Main Catalog 2012/2013

for specialists in automation and control technology

www.vipa.com

VIPA

Welcome to VIPA

This is VIPA

- Specialists in automation and control systems.
- Developer in some to the most advanced products in the PLC field.
- Developer of some of the world‘s fastest hard PLCs of their class.
- Developer of technologies that are now the industry standard.
- Global Player with branches in 60 countries.
- Extremely customer oriented and flexible.

Wolfgang Seel | CEO

VIPA has traditionally been amongst the most innovative suppliers of memory-programmable controllers (PLCs) in the market and is growing worldwide, with double-digit growth rates. Therefore, VIPA belongs to the still young, but also exceptionally successful companies in the Automation market.

Our success is based on five pillars:

- High rate of innovation and quick decision making
- Various unique features
- A convincing cost-performance ratio
- Commitment and competence of our employees
- Cooperation with powerful partners

Our aspiration:

- Constantly continue to improve existing technologies, but also to introduce new and innovative trends in the market.
- Continuous flexible adaptation of our products to current market needs and to further increase our market acceptance.
- Continue to develop our personnel resources in sales, development, quality assurance and service in accordance with our revenue growth.
- Enter into cooperation agreements with powerful partners and to increase our market share through joint market cultivation.

To meet this aspiration, we consider it as our aim, also in the future, to improve what is established, to question, revise or develop completely from new.

Furthermore we want to make available to our partners and customers also in the future through continuous innovation and smart system maintenance unique technological features with which together we can gain new and satisfied system users.

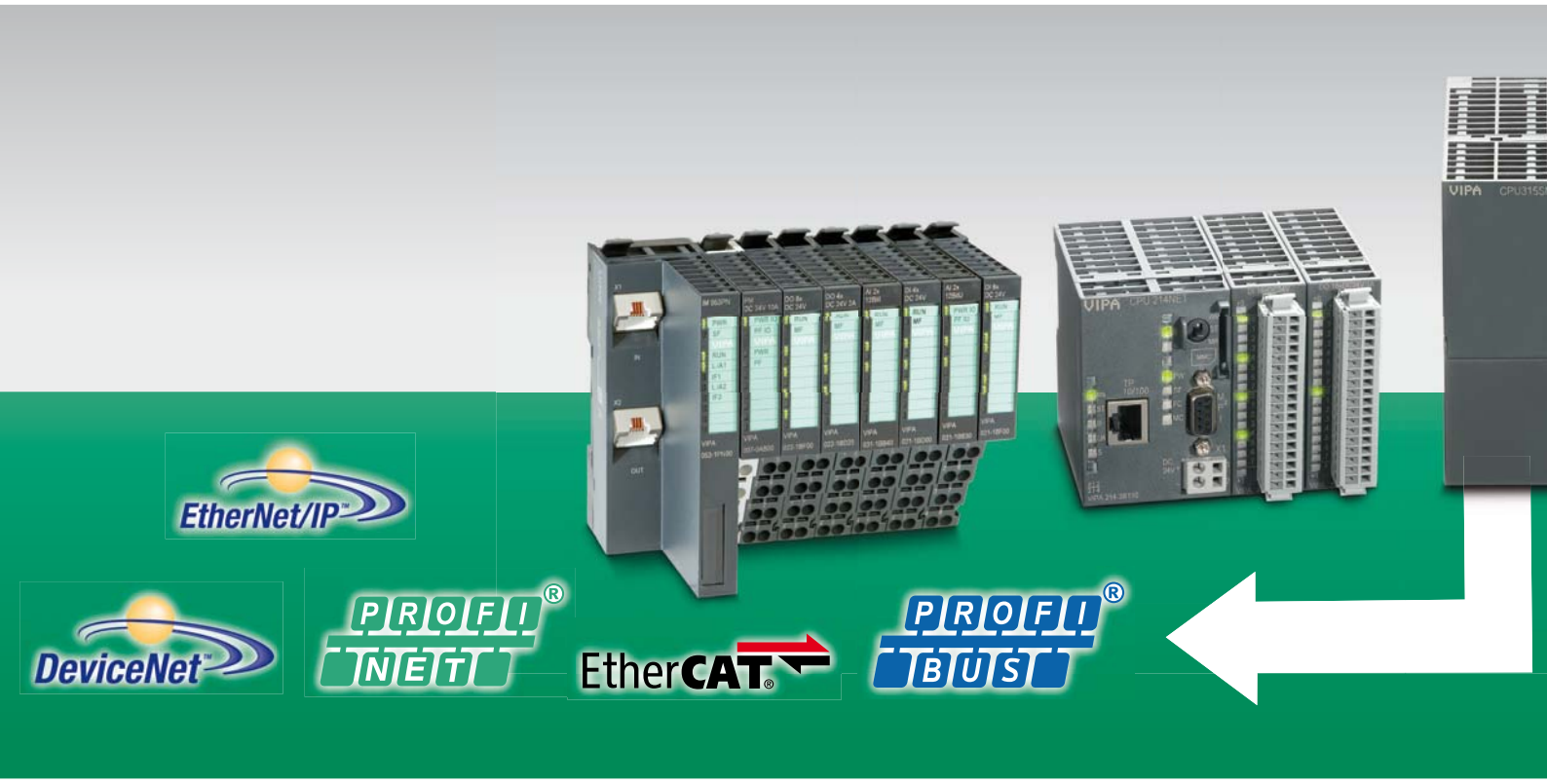
With our highly motivated employees, we're working hard on improving our quality, service and the satisfaction of our customers and partners. Convince yourself of the possibilities that our automation solutions and systems offer, and discover how with us you can sustainable increase your competitiveness.

Strengthened by above-average growth, we are determined to continue our successful path in the future.

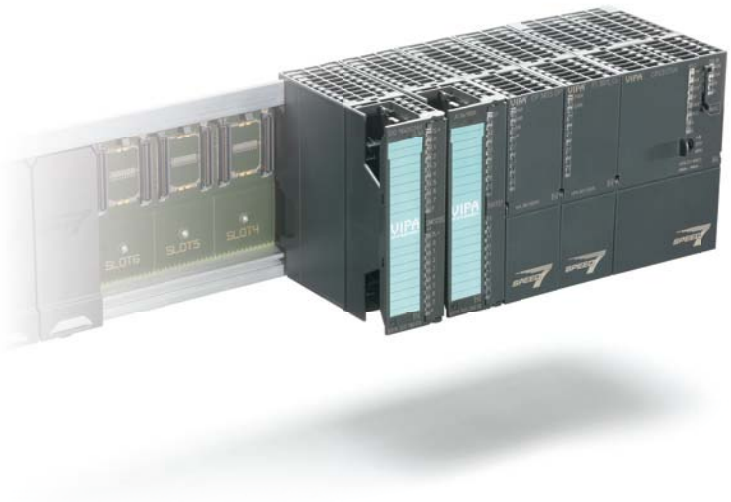
We look forward to cooperating with you!

Wolfgang Seel
CEO

We speak your language …



SPEED7 ensures your lead

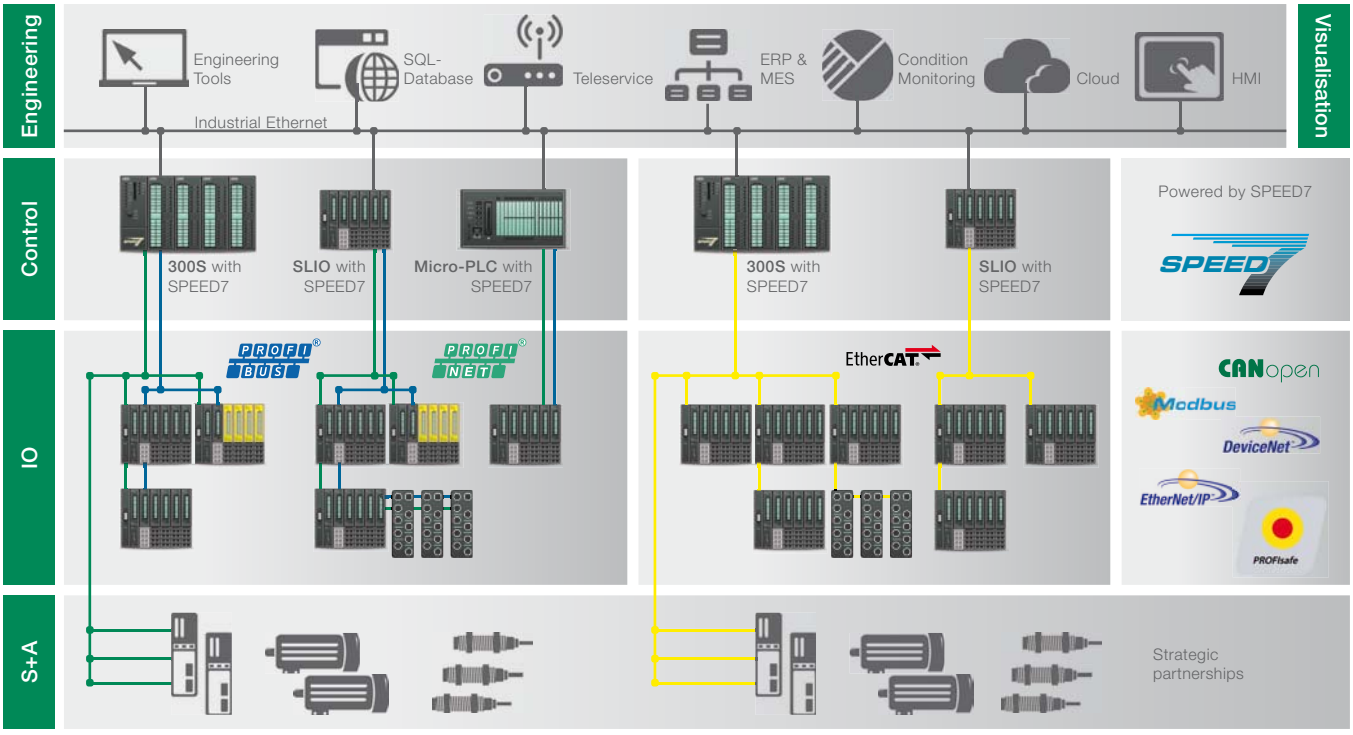


- a flexible automation platform
- and one of the fastest STEP7 PLC processors in the world!

SPEED7 technology offers developers a modular building block, with which a high-performance automation system can be developed in the shortest time on an open STEP7 architecture.

- SPEED7 ensures maximum speed with all applications and, for example, the highest clock rates.
- SPEED7 upgrades also older systems to a modern standard.
- SPEED7 processes vast amounts of data in real time.

… and in future also that of almost all systems



System solutions

Professional benefits for professional applications

- **Consistent standardization**
  All systems are programmable with VIPA WinPLC7 programming tool and/or with STEP7 from Siemens and in the future with the new "VIPA Suite".
- **Increase of productivity**
  Significant reduction in cycle times of user programs by SPEED7 technology with reduced power dissipation.
- **High efficiency**
  Above average basic features of the systems, integrated RJ45 Ethernet interface for PG/OP communication, optional integrated SPEED-Bus.
- **Absolute flexibility**
  Mixed operation for example with VIPA CPUs and Siemens assemblies possible.
- **Open communication possibilities**
  Supports internationally established communication standards like Ethernet, PROFIBUS, CANopen, EtherCAT, Modbus, EtherNet/IP, DeviceNet, Interbus, PROFINET and ASi.

Automotive:

An industry that needs solutions like on an assembly line. Ever increasing range of models, more and more complex technology, ever faster product cycles. Whoever wants to survive here, must be able to refine, expand, and accelerate his technology.

Renewable energy:

In principle every installation of a VIPA control system has its own energy policy - on starting up the efficiency increases right away, often the consumption of raw materials sinks and his conscience is eased.

Building automation:

Low energy is the goal, high performance is our way… Here our control systems are more intelligent than some specifications.

Food & Beverage:

Multi-purpose demands: Flash-freezing and autoclaving, vaccum packing and pressurized filling go on here. The whole thing under the toughest hygene conditions and always under time pressure.

Handling and storage technology:

In order that the delivery rate never stands still, not only are tailor-made PLC systems designed at VIPA, but also precise, effective time schedules for their installation.

Environment:

Regardless of whether it‘s a question of renewable energy or water/sewage: The very strict requirements in terms of robustness, compact design and of energy consumption of the controllers can be excellently implemented with our automation technology.

Packaging:

The most important factor in this industry: Speed. Because many commodities are perishable, deliveries must arrive just in time and demand simply fluctuates.

Water/Sewage:

That a manufacturer of control engineering knows how a sewage plant works seems unusual. But this is typical VIPA. At VIPA no one turns his nose up when it comes to dealing with anaerobic digestion tanks, activated sludge and denitrification.

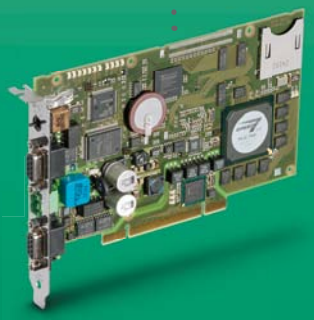
„If you don't know the destination, then you have no route.“ (Christian Morgenstern)

500S PC control system for complex tasks. And also one of the fastest control systems programmable with STEP7

100V Control system for cost-sensitive and small applications

300S One of the fastest control systems programmable with STEP7

200V Modular control system for central and decentral applications



1985

VIPA

profichip®
automation in silicon

Foundation of **profichip GmbH**

Foundation of **VIPA GmbH** by Wolfgang Seel

Move to the **new headquarter** of VIPA and profichip in Herzogenaurach

Operating / monitoring devices
From two-line displays
to touch panels

Accessories
enhanceing, linking,
optimizing

SLIO One of the most effecient
and most modern decentral I/O
systems in the world

Software for convenient
programming and
parameterization

2012

INNOVATIONSPREIS 2007
initiative mittelstand
KATEGORIESIEGER

Winner of the innovation prize
„Initiative Mittelstand 2007“
for the SPEED7 technology

INDUSTRIE PREIS 2008

Winner of the industry prize
„Industrie Preis 2008“ for
the SPEED7 technology

awarded with the **Jobstar** of
Metropolitan Region Nuremberg

TOP 100

Honoured as top
innovator by **Top100**

Contents | VIPA

At a glance

SLIO

the fine-granular I/O system

System description SLIO

Structure and Concept

SLIO stands for Slice I/O. The system is very compact and can be adapted piecemeal exactly to the requirements of the application.

The system is designed for decentralized automation tasks.

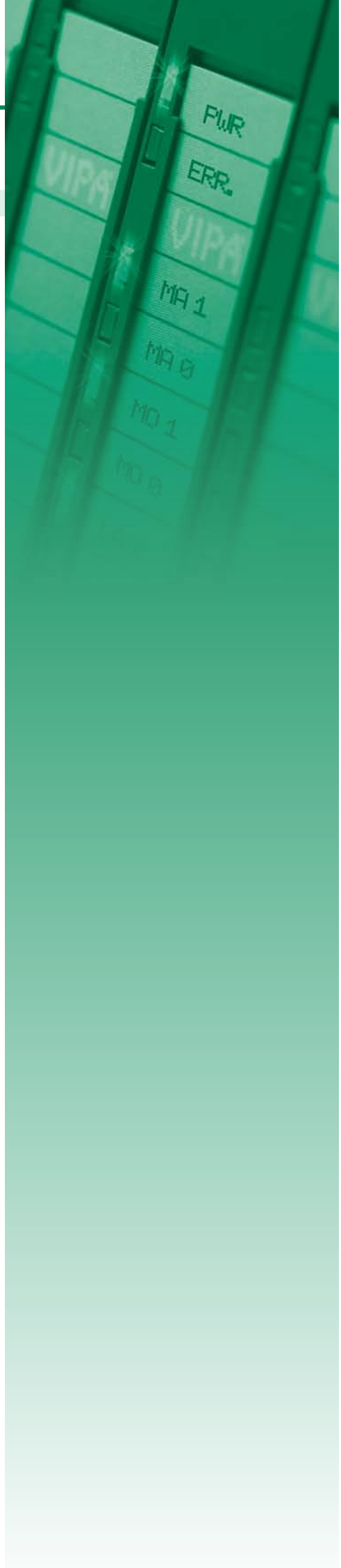
With the help of the power module (PM), color contrasted from the signal modules (SM) and functional modules (FM), these are supplied with power and separate potential groups can be defined as required. The terminal module (TM) combines clamp, seating for the electronic module (EM) and mechanical bus connector. The electronic modules are connected to the terminal module in a secure sliding mechanism. In the case of service, only the electronic module is replaced by simply pulling out of the terminal module – wiring and mounting remain on the 35 mm profile rail. The step-formed spring-type terminals on the terminal module enable a quick, clear and secure wiring. Through integrated status LEDs and the label strip on the front a channel-specific, unambiguous allocation, and readability of the channel conditions of the electronic module is ensured.

All interface modules (IM) for PROFIBUS-DP, CANopen, PROFINET, EtherCAT, DeviceNet and Modbus/TCP support up to 64 electronic modules.

The space-saving assembly size allows use in any automation environment.

Assembly is very easy: First the terminal modules are connected, then the electronic modules are inserted into the slot designated for the terminal module until the connection between both module parts is established by an audible click.

SLIO is one of the most highly efficient decentral systems worldwide and is evolving daily.



Performance and Application

SLIO is designed for large decentralized automation tasks in the manufacturing and process industries. SLIO expands key solutions and is integrated with the help of the device master files into existing fieldbus infrastructure. Through the new backplane bus concept the interface modules (fieldbus slave) in SLIO enable very short response times for signal processing.

Functions

A variety of signal modules are available for the connection of sensors and actuators for acquiring digital and analog signals to and from the process.

For positioning, path measurement, counting tasks and other functions further functional modules are continuously being developed.

Communication

SLIO includes interface modules (fieldbus slave modules) with different fieldbus protocols by which the system, manufacturer-independent, can be integrated into most automation concepts.

Clamp modules

Assembly and function

Clanp modules are passive modules for 2- or 3-wire installations, whose contacts are vertical electrical connected internal. Within the module the backplane bus feed-through. The module does not have any module identification, but is considered at the maximum number of the modules.

Through the application of the clamp modules, distributors for power supply could be realized easily and enables so the connection of active supplied sensors like proximity switch. The wiring is done via timesaving and secure cage clamp technique.

The clamp modules are fixed on the mounting surface by means of a 35mm DIN rail.

Features

- Maintenance-free cage clamp technique
- Backplane bus feed-through
- Max. terminal voltage 10A
- Potential separation 500 Veff (field voltage to bus)
- Mounting on a 35mm DIN rail
- 24 month guarantee

Overview

Order no.	Name/Description	Page
Clamp modules		
001-1BA00	**CM 001 - Potential distributor module** › 8xDC 24 V clamps	**18**
001-1BA10	**CM 001 - Potential distributor module** › 8xDC 0 V clamps	**18**
001-1BA20	**CM 001 - Potential distributor module** › 4xDC 24 V, 4xDC 0 V clamps	**18**

Clamp modules

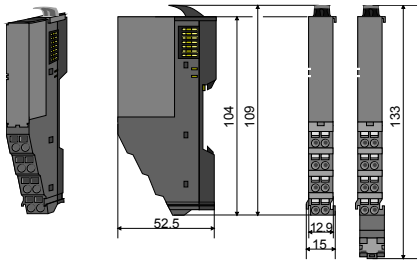
Clamp modules | Clamp modules						
001-1BA00 001-1BA10 001-1BA20						

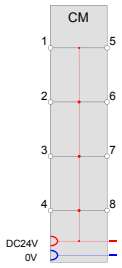
Order number	001-1BA00	001-1BA10	001-1BA20	
Figure				
Type	CM 001	CM 001	CM 001	
Module ID	-	-	-	
General information				
Note	-	-	-	
Features	› 8xDC 24 V clamps	› 8xDC 0 V clamps	› 4xDC 24 V, 4xDC 0 V clamps	
Clamp parameter				
Terminal voltage max.	DC 30 V	DC 0 V	DC 30 V	
Terminal current max.	10 A	10 A	10 A	
Housing				
Material	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10	
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	
Mechanical data				
Dimensions (WxHxD)	12.9 mm x 109 mm x 52.5 mm	12.9 mm x 109 mm x 52.5 mm	12.9 mm x 109 mm x 52.5 mm	
Weight	50 g	50 g	50 g	
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	
Certifications				
UL508 certification	yes	yes	yes	

Connections, Interfaces

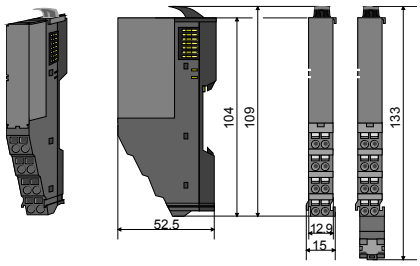
Clamp modules | Clamp modules						
001-1BA00 001-1BA10 001-1BA20						

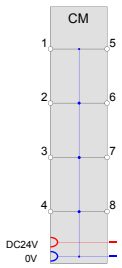
001-1BA00





001-1BA10





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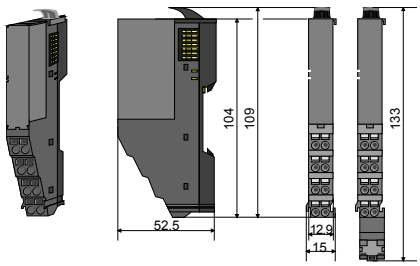
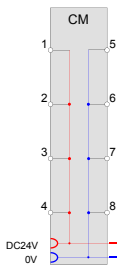
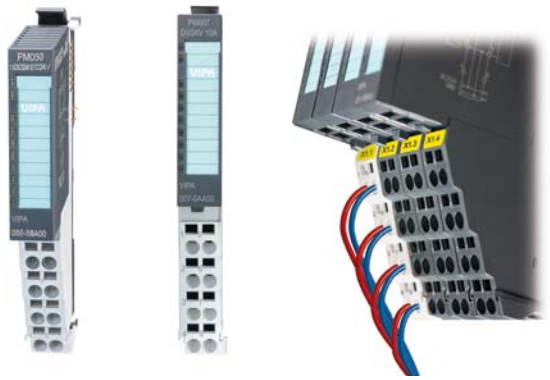




Power modules



Structure and Function

In the system SLIO the power supply is provided via power modules.

Both the bus interface as well as the electronics of the connected peripheral modules are supplied with power via the power module (PM) integrated in interface module (IM). The DC 24 V load power supply for the connected peripheral modules is provided via a further connection in the PM.

With the help of color-contrasted power modules within the system further potential areas for the DC 24 V load power supply can be defined.

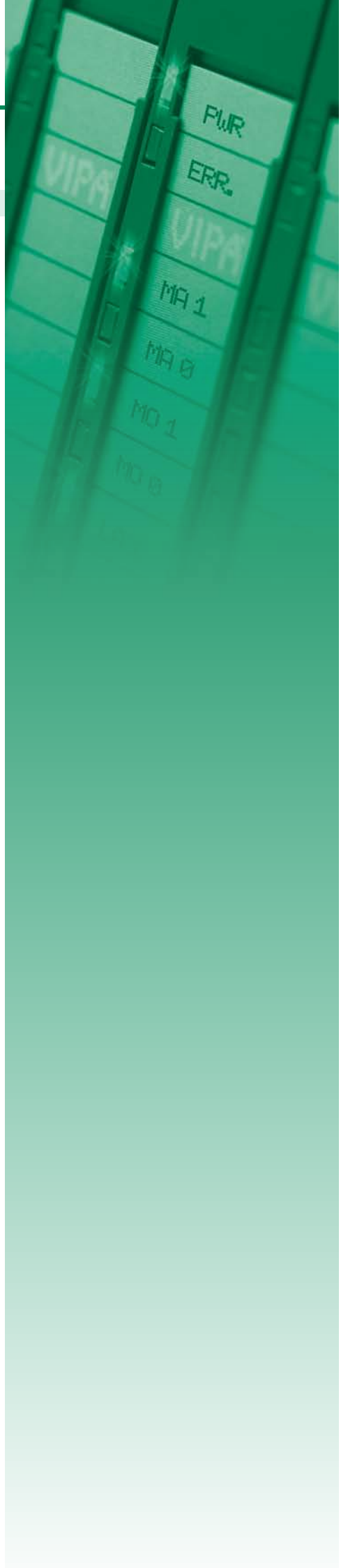
The two-component design allows for the easiest of service by separating the electronics from the terminal module.

Characteristics

- Power supply of the sensor/actuator-level
- Nominal input voltage DC 24 V
- Output current max. 10 A
- Isolation from potential groups
- Front integrated status LEDs
- Mounting security by reverse polarity and overvoltage protection
- 24 months warranty

Overview

Order no.	Name/Description	Page
Power modules		
007-1AB00	**PM 007 - Power module** › Power supply DC 24 V, 10 A › Reverse polarity protection › Overvoltage protection	**22**
007-1AB10	**PM 007 - Power module** › Power supply DC 24 V, 4 A › Power supply DC 24 V for bus supply 5 V, 2 A › Reverse polarity protection › Overvoltage protection	**22**



Power modules

Power modules | Power modules						
007-1AB00 007-1AB10						

Order number	007-1AB00	007-1AB10		
Figure				
Type	PM 007	PM 007		
Module ID	-	-		
General information				
Note	-	-		
Features	› Power supply DC 24 V, 10 A › Reverse polarity protection › Overvoltage protection	› Power supply DC 24 V, 4 A › Power supply DC 24 V for bus supply 5 V, 2 A › Reverse polarity protection › Overvoltage protection		
Technical data power supply				
Input voltage (rated value)	DC 24 V	DC 24 V		
Input voltage (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V		
Mains frequency (rated value)	-	-		
Mains frequency (permitted range)	-	-		
Input voltage (at 120 V)	-	-		
Input voltage (at 230 V)	-	-		
Inrush current	-	-		
Power consumption	-	-		
Output voltage (rated value)	24 V	24 V		
Output current (rated value)	10 A	4 A		
Power supply parallel switchable	-	-		
Reverse polarity protection	yes	yes		
Overvoltage protection	36 V	36 V		
Ripple of output voltage (max.)	-	-		
Efficiency	-	89 %		
Power loss	-	1.4 W		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	no	no		
Process alarm	no	no		
Diagnostic interrupt	no	no		
Diagnostic functions	no	no		
Diagnostics information read-out	none	none		
Supply voltage display	green LED	green LED		
Group error display	red LED	red LED		
Channel error display	none	none		
Housing				
Material	PPE / PPE GF10	PPE / PPE GF10		
Mounting	Profile rail 35 mm	Profile rail 35 mm		

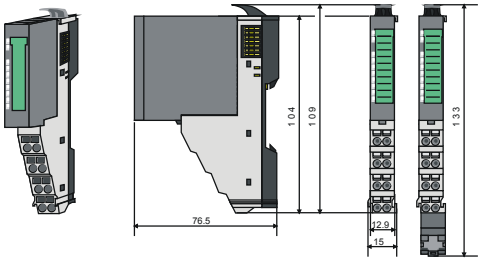
Power modules | Power modules						
007-1AB00 007-1AB10						

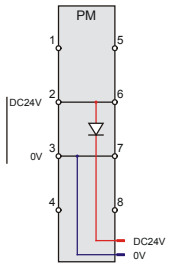
Order number	007-1AB00	007-1AB10		
Mechanical data				
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm		
Weight	60 g	75 g		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	yes	yes		

Connections, Interfaces

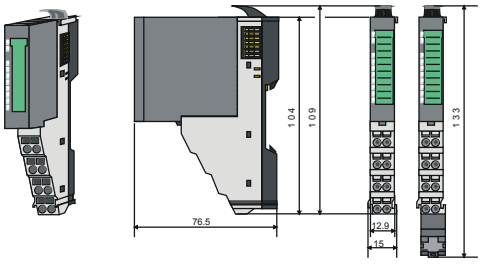
Power modules | Power modules						
007-1AB00 007-1AB10						

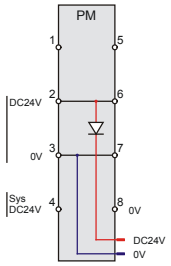
007-1AB00



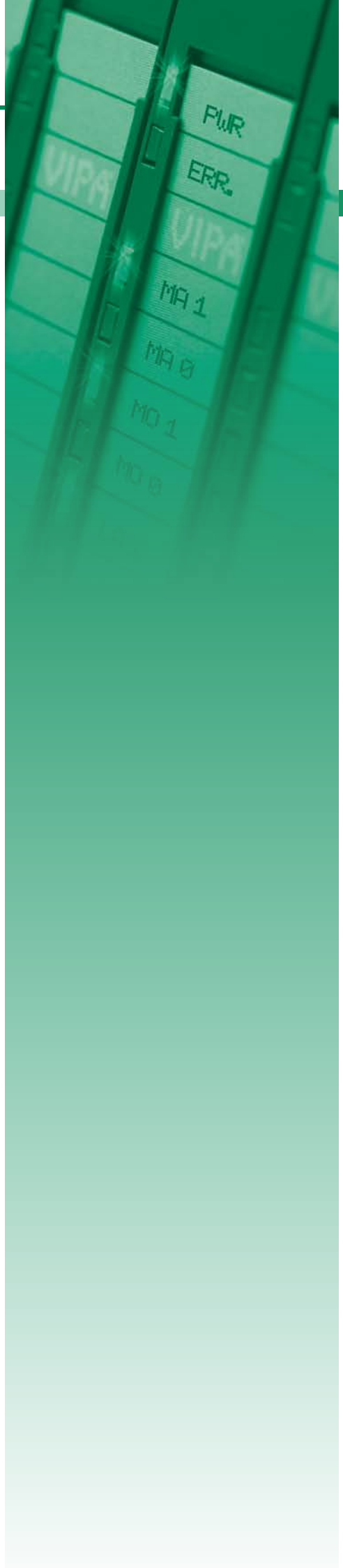


007-1AB10





Signal modules digital



Structure and Function

Signal modules (SM) to connect sensors and actuators are the interfaces of the system to the process. Digital signal modules acquire the binary control signals to and from the process level.

A variety of different digital signal modules provides exactly the I/O modules, which are required for each task. The digital modules differ in the number of channels, voltage and current ranges, isolation, and diagnostic and alarm capability.

Each signal module consists of a terminal and an electronic module.

The terminal module (TM) contains the receptacle for the electronic module (EM), the backplane connectors and contacts for the distribution of the load power supply electronics, the modular connection to DC 24 V load power supply and the staircase-shaped terminal block for wiring.

Furthermore the terminal module processes a locking system for fixing to a profile rail. The SLIO system can also be constructed "block by block" outside the cabinet and later assembled as a complete system in the control cabinet.

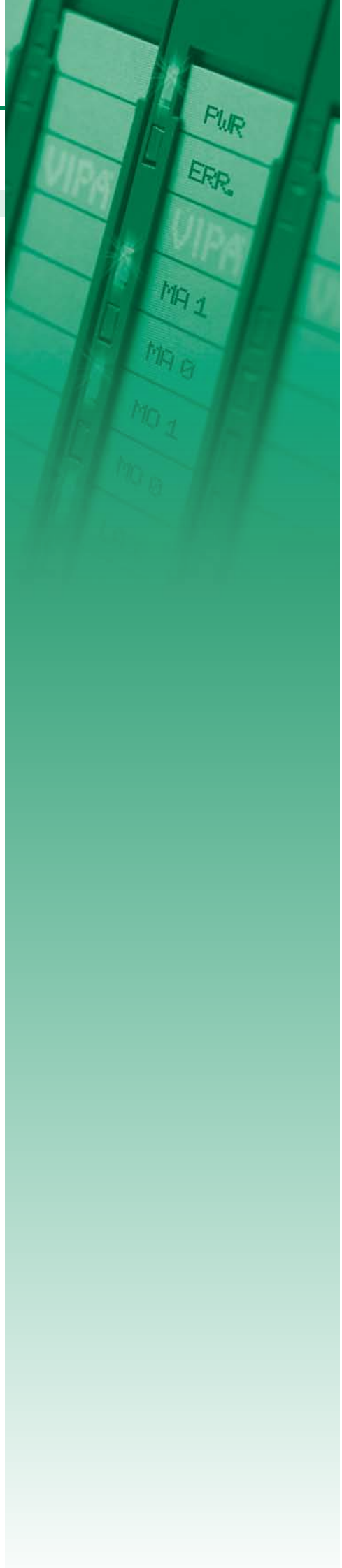
The functionality of the signal module is defined via the electronics module that is connected by a secure sliding mechanism to the terminal module.

During service the defective electronic module can be replaced without detaching the wiring.

Characteristics

- Electrically isolated digital inputs and outputs to the backplane bus
- 2, 4 or 8 channel
- Various modules, suitable for switches and proximity switches as well as for measuring transducers
- Direct mapping and readability of the channel conditions via status LEDs
- Safe and time-saving installation by the terminal assignment mounted on the module
- When changing the module equipment identification (BMK) is retained on the TM
- Individual single-channel lettering on insertion strip
- 24 month warranty

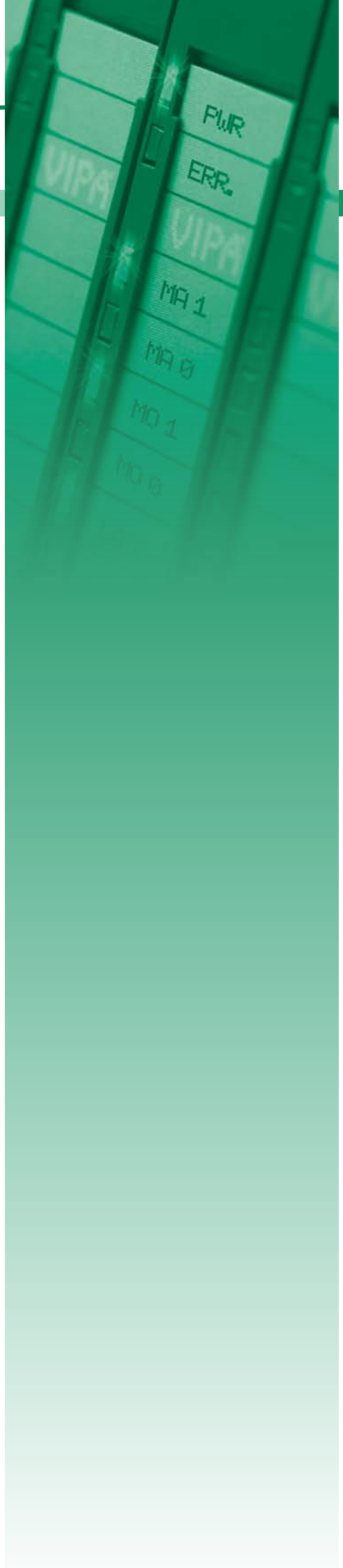
Overview



Order no.	Name/Description	Page
Digital input modules		
021-1BB00	**SM 021 - Digital input** › 2 inputs	**29**
021-1BB10	**SM 021 - Digital input** › 2 fast inputs › Input filter time delay parameterizable 2 µs...4 ms	**29**
021-1BB50	**SM 021 - Digital input** › 2 inputs › Active low input	**29**
021-1BB70	**SM 021 - Digital input** › 2 inputs › Time stamp	**29**
021-1BD00	**SM 021 - Digital input** › 4 inputs	**32**
021-1BD10	**SM 021 - Digital input** › 4 fast inputs › Input filter time delay parameterizable 2 µs...4 ms	**32**
021-1BD40	**SM 021 - Digital input** › 4 inputs › Connect 2/3-wire	**32**
021-1BD50	**SM 021 - Digital input** › 4 inputs › Active low input	**32**
021-1BD70	**SM 021 - Digital input** › 4 inputs › Time stamp	**35**
021-1BF00	**SM 021 - Digital input** › 8 inputs	**35**
021-1BF50	**SM 021 - Digital input** › 8 inputs › Active low input	**35**
021-1SD00	**SM 021 - Digital input** › 4 inputs › Safety	**35**
Digital output modules		
022-1BB00	**SM 022 - Digital output** › 2 outputs › Output current 0.5 A	**38**
022-1BB20	**SM 022 - Digital output** › 2 outputs › Output current 2 A	**38**
022-1BB50	**SM 022 - Digital output** › 2 Low-Side outputs › Output current 0.5 A	**38**
022-1BB70	**SM 022 - Digital output** › 2 outputs › Time stamp › Output current 0.5 A	**38**
022-1BB90	**SM 022 - Digital output** › 2 outputs › PWM	**41**
022-1BD00	**SM 022 - Digital output** › 4 outputs › Output current 0.5 A	**41**
022-1BD20	**SM 022 - Digital output** › 4 outputs › Output current 2 A	**41**
022-1BD50	**SM 022 - Digital output** › 4 Low-Side outputs › Output current 0.5 A	**41**
022-1BD70	**SM 022 - Digital output** › 4 outputs › Time stamp › Output current 0.5 A	**44**
022-1BF00	**SM 022 - Digital output** › 8 outputs › Output current 0.5 A	**44**

Overview

Order no.	Name/Description	Page
022-1BF50	**SM 022 - Digital output** › 8 Low-Side outputs › Output current 0.5 A	**44**
022-1HB10	**SM 022 - Digital output** › 2 relay outputs › DC 30 V/ AC 230 V › Output current 3 A	**44**
022-1SD00	**SM 022 - Digital output** › 4 outputs › Safety › Output current 0.5 A	**47**



Digital input modules

Signal modules digital | Digital input modules						
021-1BB00 021-1BB10 021-1BB50 021-1BB70	021-1BD00 021-1BD10 021-1BD40 021-1BD50	021-1BD70 021-1BF00 021-1BF50 021-1SD00				

Order number	021-1BB00	021-1BB10	021-1BB50	021-1BB70
Figure				
Type	SM 021	SM 021	SM 021	SM 021
Module ID	0001 9F82	000A 1F02	0002 9F82	0F01 47C1
General information				
Note	-	-	-	-
Features	› 2 inputs	› 2 fast inputs › Input filter time delay parameterizable 2 µs...4 ms	› 2 inputs › Active low input	› 2 inputs › Time stamp
Current consumption/power loss				
Current consumption from backplane bus	55 mA	95 mA	60 mA	85 mA
Power loss	0.5 W	0.9 W	0.5 W	0.9 W
Technical data digital inputs				
Number of inputs	2	2	2	2
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	-	DC 20.4...28.8 V	-	DC 24 V
Current consumption from load voltage L+ (without load)	-	12 mA	-	10 mA
Rated value	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 15...28.8 V	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 0...5 V	DC 15...28.8 V
Input voltage hysteresis	-	-	-	-
Frequency range	-	-	-	-
Input resistance	-	-	-	-
Input current for signal "1"	3 mA	3 mA	3 mA	3 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	✓
Max. permissible BERO quiescent current	0.5 mA	0.5 mA	0.5 mA	0.5 mA
Input delay of "0" to "1"	3 ms	parameterizable 2µs - 3ms	3 ms	parameterizable 2µs - 3ms
Input delay of "1" to "0"	3 ms	parameterizable 2µs - 3ms	3 ms	parameterizable 2µs - 3ms
Number of simultaneously utilizable inputs horizontal configuration	2	2	2	2
Number of simultaneously utilizable inputs vertical configuration	2	2	2	2
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1	-	IEC 61131, type 1
Initial data size	2 Bit	2 Bit	2 Bit	60 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	yes, parameterizable	no	no
Process alarm	no	yes, parameterizable	no	no
Diagnostic interrupt	no	yes, parameterizable	no	no

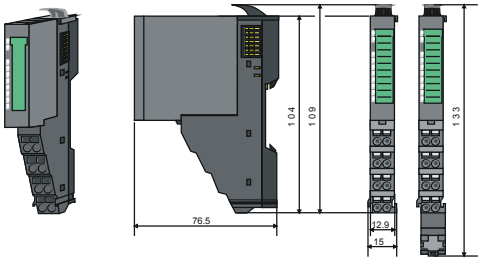
Signal modules digital | Digital input modules						
021-1BB00 021-1BB10 021-1BB50 021-1BB70	021-1BD00 021-1BD10 021-1BD40 021-1BD50	021-1BD70 021-1BF00 021-1BF50 021-1SD00				

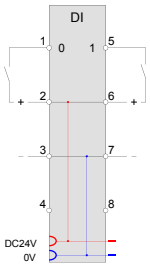
Order number	021-1BB00	021-1BB10	021-1BB50	021-1BB70
Diagnostic functions	no	yes	no	no
Diagnostics information read-out	none	possible	none	possible
Module state	green LED	green LED	green LED	green LED
Module error display	red LED	red LED	red LED	red LED
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	-
Between channels of groups to	-	-	-	-
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Safety				
Safety protocol	-	-	-	-
Safety requirements	-	-	-	-
Secure user address	-	-	-	-
Watchdog	-	-	-	-
Two channels	-	-	-	-
Test pulse outputs	-	-	-	-
Datasizes				
Input bytes	1	1	1	20 / 60
Output bytes	0	0	0	0
Parameter bytes	0	9	0	10
Diagnostic bytes	0	20	0	20
Housing				
Material	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm
Weight	60 g	60 g	60 g	60 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

Connections, Interfaces

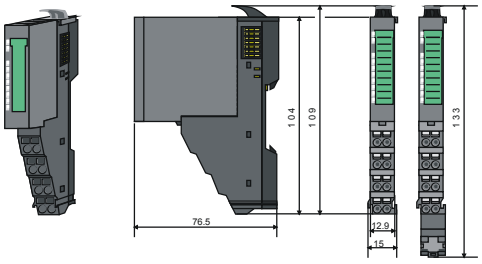
Signal modules digital | Digital input modules						
021-1BB00 021-1BB10 021-1BB50 021-1BB70	021-1BD00 021-1BD10 021-1BD40 021-1BD50	021-1BD70 021-1BF00 021-1BF50 021-1SD00				

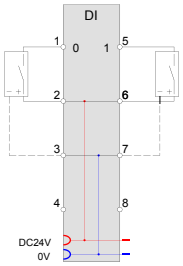
021-1BB00



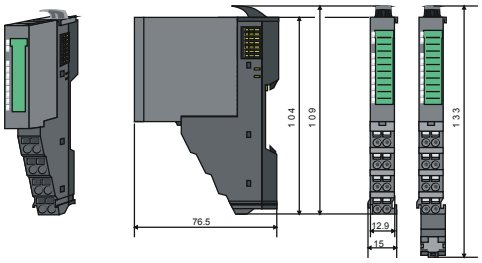


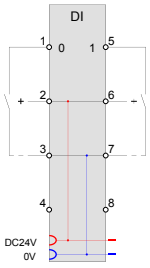
021-1BB10



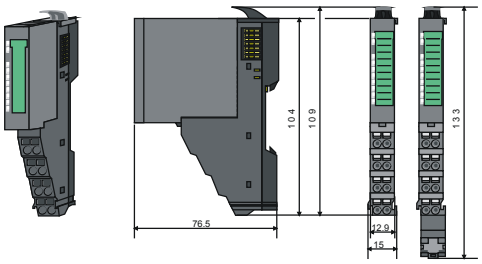


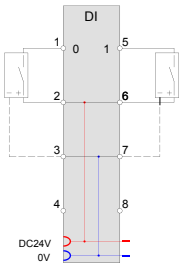
021-1BB50





021-1BB70





Digital input modules

Signal modules digital | Digital input modules						
021-1BB00 021-1BB10 021-1BB50 021-1BB70	021-1BD00 021-1BD10 021-1BD40 021-1BD50	021-1BD70 021-1BF00 021-1BF50 021-1SD00				

Order number	021-1BD00	021-1BD10	021-1BD40	021-1BD50
Figure				
Type	SM 021	SM 021	SM 021	SM 021
Module ID	0003 9F84	0009 1F04	0008 9F84	0004 9F84
General information				
Note	-	-	-	-
Features	› 4 inputs	› 4 fast inputs › Input filter time delay parameterizable 2 µs...4 ms	› 4 inputs › Connect 2/3-wire	› 4 inputs › Active low input
Current consumption/power loss				
Current consumption from backplane bus	55 mA	95 mA	55 mA	65 mA
Power loss	0.6 W	0.95 W	0.6 W	0.6 W
Technical data digital inputs				
Number of inputs	4	4	4	4
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	-	DC 20.4...28.8 V	-	-
Current consumption from load voltage L+ (without load)	-	15 mA	-	-
Rated value	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	DC 15...28.8 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	DC 0...5 V
Input voltage hysteresis	-	-	-	-
Frequency range	-	-	-	-
Input resistance	-	-	-	-
Input current for signal "1"	3 mA	3 mA	3 mA	3 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	✓
Max. permissible BERO quiescent current	0.5 mA	0.5 mA	0.5 mA	0.5 mA
Input delay of "0" to "1"	3 ms	parameterizable 2µs - 3ms	3 ms	3 ms
Input delay of "1" to "0"	3 ms	parameterizable 2µs - 3ms	3 ms	3 ms
Number of simultaneously utilizable inputs horizontal configuration	4	4	4	4
Number of simultaneously utilizable inputs vertical configuration	4	4	4	4
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1	-
Initial data size	4 Bit	4 Bit	4 Bit	4 Bit
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	yes, parameterizable	no	no
Process alarm	no	yes, parameterizable	no	no
Diagnostic interrupt	no	yes, parameterizable	no	no

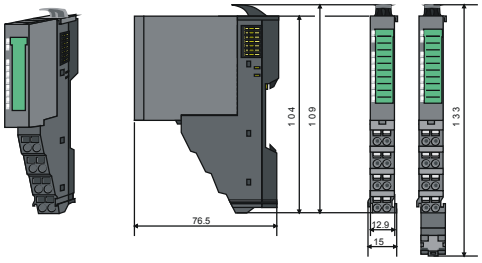
Signal modules digital | Digital input modules						
021-1BB00 021-1BB10 021-1BB50 021-1BB70	021-1BD00 021-1BD10 021-1BD40 021-1BD50	021-1BD70 021-1BF00 021-1BF50 021-1SD00				

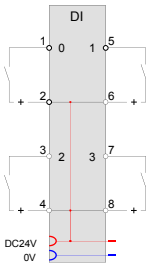
Order number	021-1BD00	021-1BD10	021-1BD40	021-1BD50
Diagnostic functions	no	yes	no	no
Diagnostics information read-out	none	possible	none	none
Module state	green LED	green LED	green LED	green LED
Module error display	red LED	red LED	red LED	red LED
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	-
Between channels of groups to	-	-	-	-
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Safety				
Safety protocol	-	-	-	-
Safety requirements	-	-	-	-
Secure user address	-	-	-	-
Watchdog	-	-	-	-
Two channels	-	-	-	-
Test pulse outputs	-	-	-	-
Datasizes				
Input bytes	1	1	1	1
Output bytes	0	0	0	0
Parameter bytes	0	11	0	0
Diagnostic bytes	0	20	0	0
Housing				
Material	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm
Weight	60 g	60 g	60 g	60 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

Connections, Interfaces

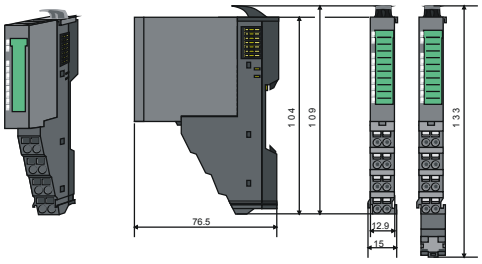
Signal modules digital | Digital input modules						
021-1BB00 021-1BB10 021-1BB50 021-1BB70	021-1BD00 021-1BD10 021-1BD40 021-1BD50	021-1BD70 021-1BF00 021-1BF50 021-1SD00				

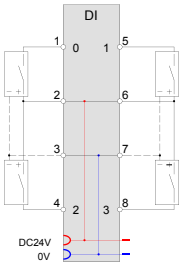
021-1BD00



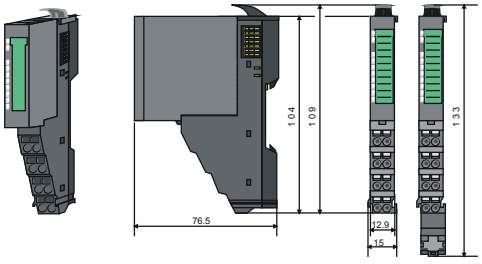


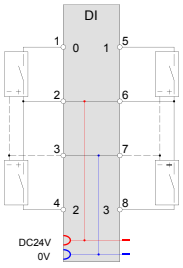
021-1BD10



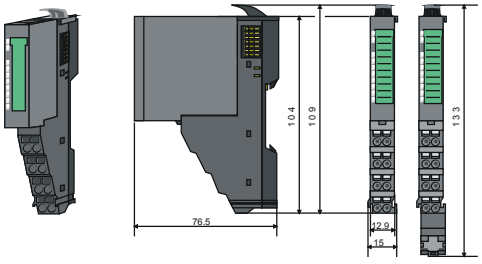


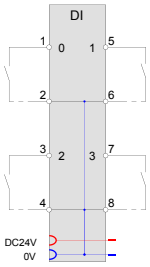
021-1BD40





021-1BD50





Digital input modules

Signal modules digital | Digital input modules						
021-1BB00 021-1BB10 021-1BB50 021-1BB70	021-1BD00 021-1BD10 021-1BD40 021-1BD50	021-1BD70 021-1BF00 021-1BF50 021-1SD00				

Order number	021-1BD70	021-1BF00	021-1BF50	021-1SD00
Figure				
Type	SM 021	SM 021	SM 021	SM 021
Module ID	0F03 47C2	0005 9FC1	0007 9FC1	0C41 2E00
General information				
Note	-	-	-	-
Features	› 4 inputs › Time stamp	› 8 inputs	› 8 inputs › Active low input	› 4 inputs › Safety
Current consumption/power loss				
Current consumption from backplane bus	85 mA	60 mA	65 mA	80 mA
Power loss	0.95 W	0.9 W	0.9 W	0.8 W
Technical data digital inputs				
Number of inputs	4	8	8	4
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	-	-	-
Current consumption from load voltage L+ (without load)	15 mA	-	-	-
Rated value	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 15...28.8 V	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 0...5 V	DC 15...28.8 V
Input voltage hysteresis	-	-	-	-
Frequency range	-	-	-	-
Input resistance	-	-	-	-
Input current for signal "1"	3 mA	3 mA	3 mA	3 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	✓
Max. permissible BERO quiescent current	0.5 mA	0.5 mA	0.5 mA	1.5 mA
Input delay of "0" to "1"	parameterizable 2µs - 3ms	3 ms	3 ms	parameterizable 1ms - 1s
Input delay of "1" to "0"	parameterizable 2µs - 3ms	3 ms	3 ms	parameterizable 1ms - 1s
Number of simultaneously utilizable inputs horizontal configuration	4	8	8	4
Number of simultaneously utilizable inputs vertical configuration	4	8	8	4
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1	-	IEC 61131, type 3
Initial data size	60 Byte	8 Bit	8 Bit	4 Bit
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	no	no	yes, parameterizable
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	yes, parameterizable
Diagnostic functions	no	no	no	yes, parameterizable
Diagnostics information read-out	possible	none	none	possible

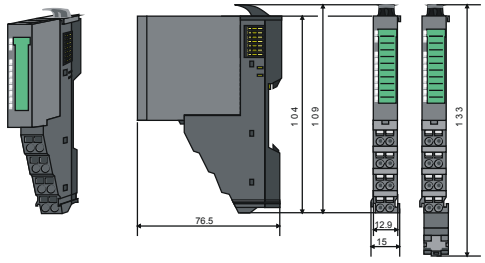
Signal modules digital | Digital input modules						
021-1BB00 021-1BB10 021-1BB50 021-1BB70	021-1BD00 021-1BD10 021-1BD40 021-1BD50	021-1BD70 021-1BF00 021-1BF50 021-1SD00				

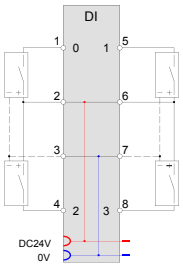
Order number	021-1BD70	021-1BF00	021-1BF50	021-1SD00
Module state	green LED	green LED	green LED	green LED
Module error display	red LED	red LED	red LED	red LED
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	-
Between channels of groups to	-	-	-	-
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Safety				
Safety protocol	-	-	-	PROFIsafe V2
Safety requirements	-	-	-	SIL CL 3 and PL e
Secure user address	-	-	-	1 - 4095
Watchdog	-	-	-	parameterizable 10ms - 1s
Two channels	-	-	-	Each 2 of 4 inputs switchable
Test pulse outputs	-	-	-	4
Datasizes				
Input bytes	20 / 60	1	1	5
Output bytes	0	0	0	5
Parameter bytes	12	0	0	44
Diagnostic bytes	20	0	0	20
Housing				
Material	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10	PC / PPE GF10
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm
Weight	60 g	60 g	60 g	60 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	in preparation

Connections, Interfaces

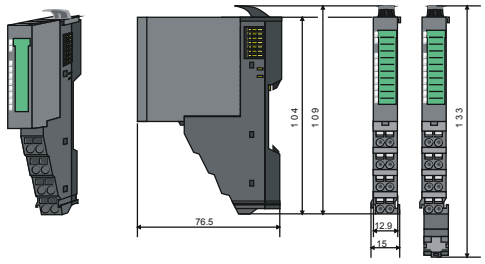
Signal modules digital | Digital input modules						
021-1BB00 021-1BB10 021-1BB50 021-1BB70	021-1BD00 021-1BD10 021-1BD40 021-1BD50	021-1BD70 021-1BF00 021-1BF50 021-1SD00				

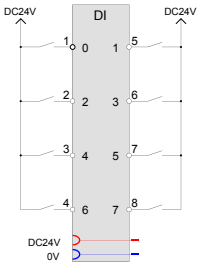
021-1BD70



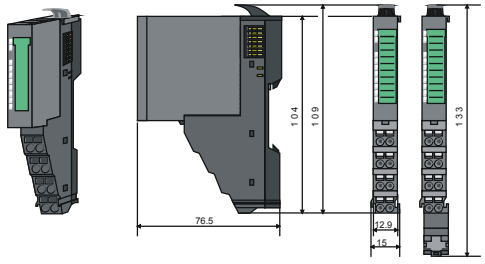


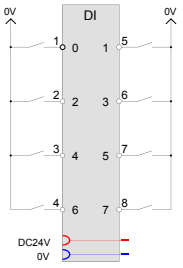
021-1BF00



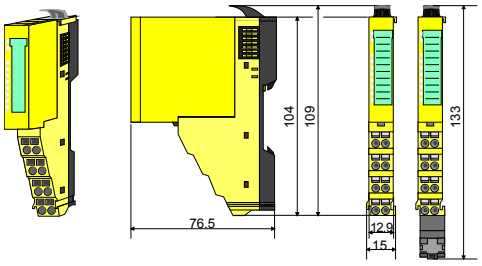


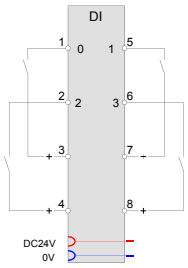
021-1BF50





021-1SD00





Digital output modules

Signal modules digital | Digital output modules						
022-1BB00 022-1BB20 022-1BB50 022-1BB70	022-1BB90 022-1BD00 022-1BD20 022-1BD50	022-1BD70 022-1BF00 022-1BF50 022-1HB10	022-1SD00			

Order number	022-1BB00	022-1BB20	022-1BB50	022-1BB70
Figure				
Type	SM 022	SM 022	SM 022	SM 022
Module ID	0101 AF90	0102 AF90	0103 AF90	0F41 57E1
General information				
Note	-	-	-	-
Features	› 2 outputs › Output current 0.5 A	› 2 outputs › Output current 2 A	› 2 Low-Side outputs › Output current 0.5 A	› 2 outputs › Time stamp › Output current 0.5 A
Current consumption/power loss				
Current consumption from backplane bus	55 mA	60 mA	60 mA	85 mA
Power loss	0.4 W	0.55 W	0.4 W	0.95 W
Technical data digital outputs				
Number of outputs	2	2	2	2
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Current consumption from load voltage L+ (without load)	5 mA	10 mA	2.5 mA	15 mA
Total current per group, horizontal configuration, 40°C	1 A	4 A	1 A	1 A
Total current per group, horizontal configuration, 60°C	1 A	4 A	1 A	1 A
Total current per group, vertical configuration	1 A	4 A	1 A	1 A
Output current at signal "1", rated value	0.5 A	2 A	0.5 A	0.5 A
Output delay of "0" to "1"	30 µs	100 µs	30 µs	max. 100 ns
Output delay of "1" to "0"	175 µs	250 µs	100 µs	max. 100 ns
Minimum load current	-	-	-	-
Lamp load	10 W	10 W	10 W	10 W
Parallel switching of outputs for redundant control of a load	not possible	not possible	not possible	not possible
Parallel switching of outputs for increased power	not possible	not possible	not possible	not possible
Actuation of digital input	✓	✓	✓	✓
Switching frequency with resistive load	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz	max. 40 kHz
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz	max. 40 kHz
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz	max. 10 Hz	max. 40 kHz
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)	+45 V	L+ (-52 V)
Short-circuit protection of output	yes, electronic	yes, electronic	yes, electronic	yes, electronic, and only highside
Trigger level	1 A	2.7 A	1.7 A	2.5 A
Number of operating cycle of relay outputs	-	-	-	-

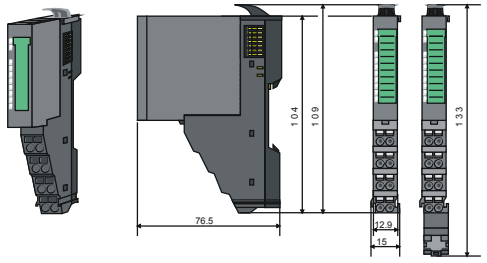
Signal modules digital | Digital output modules						
022-1BB00 022-1BB20 022-1BB50 022-1BB70	022-1BB90 022-1BD00 022-1BD20 022-1BD50	022-1BD70 022-1BF00 022-1BF50 022-1HB10	022-1SD00			

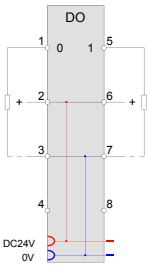
Order number	022-1BB00	022-1BB20	022-1BB50	022-1BB70
Switching capacity of contacts	-	-	-	-
Output data size	2 Bit	2 Bit	2 Bit	60 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	possible
Module state	green LED	green LED	green LED	green LED
Module error display	red LED	red LED	red LED	red LED
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	-
Between channels of groups to	-	-	-	-
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Safety				
Safety protocol	-	-	-	-
Safety requirements	-	-	-	-
Secure user address	-	-	-	-
Watchdog	-	-	-	-
Two channels	-	-	-	-
Test pulse length	-	-	-	-
Circuit monitoring	-	-	-	-
Datasizes				
Input bytes	0	0	0	4
Output bytes	1	1	1	20 / 60
Parameter bytes	0	0	0	6
Diagnostic bytes	0	0	0	20
Housing				
Material	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm
Weight	60 g	60 g	60 g	60 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

Connections, Interfaces

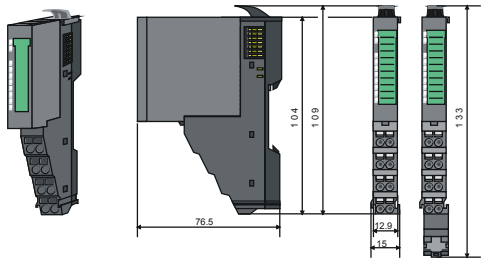
Signal modules digital | Digital output modules						
022-1BB00 022-1BB20 022-1BB50 022-1BB70	022-1BB90 022-1BD00 022-1BD20 022-1BD50	022-1BD70 022-1BF00 022-1BF50 022-1HB10	022-1SD00			

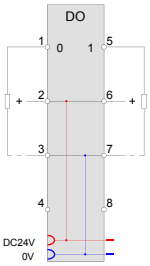
022-1BB00



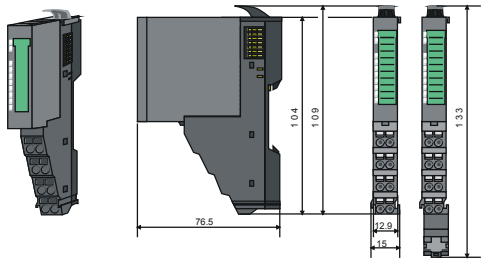


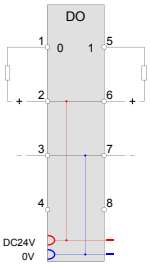
022-1BB20



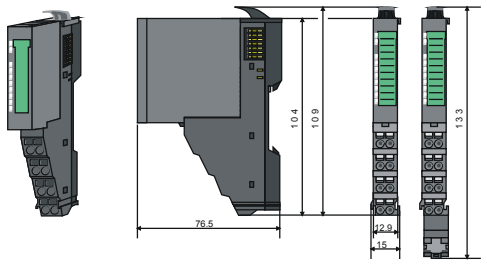


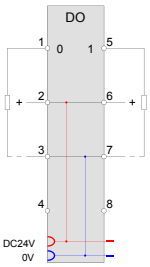
022-1BB50





022-1BB70





Digital output modules

Signal modules digital | Digital output modules						
022-1BB00 022-1BB20 022-1BB50 022-1BB70	022-1BB90 022-1BD00 022-1BD20 022-1BD50	022-1BD70 022-1BF00 022-1BF50 022-1HB10	022-1SD00			

Order number	022-1BB90	022-1BD00	022-1BD20	022-1BD50
Figure				
Type	SM 022	SM 022	SM 022	SM 022
Module ID	0901 4880	0104 AFA0	0108 AFA0	0105 AFA0
General information				
Note	-	-	-	-
Features	› 2 outputs › PWM	› 4 outputs › Output current 0.5 A	› 4 outputs › Output current 2 A	› 4 Low-Side outputs › Output current 0.5 A
Current consumption/power loss				
Current consumption from backplane bus	85 mA	55 mA	65 mA	65 mA
Power loss	0.95 W	0.5 W	0.8 W	0.5 W
Technical data digital outputs				
Number of outputs	2	4	4	4
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Current consumption from load voltage L+ (without load)	15 mA	10 mA	20 mA	5 mA
Total current per group, horizontal configuration, 40°C	1 A	2 A	4 A	2 A
Total current per group, horizontal configuration, 60°C	1 A	2 A	4 A	2 A
Total current per group, vertical configuration	1 A	2 A	4 A	2 A
Output current at signal "1", rated value	0.5 A	0.5 A	2 A	0.5 A
Output delay of "0" to "1"	max. 100 ns	30 µs	100 µs	30 µs
Output delay of "1" to "0"	max. 100 ns	175 µs	250 µs	100 µs
Minimum load current	-	-	-	-
Lamp load	10 W	10 W	10 W	10 W
Parallel switching of outputs for redundant control of a load	not possible	not possible	not possible	not possible
Parallel switching of outputs for increased power	not possible	not possible	not possible	not possible
Actuation of digital input	✓	✓	✓	✓
Switching frequency with resistive load	max. 40 kHz	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz
Switching frequency with inductive load	max. 40 kHz	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz
Switching frequency on lamp load	max. 40 kHz	max. 10 Hz	max. 10 Hz	max. 10 Hz
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)	+45 V
Short-circuit protection of output	yes, electronic, and only highside	yes, electronic	yes, electronic	yes, electronic
Trigger level	2.5 A	1 A	2.7 A	1.7 A
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-

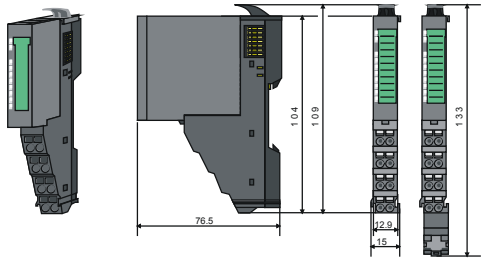
Signal modules digital | Digital output modules						
022-1BB00 022-1BB20 022-1BB50 022-1BB70	022-1BB90 022-1BD00 022-1BD20 022-1BD50	022-1BD70 022-1BF00 022-1BF50 022-1HB10	022-1SD00			

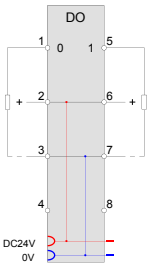
Order number	022-1BB90	022-1BD00	022-1BD20	022-1BD50
Output data size	12 Byte	4 Bit	4 Bit	4 Bit
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	possible	none	none	none
Module state	green LED	green LED	green LED	green LED
Module error display	red LED	red SF LED	red SF LED	red SF LED
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	-
Between channels of groups to	-	-	-	-
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Safety				
Safety protocol	-	-	-	-
Safety requirements	-	-	-	-
Secure user address	-	-	-	-
Watchdog	-	-	-	-
Two channels	-	-	-	-
Test pulse length	-	-	-	-
Circuit monitoring	-	-	-	-
Datasizes				
Input bytes	4	0	0	0
Output bytes	12	1	1	1
Parameter bytes	12	0	0	0
Diagnostic bytes	20	0	0	0
Housing				
Material	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm
Weight	60 g	60 g	60 g	60 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

Connections, Interfaces

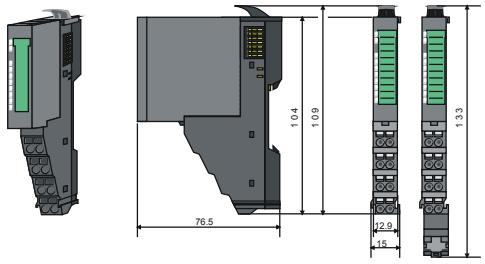
Signal modules digital | Digital output modules						
022-1BB00 022-1BB20 022-1BB50 022-1BB70	022-1BB90 022-1BD00 022-1BD20 022-1BD50	022-1BD70 022-1BF00 022-1BF50 022-1HB10	022-1SD00			

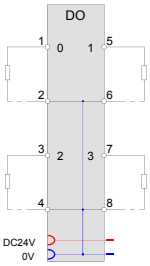
022-1BB90



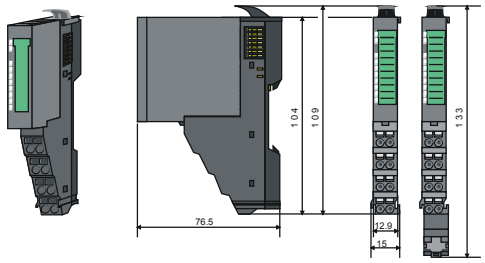


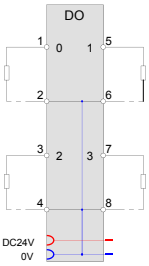
022-1BD00



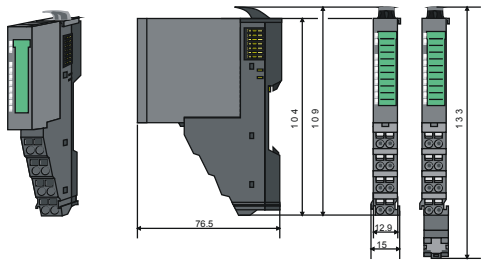


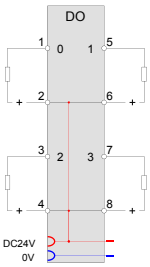
022-1BD20





022-1BD50





Digital output modules

Signal modules digital | Digital output modules						
022-1BB00 022-1BB20 022-1BB50 022-1BB70	022-1BB90 022-1BD00 022-1BD20 022-1BD50	022-1BD70 022-1BF00 022-1BF50 022-1HB10	022-1SD00			

Order number	022-1BD70	022-1BF00	022-1BF50	022-1HB10
Figure				
Type	SM 022	SM 022	SM 022	SM 022
Module ID	0F43 57E2	0106 AFC8	0107 AFC8	0109 AF90
General information				
Note	-	-	-	-
Features	› 4 outputs › Time stamp › Output current 0.5 A	› 8 outputs › Output current 0.5 A	› 8 Low-Side outputs › Output current 0.5 A	› 2 relay outputs › DC 30 V/ AC 230 V › Output current 3 A
Current consumption/power loss				
Current consumption from backplane bus	90 mA	65 mA	70 mA	130 mA
Power loss	0.95 W	0.7 W	0.6 W	0.7 W
Technical data digital outputs				
Number of outputs	4	8	8	2
Cable length, shielded	1000 m	1000 m	1000 m	-
Cable length, unshielded	600 m	600 m	600 m	-
Rated load voltage	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 30 V/ AC 230 V
Current consumption from load voltage L+ (without load)	25 mA	15 mA	10 mA	-
Total current per group, horizontal configuration, 40°C	2 A	4 A	2.5 A	-
Total current per group, horizontal configuration, 60°C	2 A	4 A	2.5 A	-
Total current per group, vertical configuration	2 A	4 A	2.5 A	-
Output current at signal "1", rated value	0.5 A	0.5 A	0.5 A	3 A
Output delay of "0" to "1"	max. 100 ns	30 µs	30 µs	-
Output delay of "1" to "0"	max. 100 ns	175 µs	100 µs	-
Minimum load current	-	-	-	-
Lamp load	10 W	10 W	10 W	-
Parallel switching of outputs for redundant control of a load	not possible	not possible	not possible	-
Parallel switching of outputs for increased power	not possible	not possible	not possible	-
Actuation of digital input	✓	✓	✓	-
Switching frequency with resistive load	max. 40 kHz	max. 1000 Hz	max. 1000 Hz	max. 100 Hz
Switching frequency with inductive load	max. 40 kHz	max. 0.5 Hz	max. 0.5 Hz	-
Switching frequency on lamp load	max. 40 kHz	max. 10 Hz	max. 10 Hz	-
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)	+45 V	-
Short-circuit protection of output	yes, electronic, and only highside	yes, electronic	yes, electronic	-
Trigger level	2.5 A	1 A	1.7 A	-
Number of operating cycle of relay outputs	-	-	-	-

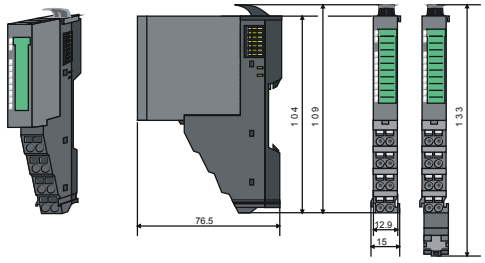
Signal modules digital | Digital output modules						
022-1BB00 022-1BB20 022-1BB50 022-1BB70	022-1BB90 022-1BD00 022-1BD20 022-1BD50	022-1BD70 022-1BF00 022-1BF50 022-1HB10	022-1SD00			

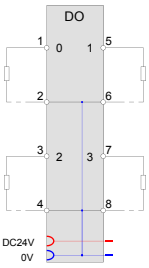
Order number	022-1BD70	022-1BF00	022-1BF50	022-1HB10
Switching capacity of contacts	-	-	-	3 A
Output data size	60 Byte	8 Bit	8 Bit	2 Bit
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	red LED per channel	red LED per channel
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	possible	none	none	none
Module state	green LED	green LED	green LED	green LED
Module error display	red SF LED	red SF LED	red LED	red LED
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	✓
Between channels of groups to	-	-	-	-
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Safety				
Safety protocol	-	-	-	-
Safety requirements	-	-	-	-
Secure user address	-	-	-	-
Watchdog	-	-	-	-
Two channels	-	-	-	-
Test pulse length	-	-	-	-
Circuit monitoring	-	-	-	-
Datasizes				
Input bytes	4	0	0	0
Output bytes	20 / 60	1	1	1
Parameter bytes	6	0	0	0
Diagnostic bytes	20	0	0	0
Housing				
Material	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm
Weight	60 g	60 g	60 g	60 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

Connections, Interfaces

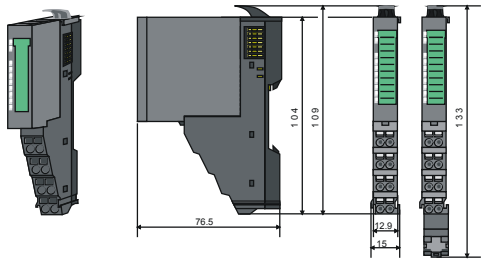
Signal modules digital | Digital output modules						
022-1BB00 022-1BB20 022-1BB50 022-1BB70	022-1BB90 022-1BD00 022-1BD20 022-1BD50	022-1BD70 022-1BF00 022-1BF50 022-1HB10	022-1SD00			

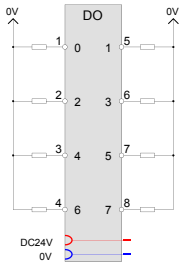
022-1BD70



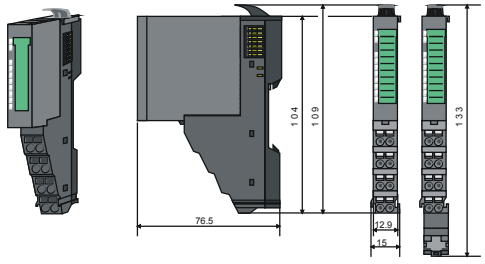


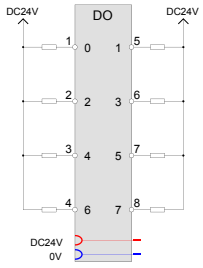
022-1BF00



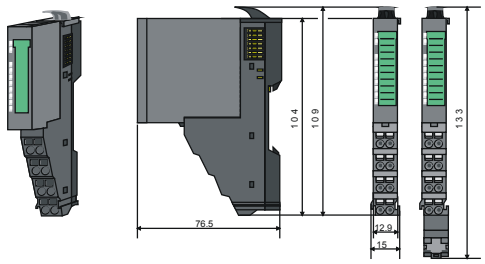


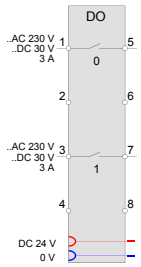
022-1BF50





022-1HB10





Digital output modules

Signal modules digital | Digital output modules						
022-1BB00 022-1BB20 022-1BB50 022-1BB70	022-1BB90 022-1BD00 022-1BD20 022-1BD50	022-1BD70 022-1BF00 022-1BF50 022-1HB10	022-1SD00			

Order number	022-1SD00			
Figure				
Type	SM 022			
Module ID	0C81 1E00			
General information				
Note	-			
Features	› 4 outputs › Safety › Output current 0.5 A			
Current consumption/power loss				
Current consumption from backplane bus	80 mA			
Power loss	1.2 W			
Technical data digital outputs				
Number of outputs	4			
Cable length, shielded	1000 m			
Cable length, unshielded	600 m			
Rated load voltage	DC 20.4...28.8 V			
Current consumption from load voltage L+ (without load)	10 mA			
Total current per group, horizontal configuration, 40°C	2 A			
Total current per group, horizontal configuration, 60°C	2 A			
Total current per group, vertical configuration	2 A			
Output current at signal "1", rated value	0.5 A			
Output delay of "0" to "1"	100 µs			
Output delay of "1" to "0"	175 µs			
Minimum load current	-			
Lamp load	5 W			
Parallel switching of outputs for redundant control of a load	not possible			
Parallel switching of outputs for increased power	not possible			
Actuation of digital input	✓			
Switching frequency with resistive load	max. 100 Hz			
Switching frequency with inductive load	max. 0.5 Hz			
Switching frequency on lamp load	max. 10 Hz			
Internal limitation of inductive shut-off voltage	L+ (-52 V)			
Short-circuit protection of output	yes, electronic			
Trigger level	1.7 A			
Number of operating cycle of relay outputs	-			
Switching capacity of contacts	-			

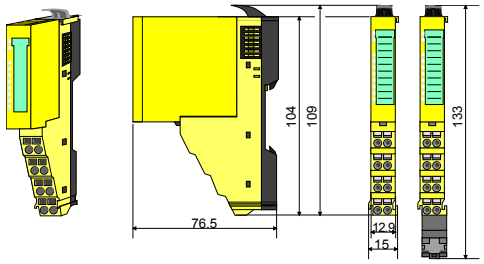
Signal modules digital | Digital output modules						
022-1BB00 022-1BB20 022-1BB50 022-1BB70	022-1BB90 022-1BD00 022-1BD20 022-1BD50	022-1BD70 022-1BF00 022-1BF50 022-1HB10	022-1SD00			

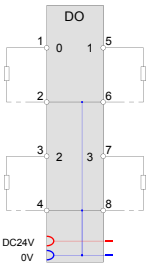
Order number	**022-1SD00**			
Output data size	4 Bit			
Status information, alarms, diagnostics				
Status display	green LED per channel			
Interrupts	yes, parameterizable			
Process alarm	no			
Diagnostic interrupt	yes, parameterizable			
Diagnostic functions	yes, parameterizable			
Diagnostics information read-out	possible			
Module state	green LED			
Module error display	red SF LED			
Channel error display	none			
Isolation				
Between channels	-			
Between channels of groups to	-			
Between channels and backplane bus	✓			
Insulation tested with	DC 500 V			
Safety				
Safety protocol	PROFIsafe V2			
Safety requirements	SIL CL 3 and PL e			
Secure user address	1 - 4095			
Watchdog	parameterizable 10ms - 1s			
Two channels	Each 2 of 4 outputs switchable			
Test pulse length	parameterizable 500µs - 16ms			
Circuit monitoring	✓			
Datasizes				
Input bytes	5			
Output bytes	5			
Parameter bytes	44			
Diagnostic bytes	20			
Housing				
Material	PC / PPE GF10			
Mounting	Profile rail 35 mm			
Mechanical data				
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm			
Weight	60 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	in preparation			

Connections, Interfaces

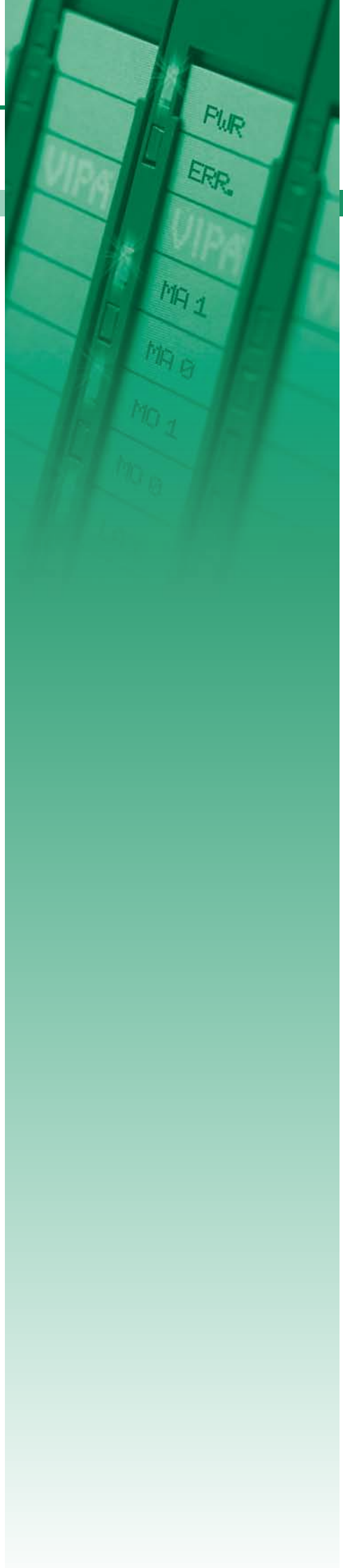
Signal modules digital | Digital output modules						
022-1BB00 022-1BB20 022-1BB50 022-1BB70	022-1BB90 022-1BD00 022-1BD20 022-1BD50	022-1BD70 022-1BF00 022-1BF50 022-1HB10	022-1SD00			

022-1SD00





Signal modules analog



Structure and Function

Signal modules (SM) to connect sensors and actuators are the interfaces of the system to the process. Analog signal modules acquire the analog control signals (e.g. measurement data) to and out of the process level. Depending on the application and type the control signals are acquired from the process level and converted into interpretable signals for controlling. Analog output modules convert the internal control signals into signals suitable for the process level.

A variety of different analog signal modules accurately provide the inputs and outputs that are required for each task. The analog modules differ in the number of channels, voltage and current ranges, isolation, and diagnostic and alarm capability.

Each signal module consists of a terminal and an electronics module.

The terminal module (TM) contains the retainer for the electronic module (EM), the backplane connectors and contacts for the distribution of the load power supply electronics, the modular connection to DC 24 V load power supply and the staircase-shaped terminal block for the wiring.

Furthermore the terminal module processes a locking system for fixing to a profile rail. The SLIO system can also be constructed "block by block" outside the cabinet and later assembled as a complete system in the control cabinet.

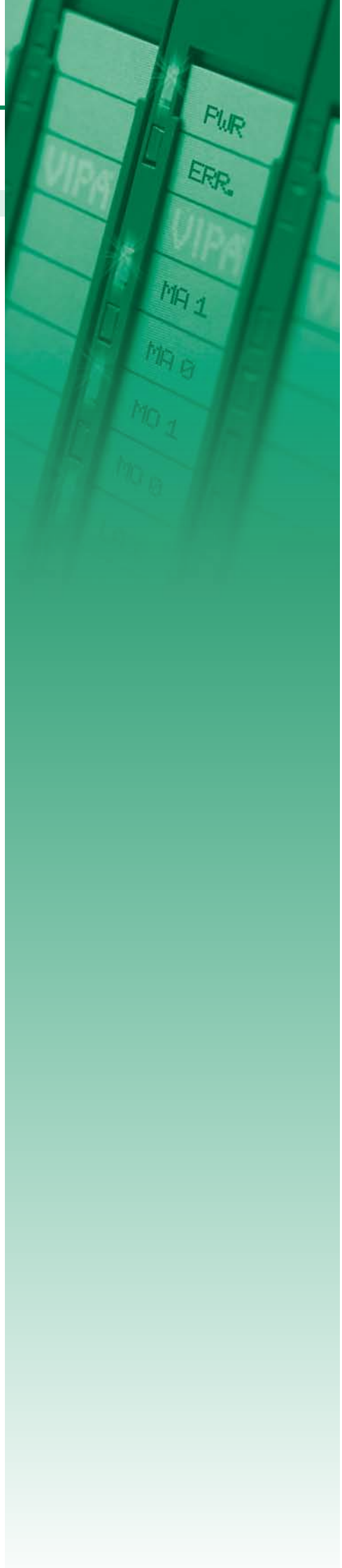
The functionality of the signal module is defined via the electronics module that is connected by a secure sliding mechanism to the terminal module.

During service the defective electronic module can be replaced without detaching the wiring.

Characteristics

- 2 or 4 channel
- 12 bit or 16 bit resolution
- Functions of the inputs / outputs programmable
- Most various assemblies, suitable for measuring transducers (current/ voltage, resistance or temperature sensors)
- Direct mapping and readability of the channel conditions via status LEDs
- Safe and time-saving installation by the terminal assignment mounted on the module
- When changing the module equipment identification (BMK) is retained on the TM
- Individual single-channel lettering on insertion strip
- 24 month warranty

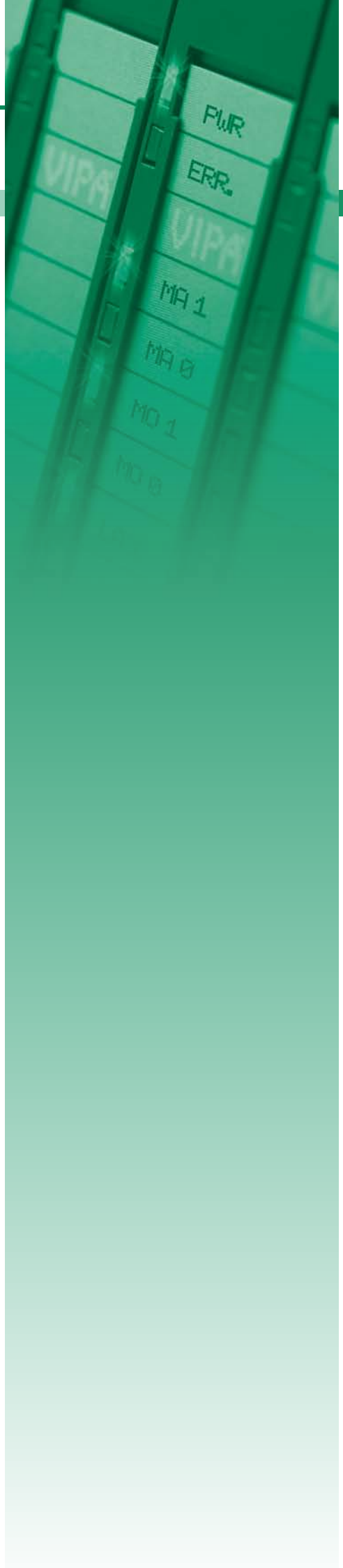
Overview



Order no.	Name/Description	Page
Analog input modules		
031-1BB10	**SM 031 - Analog input** › 2 inputs 12Bit › Current 4...20 mA › 2 wire	**53**
031-1BB30	**SM 031 - Analog input** › 2 inputs 12Bit › Voltage 0...10 V	**53**
031-1BB40	**SM 031 - Analog input** › 2 inputs 12Bit › Current 0(4)...20 mA	**53**
031-1BB60	**SM 031 - Analog input** › 2 inputs 12Bit › Current 4...20 mA › 2 wire	**53**
031-1BB70	**SM 031 - Analog input** › 2 inputs 12Bit › Voltage -10 V...+10 V	**57**
031-1BB90	**SM 031 - Analog input** › 2 inputs 16Bit › Thermocouple › Voltage -80mV...+80mV	**57**
031-1BD30	**SM 031 - Analog input** › 4 inputs 12Bit › Voltage 0...10 V	**57**
031-1BD40	**SM 031 - Analog input** › 4 inputs 12Bit › Current 0(4)...20 mA	**57**
031-1BD70	**SM 031 - Analog input** › 4 inputs 12Bit › Voltage -10 V...+10 V	**61**
031-1BD80	**SM 031 - Analog input** › 4 inputs 16Bit › 0 .. 3000 ohm resistance › Resistance measurment with 2, 3, and 4-wires	**61**
031-1CB30	**SM 031 - Analog input** › 2 inputs 16Bit › Voltage 0...10 V	**61**
031-1CB40	**SM 031 - Analog input** › 2 inputs 16Bit › Current 0(4)...20 mA	**61**
031-1CB70	**SM 031 - Analog input** › 2 inputs 16Bit › Voltage -10 V...+10 V	**65**
031-1CD30	**SM 031 - Analog input** › 4 inputs 16Bit › Voltage 0...10 V	**65**
031-1CD40	**SM 031 - Analog input** › 4 inputs 16Bit › Current 0(4)...20 mA	**65**
031-1CD70	**SM 031 - Analog input** › 4 inputs 16Bit › Voltage -10 V...+10 V	**65**
031-1LB90	**SM 031 - Analog input** › 2 inputs 16Bit › Thermocouple › Voltage -80mV...+80mV	**69**
031-1LD80	**SM 031 - Analog input** › 4 inputs 16Bit › 0 .. 3000 ohm resistance › Resistance measurment with 2, 3, and 4-wires	**69**
Analog output modules		
032-1BB30	**SM 032 - Analog output** › 2 outputs 12Bit › Voltage 0...10 V	**73**
032-1BB40	**SM 032 - Analog output** › 2 outputs 12Bit › Current 0(4)...20 mA	**73**

Overview

Order no.	Name/Description	Page
032-1BB70	**SM 032 - Analog output** › 2 outputs 12Bit › Voltage -10 V...+10 V	**73**
032-1BD30	**SM 032 - Analog output** › 4 outputs 12Bit › Voltage 0...10 V	**73**
032-1BD40	**SM 032 - Analog output** › 4 outputs 12Bit › Current 0(4)...20mA	**76**
032-1BD70	**SM 032 - Analog output** › 4 outputs 12Bit › Voltage -10 V...+10 V	**76**
032-1CB30	**SM 032 - Analog output** › 2 outputs 16Bit › Voltage 0...10 V	**76**
032-1CB70	**SM 032 - Analog output** › 2 outputs 16Bit › Voltage -10 V...+10 V	**76**
032-1CD30	**SM 032 - Analog output** › 4 outputs 16Bit › Voltage 0...10 V	**79**
032-1CD70	**SM 032 - Analog output** › 4 outputs 16Bit › Voltage -10 V...+10 V	**79**



Analog input modules

Signal modules analog | Analog input modules						
031-1BB10 031-1BB30 031-1BB40 031-1BB60	031-1BB70 031-1BB90 031-1BD30 031-1BD40	031-1BD70 031-1BD80 031-1CB30 031-1CB40	031-1CB70 031-1CD30 031-1CD40 031-1CD70	031-1LB90 031-1LD80		

Order number	031-1BB10	031-1BB30	031-1BB40	031-1BB60
Figure				
Type	SM 031	SM 031	SM 031	SM 031
Module ID	0411 1543	0401 15C3	0402 15C3	0407 15C3
General information				
Note	-	-	-	-
Features	› 2 inputs 12Bit › Current 4...20 mA › 2 wire	› 2 inputs 12Bit › Voltage 0...10 V	› 2 inputs 12Bit › Current 0(4)...20 mA	› 2 inputs 12Bit › Current 4...20 mA › 2 wire
Current consumption/power loss				
Current consumption from backplane bus	50 mA	70 mA	70 mA	50 mA
Power loss	0.7 W	0.7 W	0.7 W	0.7 W
Technical data analog inputs				
Number of inputs	2	2	2	2
Cable length, shielded	200 m	200 m	200 m	200 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Current consumption from load voltage L+ (without load)	20 mA	15 mA	15 mA	15 mA
Voltage inputs	-	✓	-	-
Min. input resistance (voltage range)	-	100 kΩ	-	-
Input voltage ranges	-	0 V ... +10 V	-	-
Operational limit of voltage ranges	-	+/-0.3%	-	-
Operational limit of voltage ranges with SFU	-	-	-	-
Basic error limit voltage ranges	-	+/-0.2%	-	-
Basic error limit voltage ranges with SFU	-	-	-	-
Current inputs	✓	-	✓	✓
Min. input resistance (current range)	60 Ω	-	110 Ω	110 Ω
Input current ranges	+4 mA ... +20 mA 0 mA ... +20 mA	-	0 mA ... +20 mA +4 mA ... +20 mA	0 mA ... +20 mA +4 mA ... +20 mA
Operational limit of current ranges	+/-0.5%	-	+/-0.3% ... +/-0.5%	+/-0.5%
Operational limit of current ranges with SFU	-	-	-	-
Basic error limit current ranges	+/-0.3%	-	+/-0.2% ... +/-0.3%	+/-0.3%
Basic error limit current ranges with SFU	-	-	-	-
Resistance inputs	-	-	-	-
Resistance ranges	-	-	-	-
Operational limit of resistor ranges	-	-	-	-
Basic error limit	-	-	-	-
Resistance thermometer inputs	-	-	-	-
Resistance thermometer ranges	-	-	-	-
Operational limit of resistance thermometer ranges	-	-	-	-

Signal modules analog | Analog input modules						
031-1BB10 031-1BB30 031-1BB40 031-1BB60	031-1BB70 031-1BB90 031-1BD30 031-1BD40	031-1BD70 031-1BD80 031-1CB30 031-1CB40	031-1CB70 031-1CD30 031-1CD40 031-1CD70	031-1LB90 031-1LD80		

Order number	031-1BB10	031-1BB30	031-1BB40	031-1BB60
Operational limit of resistor ranges with SFU	-	-	-	-
Basic error limit thermoresistor ranges	-	-	-	-
Operational limit of resistor ranges with SFU	-	-	-	-
Thermocouple inputs	-	-	-	-
Thermocouple ranges	-	-	-	-
Operational limit of thermocouple ranges	-	-	-	-
Operational limit of thermocouple ranges with SFU	-	-	-	-
Basic error limit thermoelement ranges	-	-	-	-
Basic error limit thermoelement ranges with SFU	-	-	-	-
Programmable temperature compensation	-	-	-	-
External temperature compensation	-	-	-	-
Internal temperature compensation	-	-	-	-
Resolution in bit	12	12	12	12
Measurement principle	successive approxi-mation	successive approxi-mation	successive approxi-mation	successive approxi-mation
Basic conversion time	1.15 ms all channels	2 ms all channels	2 ms all channels	2 ms all channels
Noise suppression for frequency	>80dB (UCM<20V)	>50dB at 50Hz (UCM<2V)	>50dB at 50Hz (UCM<2V)	>50dB at 50Hz (UCM<2V)
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	yes, parameterizable	no	no	no
Process alarm	yes, parameterizable	no	no	no
Diagnostic interrupt	yes, parameterizable	no	no	no
Diagnostic functions	yes	yes	yes	yes
Diagnostics information read-out	possible	possible	possible	possible
Module state	green LED	green LED	green LED	green LED
Module error display	red LED	red LED	red LED	red LED
Channel error display	red LED per channel	red LED per channel	red LED per channel	red LED per channel
Isolation				
Between channels	✓	-	-	-
Between channels of groups to	1	-	-	-
Between channels and backplane bus	✓	✓	✓	✓
Between channels and power supply	✓	✓	✓	-
Max. potential difference between circuits	DC 75 V/ AC 60 V	-	-	-
Max. potential difference between inputs (Ucm)	DC 75 V/ AC 60 V	DC 2 V	DC 2 V	-
Max. potential difference between Mana and Mintern (Uiso)	-	-	-	-
Max. potential difference between inputs and Mana (Ucm)	DC 75 V/ AC 60 V	-	-	-
Max. potential difference between inputs and Mintern (Uiso)	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V
Max. potential difference between Mintern and outputs	-	-	-	-

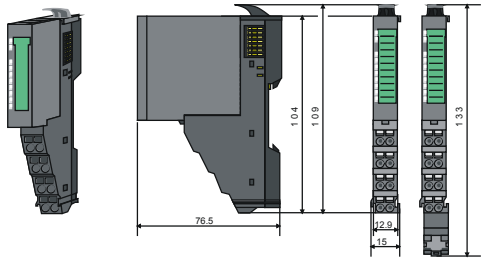
Signal modules analog | Analog input modules						
031-1BB10 031-1BB30 031-1BB40 031-1BB60	031-1BB70 031-1BB90 031-1BD30 031-1BD40	031-1BD70 031-1BD80 031-1CB30 031-1CB40	031-1CB70 031-1CD30 031-1CD40 031-1CD70	031-1LB90 031-1LD80		

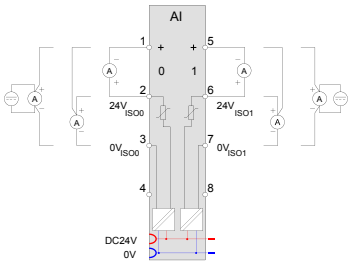
Order number	**031-1BB10**	**031-1BB30**	**031-1BB40**	**031-1BB60**
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	4	4	4	4
Output bytes	0	0	0	0
Parameter bytes	15	6	6	6
Diagnostic bytes	20	20	20	20
Housing				
Material	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm
Weight	60 g	60 g	60 g	60 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	in preparation	yes	yes	in preparation

Connections, Interfaces

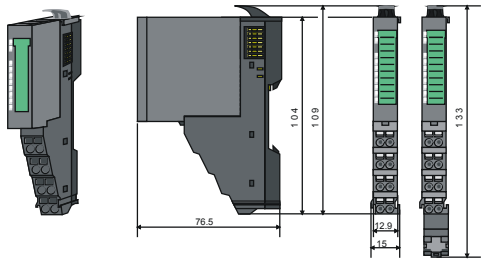
Signal modules analog | Analog input modules						
031-1BB10 031-1BB30 031-1BB40 031-1BB60	031-1BB70 031-1BB90 031-1BD30 031-1BD40	031-1BD70 031-1BD80 031-1CB30 031-1CB40	031-1CB70 031-1CD30 031-1CD40 031-1CD70	031-1LB90 031-1LD80		

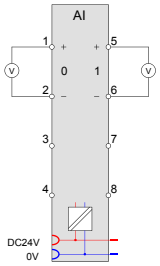
031-1BB10



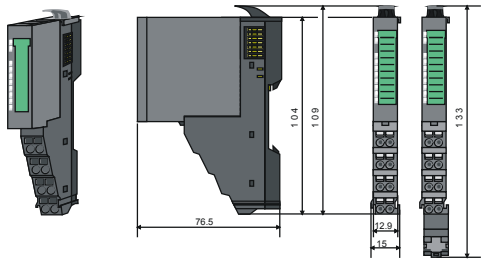


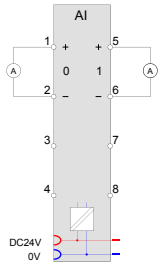
031-1BB30



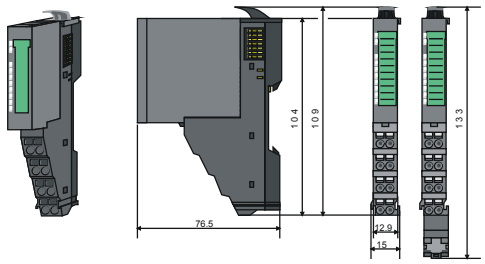


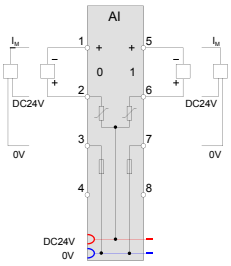
031-1BB40





031-1BB60





Analog input modules

Signal modules analog | Analog input modules						
031-1BB10 031-1BB30 031-1BB40 031-1BB60	031-1BB70 031-1BB90 031-1BD30 031-1BD40	031-1BD70 031-1BD80 031-1CB30 031-1CB40	031-1CB70 031-1CD30 031-1CD40 031-1CD70	031-1LB90 031-1LD80		

Order number	031-1BB70	031-1BB90	031-1BD30	031-1BD40
Figure				
Type	SM 031	SM 031	SM 031	SM 031
Module ID	0408 15C3	0403 1543	0404 15C4	0405 15C4
General information				
Note	-	-	-	-
Features	› 2 inputs 12Bit › Voltage -10 V...+10 V	› 2 inputs 16Bit › Thermocouple › Voltage -80mV...+80mV	› 4 inputs 12Bit › Voltage 0...10 V	› 4 inputs 12Bit › Current 0(4)...20 mA
Current consumption/power loss				
Current consumption from backplane bus	50 mA	75 mA	70 mA	70 mA
Power loss	0.5 W	1.1 W	0.7 W	0.7 W
Technical data analog inputs				
Number of inputs	2	2	4	4
Cable length, shielded	200 m	200 m	200 m	200 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Current consumption from load voltage L+ (without load)	15 mA	30 mA	15 mA	15 mA
Voltage inputs	✓	-	✓	-
Min. input resistance (voltage range)	100 kΩ	10 MΩ	100 kΩ	-
Input voltage ranges	-10 V ... +10 V	-80 mV ... +80 mV	0 V ... +10 V	-
Operational limit of voltage ranges	+/-0.3%	±0.3%	+/-0.3%	-
Operational limit of voltage ranges with SFU	-	±0.1%	-	-
Basic error limit voltage ranges	+/-0.2%	±0.25%	+/-0.2%	-
Basic error limit voltage ranges with SFU	-	±0.05%	-	-
Current inputs	-	-	-	✓
Min. input resistance (current range)	-	-	-	110 Ω
Input current ranges	-	-	-	0 mA ... +20 mA +4 mA ... +20 mA
Operational limit of current ranges	-	-	-	+/-0.3% ... +/-0.5%
Operational limit of current ranges with SFU	-	-	-	-
Basic error limit current ranges	-	-	-	+/-0.2% ... +/-0.3%
Basic error limit current ranges with SFU	-	-	-	-
Resistance inputs	-	-	-	-
Resistance ranges	-	-	-	-
Operational limit of resistor ranges	-	-	-	-
Basic error limit	-	-	-	-
Resistance thermometer inputs	-	-	-	-
Resistance thermometer ranges	-	-	-	-
Operational limit of resistance thermometer ranges	-	-	-	-

Signal modules analog | Analog input modules						
031-1BB10 031-1BB30 031-1BB40 031-1BB60	031-1BB70 031-1BB90 031-1BD30 031-1BD40	031-1BD70 031-1BD80 031-1CB30 031-1CB40	031-1CB70 031-1CD30 031-1CD40 031-1CD70	031-1LB90 031-1LD80		

Order number	031-1BB70	031-1BB90	031-1BD30	031-1BD40
Operational limit of resistor ranges with SFU	-	-	-	-
Basic error limit thermoresistor ranges	-	-	-	-
Operational limit of resistor ranges with SFU	-	-	-	-
Thermocouple inputs	-	✓	-	-
Thermocouple ranges	-	type B type C type E type J type K type L type N type R type S type T	-	-
Operational limit of thermocouple ranges	-	Type E, L, T, J, K, N: ±2.5K / Type B, C, R, S: ±8.0K	-	-
Operational limit of thermocouple ranges with SFU	-	Type E, L, T, J, K, N: ±1.5K / Type B, C, R, S: ±4.0K	-	-
Basic error limit thermoelement ranges	-	Type E, L, T, J, K, N: ±2.0K / Type B, C, R, S: ±7.0K	-	-
Basic error limit thermoelement ranges with SFU	-	Type E, L, T, J, K, N: ±1.0K / Type B, C, R, S: ±3.0K	-	-
Programmable temperature compensation	-	✓	-	-
External temperature compensation	-	✓	-	-
Internal temperature compensation	-	✓	-	-
Resolution in bit	12	16	12	12
Measurement principle	successive approxi-mation	Sigma-Delta	successive approxi-mation	successive approxi-mation
Basic conversion time	2 ms all channels	4.2...324.1 ms (50 Hz) 3.8...270.5 ms (60 Hz) per channel	4 ms all channels	4 ms all channels
Noise suppression for frequency	>50dB at 50Hz (UCM<2V)	>90dB at 50Hz (UCM<10V)	>50dB at 50Hz (UCM<2V)	>50dB at 50Hz (UCM<2V)
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	no	yes	no	no
Process alarm	no	yes, parameterizable	no	no
Diagnostic interrupt	no	yes, parameterizable	no	no
Diagnostic functions	yes	yes	yes	yes
Diagnostics information read-out	possible	possible	possible	possible
Module state	green LED	green LED	green LED	green LED
Module error display	red LED	red LED	red LED	red LED
Channel error display	red LED per channel	red LED per channel	red LED per channel	red LED per channel
Isolation				
Between channels	-	-	-	-
Between channels of groups to	-	-	-	-
Between channels and backplane bus	✓	✓	✓	✓

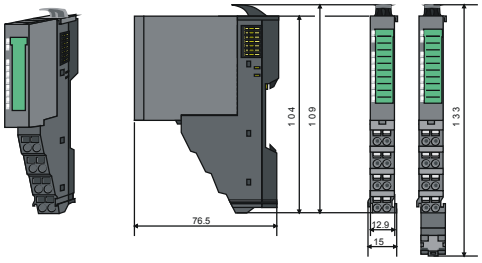
Signal modules analog | Analog input modules						
031-1BB10 031-1BB30 031-1BB40 031-1BB60	031-1BB70 031-1BB90 031-1BD30 031-1BD40	031-1BD70 031-1BD80 031-1CB30 031-1CB40	031-1CB70 031-1CD30 031-1CD40 031-1CD70	031-1LB90 031-1LD80		

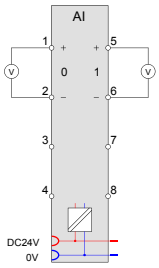
Order number	031-1BB70	031-1BB90	031-1BD30	031-1BD40
Between channels and power supply	✓	-	✓	✓
Max. potential difference between circuits	-	-	-	-
Max. potential difference between inputs (Ucm)	DC 2 V	DC 140 V/ AC 60 V	DC 2 V	DC 2 V
Max. potential difference between Mana and Mintern (Uiso)	-	-	-	-
Max. potential difference between inputs and Mana (Ucm)	-	-	-	-
Max. potential difference between inputs and Mintern (Uiso)	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V
Max. potential difference between Mintern and outputs	-	-	-	-
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	4	4	8	8
Output bytes	0	0	0	0
Parameter bytes	6	22	8	8
Diagnostic bytes	20	20	20	20
Housing				
Material	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm
Weight	60 g	60 g	60 g	60 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	in preparation	yes	yes	yes

Connections, Interfaces

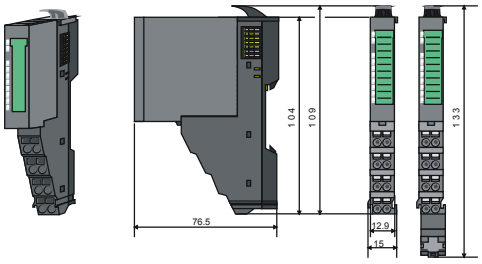
Signal modules analog | Analog input modules						
031-1BB10 031-1BB30 031-1BB40 031-1BB60	031-1BB70 031-1BB90 031-1BD30 031-1BD40	031-1BD70 031-1BD80 031-1CB30 031-1CB40	031-1CB70 031-1CD30 031-1CD40 031-1CD70	031-1LB90 031-1LD80		

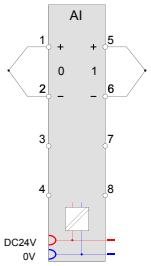
031-1BB70



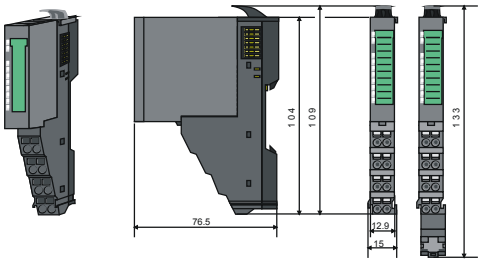


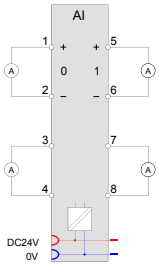
031-1BB90



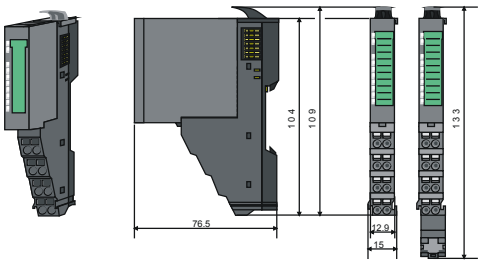


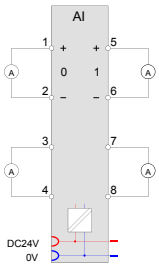
031-1BD30





031-1BD40





Analog input modules

Signal modules analog | Analog input modules						
031-1BB10 031-1BB30 031-1BB40 031-1BB60	031-1BB70 031-1BB90 031-1BD30 031-1BD40	031-1BD70 031-1BD80 031-1CB30 031-1CB40	031-1CB70 031-1CD30 031-1CD40 031-1CD70	031-1LB90 031-1LD80		

Order number	031-1BD70	031-1BD80	031-1CB30	031-1CB40
Figure				
Type	SM 031	SM 031	SM 031	SM 031
Module ID	0409 15C4	0406 1544	040A 1543	040B 1543
General information				
Note	-	-	-	-
Features	› 4 inputs 12Bit › Voltage -10 V...+10 V	› 4 inputs 16Bit › 0 .. 3000 ohm resistance › Resistance measurment with 2, 3, and 4-wires	› 2 inputs 16Bit › Voltage 0...10 V	› 2 inputs 16Bit › Current 0(4)...20 mA
Current consumption/power loss				
Current consumption from backplane bus	50 mA	75 mA	60 mA	60 mA
Power loss	0.5 W	1 W	0.8 W	0.7 W
Technical data analog inputs				
Number of inputs	4	4	2	2
Cable length, shielded	200 m	200 m	200 m	200 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Current consumption from load voltage L+ (without load)	15 mA	30 mA	20 mA	15 mA
Voltage inputs	✓	-	✓	-
Min. input resistance (voltage range)	100 kΩ	-	200 kΩ	-
Input voltage ranges	-10 V ... +10 V	-	0 V ... +10 V	-
Operational limit of voltage ranges	+/-0.3%	-	+/-0.2%	-
Operational limit of voltage ranges with SFU	-	-	-	-
Basic error limit voltage ranges	+/-0.2%	-	+/-0.1%	-
Basic error limit voltage ranges with SFU	-	-	-	-
Current inputs	-	-	-	✓
Min. input resistance (current range)	-	-	-	60 Ω
Input current ranges	-	-	-	0 mA ... +20 mA +4 mA ... +20 mA
Operational limit of current ranges	-	-	-	+/-0.2%
Operational limit of current ranges with SFU	-	-	-	-
Basic error limit current ranges	-	-	-	+/-0.1%
Basic error limit current ranges with SFU	-	-	-	-
Resistance inputs	-	✓	-	-
Resistance ranges	-	0 ... 60 Ohm 0 ... 600 Ohm 0 ... 3000 Ohm	-	-
Operational limit of resistor ranges	-	+/- 0.4 %	-	-
Basic error limit	-	+/- 0.2 %	-	-
Resistance thermometer inputs	-	✓	-	-

Signal modules analog | Analog input modules						
031-1BB10 031-1BB30 031-1BB40 031-1BB60	031-1BB70 031-1BB90 031-1BD30 031-1BD40	031-1BD70 031-1BD80 031-1CB30 031-1CB40	031-1CB70 031-1CD30 031-1CD40 031-1CD70	031-1LB90 031-1LD80		

Order number	031-1BD70	031-1BD80	031-1CB30	031-1CB40
Resistance thermometer ranges	-	Pt100 Pt1000 Ni100 Ni1000	-	-
Operational limit of resistance thermometer ranges	-	+/- 0.4 %	-	-
Operational limit of resistor ranges with SFU	-	-	-	-
Basic error limit thermoresistor ranges	-	+/- 0.2 %	-	-
Operational limit of resistor ranges with SFU	-	-	-	-
Thermocouple inputs	-	-	-	-
Thermocouple ranges	-	-	-	-
Operational limit of thermocouple ranges	-	-	-	-
Operational limit of thermocouple ranges with SFU	-	-	-	-
Basic error limit thermoelement ranges	-	-	-	-
Basic error limit thermoelement ranges with SFU	-	-	-	-
Programmable temperature compensation	-	-	-	-
External temperature compensation	-	-	-	-
Internal temperature compensation	-	-	-	-
Resolution in bit	12	16	16	16
Measurement principle	successive approximation	Sigma-Delta	successive approximation	successive approximation
Basic conversion time	4 ms all channels	4.2...324.1 ms (50 Hz) 3.8...270.5 ms (60 Hz) per channel	240 µs all channels	240 µs all channels
Noise suppression for frequency	>50dB at 50Hz (UCM<2V)	>80dB at 50Hz (UCM<6V)	>80dB at 50Hz (UCM<9V)	>80dB (UCM<4V)
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	no	yes, parameterizable	yes, parameterizable	yes, parameterizable
Process alarm	no	yes, parameterizable	yes, parameterizable	yes, parameterizable
Diagnostic interrupt	no	yes, parameterizable	yes, parameterizable	yes, parameterizable
Diagnostic functions	yes	yes	yes	yes
Diagnostics information read-out	possible	possible	possible	possible
Module state	green LED	green LED	green LED	green LED
Module error display	red LED	red LED	red LED	red LED
Channel error display	red LED per channel	red LED per channel	red LED per channel	red LED per channel
Isolation				
Between channels	-	-	-	-
Between channels of groups to	-	-	-	-
Between channels and backplane bus	✓	✓	✓	✓
Between channels and power supply	✓	-	✓	✓
Max. potential difference between circuits	-	-	-	-
Max. potential difference between inputs (Ucm)	DC 2 V	DC 6 V	DC 9 V	DC 4 V
Max. potential difference between Mana and Mintern (Uiso)	-	-	-	-

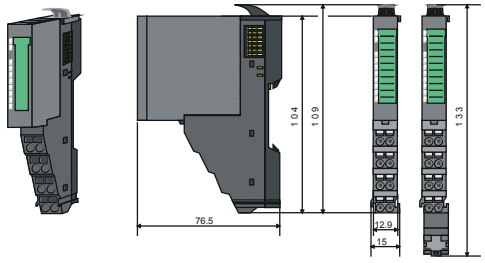
Signal modules analog | Analog input modules						
031-1BB10 031-1BB30 031-1BB40 031-1BB60	031-1BB70 031-1BB90 031-1BD30 031-1BD40	031-1BD70 031-1BD80 031-1CB30 031-1CB40	031-1CB70 031-1CD30 031-1CD40 031-1CD70	031-1LB90 031-1LD80		

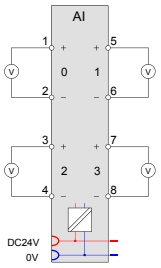
Order number	031-1BD70	031-1BD80	031-1CB30	031-1CB40
Max. potential difference between inputs and Mana (Ucm)	-	-	-	-
Max. potential difference between inputs and Mintern (Uiso)	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V
Max. potential difference between Mintern and outputs	-	-	-	-
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	8	8	4	4
Output bytes	0	0	0	0
Parameter bytes	8	34	20	20
Diagnostic bytes	20	20	20	20
Housing				
Material	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm
Weight	60 g	60 g	60 g	60 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	in preparation	yes	in preparation	in preparation

Connections, Interfaces

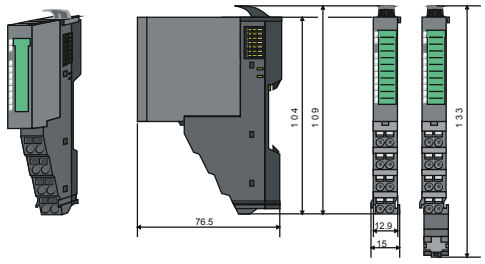
Signal modules analog | Analog input modules						
031-1BB10 031-1BB30 031-1BB40 031-1BB60	031-1BB70 031-1BB90 031-1BD30 031-1BD40	031-1BD70 031-1BD80 031-1CB30 031-1CB40	031-1CB70 031-1CD30 031-1CD40 031-1CD70	031-1LB90 031-1LD80		

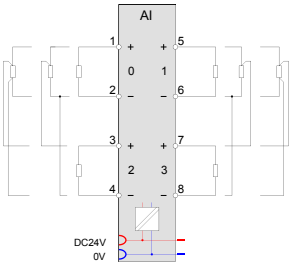
031-1BD70



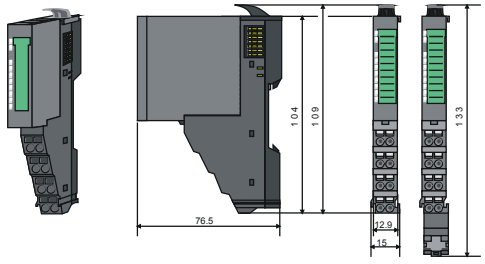


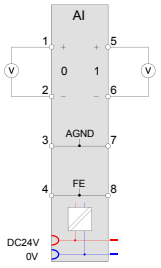
031-1BD80



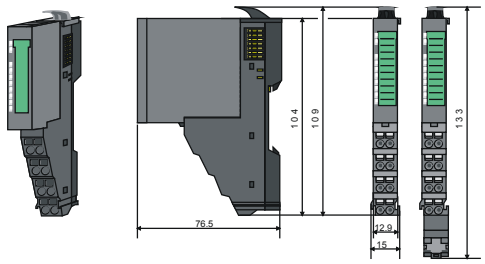


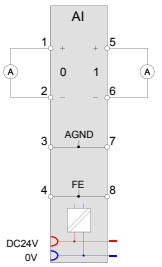
031-1CB30





031-1CB40





Analog input modules

Signal modules analog | Analog input modules						
031-1BB10 031-1BB30 031-1BB40 031-1BB60	031-1BB70 031-1BB90 031-1BD30 031-1BD40	031-1BD70 031-1BD80 031-1CB30 031-1CB40	031-1CB70 031-1CD30 031-1CD40 031-1CD70	031-1LB90 031-1LD80		

Order number	031-1CB70	031-1CD30	031-1CD40	031-1CD70
Figure				
Type	SM 031	SM 031	SM 031	SM 031
Module ID	040C 1543	040D 1544	0411 1544	040E 1544
General information				
Note	-	-	-	-
Features	› 2 inputs 16Bit › Voltage -10 V...+10 V	› 4 inputs 16Bit › Voltage 0...10 V	› 4 inputs 16Bit › Current 0(4)...20 mA	› 4 inputs 16Bit › Voltage -10 V...+10 V
Current consumption/power loss				
Current consumption from backplane bus	60 mA	60 mA	60 mA	60 mA
Power loss	0.8 W	0.9 W	0.8 W	0.9 W
Technical data analog inputs				
Number of inputs	2	4	4	4
Cable length, shielded	200 m	200 m	200 m	200 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Current consumption from load voltage L+ (without load)	20 mA	25 mA	20 mA	25 mA
Voltage inputs	✓	✓	-	✓
Min. input resistance (voltage range)	200 kΩ	200 kΩ	-	200 kΩ
Input voltage ranges	-10 V ... +10 V	0 V ... +10 V	-	-10 V ... +10 V
Operational limit of voltage ranges	+/-0.2%	+/-0.2%	-	+/-0.2%
Operational limit of voltage ranges with SFU	-	-	-	-
Basic error limit voltage ranges	+/-0.1%	+/-0.1%	-	+/-0.1%
Basic error limit voltage ranges with SFU	-	-	-	-
Current inputs	-	-	✓	-
Min. input resistance (current range)	-	-	60 Ω	-
Input current ranges	-	-	0 mA ... +20 mA +4 mA ... +20 mA	-
Operational limit of current ranges	-	-	+/-0.2%	-
Operational limit of current ranges with SFU	-	-	-	-
Basic error limit current ranges	-	-	+/-0.1%	-
Basic error limit current ranges with SFU	-	-	-	-
Resistance inputs	-	-	-	-
Resistance ranges	-	-	-	-
Operational limit of resistor ranges	-	-	-	-
Basic error limit	-	-	-	-
Resistance thermometer inputs	-	-	-	-
Resistance thermometer ranges	-	-	-	-
Operational limit of resistance thermometer ranges	-	-	-	-
Operational limit of resistor ranges with SFU	-	-	-	-

Signal modules analog | Analog input modules						
031-1BB10 031-1BB30 031-1BB40 031-1BB60	031-1BB70 031-1BB90 031-1BD30 031-1BD40	031-1BD70 031-1BD80 031-1CB30 031-1CB40	031-1CB70 031-1CD30 031-1CD40 031-1CD70	031-1LB90 031-1LD80		

Order number	031-1CB70	031-1CD30	031-1CD40	031-1CD70
Basic error limit thermoresistor ranges	-	-	-	-
Operational limit of resistor ranges with SFU	-	-	-	-
Thermocouple inputs	-	-	-	-
Thermocouple ranges	-	-	-	-
Operational limit of thermocouple ranges	-	-	-	-
Operational limit of thermocouple ranges with SFU	-	-	-	-
Basic error limit thermoelement ranges	-	-	-	-
Basic error limit thermoelement ranges with SFU	-	-	-	-
Programmable temperature compensation	-	-	-	-
External temperature compensation	-	-	-	-
Internal temperature compensation	-	-	-	-
Resolution in bit	16	16	16	16
Measurement principle	successive approxi-mation	successive approxi-mation	successive approxi-mation	successive approxi-mation
Basic conversion time	240 µs all channels	480 µs all channels	240 µs all channels	480 µs all channels
Noise suppression for frequency	>80dB at 50Hz (UCM<9V)	>80dB at 50Hz (UCM<9V)	>80dB (UCM<4V)	>80dB at 50Hz (UCM<35V)
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	yes, parameterizable	yes, parameterizable	yes, parameterizable	yes, parameterizable
Process alarm	yes, parameterizable	yes, parameterizable	yes, parameterizable	yes, parameterizable
Diagnostic interrupt	yes, parameterizable	yes, parameterizable	yes, parameterizable	yes, parameterizable
Diagnostic functions	yes	yes	yes	yes
Diagnostics information read-out	possible	possible	possible	possible
Module state	green LED	green LED	green LED	green LED
Module error display	red LED	red LED	red LED	red LED
Channel error display	red LED per channel	red LED per channel	red LED per channel	red LED per channel
Isolation				
Between channels	-	-	-	-
Between channels of groups to	-	-	-	-
Between channels and backplane bus	✓	✓	✓	✓
Between channels and power supply	✓	✓	✓	✓
Max. potential difference between circuits	-	-	-	-
Max. potential difference between inputs (Ucm)	DC 9 V	DC 9 V	DC 4 V	DC 9 V
Max. potential difference between Mana and Mintern (Uiso)	-	-	-	-
Max. potential difference between inputs and Mana (Ucm)	-	-	-	-
Max. potential difference between inputs and Mintern (Uiso)	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V
Max. potential difference between Mintern and outputs	-	-	-	-
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V

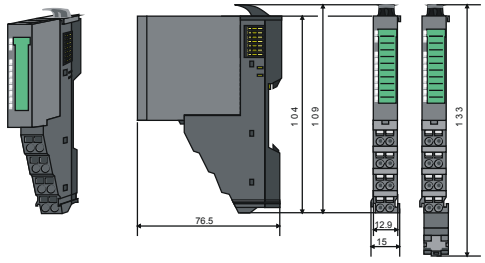
Signal modules analog | Analog input modules						
031-1BB10 031-1BB30 031-1BB40 031-1BB60	031-1BB70 031-1BB90 031-1BD30 031-1BD40	031-1BD70 031-1BD80 031-1CB30 031-1CB40	031-1CB70 031-1CD30 031-1CD40 031-1CD70	031-1LB90 031-1LD80		

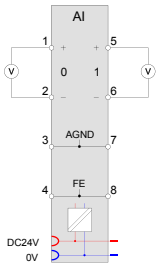
Order number	031-1CB70	031-1CD30	031-1CD40	031-1CD70
Datasizes				
Input bytes	4	8	4	8
Output bytes	0	0	0	0
Parameter bytes	20	32	32	32
Diagnostic bytes	20	20	20	20
Housing				
Material	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm
Weight	60 g	60 g	60 g	60 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	in preparation	in preparation	in preparation	in preparation

Connections, Interfaces

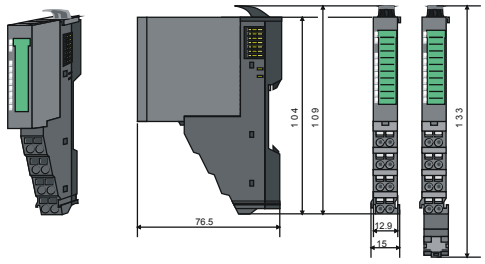
Signal modules analog | Analog input modules						
031-1BB10 031-1BB30 031-1BB40 031-1BB60	031-1BB70 031-1BB90 031-1BD30 031-1BD40	031-1BD70 031-1BD80 031-1CB30 031-1CB40	031-1CB70 031-1CD30 031-1CD40 031-1CD70	031-1LB90 031-1LD80		

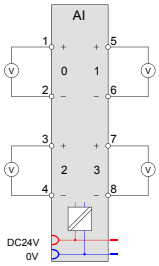
031-1CB70





031-1CD30





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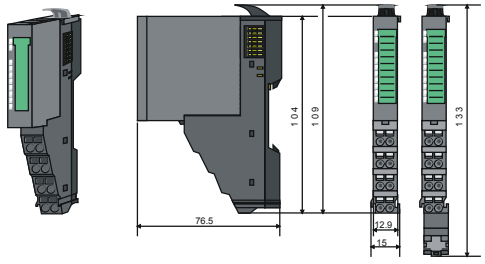
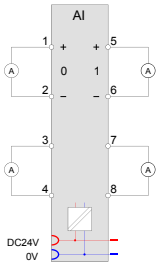
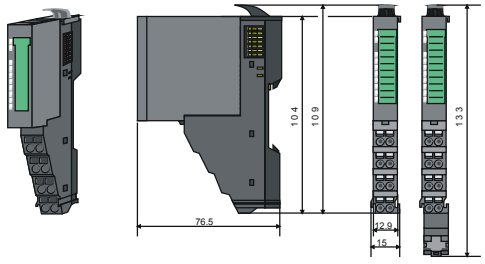
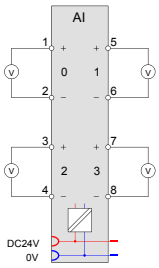




031-1CD70





Analog input modules

Signal modules analog | Analog input modules						
031-1BB10 031-1BB30 031-1BB40 031-1BB60	031-1BB70 031-1BB90 031-1BD30 031-1BD40	031-1BD70 031-1BD80 031-1CB30 031-1CB40	031-1CB70 031-1CD30 031-1CD40 031-1CD70	031-1LB90 031-1LD80		

Order number	031-1LB90	031-1LD80		
Figure				
Type	SM 031	SM 031		
Module ID	040F 1543	0410 1544		
General information				
Note	-	-		
Features	› 2 inputs 16Bit › Thermocouple › Voltage -80mV...+80mV	› 4 inputs 16Bit › 0 .. 3000 ohm resistance › Resistance measurment with 2, 3, and 4-wires		
Current consumption/power loss				
Current consumption from backplane bus	55 mA	55 mA		
Power loss	1 W	1 W		
Technical data analog inputs				
Number of inputs	2	4		
Cable length, shielded	200 m	200 m		
Rated load voltage	DC 24 V	DC 24 V		
Current consumption from load voltage L+ (without load)	30 mA	30 mA		
Voltage inputs	-	-		
Min. input resistance (voltage range)	10 MΩ	-		
Input voltage ranges	-80 mV ... +80 mV	-		
Operational limit of voltage ranges	±0.3%	-		
Operational limit of voltage ranges with SFU	±0.1%	-		
Basic error limit voltage ranges	±0.25%	-		
Basic error limit voltage ranges with SFU	±0.05%	-		
Current inputs	-	-		
Min. input resistance (current range)	-	-		
Input current ranges	-	-		
Operational limit of current ranges	-	-		
Operational limit of current ranges with SFU	-	-		
Basic error limit current ranges	-	-		
Basic error limit current ranges with SFU	-	-		
Resistance inputs	-	✓		
Resistance ranges	-	0 ... 60 Ohm 0 ... 600 Ohm 0 ... 3000 Ohm		
Operational limit of resistor ranges	-	+/- 0.4 %		
Basic error limit	-	+/- 0.2 %		
Resistance thermometer inputs	-	✓		

Signal modules analog | Analog input modules						
031-1BB10 031-1BB30 031-1BB40 031-1BB60	031-1BB70 031-1BB90 031-1BD30 031-1BD40	031-1BD70 031-1BD80 031-1CB30 031-1CB40	031-1CB70 031-1CD30 031-1CD40 031-1CD70	031-1LB90 031-1LD80		

Order number	031-1LB90	031-1LD80		
Resistance thermometer ranges	-	Pt100 Pt1000 Ni100 Ni1000		
Operational limit of resistance thermometer ranges	-	+/- 0.4 %		
Operational limit of resistor ranges with SFU	-	-		
Basic error limit thermoresistor ranges	-	+/- 0.2 %		
Operational limit of resistor ranges with SFU	-	-		
Thermocouple inputs	✓	-		
Thermocouple ranges	type B type C type E type J type K type L type N type R type S type T	-		
Operational limit of thermocouple ranges	Type E, L, T, J, K, N: ±2.5K / Type B, C, R, S: ±8.0K	-		
Operational limit of thermocouple ranges with SFU	Type E, L, T, J, K, N: ±1.5K / Type B, C, R, S: ±4.0K	-		
Basic error limit thermoelement ranges	Type E, L, T, J, K, N: ±2.0K / Type B, C, R, S: ±7.0K	-		
Basic error limit thermoelement ranges with SFU	Type E, L, T, J, K, N: ±1.0K / Type B, C, R, S: ±3.0K	-		
Programmable temperature compensation	✓	-		
External temperature compensation	✓	-		
Internal temperature compensation	✓	-		
Resolution in bit	16	16		
Measurement principle	Sigma-Delta	Sigma-Delta		
Basic conversion time	84.2 ms (50 Hz) 70.5 ms (60 Hz) per channel	4.2...324.1 ms (50 Hz) 3.8...270.5 ms (60 Hz) per channel		
Noise suppression for frequency	>90dB at 50Hz (UCM<10V)	>80dB at 50Hz (UCM<6V)		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	yes	yes, parameterizable		
Process alarm	no	no		
Diagnostic interrupt	yes, parameterizable	yes, parameterizable		
Diagnostic functions	yes	yes		
Diagnostics information read-out	possible	possible		
Module state	green LED	green LED		
Module error display	red LED	red LED		
Channel error display	red LED per channel	red LED per channel		

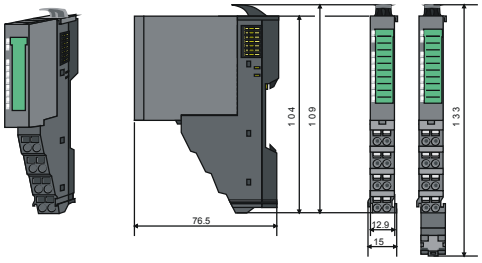
Signal modules analog | Analog input modules						
031-1BB10 031-1BB30 031-1BB40 031-1BB60	031-1BB70 031-1BB90 031-1BD30 031-1BD40	031-1BD70 031-1BD80 031-1CB30 031-1CB40	031-1CB70 031-1CD30 031-1CD40 031-1CD70	031-1LB90 031-1LD80		

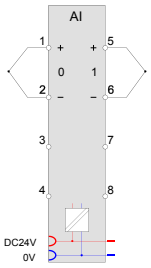
Order number	031-1LB90	031-1LD80		
Isolation				
Between channels	-	-		
Between channels of groups to	-	-		
Between channels and backplane bus	✓	✓		
Between channels and power supply	-	-		
Max. potential difference between circuits	-	-		
Max. potential difference between inputs (Ucm)	DC 140 V/ AC 60 V	DC 6 V		
Max. potential difference between Mana and Mintern (Uiso)	-	-		
Max. potential difference between inputs and Mana (Ucm)	-	-		
Max. potential difference between inputs and Mintern (Uiso)	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V		
Max. potential difference between Mintern and outputs	-	-		
Insulation tested with	DC 500 V	DC 500 V		
Datasizes				
Input bytes	4	8		
Output bytes	0	0		
Parameter bytes	10	12		
Diagnostic bytes	20	20		
Housing				
Material	PPE / PPE GF10	PPE / PPE GF10		
Mounting	Profile rail 35 mm	Profile rail 35 mm		
Mechanical data				
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm		
Weight	60 g	60 g		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	in preparation	in preparation		

Connections, Interfaces

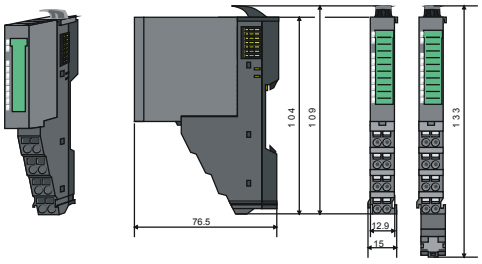
Signal modules analog | Analog input modules						
031-1BB10 031-1BB30 031-1BB40 031-1BB60	031-1BB70 031-1BB90 031-1BD30 031-1BD40	031-1BD70 031-1BD80 031-1CB30 031-1CB40	031-1CB70 031-1CD30 031-1CD40 031-1CD70	031-1LB90 031-1LD80		

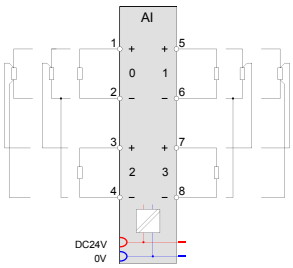
031-1LB90





031-1LD80





Analog output modules

Signal modules analog | Analog output modules						
032-1BB30 032-1BB40 032-1BB70 032-1BD30	032-1BD40 032-1BD70 032-1CB30 032-1CB70	032-1CD30 032-1CD70				

Order number	032-1BB30	032-1BB40	032-1BB70	032-1BD30
Figure				
Type	SM 032	SM 032	SM 032	SM 032
Module ID	0501 25D8	0502 25D8	0505 25D8	0503 25E0
General information				
Note	-	-	-	-
Features	› 2 outputs 12Bit › Voltage 0...10 V	› 2 outputs 12Bit › Current 0(4)...20 mA	› 2 outputs 12Bit › Voltage -10 V...+10 V	› 4 outputs 12Bit › Voltage 0...10 V
Current consumption/power loss				
Current consumption from backplane bus	80 mA	80 mA	60 mA	80 mA
Power loss	1.2 W	0.8 W	0.8 W	1.2 W
Technical data analog outputs				
Number of outputs	2	2	2	4
Cable length, shielded	200 m	200 m	200 m	200 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Current consumption from load voltage L+ (without load)	-	-	-	-
Voltage output short-circuit protection	✓	-	✓	✓
Voltage outputs	✓	-	✓	✓
Min. load resistance (voltage range)	5 kΩ	-	5 kΩ	5 kΩ
Max. capacitive load (current range)	1 µF	-	1 µF	1 µF
Output voltage ranges	0 V ... +10 V	-	-10 V ... +10 V	0 V ... +10 V
Operational limit of voltage ranges	+/-0.3%	-	+/-0.3%	+/-0.3%
Basic error limit voltage ranges with SFU	+/-0.2%	-	+/-0.2%	+/-0.2%
Current outputs	-	✓	-	-
Max. in load resistance (current range)	-	350 Ω	-	-
Max. inductive load (current range)	-	10 mH	-	-
Output current ranges	-	0 mA ... +20 mA +4 mA ... +20 mA	-	-
Operational limit of current ranges	-	+/-0.4% ... +/-0.5%	-	-
Basic error limit current ranges with SFU	-	+/-0.2% ... +/-0.3%	-	-
Settling time for ohmic load	1.5 ms	0.25 ms	1.5 ms	1.5 ms
Settling time for capacitive load	2 ms	-	2 ms	2 ms
Settling time for inductive load	-	1.5 ms	-	-
Resolution in bit	12	12	12	12
Conversion time	2 ms all channels	2 ms all channels	2 ms all channels	2 ms all channels
Substitute value can be applied	no	no	no	no
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	yes	yes	yes	yes

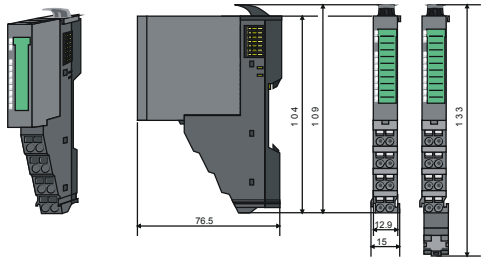
Signal modules analog | Analog output modules						
032-1BB30 032-1BB40 032-1BB70 032-1BD30	032-1BD40 032-1BD70 032-1CB30 032-1CB70	032-1CD30 032-1CD70				

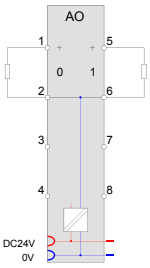
Order number	032-1BB30	032-1BB40	032-1BB70	032-1BD30
Diagnostics information read-out	possible	possible	possible	possible
Module state	green LED	green LED	green LED	green LED
Module error display	red LED	red LED	red LED	red LED
Channel error display	red LED per channel	red LED per channel	red LED per channel	red LED per channel
Isolation				
Between channels	-	-	-	-
Between channels of groups to	-	-	-	-
Between channels and backplane bus	✓	✓	✓	✓
Between channels and power supply	✓	✓	✓	✓
Max. potential difference between circuits	-	-	-	-
Max. potential difference between inputs (Ucm)	-	-	-	-
Max. potential difference between Mana and Mintern (Uiso)	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V
Max. potential difference between inputs and Mana (Ucm)	-	-	-	-
Max. potential difference between inputs and Mintern (Uiso)	-	-	-	-
Max. potential difference between Mintern and outputs	-	-	-	-
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	0	0	0	0
Output bytes	4	4	4	8
Parameter bytes	8	8	8	10
Diagnostic bytes	20	20	20	20
Housing				
Material	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm
Weight	60 g	60 g	60 g	60 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	in preparation	yes

Connections, Interfaces

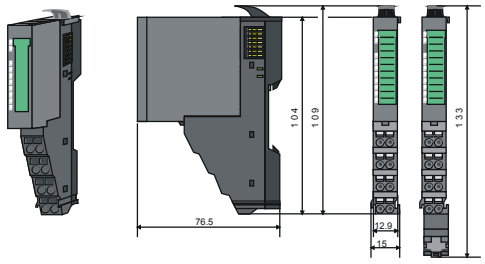
Signal modules analog | Analog output modules						
032-1BB30 032-1BB40 032-1BB70 032-1BD30	032-1BD40 032-1BD70 032-1CB30 032-1CB70	032-1CD30 032-1CD70				

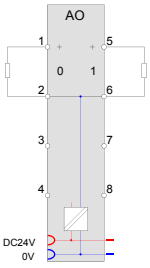
032-1BB30



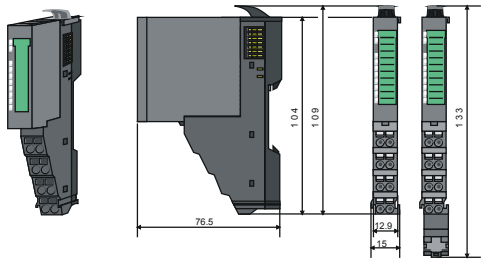


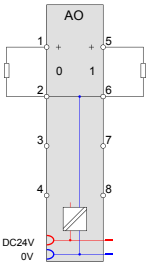
032-1BB40



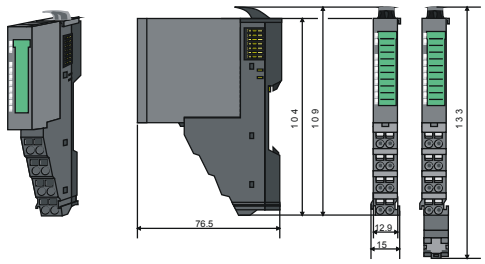


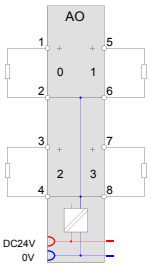
032-1BB70





032-1BD30





Analog output modules

Signal modules analog | Analog output modules						
032-1BB30 032-1BB40 032-1BB70 032-1BD30	032-1BD40 032-1BD70 032-1CB30 032-1CB70	032-1CD30 032-1CD70				

Order number	032-1BD40	032-1BD70	032-1CB30	032-1CB70
Figure				
Type	SM 032	SM 032	SM 032	SM 032
Module ID	0504 25E0	0506 25E0	0507 2558	0508 2558
General information				
Note	-	-	-	-
Features	› 4 outputs 12Bit › Current 0(4)...20mA	› 4 outputs 12Bit › Voltage -10 V...+10 V	› 2 outputs 16Bit › Voltage 0...10 V	› 2 outputs 16Bit › Voltage -10 V...+10 V
Current consumption/power loss				
Current consumption from backplane bus	80 mA	60 mA	60 mA	60 mA
Power loss	0.8 W	0.8 W	0.8 W	0.8 W
Technical data analog outputs				
Number of outputs	4	4	2	2
Cable length, shielded	200 m	200 m	200 m	200 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Current consumption from load voltage L+ (without load)	-	-	-	-
Voltage output short-circuit protection	-	✓	✓	✓
Voltage outputs	-	✓	✓	✓
Min. load resistance (voltage range)	-	5 kΩ	5 kΩ	5 kΩ
Max. capacitive load (current range)	-	1 µF	1 µF	1 µF
Output voltage ranges	-	-10 V ... +10 V	0 V ... +10 V	-10 V ... +10 V
Operational limit of voltage ranges	-	+/-0.3%	+/-0.2%	+/-0.2%
Basic error limit voltage ranges with SFU	-	+/-0.2%	+/-0.1%	+/-0.1%
Current outputs	✓	-	-	-
Max. in load resistance (current range)	350 Ω	-	-	-
Max. inductive load (current range)	10 mH	-	-	-
Output current ranges	0 mA ... +20 mA +4 mA ... +20 mA	-	-	-
Operational limit of current ranges	+/-0.4% ... +/-0.5%	-	-	-
Basic error limit current ranges with SFU	+/-0.2% ... +/-0.3%	-	-	-
Settling time for ohmic load	0.25 ms	1.5 ms	150 µs	150 µs
Settling time for capacitive load	-	2 ms	1 ms	1 ms
Settling time for inductive load	1.5 ms	-	-	-
Resolution in bit	12	12	16	16
Conversion time	2 ms all channels	2 ms all channels	200 µs all channels	200 µs all channels
Substitute value can be applied	no	no	no	no
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	yes	yes	yes	yes

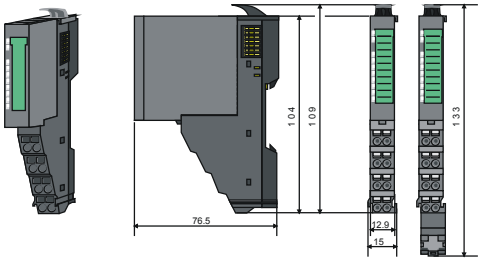
Signal modules analog | Analog output modules						
032-1BB30 032-1BB40 032-1BB70 032-1BD30	032-1BD40 032-1BD70 032-1CB30 032-1CB70	032-1CD30 032-1CD70				

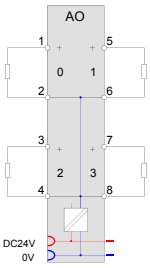
Order number	032-1BD40	032-1BD70	032-1CB30	032-1CB70
Diagnostics information read-out	possible	possible	possible	possible
Module state	green LED	green LED	green LED	green LED
Module error display	red LED	red LED	red LED	red LED
Channel error display	red LED per channel	red LED per channel	red LED per channel	red LED per channel
Isolation				
Between channels	-	-	-	-
Between channels of groups to	-	-	-	-
Between channels and backplane bus	✓	✓	✓	✓
Between channels and power supply	✓	✓	✓	✓
Max. potential difference between circuits	-	-	-	-
Max. potential difference between inputs (Ucm)	-	-	-	-
Max. potential difference between Mana and Mintern (Uiso)	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V
Max. potential difference between inputs and Mana (Ucm)	-	-	-	-
Max. potential difference between inputs and Mintern (Uiso)	-	-	-	-
Max. potential difference between Mintern and outputs	-	-	-	-
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	0	0	0	0
Output bytes	8	8	4	4
Parameter bytes	10	10	8	8
Diagnostic bytes	20	20	20	20
Housing				
Material	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm
Weight	60 g	60 g	60 g	60 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	in preparation	in preparation	in preparation

Connections, Interfaces

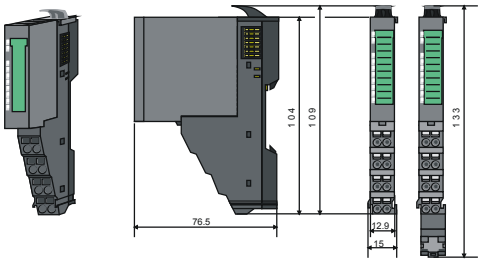
Signal modules analog | Analog output modules						
032-1BB30 032-1BB40 032-1BB70 032-1BD30	032-1BD40 032-1BD70 032-1CB30 032-1CB70	032-1CD30 032-1CD70				

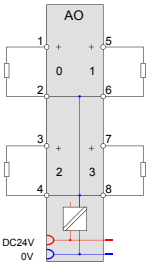
032-1BD40



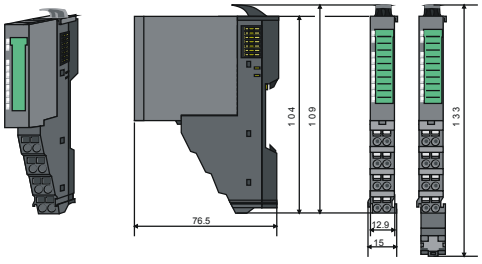


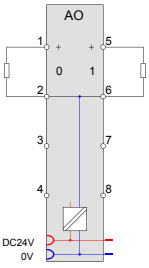
032-1BD70



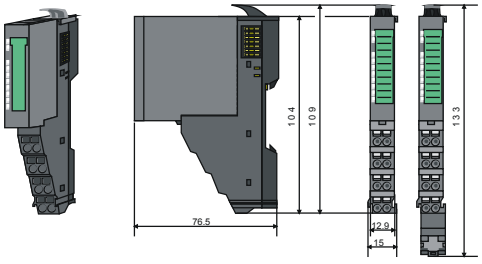


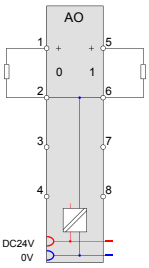
032-1CB30





032-1CB70





Analog output modules

Signal modules analog | Analog output modules						
032-1BB30 032-1BB40 032-1BB70 032-1BD30	032-1BD40 032-1BD70 032-1CB30 032-1CB70	032-1CD30 032-1CD70				

Order number	032-1CD30	032-1CD70		
Figure				
Type	SM 032	SM 032		
Module ID	0509 2560	050A 2560		
General information				
Note	-	-		
Features	› 4 outputs 16Bit › Voltage 0...10 V	› 4 outputs 16Bit › Voltage -10 V...+10 V		
Current consumption/power loss				
Current consumption from backplane bus	60 mA	60 mA		
Power loss	0.8 W	0.8 W		
Technical data analog outputs				
Number of outputs	4	4		
Cable length, shielded	200 m	200 m		
Rated load voltage	DC 24 V	DC 24 V		
Current consumption from load voltage L+ (without load)	-	-		
Voltage output short-circuit protection	✓	✓		
Voltage outputs	✓	✓		
Min. load resistance (voltage range)	5 kΩ	5 kΩ		
Max. capacitive load (current range)	1 µF	1 µF		
Output voltage ranges	0 V ... +10 V	-10 V ... +10 V		
Operational limit of voltage ranges	+/-0.2%	+/-0.2%		
Basic error limit voltage ranges with SFU	+/-0.1%	+/-0.1%		
Current outputs	-	-		
Max. in load resistance (current range)	-	-		
Max. inductive load (current range)	-	-		
Output current ranges	-	-		
Operational limit of current ranges	-	-		
Basic error limit current ranges with SFU	-	-		
Settling time for ohmic load	150 µs	150 µs		
Settling time for capacitive load	1 ms	2 ms		
Settling time for inductive load	-	-		
Resolution in bit	16	16		
Conversion time	200 µs all channels	200 µs all channels		
Substitute value can be applied	no	no		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	no	no		
Process alarm	no	no		
Diagnostic interrupt	no	no		
Diagnostic functions	yes	yes		
Diagnostics information read-out	possible	possible		

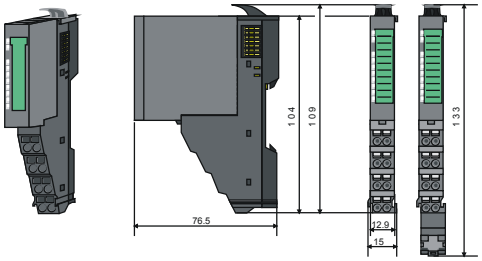
Signal modules analog | Analog output modules						
032-1BB30 032-1BB40 032-1BB70 032-1BD30	032-1BD40 032-1BD70 032-1CB30 032-1CB70	032-1CD30 032-1CD70				

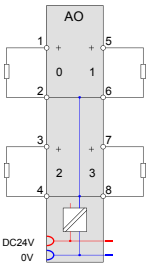
Order number	032-1CD30	032-1CD70		
Module state	green LED	green LED		
Module error display	red LED	red LED		
Channel error display	red LED per channel	red LED per channel		
Isolation				
Between channels	-	-		
Between channels of groups to	-	-		
Between channels and backplane bus	✓	✓		
Between channels and power supply	✓	✓		
Max. potential difference between circuits	-	-		
Max. potential difference between inputs (Ucm)	-	-		
Max. potential difference between Mana and Mintern (Uiso)	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V		
Max. potential difference between inputs and Mana (Ucm)	-	-		
Max. potential difference between inputs and Mintern (Uiso)	-	-		
Max. potential difference between Mintern and outputs	-	-		
Insulation tested with	DC 500 V	DC 500 V		
Datasizes				
Input bytes	0	0		
Output bytes	8	8		
Parameter bytes	10	10		
Diagnostic bytes	20	20		
Housing				
Material	PPE / PPE GF10	PPE / PPE GF10		
Mounting	Profile rail 35 mm	Profile rail 35 mm		
Mechanical data				
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm		
Weight	60 g	60 g		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	in preparation	in preparation		

Connections, Interfaces

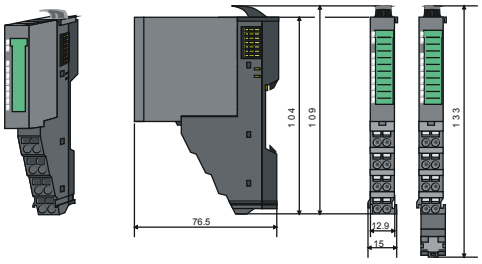
Signal modules analog | Analog output modules						
032-1BB30 032-1BB40 032-1BB70 032-1BD30	032-1BD40 032-1BD70 032-1CB30 032-1CB70	032-1CD30 032-1CD70				

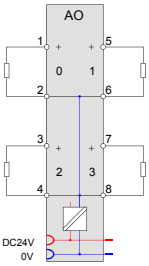
032-1CD30



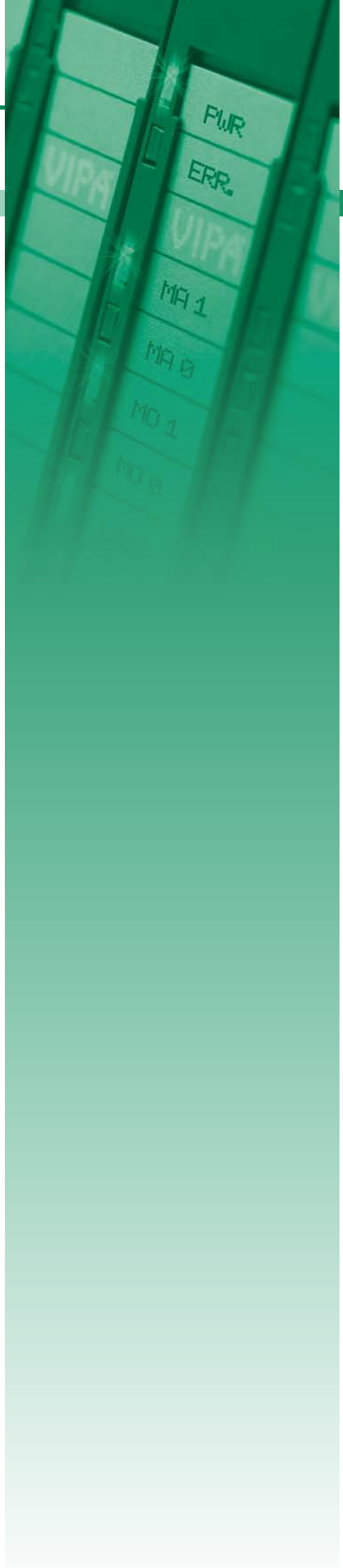


032-1CD70





Communication processors



Structure and Function

Communications processors are used to connect different target and source systems, e.g. via Ethernet to higher-level ERP systems or serially to scanners, printers and other peripherals.

CP 040

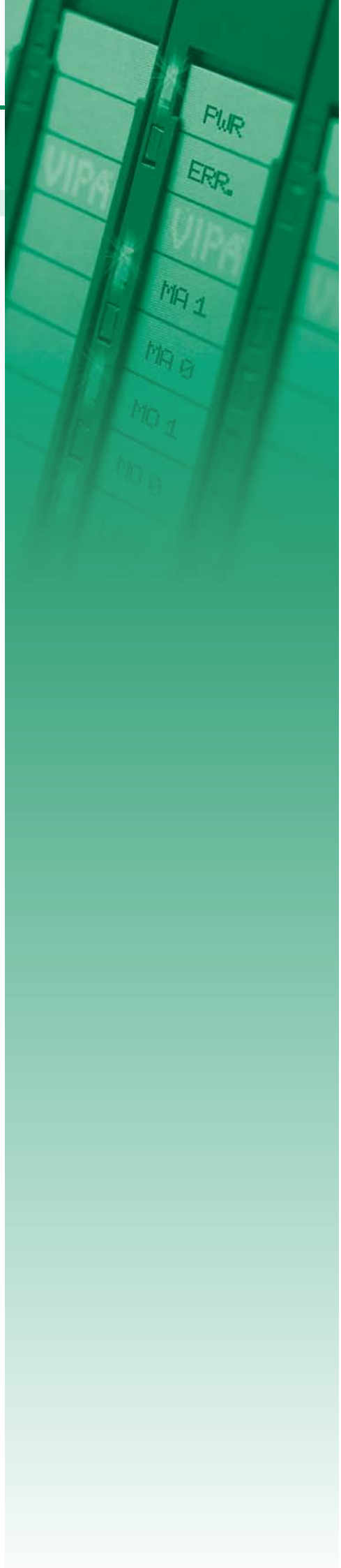
The communication processors CP 040 enable the serial process coupling to different target and source systems. Depending on the module they have a RS232 or a RS422/485 interface.

Characteristics

- Support for all standard protocols ASCII, STX/ETX, 3964(R) and Modbus (master, slave)
- Internal communication via VIPA FBs
- Compact design
- LED status indicator
- Electrically isolated to the backplane bus
- Assembly with 35 mm profile rail
- 24 month warranty

Overview

Order no.	Name/Description	Page
RS232/422/485 and other CPs		
040-1BA00	**CP 040 - Communication processor** › RS232 interface	**84**
040-1CA00	**CP 040 - Communication processor** › RS422/485 interface	**84**



RS232/422/485 and other CPs

Communication processors | RS232/422/485 and other CPs						
040-1BA00 040-1CA00						

Order number	040-1BA00	040-1CA00		
Figure				
Type	CP 040 RS232	CP 040 RS422/485		
Module ID	0E01 0700	0E41 1700		
General information				
Note	-	-		
Features	› RS232 interface	› RS422/485 interface		
Current consumption/power loss				
Current consumption from backplane bus	100 mA	100 mA		
Current consumption from load voltage L+ (without load)	10 mA	10 mA		
Power loss	1 W	1 W		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	yes, parameterizable	yes, parameterizable		
Process alarm	no	no		
Diagnostic interrupt	yes, parameterizable	yes, parameterizable		
Diagnostic functions	yes, parameterizable	yes, parameterizable		
Diagnostics information read-out	possible	possible		
Supply voltage display	green LED	green LED		
Group error display	red LED	red LED		
Channel error display	red LED	red LED		
Point-to-point communication				
PtP communication	✓	✓		
Interface isolated	✓	✓		
RS232 interface	✓	-		
RS422 interface	-	✓		
RS485 interface	-	✓		
Connector	Terminal module	Terminal module		
Transmission speed, min.	150 bit/s	150 bit/s		
Transmission speed, max.	115.2 kbit/s	115.2 kbit/s		
Cable length, max.	15 m	1200 m		
Point-to-point protocol				
ASCII protocol	✓	✓		
STX/ETX protocol	✓	✓		
3964(R) protocol	✓	✓		
RK512 protocol	-	-		
USS master protocol	-	-		
Modbus master protocol	✓	✓		
Modbus slave protocol	✓	✓		
Special protocols	-	-		

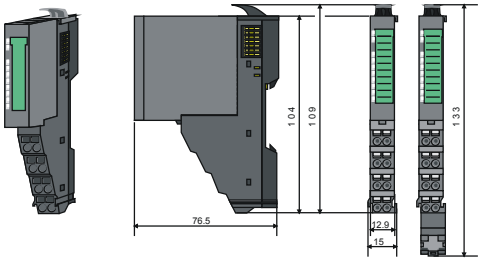
Communication processors | RS232/422/485 and other CPs						
040-1BA00 040-1CA00						

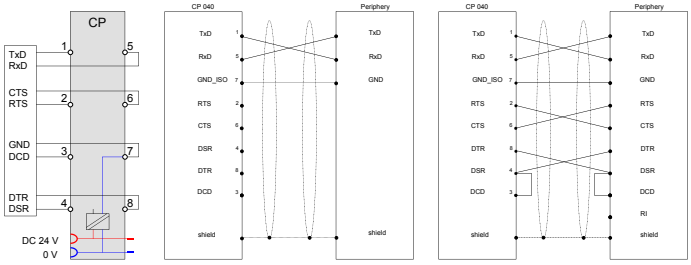
Order number	040-1BA00	040-1CA00		
Datasizes				
Input bytes	8 / 20 / 60	8 / 20 / 60		
Output bytes	8 / 20 / 60	8 / 20 / 60		
Parameter bytes	21	23		
Diagnostic bytes	20	20		
Housing				
Material	PPE / PPE GF10	PPE / PPE GF10		
Mounting	Profile rail 35 mm	Profile rail 35 mm		
Mechanical data				
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm		
Weight	60 g	60 g		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	yes	yes		

Connections, Interfaces

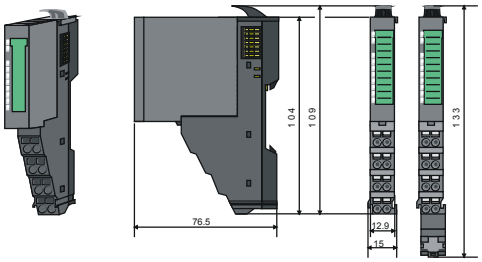
Communication processors | RS232/422/485 and other CPs						
040-1BA00 040-1CA00						

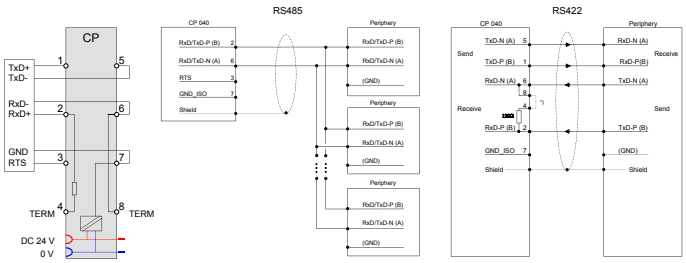
040-1BA00



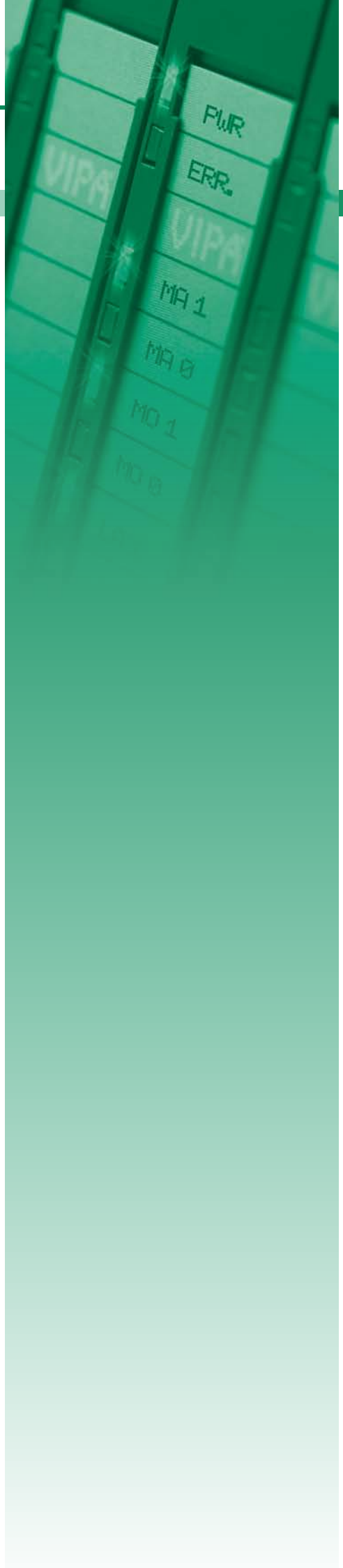


040-1CA00





Function modules



Structure and Function

Function modules (FM) are intelligent modules that perform technological tasks such as position determination, counting and positioning, and other complex functions in the automation independently. They are used when there are high demands on accuracy and dynamic in the starting of automation tasks.

Different functional modules, for example counter modules, SSI modules provide exactly the functions that are required for the respective tasks.

Each functional module consists of a terminal and an electronic module.

The terminal module (TM) contains the retainer for the electronic module (EM), the backplane connectors and contacts for the distribution of the load power supply electronics, the modular connection to DC 24 V load power supply and the staircase-shaped terminal block for the wiring.

Furthermore the terminal module processes a locking system for fixing to a profile rail. The SLIO system can also be constructed "block by block" outside the cabinet and later assembled as a complete system in the control cabinet.

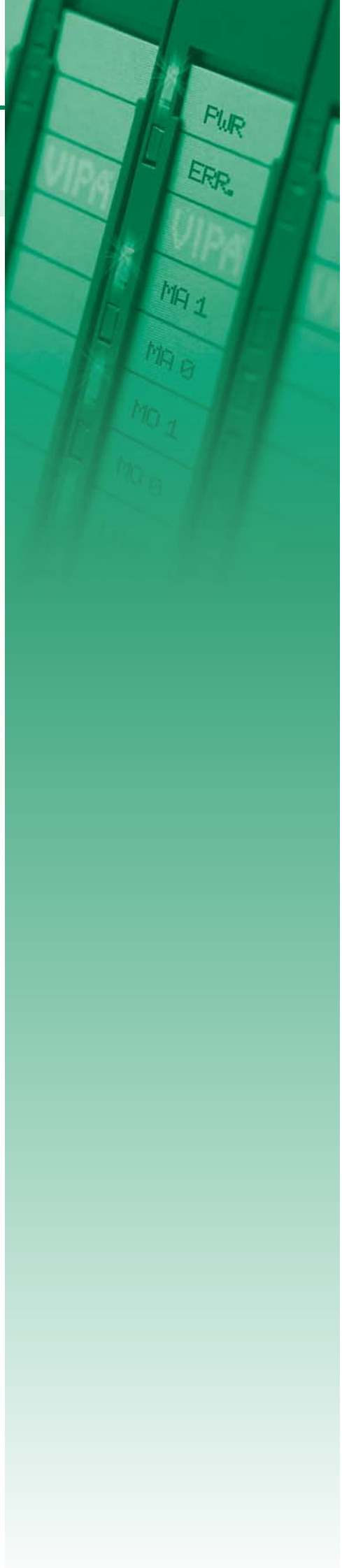
The functionality of the signal module is defined via the electronic module that is connected by a secure sliding mechanism to the terminal module.

During service the defective electronic module can be replaced without detaching the wiring.

Characteristics

- Supports fast counter systems up to 1 MHz
- Counting direction invertible
- Integrated digital outputs
- For direct connection of incremental encoders
- Electrically isolated to the backplane bus
- Direct mapping and readability of the channel conditions via status LEDs
- Safe and time-saving installation by the terminal assignment mounted on the module
- When changing the module equipment identification (BMK) is retained on the TM
- Individual single-channel lettering on insertion strip
- 24 month warranty

Overview



Order no.	Name/Description	Page
Counter modules		
050-1BA00	**FM 050 - Counter module** › 1 Counter 32 Bit (AB) › DC 24 V	**90**
050-1BA10	**FM 050 - Counter module** › 1 Counter 32 Bit (AB) › DC 5 V	**90**
050-1BB00	**FM 050 - Counter module** › 2 Counter 32 Bit (AB) › DC 24 V	**90**
050-1BB30	**FM 050 - Counter module** › 2 Counter 32 Bit (AB) › DC 24 V	**90**
SSI modules		
050-1BS00	**FM 050S - SSI module** › SSI - Encoder › Master or slave mode › Encoder frequency 125 kHz...2 MHz › µs time stamp for encoder value	**94**

Counter modules

Function modules | Counter modules						
050-1BA00 050-1BA10 050-1BB00 050-1BB30						

Order number	050-1BA00	050-1BA10	050-1BB00	050-1BB30
Figure				
Type	FM 050	FM 050	FM 050	FM 050
Module ID	08C1 3800	08C2 3801	08C3 380A	08C4 388B
General information				
Note	-	-	-	-
Features	› 1 Counter 32 Bit (AB) › DC 24 V	› 1 Counter 32 Bit (AB) › DC 5 V	› 2 Counter 32 Bit (AB) › DC 24 V	› 2 Counter 32 Bit (AB) › DC 24 V
Current consumption/power loss				
Current consumption from backplane bus	75 mA	70 mA	75 mA	75 mA
Power loss	1 W	0.85 W	0.9 W	0.9 W
Technical data digital inputs				
Number of inputs	5	-	4	4
Cable length, shielded	100 m	100 m	100 m	100 m
Cable length, unshielded	-	-	-	-
Rated load voltage	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Reverse polarity protection of rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	20 mA	20 mA	15 mA	15 mA
Rated value	DC 20.4...28.8 V	-	DC 20.4...28.8 V	DC 20.4...28.8 V
Input voltage for signal "0"	DC 0...5 V	Differential signal RS422	DC 0...5 V	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V	Differential signal RS422	DC 15...28.8 V	DC 15...28.8 V
Input voltage hysteresis	-	-	-	-
Frequency range	-	-	-	-
Input resistance	-	120 Ω	-	-
Input current for signal "1"	3 mA	-	3 mA	3 mA
Connection of Two-Wire-BEROs possible	✓	-	✓	✓
Max. permissible BERO quiescent current	0.5 mA	-	0.5 mA	0.5 mA
Input delay of "0" to "1"	0,8 µs	0,8 µs	0,8 µs	0,8 µs
Input delay of "1" to "0"	0,8 µs	0,8 µs	0,8 µs	0,8 µs
Number of simultaneously utilizable inputs horizontal configuration	5	-	4	4
Number of simultaneously utilizable inputs vertical configuration	5	-	4	4
Input characteristic curve	IEC 61131, type 1	-	IEC 61131, type 1	IEC 61131, type 1
Initial data size	12 Byte	8 Byte	12 Byte	12 Byte
Technical data digital outputs				
Number of outputs	1	-	-	-
Cable length, shielded	100 m	-	-	-
Cable length, unshielded	100 m	-	-	-
Rated load voltage	DC 20.4...28.8 V	-	-	-

Function modules | Counter modules						
050-1BA00 050-1BA10 050-1BB00 050-1BB30						

Order number	050-1BA00	050-1BA10	050-1BB00	050-1BB30
Current consumption from load voltage L+ (without load)	-	-	-	-
Output delay of "0" to "1"	30 µs	-	-	-
Output delay of "1" to "0"	30 µs	-	-	-
Minimum load current	-	-	-	-
Lamp load	10 W	-	-	-
Parallel switching of outputs for redundant control of a load	not possible	-	-	-
Parallel switching of outputs for increased power	not possible	-	-	-
Actuation of digital input	✓	-	-	-
Switching frequency with resistive load	max. 10 kHz	-	-	-
Switching frequency with inductive load	max. 0.5 Hz	-	-	-
Switching frequency on lamp load	max. 10 kHz	-	-	-
Internal limitation of inductive shut-off voltage	L+ (-52 V)	-	-	-
Short-circuit protection of output	yes, electronic	-	-	-
Trigger level	1 A	-	-	-
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-
Output data size	10 Byte	10 Byte	12 Byte	4 Byte
Technical data counters				
Number of counters	1	1	2	2
Counter width	32 Bit	32 Bit	32 Bit	32 Bit
Maximum input frequency	100 kHz	500 kHz	100 kHz	100 kHz
Maximum count frequency	400 kHz	2 MHz	400 kHz	400 kHz
Mode incremental encoder	✓	✓	✓	✓
Mode pulse / direction	✓	✓	✓	✓
Mode pulse	-	-	-	-
Mode frequency counter	-	-	-	-
Mode period measurement	-	-	-	-
Gate input available	✓	-	-	-
Latch input available	✓	-	-	-
Reset input available	✓	✓	-	-
Counter output available	✓	-	-	-
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	yes, parameterizable	yes, parameterizable	yes, parameterizable	no
Process alarm	yes, parameterizable	yes, parameterizable	yes, parameterizable	no
Diagnostic interrupt	yes, parameterizable	yes, parameterizable	yes, parameterizable	no
Diagnostic functions	yes, parameterizable	yes, parameterizable	yes, parameterizable	no
Diagnostics information read-out	possible	possible	possible	possible
Module state	green LED	green LED	green LED	green LED
Module error display	red LED	red LED	red LED	red LED
Channel error display	none	none	none	none

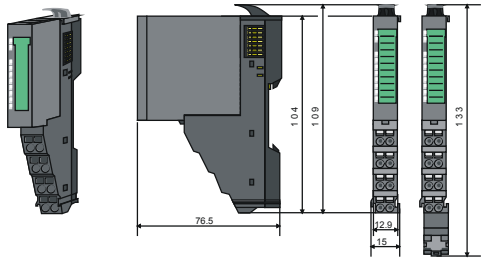
Function modules | Counter modules						
050-1BA00 050-1BA10 050-1BB00 050-1BB30						

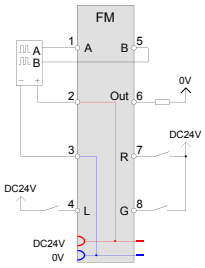
Order number	050-1BA00	050-1BA10	050-1BB00	050-1BB30
Isolation				
Between channels	-	-	-	-
Between channels of groups to	-	-	-	-
Between channels and backplane bus	✓	✓	✓	✓
Between channels and power supply	-	-	-	-
Max. potential difference between circuits	-	-	-	-
Max. potential difference between inputs (Ucm)	-	-	-	-
Max. potential difference between Mana and Mintern (Uiso)	-	-	-	-
Max. potential difference between inputs and Mana (Ucm)	-	-	-	-
Max. potential difference between inputs and Mintern (Uiso)	-	-	-	-
Max. potential difference between Mintern and outputs	-	-	-	-
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	12	8	12	12
Output bytes	10	10	12	4
Parameter bytes	25	23	45	12
Diagnostic bytes	20	20	20	20
Housing				
Material	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm	12.9 mm x 109 mm x 76.5 mm
Weight	60 g	60 g	60 g	60 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

Connections, Interfaces

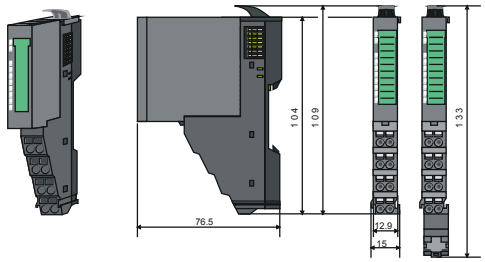
Function modules | Counter modules						
050-1BA00 050-1BA10 050-1BB00 050-1BB30						

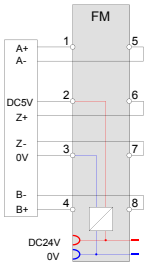
050-1BA00



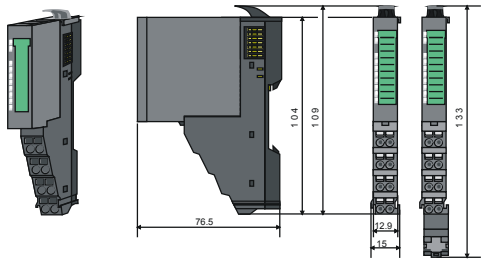


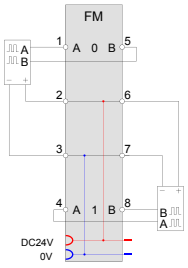
050-1BA10





050-1BB00





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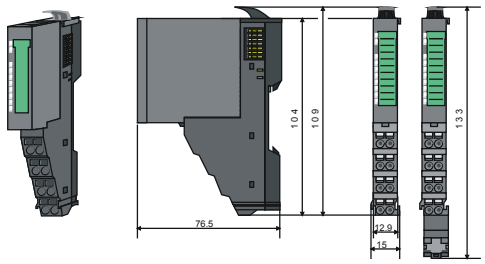
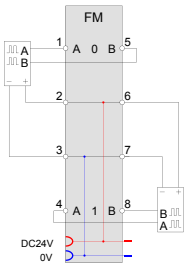




SSI modules

Function modules | SSI modules						
050-1BS00						

Order number	050-1BS00			
Figure				
Type	FM 050			
Module ID	09C1 7800			
General information				
Note	-			
Features	› SSI - Encoder › Master or slave mode › Encoder frequency 125 kHz...2 MHz › µs time stamp for encoder value			
Current consumption/power loss				
Current consumption from backplane bus	70 mA			
Power loss	1 W			
Parallel switching of outputs for increased power	-			
Status information, alarms, diagnostics				
Status display	yes			
Interrupts	yes, parameterizable			
Process alarm	no			
Diagnostic interrupt	yes, parameterizable			
Diagnostic functions	yes, parameterizable			
Diagnostics information read-out	possible			
Module state	green LED			
Module error display	red LED			
Channel error display	none			
Isolation				
Between channels	-			
Between channels of groups to	-			
Between channels and backplane bus	✓			
Between channels and power supply	-			
Max. potential difference between circuits	-			
Max. potential difference between inputs (Ucm)	-			
Max. potential difference between Mana and Mintern (Uiso)	-			
Max. potential difference between inputs and Mana (Ucm)	-			
Max. potential difference between inputs and Mintern (Uiso)	-			
Max. potential difference between Mintern and outputs	-			
Insulation tested with	DC 500 V			

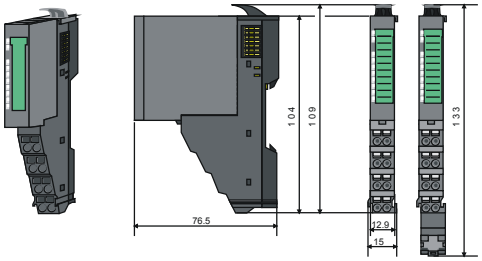
Function modules | SSI modules						
050-1BS00						

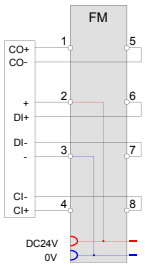
Order number	050-1BS00			
Datasizes				
Input bytes	6			
Output bytes	0			
Parameter bytes	17			
Diagnostic bytes	20			
Housing				
Material	PPE / PPE GF10			
Mounting	Profile rail 35 mm			
Mechanical data				
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm			
Weight	60 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

Connections, Interfaces

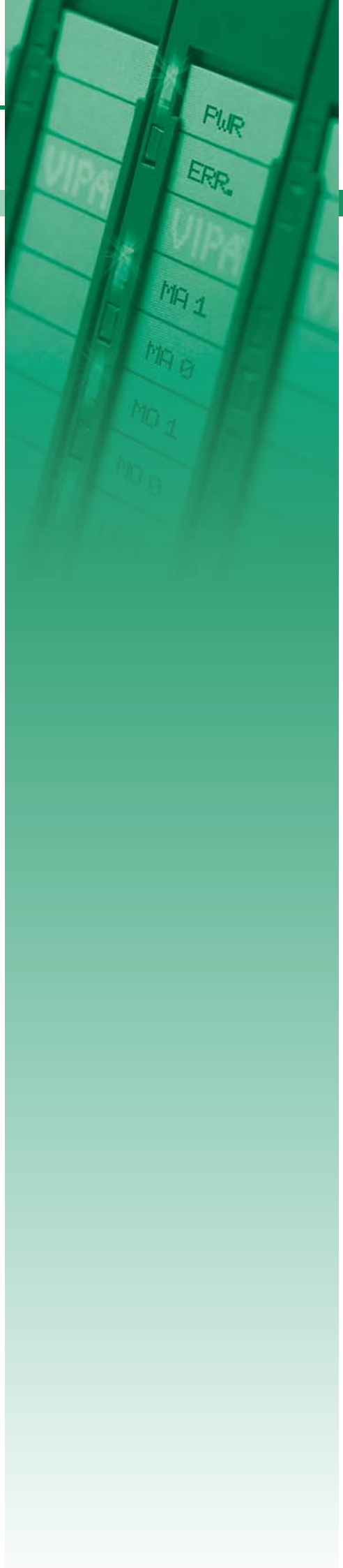
Function modules | SSI modules						
050-1BS00						

050-1BS00





Interface modules



Structure and Function

Interface modules (IM) form the interface between process level and parent bus system. All control signals are transmitted through the internal backplane bus to the electronics module (EM).

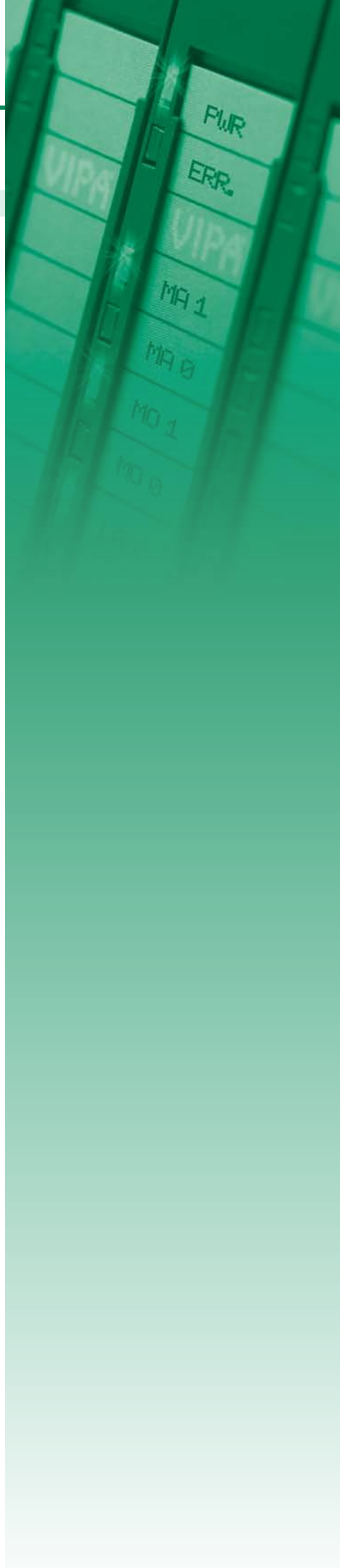
In the case of the interface module the bus interface and power module (PM) are integrated in a single casing. Both the bus interface and the electronics of the connected peripheral modules are supplied with power via the integrated power module.

Up to 64 I/O modules can be operated on the interface module.

Characteristics

- Support for various fieldbus systems
- Functional DIP switches for address setting for the PROFIBUS-DP and CANopen with transparent cover
- MAC address on the front in plain text
- Electrical isolation between fieldbus and input/output field
- Integrated DC 24 V power module to the electronic and load voltage supply of the peripheral modules
- Easy to maintain, replaceable power module
- Up to 64 signal and function modules per interface module
- 24 month warranty

Overview



Order no.	Name/Description	Page
Fieldbus slave modules without I/Os		
053-1CA00	**IM 053CAN - CANopen slave** › CANopen slave › 16 Rx and 16 Tx PDOs › 2 SDOs › PDO linking › PDO mapping: fix › max. 64 peripheral modules	**100**
053-1DN00	**IM 053DN - DeviceNet slave** › DeviceNet slave › Group 2 only device › Poll only device › Baud rate: 125, 250 and 500kbit/s › max. 64 peripheral modules	**100**
053-1DP00	**IM 053DP - PROFIBUS-DP slave** › PROFIBUS-DP slave (DP-V0, DP-V1) › 244 Byte input and 244 Byte output data › 64 peripheral modules max.	**100**
053-1EC00	**IM 053EC - EtherCAT slave** › EtherCAT slave › RJ45 jack 100BaseTX › 64 peripheral modules max.	**100**
053-1MT00	**IM 053MT - Modbus/TCP slave** › Modbus/TCP slave › I/O configuration via fieldbus › Adjustable I/O cycle (0.5...4 ms) › max. 64 peripheral modules	**103**
053-1PN00	**IM 053PN - PROFINET-IO slave** › PROFINET-IO slave › Transfer rate 100Mbit/s › max. 64 peripheral modules	**103**

Fieldbus slave modules without I/Os

Interface modules | Fieldbus slave modules without I/Os						
053-1CA00 053-1DN00 053-1DP00 053-1EC00	053-1MT00 053-1PN00					

Order number	053-1CA00	053-1DN00	053-1DP00	053-1EC00
Figure				
Type	IM 053CAN	IM 053DN	IM 053DP	IM 053EC
Module ID	-	-	-	-
General information				
Note	-	-	-	-
Features	› CANopen slave › 16 Rx and 16 Tx PDOs › 2 SDOs › PDO linking › PDO mapping: fix › max. 64 peripheral modules	› DeviceNet slave › Group 2 only device › Poll only device › Baud rate: 125, 250 and 500kbit/s › max. 64 peripheral modules	› PROFIBUS-DP slave (DP-V0, DP-V1) › 244 Byte input and 244 Byte output data › 64 peripheral modules max.	› EtherCAT slave › RJ45 jack 100BaseTX › 64 peripheral modules max.
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Reverse polarity protection	✓	✓	✓	✓
Current consumption (no-load operation)	90 mA	90 mA	90 mA	95 mA
Current consumption (rated value)	0.95 A	0.95 A	0.95 A	0.95 A
Inrush current	3.9 A	3.9 A	3.9 A	3.9 A
I^2t	0.14 A^2s	0.14 A^2s	0.14 A^2s	0.14 A^2s
Max. current drain at backplane bus	3 A	3 A	3 A	3 A
Max. current drain load supply	10 A	10 A	10 A	10 A
Power loss	3 W	3 W	3 W	3 W
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	yes, parameterizable	-	yes, parameterizable	yes, parameterizable
Process alarm	no	-	yes, parameterizable	yes, parameterizable
Diagnostic interrupt	yes, parameterizable	-	yes, parameterizable	yes, parameterizable
Diagnostic functions	yes, parameterizable	-	yes, parameterizable	yes, parameterizable
Diagnostics information read-out	possible	possible	possible	possible
Supply voltage display	green LED	green LED	green LED	green LED
Service Indicator	-	-	-	-
Group error display	red LED	red SF LED	red LED	red SF LED
Channel error display	none	none	none	none
Hardware configuration				
Racks, max.	1	1	1	1
Modules per rack, max.	64	64	64	64
Number of digital modules, max.	64	64	64	64
Number of analog modules, max.	64	64	64	64

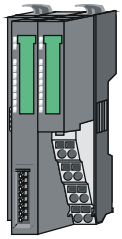
Interface modules | Fieldbus slave modules without I/Os						
053-1CA00 053-1DN00 053-1DP00 053-1EC00	053-1MT00 053-1PN00					

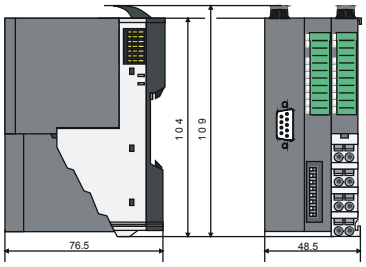
Order number	053-1CA00	053-1DN00	053-1DP00	053-1EC00
Communication				
Fieldbus	CANopen	DeviceNet	PROFIBUS-DP to EN 50170	EtherCAT
Type of interface	CAN	CAN	RS485 isolated	Ethernet 100 MBit
Connector	Sub-D, 9-pin, male	5-pin Open Style Connector	Sub-D, 9-pin, female	2 x RJ45
Topology	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends	-
Electrically isolated	✓	✓	✓	✓
Number of participants, max.	127	64	125	65535
Node addresses	1 - 127	0 - 63	1 - 125	-
Transmission speed, min.	10 kbit/s	125 kbit/s	9.6 kbit/s	100 Mbit/s
Transmission speed, max.	1 Mbit/s	500 kbit/s	12 Mbit/s	100 Mbit/s
Address range inputs, max.	128 Byte	256 Byte	244 Byte	4 KB
Address range outputs, max.	128 Byte	256 Byte	244 Byte	4 KB
Number of TxPDOs, max.	16	-	-	-
Number of RxPDOs, max.	16	-	-	-
Housing				
Material	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10	PPE / PPE GF10
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	48.5 mm x 109 mm x 76.5 mm	48.5 mm x 109 mm x 76.5 mm	48.5 mm x 109 mm x 76.5 mm	48.5 mm x 109 mm x 76.5 mm
Weight	155 g	155 g	155 g	155 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

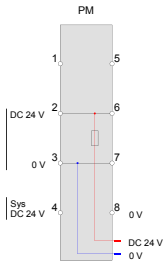
Connections, Interfaces

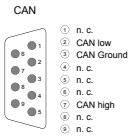
Interface modules | Fieldbus slave modules without I/Os						
053-1CA00 053-1DN00 053-1DP00 053-1EC00	053-1MT00 053-1PN00					

053-1CA00

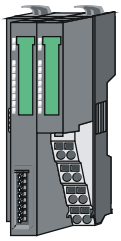


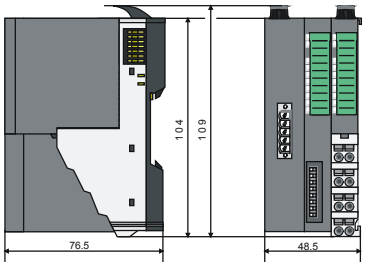


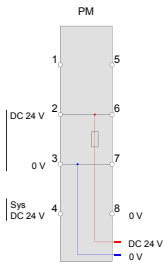


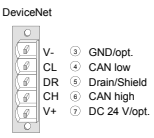


053-1DN00

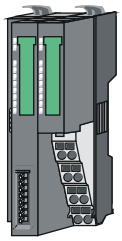


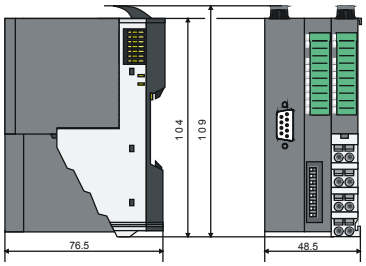


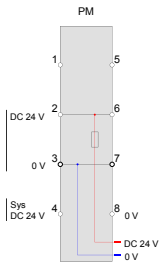


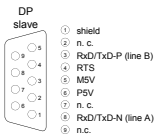


053-1DP00

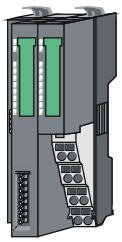


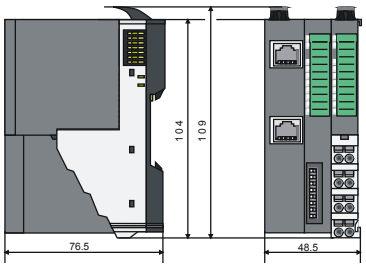


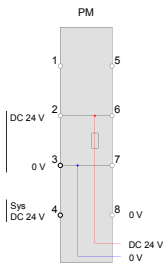


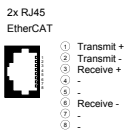


053-1EC00









Fieldbus slave modules without I/Os

Interface modules | Fieldbus slave modules without I/Os						
053-1CA00 053-1DN00 053-1DP00 053-1EC00	053-1MT00 053-1PN00					

Order number	053-1MT00	053-1PN00		
Figure				
Type	IM 053MT	IM 053PN		
Module ID	-	-		
General information				
Note	-	-		
Features	› Modbus/TCP slave › I/O configuration via fieldbus › Adjustable I/O cycle (0.5...4 ms) › max. 64 peripheral modules	› PROFINET-IO slave › Transfer rate 100Mbit/s › max. 64 peripheral modules		
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V		
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V		
Reverse polarity protection	✓	✓		
Current consumption (no-load operation)	95 mA	95 mA		
Current consumption (rated value)	0.95 A	0.95 A		
Inrush current	3.9 A	3.9 A		
I^2t	0.14 A^2s	0.14 A^2s		
Max. current drain at backplane bus	3 A	3 A		
Max. current drain load supply	10 A	10 A		
Power loss	3 W	3 W		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	yes, parameterizable	yes, parameterizable		
Process alarm	yes, parameterizable	yes, parameterizable		
Diagnostic interrupt	yes, parameterizable	yes, parameterizable		
Diagnostic functions	yes, parameterizable	yes, parameterizable		
Diagnostics information read-out	possible	possible		
Supply voltage display	green LED	green LED		
Service Indicator	yellow LED	yellow LED		
Group error display	red SF LED	red SF LED		
Channel error display	none	none		
Hardware configuration				
Racks, max.	1	1		
Modules per rack, max.	64	64		
Number of digital modules, max.	64	64		
Number of analog modules, max.	64	64		
Communication				
Fieldbus	Modbus / TCP/IP	PROFINET-IO		
Type of interface	Ethernet 10/100 MBit	Ethernet 100 MBit		
Connector	RJ45	2 x RJ45		

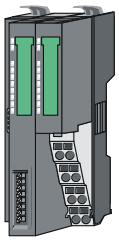
Interface modules | Fieldbus slave modules without I/Os						
053-1CA00 053-1DN00 053-1DP00 053-1EC00	053-1MT00 053-1PN00					

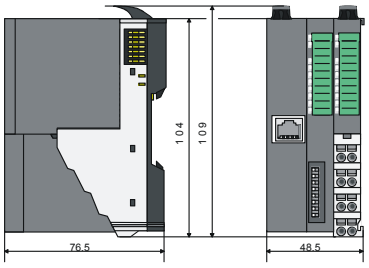
Order number	053-1MT00	053-1PN00		
Topology	-	-		
Electrically isolated	✓	✓		
Number of participants, max.	-	-		
Node addresses	-	-		
Transmission speed, min.	10 Mbit/s	100 Mbit/s		
Transmission speed, max.	100 Mbit/s	100 Mbit/s		
Address range inputs, max.	1 KB	512 Byte		
Address range outputs, max.	1 KB	512 Byte		
Number of TxPDOs, max.	-	-		
Number of RxPDOs, max.	-	-		
Housing				
Material	PPE / PPE GF10	PPE / PPE GF10		
Mounting	Profile rail 35 mm	Profile rail 35 mm		
Mechanical data				
Dimensions (WxHxD)	48.5 mm x 109 mm x 76.5 mm	48.5 mm x 109 mm x 76.5 mm		
Weight	155 g	155 g		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	yes	yes		

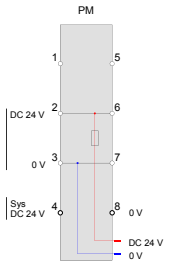
Connections, Interfaces

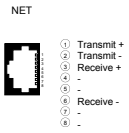
Interface modules | Fieldbus slave modules without I/Os						
053-1CA00 053-1DN00 053-1DP00 053-1EC00	053-1MT00 053-1PN00					

053-1MT00

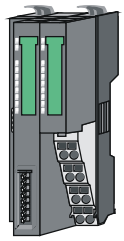


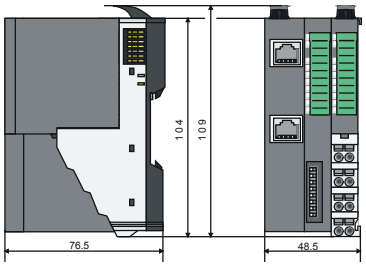


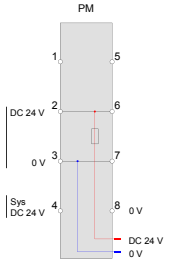


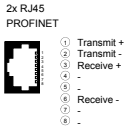


053-1PN00









SLIO accessories

Structure and Function

System accessories expand the use of the system and facilitate starting.

35 mm profile rail

Using 35 mm profile rails the respective modules can be mounted directly on the mounting surface. The profile rail is available in various lengths.

Manuals

The technical documentation of the respective modules includes various manuals with the necessary hardware and programming information, detailed descriptions of each module, and instructions for structure and assembly.

SLIO starterKIT

Order number	Type	Description	Note
800-1DK10	SLIO_Starter-Kit 1- IM053DP	consisting of: 1 x IM 053DP - PROFIBUS-DP slave, 1x CM 001 Clamps module (4xDC 24V, 4xDC 0V Clamps), 1 x SM 021 Digital Input (DI 8xDC 24V), 1 x SM 021 Digital Input (DI 4xDC 24V), 1x SM 022 Digital Output (DO 4xDC 24V, 0,5A), 1x SM 031 Analog Input (AI 2x12Bit, U), 1x SM 032 Analog Output (AO 2x12Bit, U), 1x PROFIBUS cable ready for connecting including 2x PB connector (972-0DP01 + 972-0DP10), 1x profil rail, 1x SLIO USB stick (with GSD files, Manual, Catalog (german/english), example programs), 1x transport case	

35 mm profile rail

Order number	Type	Description	Note
290-1AF00	35 mm profile rail	length 2000 mm	
290-1AF30	35 mm profile rail	length 530 mm	

Miscellaneous

Order number	Type	Description	Note
000-0AA00	SLIO bus cover		
000-0AB00	SLIO shield bus carrier	10 pieces	

Manuals and operating instructions

Order number	Title	Contents	Language
HB300D	Manual system SLIO, German	Manual System SLIO - Compendium, German HB300D_CP, HB300D_SM-DIO, HB300D_SM-AIO, HB300D_IM, HB300D_FM, HB300D_PS-CM	DE
HB300E	Manual system SLIO, English	Manual System SLIO - Compendium, English HB300E_CP, HB300E_SM-DIO, HB300E_SM-AIO, HB300E_IM, HB300E_FM, HB300_PS-CM	EN
HB300D_CP	Manual system SLIO - CP	CP - Communication processor	DE
HB300E_CP	Manual system SLIO - CP	CP - Communication processor	EN
HB300D_FM	Manual system SLIO - FM	FM - Function modules	DE
HB300E_FM	Manual system SLIO - FM	FM - Function modules	EN
HB300D_IM	Manual system SLIO - IM	IM - Interface modules	DE
HB300E_IM	Manual system SLIO - IM	IM - Interface modules	EN
HB300D_PS-CM	Manual system SLIO - PS-CM	PS-CM - Power modules / Clamp modules	DE
HB300E_PS-CM	Manual system SLIO - PS-CM	PS-CM - Power modules / Clamps modules	EN
HB300D_SM-AIO	Manual system SLIO - SM-AIO	SM-AIO - Analog Signal modules	DE
HB300E_SM-AIO	Manual system SLIO - SM-AIO	SM-AIO - Analog Signal modules	EN
HB300D_SM-DIO	Manual system SLIO - SM-DIO	SM-DIO - Digital Signal modules	DE
HB300E_SM-DIO	Manual system SLIO - SM-DIO	SM-DIO - Digital Signal modules	EN
HB300D_SM-S	Manual system SLIO - SM-S	SM-DIO - Safety Digital Signal modules	DE
HB300E_SM-S	Manual system SLIO - SM-S	SM-DIO - Safety Digital Signal modules	EN

At a glance

100V

the compact control system

System description 100V

Structure and Function

100V is a very compact control system.

The system is designed for centralized and decentralized automation tasks.

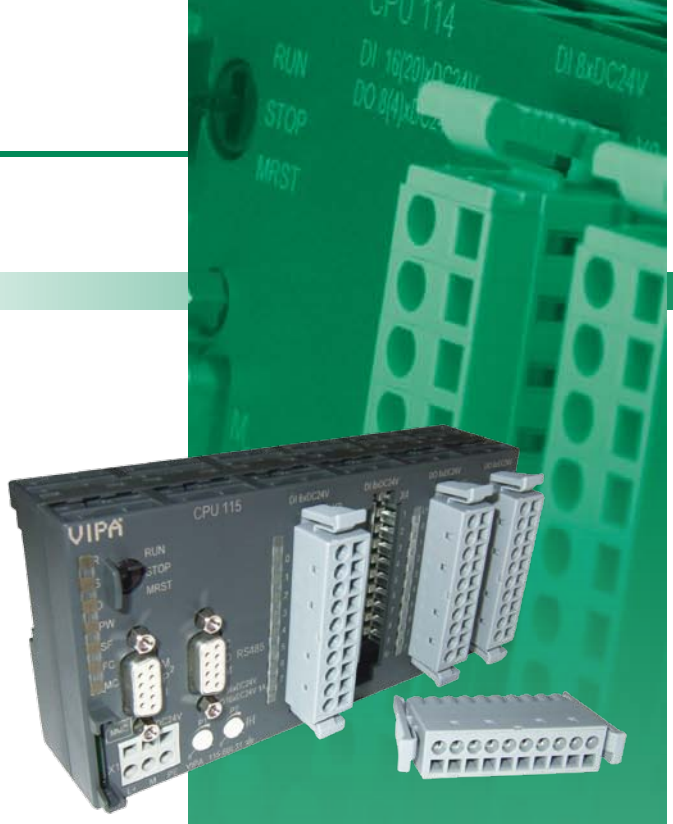
The compact CPUs unify interfaces for communication and digital I/O peripherals in a casing.

By the use of up to four expansion modules the CPUs can be extended by up to 160 analog and digital I/O points.

With its space-saving assembly size it fits into almost any automation environment.

100V is immediately usable central and decentral without further components. The installation of the system and the enlargement of the periphery is extremely simple. The CPU is clipped onto a standard 35 mm profile rail. If the CPU needs to be expanded bus connectors are used for communication between the CPU and expansion modules on the profile rail in advance, after that the CPU and the 100V/200V expansion modules are snapped on - finished.

The scope of supply includes front connectors, labeling strips and, in 100V expansion modules, also bus connectors.



Performance and Application

100V is designed for centralized and decentralized automation tasks in the manufacturing and process industries for the lower performance range.

Programming

100V is programmed with VIPA WinPLC7 or with Siemens STEP7 in LAD, FBD and STL.

Memory

The CPUs in the system 100V have the work and load memory already integrated. Depending on the CPU version, users can choose from 8 kByte to 32 kByte work memory. In addition, MMC cards for storing program and data are supported.

Functions

For the connection of sensors and actuators are a variety of signaling modules in 100V, and 200V for acquiring digital and analog signals in and out of the process is available. Most of the signal modules from 200V are bus and functionally compatible to 100V.

Depending on the CPU, variant counter inputs and PWM outputs are integrated. Due to the counter inputs, complex and fast counting tasks in the manufacturing and process industries will be economically realized. The adjustable PWM outputs via potentiometer allow, for example, CCFLs to be "dimmed" or the speed of appropriate electric motors and fans to be regulated via impulses.

Communication

For the connection of serial devices, e.g. scanner or printer, and for the integration of systems from other manufacturers, different CPU variants are available with integrated interfaces. 100V provides fieldbus slave modules for PROFIBUS-DP and CANopen, with which the system also serves as manufacturer-independent, central, but also as subordinate decentralized fieldbus slave unit.

The fieldbus slave modules are integrated via the device master files into existing fieldbus infrastructure.

CPUs

CPUs-Central Modules

Central Processing Units (CPU) control and regulate processes in plant and machinery. The CPUs are selected according to application with the appropriate performance and memory and can be extended with signal and function modules, as well as communication processors.

The 100V compact CPUs (micro-PLC) have already integrated the inputs and outputs and are designed for small to medium applications.

Furthermore, each CPU has a front slot for a memory module as well as an MP²I interface. The CPU11x supports the standard MPI protocol, serial point-to-point communications. Thereby, in connection with the "Green Cable" from VIPA, a direct and cost-effective programming is possible.

The CPU of the system 100V is ideal for use in control systems with a limited number of inputs and outputs, where previously the use of a PLC was dispensed with. Moreover, this CPU series offers the expansion capability with I/O modules of the system 200V.

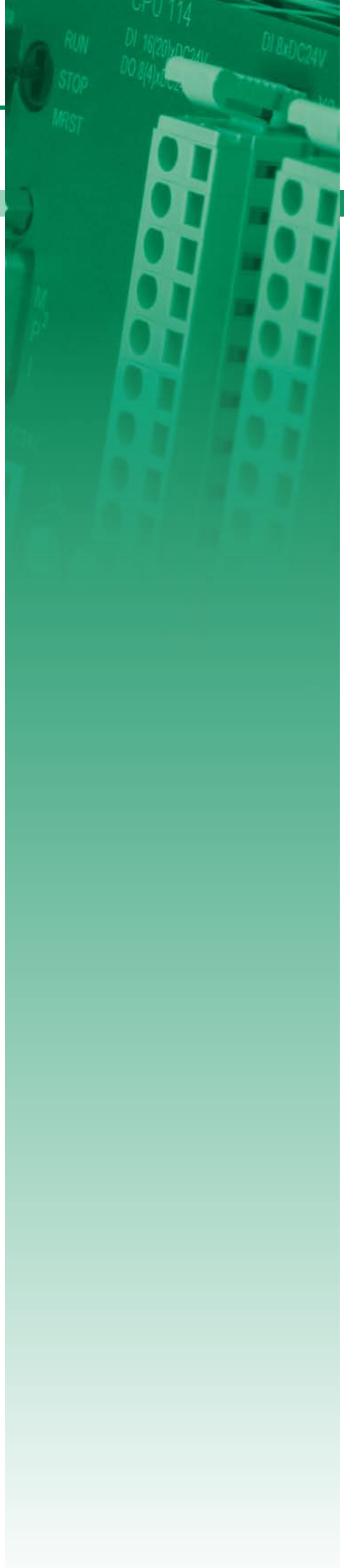
Characteristics

- Programmable with WinPLC7 or Siemens STEP7 (WinPLC7 lite included)
- Integrated work memory, operation without additional memory card
- Integrated flash ROM memory for continuous saving of program and data
- Integrated accumulator-backed RAM memory
- Support of standard MMC cards for saving of program and data
- MPI-Interface on board
- Suitable for centralized and decentralized applications
- Front integrated status LEDs
- Expandable with up to four signal and function modules
- Integrated real time clock
- Compact design and modular construction
- Maintenance-free cage-clamp technology
- Front connector included
- Assembly with 35 mm profile rail
- 24 months warranty

Overview

Order no.	Name/Description	Page
CPUs STEP7 programmable		
112-4BH02	**CPU 112 - Micro PLC** › 8 (12) inputs › 8 (4) outputs › 8 kB work memory, 16 kB load memory	**117**
114-6BJ02	**CPU 114 - Micro PLC** › 16 (20) inputs › 8 (4) outputs › from which are 2 PWM 50 kHz outputs › 16 kB work memory, 24 kB load memory	**117**
114-6BJ03	**CPU 114 - Micro PLC** › 16 (20) inputs › 8 (4) outputs › from which are 2 PWM 50 kHz outputs › 24 kB work memory, 32 kB load memory	**117**
114-6BJ04	**CPU 114 - Micro PLC** › 16 (20) inputs › 8 (4) outputs › from which are 2 PWM 50 kHz outputs › 32 kB work memory, 40 kB load memory	**117**
114-6BJ52	**CPU 114R - Micro PLC** › 16 inputs › 8 relay outputs › AC 230 V/ DC 30 V › 16 kB work memory, 24 kB load memory	**123**
114-6BJ53	**CPU 114R - Micro PLC** › 16 inputs › 8 relay outputs › AC 230 V/ DC 30 V › 24 kB work memory, 32 kB load memory	**123**
114-6BJ54	**CPU 114R - Micro PLC** › 16 inputs › 8 relay outputs › AC 230 V/ DC 30 V › 32 kB work memory, 40 kB load memory	**123**
115-6BL02	**CPU 115 - Micro PLC** › 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 16 kB work memory, 24 kB load memory	**123**
115-6BL03	**CPU 115 - Micro PLC** › 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 24 kB work memory, 32 kB load memory	**129**
115-6BL04	**CPU 115 - Micro PLC** › 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 32 kB work memory, 40 kB load memory	**129**
CPUs STEP7 programmable, PtP		
115-6BL12	**CPU 115SER - Micro PLC** › 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 16 kB work memory, 24 kB load memory › RS232 interface	**135**
115-6BL13	**CPU 115SER - Micro PLC** › 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 24 kB work memory, 32 kB load memory › RS232 interface	**135**
115-6BL14	**CPU 115SER - Micro PLC** › 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 32 kB work memory, 40 kB load memory › RS232 interface	**135**

Overview



Order no.	Name/Description	Page
115-6BL32	**CPU 115SER - Micro PLC** › 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 16 kB work memory, 24 kB load memory › RS485 interface	**135**
115-6BL33	**CPU 115SER - Micro PLC** › 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 24 kB work memory, 32 kB load memory › RS485 interface	**141**
115-6BL34	**CPU 115SER - Micro PLC** › 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 32 kB work memory, 40 kB load memory › RS485 interface	**141**
CPUs STEP7 programmable, DP slave		
115-6BL22	**CPU 115DP - Micro PLC** › 16 (20) inputs › 16 (12) outputs › 16 kB work memory, 24 kB load memory › PROFIBUS-DP slave interface	**147**
115-6BL23	**CPU 115DP - Micro PLC** › 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 24 kB work memory, 32 kB load memory › PROFIBUS-DP slave interface	**147**
115-6BL24	**CPU 115DP - Micro PLC** › 16 (20) inputs › 16 (12) outputs › 32 kB work memory, 40 kB load memory › PROFIBUS-DP slave interface	**147**

CPUs STEP7 programmable

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	112-4BH02	114-6BJ02	114-6BJ03	114-6BJ04
Figure				
Type	CPU 112	CPU 114	CPU 114	CPU 114
General information				
Note	-	-	-	-
Features	› 8 (12) inputs › 8 (4) outputs › 8 kB work memory, 16 kB load memory	› 16 (20) inputs › 8 (4) outputs › from which are 2 PWM 50 kHz outputs › 16 kB work memory, 24 kB load memory	› 16 (20) inputs › 8 (4) outputs › from which are 2 PWM 50 kHz outputs › 24 kB work memory, 32 kB load memory	› 16 (20) inputs › 8 (4) outputs › from which are 2 PWM 50 kHz outputs › 32 kB work memory, 40 kB load memory
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Reverse polarity protection	✓	✓	✓	✓
Current consumption (rated value)	50 mA	80 mA	80 mA	80 mA
Technical data digital inputs				
Number of inputs	8 (12)	16 (20)	16 (20)	16 (20)
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	✓	✓	✓	✓
Current consumption from load voltage L+ (without load)	-	-	-	-
Rated value	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V
Input current for signal "1"	7 mA	7 mA	7 mA	7 mA
Connection of Two-Wire-BEROs possible	-	-	-	-
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Input delay of "0" to "1"	3 ms	3 ms	3 ms	3 ms
Input delay of "1" to "0"	3 ms	3 ms	3 ms	3 ms
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1
Initial data size	3 Byte	3 Byte	3 Byte	3 Byte
Technical data digital outputs				
Number of outputs	8 (4)	8 (4)	8 (4)	8 (4)
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	50 mA	50 mA	50 mA	50 mA

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	112-4BH02	114-6BJ02	114-6BJ03	114-6BJ04
Output voltage signal "1" at min. current	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)
Output voltage signal "1" at max. current	-	-	-	-
Output current at signal "1", rated value	0.5 A	0.5 A	0.5 A	0.5 A
Output delay of "0" to "1"	max. 100 µs	max. 100 µs	max. 100 µs	max. 100 µs
Output delay of "1" to "0"	max. 350 µs	max. 350 µs	max. 350 µs	max. 350 µs
Minimum load current	-	-	-	-
Lamp load	5 W	5 W	5 W	5 W
Switching frequency with resistive load	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz	max. 10 Hz	max. 10 Hz
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)
Short-circuit protection of output	yes, electronic	yes, electronic	yes, electronic	yes, electronic
Trigger level	1 A	1 A	1 A	1 A
Output data size	3 Byte	3 Byte	3 Byte	3 Byte
Technical data counters				
Number of counters	-	4	4	4
Counter width	-	32 Bit	32 Bit	32 Bit
Maximum input frequency	-	30 kHz	30 kHz	30 kHz
Maximum count frequency	-	30 kHz	30 kHz	30 kHz
Mode incremental encoder	-	✓	✓	✓
Mode pulse / direction	-	✓	✓	✓
Mode pulse	-	✓	✓	✓
Mode frequency counter	-	-	-	-
Mode period measurement	-	-	-	-
Gate input available	-	✓	✓	✓
Latch input available	-	-	-	-
Reset input available	-	-	-	-
Counter output available	-	-	-	-
Load and working memory				
Load memory, integrated	16 KB	24 KB	32 KB	40 KB
Work memory, integrated	8 KB	16 KB	24 KB	32 KB
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB
Hardware configuration				
Racks, max.	-	1	1	1
Modules per rack, max.	-	4	4	4
Number of integrated DP master	-	-	-	-
Number of DP master via CP	-	4	4	4
Operable function modules	-	4	4	4
Operable communication modules PtP	-	4	4	4
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	yes	yes	yes	yes
Process alarm	yes	yes	yes	yes
Diagnostic interrupt	yes	yes	yes	yes

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	112-4BH02	114-6BJ02	114-6BJ03	114-6BJ04
Diagnostic functions	no	no	no	no
Diagnostics information read-out	possible	possible	possible	possible
Supply voltage display	green LED	green LED	green LED	green LED
Group error display	red SF LED	red SF LED	red SF LED	red SF LED
Channel error display	none	none	none	none
Isolation				
Between channels of groups to	8	8	8	8
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Command processing times				
Bit instructions, min.	0.25 µs	0.25 µs	0.25 µs	0.25 µs
Word instruction, min.	1.2 µs	1.2 µs	1.2 µs	1.2 µs
Double integer arithmetic, min.	-	-	-	-
Floating-point arithmetic, min.	-	-	-	-
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256	256	256
S7 counter remanence	adjustable 0 up to 64	adjustable 0 up to 64	adjustable 0 up to 64	adjustable 0 up to 64
S7 counter remanence adjustable	C0 .. C7	C0 .. C7	C0 .. C7	C0 .. C7
Number of S7 times	256	256	256	256
S7 times remanence	adjustable 0 up to 128	adjustable 0 up to 128	adjustable 0 up to 128	adjustable 0 up to 128
S7 times remanence adjustable	not retentive	not retentive	not retentive	not retentive
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit	8192 Bit	8192 Bit
Bit memories retentive characteristic adjustable	adjustable 0 up to 256	adjustable 0 up to 256	adjustable 0 up to 256	adjustable 0 up to 256
Bit memories retentive characteristic preset	MB0 .. MB15	MB0 .. MB15	MB0 .. MB15	MB0 .. MB15
Number of data blocks	2047	2047	2047	2047
Max. data blocks size	16 KB	16 KB	16 KB	16 KB
Max. local data size per execution level	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Blocks				
Number of OBs	14	14	14	14
Maximum OB size	16 KB	16 KB	16 KB	16 KB
Number of FBs	1024	1024	1024	1024
Maximum FB size	16 KB	16 KB	16 KB	16 KB
Number of FCs	1024	1024	1024	1024
Maximum FC size	16 KB	16 KB	16 KB	16 KB
Maximum nesting depth per priority class	8	8	8	8
Maximum nesting depth additional within an error OB	1	1	1	1
Time				
Real-time clock buffered	✓	✓	✓	✓
Clock buffered period (min.)	30 d	30 d	30 d	30 d
Accuracy (max. deviation per day)	-	-	-	-
Number of operating hours counter	8	8	8	8
Value range operating hours counter	32767	32767	32767	32767

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	112-4BH02	114-6BJ02	114-6BJ03	114-6BJ04
Clock synchronization	-	-	-	-
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Output I/O address area	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Input I/O address area, decentral	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Output I/O address area, decentral	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Input process image preset	128 Byte	128 Byte	128 Byte	128 Byte
Output process image preset	128 Byte	128 Byte	128 Byte	128 Byte
Digital inputs	8 (12)	16 (20)	16 (20)	16 (20)
Digital outputs	8 (4)	8 (4)	8 (4)	8 (4)
Integrated digital inputs	8 (12)	16 (20)	16 (20)	16 (20)
Integrated digital outputs	8 (4)	8 (4)	8 (4)	8 (4)
Communication functions				
PG/OP channel	✓	✓	✓	✓
Global data communication	✓	✓	✓	✓
Number of GD circuits, max.	4	4	4	4
Size of GD packets, max.	22 Byte	22 Byte	22 Byte	22 Byte
S7 basic communication	✓	✓	✓	✓
S7 basic communication, user data per job	76 Byte	76 Byte	76 Byte	76 Byte
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
S7 communication, user data per job	160 Byte	160 Byte	160 Byte	160 Byte
Number of connections, max.	16	16	16	16
Functionality Sub-D interfaces				
Type	MP²I	MP²I	MP²I	MP²I
Type of interface	RS485	RS485	RS485	RS485
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Electrically isolated	-	-	-	-
MPI	✓	✓	✓	✓
MP²I (MPI/RS232)	✓	✓	✓	✓
DP master	-	-	-	-
DP slave	-	-	-	-
Point-to-point interface	-	-	-	-
Functionality MPI				
Number of connections, max.	16	16	16	16
PG/OP channel	✓	✓	✓	✓
Routing	-	-	-	-
Global data communication	✓	✓	✓	✓
S7 basic communication	✓	✓	✓	✓
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s

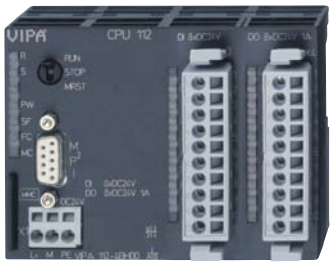
CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

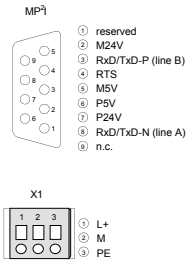
Order number	112-4BH02	114-6BJ02	114-6BJ03	114-6BJ04
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	101.6 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm
Weight	219 g	266 g	266 g	266 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

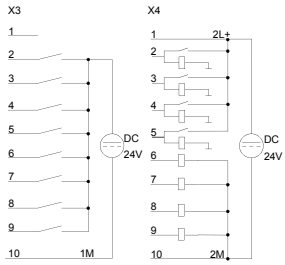
Connections, Interfaces

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

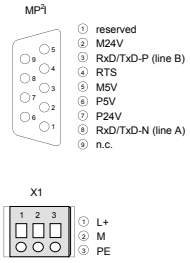
112-4BH02

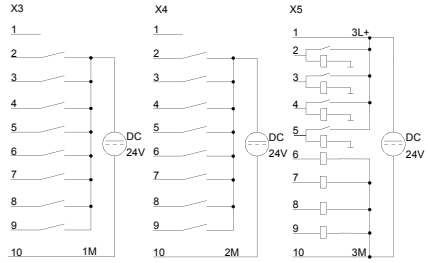




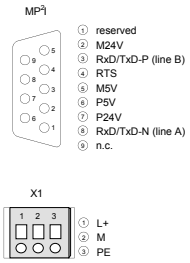


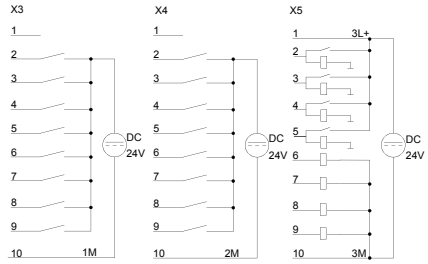
114-6BJ02



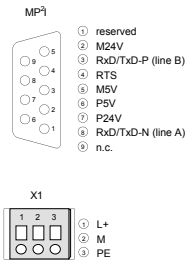


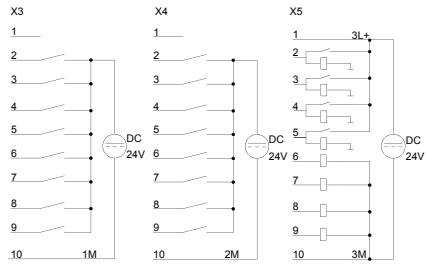
114-6BJ03





114-6BJ04





CPUs STEP7 programmable

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	114-6BJ52	114-6BJ53	114-6BJ54	115-6BL02
Figure				
Type	CPU 114R	CPU 114R	CPU 114R	CPU 115
General information				
Note	-	-	-	-
Features	› 16 inputs › 8 relay outputs › AC 230 V/ DC 30 V › 16 kB work memory, 24 kB load memory	› 16 inputs › 8 relay outputs › AC 230 V/ DC 30 V › 24 kB work memory, 32 kB load memory	› 16 inputs › 8 relay outputs › AC 230 V/ DC 30 V › 32 kB work memory, 40 kB load memory	› 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 16 kB work memory, 24 kB load memory
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Reverse polarity protection	✓	✓	✓	✓
Current consumption (rated value)	150 mA	150 mA	150 mA	90 mA
Technical data digital inputs				
Number of inputs	16	16	16	16 (20)
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	✓	✓	✓	✓
Current consumption from load voltage L+ (without load)	-	-	-	-
Rated value	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V
Input current for signal "1"	7 mA	7 mA	7 mA	7 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	✓
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Input delay of "0" to "1"	3 ms	3 ms	3 ms	3 ms
Input delay of "1" to "0"	3 ms	3 ms	3 ms	3 ms
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1
Initial data size	3 Byte	3 Byte	3 Byte	3 Byte
Technical data digital outputs				
Number of outputs	8	8	8	16 (12)
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 30 V/ AC 230 V	DC 30 V/ AC 230 V	DC 30 V/ AC 230 V	DC 24 V
Reverse polarity protection of rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	-	-	-	50 mA

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	114-6BJ52	114-6BJ53	114-6BJ54	115-6BL02
Output voltage signal "1" at min. current	-	-	-	L+ (-0.8 V)
Output voltage signal "1" at max. current	-	-	-	-
Output current at signal "1", rated value	5 A	5 A	5 A	0.5 A
Output delay of "0" to "1"	10 ms	10 ms	10 ms	max. 100 µs
Output delay of "1" to "0"	5 ms	5 ms	5 ms	max. 350 µs
Minimum load current	-	-	-	-
Lamp load	-	-	-	5 W
Switching frequency with resistive load	max. 10 Hz	max. 10 Hz	max. 10 Hz	max. 1000 Hz
Switching frequency with inductive load	-	-	-	max. 0.5 Hz
Switching frequency on lamp load	-	-	-	max. 10 Hz
Internal limitation of inductive shut-off voltage	-	-	-	L+ (-52 V)
Short-circuit protection of output	-	-	-	yes, electronic
Trigger level	-	-	-	1 A
Output data size	3 Byte	3 Byte	3 Byte	3 Byte
Technical data counters				
Number of counters	4	4	4	4
Counter width	32 Bit	32 Bit	32 Bit	32 Bit
Maximum input frequency	30 kHz	30 kHz	30 kHz	30 kHz
Maximum count frequency	30 kHz	30 kHz	30 kHz	30 kHz
Mode incremental encoder	✓	✓	✓	✓
Mode pulse / direction	✓	✓	✓	✓
Mode pulse	✓	✓	✓	✓
Mode frequency counter	-	-	-	-
Mode period measurement	-	-	-	-
Gate input available	✓	✓	✓	✓
Latch input available	-	-	-	-
Reset input available	-	-	-	-
Counter output available	-	-	-	-
Load and working memory				
Load memory, integrated	24 KB	32 KB	40 KB	24 KB
Work memory, integrated	16 KB	24 KB	32 KB	16 KB
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB
Hardware configuration				
Racks, max.	1	1	1	1
Modules per rack, max.	4	4	4	4
Number of integrated DP master	-	-	-	-
Number of DP master via CP	4	4	4	4
Operable function modules	4	4	4	4
Operable communication modules PtP	4	4	4	4
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	yes	yes	yes	yes
Process alarm	yes	yes	yes	yes
Diagnostic interrupt	yes	yes	yes	yes

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	114-6BJ52	114-6BJ53	114-6BJ54	115-6BL02
Diagnostic functions	no	no	no	no
Diagnostics information read-out	possible	possible	possible	possible
Supply voltage display	green LED	green LED	green LED	green LED
Group error display	red SF LED	red SF LED	red SF LED	red SF LED
Channel error display	none	none	none	none
Isolation				
Between channels of groups to	8	8	8	8
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Command processing times				
Bit instructions, min.	0.25 µs	0.25 µs	0.25 µs	0.25 µs
Word instruction, min.	1.2 µs	1.2 µs	1.2 µs	1.2 µs
Double integer arithmetic, min.	-	-	-	-
Floating-point arithmetic, min.	-	-	-	-
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256	256	256
S7 counter remanence	adjustable 0 up to 64	adjustable 0 up to 64	adjustable 0 up to 64	adjustable 0 up to 64
S7 counter remanence adjustable	C0 .. C7	C0 .. C7	C0 .. C7	C0 .. C7
Number of S7 times	256	256	256	256
S7 times remanence	adjustable 0 up to 128	adjustable 0 up to 128	adjustable 0 up to 128	adjustable 0 up to 128
S7 times remanence adjustable	not retentive	not retentive	not retentive	not retentive
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit	8192 Bit	8192 Bit
Bit memories retentive characteristic adjustable	adjustable 0 up to 256	adjustable 0 up to 256	adjustable 0 up to 256	adjustable 0 up to 256
Bit memories retentive characteristic preset	MB0 .. MB15	MB0 .. MB15	MB0 .. MB15	MB0 .. MB15
Number of data blocks	2047	2047	2047	2047
Max. data blocks size	16 KB	16 KB	16 KB	16 KB
Max. local data size per execution level	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Blocks				
Number of OBs	14	14	14	14
Maximum OB size	16 KB	16 KB	16 KB	16 KB
Number of FBs	1024	1024	1024	1024
Maximum FB size	16 KB	16 KB	16 KB	16 KB
Number of FCs	1024	1024	1024	1024
Maximum FC size	16 KB	16 KB	16 KB	16 KB
Maximum nesting depth per priority class	8	8	8	8
Maximum nesting depth additional within an error OB	1	1	1	1
Time				
Real-time clock buffered	✓	✓	✓	✓
Clock buffered period (min.)	30 d	30 d	30 d	30 d
Accuracy (max. deviation per day)	-	-	-	-
Number of operating hours counter	8	8	8	8
Value range operating hours counter	32767	32767	32767	32767

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	114-6BJ52	114-6BJ53	114-6BJ54	115-6BL02
Clock synchronization	-	-	-	-
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Output I/O address area	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Input I/O address area, decentral	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Output I/O address area, decentral	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Input process image preset	128 Byte	128 Byte	128 Byte	128 Byte
Output process image preset	128 Byte	128 Byte	128 Byte	128 Byte
Digital inputs	16	16	16	16 (20)
Digital outputs	8	8	8	16 (12)
Integrated digital inputs	16	16	16	16 (20)
Integrated digital outputs	8	8	8	16 (12)
Communication functions				
PG/OP channel	✓	✓	✓	✓
Global data communication	✓	✓	✓	✓
Number of GD circuits, max.	4	4	4	4
Size of GD packets, max.	22 Byte	22 Byte	22 Byte	22 Byte
S7 basic communication	✓	✓	✓	✓
S7 basic communication, user data per job	76 Byte	76 Byte	76 Byte	76 Byte
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
S7 communication, user data per job	160 Byte	160 Byte	160 Byte	160 Byte
Number of connections, max.	16	16	16	16
Functionality Sub-D interfaces				
Type	MP²I	MP²I	MP²I	MP²I
Type of interface	RS485	RS485	RS485	RS485
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Electrically isolated	-	-	-	-
MPI	✓	✓	✓	✓
MP²I (MPI/RS232)	✓	✓	✓	✓
DP master	-	-	-	-
DP slave	-	-	-	-
Point-to-point interface	-	-	-	-
Functionality MPI				
Number of connections, max.	16	16	16	16
PG/OP channel	✓	✓	✓	✓
Routing	-	-	-	-
Global data communication	✓	✓	✓	✓
S7 basic communication	✓	✓	✓	✓
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s

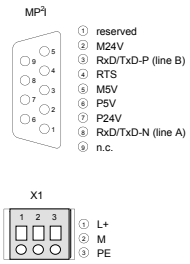
CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

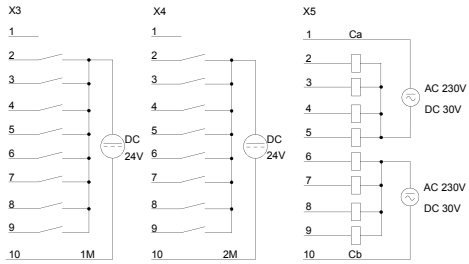
Order number	114-6BJ52	114-6BJ53	114-6BJ54	115-6BL02
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm
Weight	280 g	280 g	280 g	292 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

Connections, Interfaces

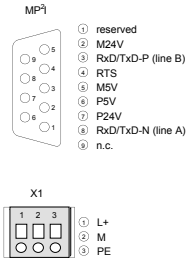
CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

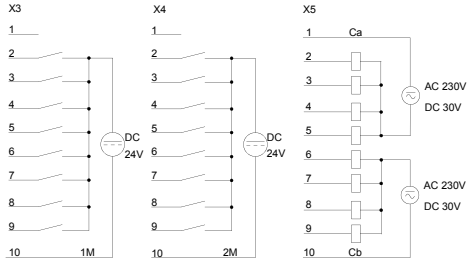
114-6BJ52



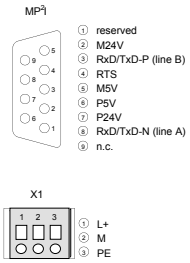


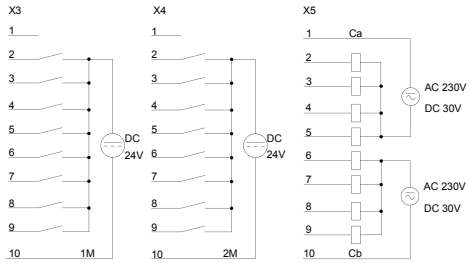
114-6BJ53



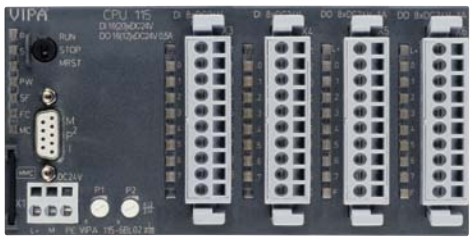


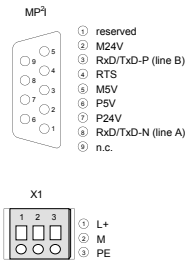
114-6BJ54

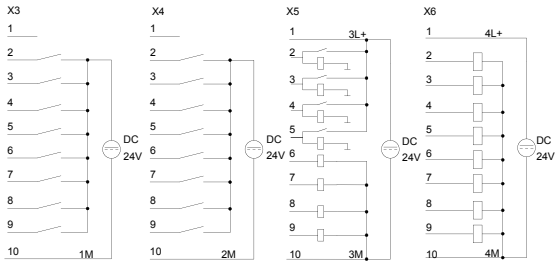




115-6BL02







CPUs STEP7 programmable

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	115-6BL03	115-6BL04		
Figure				
Type	CPU 115	CPU 115		
General information				
Note	-	-		
Features	› 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 24 kB work memory, 32 kB load memory	› 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 32 kB work memory, 40 kB load memory		
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V		
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V		
Reverse polarity protection	✓	✓		
Current consumption (rated value)	90 mA	90 mA		
Technical data digital inputs				
Number of inputs	16 (20)	16 (20)		
Cable length, shielded	1000 m	1000 m		
Cable length, unshielded	600 m	600 m		
Rated load voltage	DC 24 V	DC 24 V		
Reverse polarity protection of rated load voltage	✓	✓		
Current consumption from load voltage L+ (without load)	-	-		
Rated value	DC 24 V	DC 24 V		
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V		
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V		
Input current for signal "1"	7 mA	7 mA		
Connection of Two-Wire-BEROs possible	✓	✓		
Max. permissible BERO quiescent current	1.5 mA	1.5 mA		
Input delay of "0" to "1"	3 ms	3 ms		
Input delay of "1" to "0"	3 ms	3 ms		
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1		
Initial data size	3 Byte	3 Byte		
Technical data digital outputs				
Number of outputs	16 (12)	16 (12)		
Cable length, shielded	1000 m	1000 m		
Cable length, unshielded	600 m	600 m		
Rated load voltage	DC 24 V	DC 24 V		
Reverse polarity protection of rated load voltage	-	-		
Current consumption from load voltage L+ (without load)	50 mA	50 mA		

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	115-6BL03	115-6BL04		
Output voltage signal "1" at min. current	L+ (-0.8 V)	L+ (-0.8 V)		
Output voltage signal "1" at max. current	-	-		
Output current at signal "1", rated value	0.5 A	0.5 A		
Output delay of "0" to "1"	max. 100 µs	max. 100 µs		
Output delay of "1" to "0"	max. 350 µs	max. 350 µs		
Minimum load current	-	-		
Lamp load	5 W	5 W		
Switching frequency with resistive load	max. 1000 Hz	max. 1000 Hz		
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz		
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz		
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)		
Short-circuit protection of output	yes, electronic	yes, electronic		
Trigger level	1 A	1 A		
Output data size	3 Byte	3 Byte		
Technical data counters				
Number of counters	4	4		
Counter width	32 Bit	32 Bit		
Maximum input frequency	30 kHz	30 kHz		
Maximum count frequency	30 kHz	30 kHz		
Mode incremental encoder	✓	✓		
Mode pulse / direction	✓	✓		
Mode pulse	✓	✓		
Mode frequency counter	-	-		
Mode period measurement	-	-		
Gate input available	✓	✓		
Latch input available	-	-		
Reset input available	-	-		
Counter output available	-	-		
Load and working memory				
Load memory, integrated	32 KB	40 KB		
Work memory, integrated	24 KB	32 KB		
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB		
Hardware configuration				
Racks, max.	1	1		
Modules per rack, max.	4	4		
Number of integrated DP master	-	-		
Number of DP master via CP	4	4		
Operable function modules	4	4		
Operable communication modules PtP	4	4		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	yes	yes		
Process alarm	yes	yes		
Diagnostic interrupt	yes	yes		

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	**115-6BL03**	**115-6BL04**		
Diagnostic functions	no	no		
Diagnostics information read-out	possible	possible		
Supply voltage display	green LED	green LED		
Group error display	red SF LED	red SF LED		
Channel error display	none	none		
Isolation				
Between channels of groups to	8	8		
Between channels and backplane bus	✓	✓		
Insulation tested with	DC 500 V	DC 500 V		
Command processing times				
Bit instructions, min.	0.25 µs	0.25 µs		
Word instruction, min.	1.2 µs	1.2 µs		
Double integer arithmetic, min.	-	-		
Floating-point arithmetic, min.	-	-		
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256		
S7 counter remanence	adjustable 0 up to 64	adjustable 0 up to 64		
S7 counter remanence adjustable	C0 .. C7	C0 .. C7		
Number of S7 times	256	256		
S7 times remanence	adjustable 0 up to 128	adjustable 0 up to 128		
S7 times remanence adjustable	not retentive	not retentive		
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit		
Bit memories retentive characteristic adjustable	adjustable 0 up to 256	adjustable 0 up to 256		
Bit memories retentive characteristic preset	MB0 .. MB15	MB0 .. MB15		
Number of data blocks	2047	2047		
Max. data blocks size	16 KB	16 KB		
Max. local data size per execution level	1024 Byte	1024 Byte		
Blocks				
Number of OBs	14	14		
Maximum OB size	16 KB	16 KB		
Number of FBs	1024	1024		
Maximum FB size	16 KB	16 KB		
Number of FCs	1024	1024		
Maximum FC size	16 KB	16 KB		
Maximum nesting depth per priority class	8	8		
Maximum nesting depth additional within an error OB	1	1		
Time				
Real-time clock buffered	✓	✓		
Clock buffered period (min.)	30 d	30 d		
Accuracy (max. deviation per day)	-	-		
Number of operating hours counter	8	8		
Value range operating hours counter	32767	32767		

CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

Order number	115-6BL03	115-6BL04		
Clock synchronization	-	-		
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte		
Output I/O address area	1024 Byte	1024 Byte		
Input I/O address area, decentral	1024 Byte	1024 Byte		
Output I/O address area, decentral	1024 Byte	1024 Byte		
Input process image preset	128 Byte	128 Byte		
Output process image preset	128 Byte	128 Byte		
Digital inputs	16 (20)	16 (20)		
Digital outputs	16 (12)	16 (12)		
Integrated digital inputs	16 (20)	16 (20)		
Integrated digital outputs	16 (12)	16 (12)		
Communication functions				
PG/OP channel	✓	✓		
Global data communication	✓	✓		
Number of GD circuits, max.	4	4		
Size of GD packets, max.	22 Byte	22 Byte		
S7 basic communication	✓	✓		
S7 basic communication, user data per job	76 Byte	76 Byte		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
S7 communication, user data per job	160 Byte	160 Byte		
Number of connections, max.	16	16		
Functionality Sub-D interfaces				
Type	MP²I	MP²I		
Type of interface	RS485	RS485		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Electrically isolated	-	-		
MPI	✓	✓		
MP²I (MPI/RS232)	✓	✓		
DP master	-	-		
DP slave	-	-		
Point-to-point interface	-	-		
Functionality MPI				
Number of connections, max.	16	16		
PG/OP channel	✓	✓		
Routing	-	-		
Global data communication	✓	✓		
S7 basic communication	✓	✓		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s		
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s		

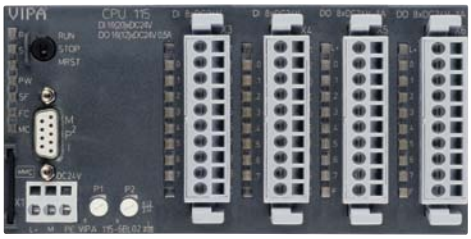
CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

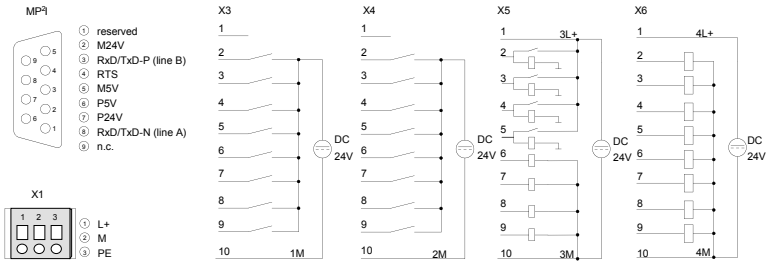
Order number	115-6BL03	115-6BL04		
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6		
Mounting	Profile rail 35 mm	Profile rail 35 mm		
Mechanical data				
Dimensions (WxHxD)	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm		
Weight	292 g	292 g		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	yes	yes		

Connections, Interfaces

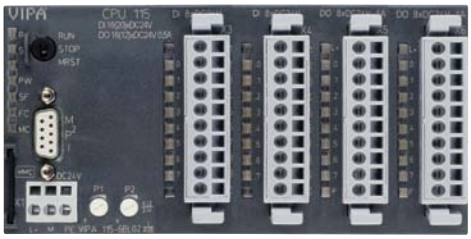
CPUs | CPUs STEP7 programmable						
112-4BH02 114-6BJ02 114-6BJ03 114-6BJ04	114-6BJ52 114-6BJ53 114-6BJ54 115-6BL02	115-6BL03 115-6BL04				

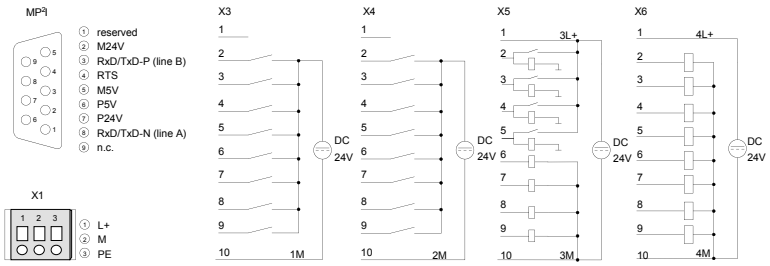
115-6BL03





115-6BL04





CPUs STEP7 programmable, PtP

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL12	115-6BL13	115-6BL14	115-6BL32
Figure				
Type	CPU 115SER	CPU 115SER	CPU 115SER	CPU 115SER
General information				
Note	-	-	-	-
Features	› 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 16 kB work memory, 24 kB load memory › RS232 interface	› 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 24 kB work memory, 32 kB load memory › RS232 interface	› 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 32 kB work memory, 40 kB load memory › RS232 interface	› 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 16 kB work memory, 24 kB load memory › RS485 interface
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Reverse polarity protection	✓	✓	✓	✓
Current consumption (rated value)	100 mA	100 mA	100 mA	110 mA
Technical data digital inputs				
Number of inputs	16 (20)	16 (20)	16 (20)	16 (20)
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	✓	✓	✓	✓
Current consumption from load voltage L+ (without load)	-	-	-	-
Rated value	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V
Input current for signal "1"	7 mA	7 mA	7 mA	7 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	✓
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Input delay of "0" to "1"	3 ms	3 ms	3 ms	3 ms
Input delay of "1" to "0"	3 ms	3 ms	3 ms	3 ms
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1
Initial data size	3 Byte	3 Byte	3 Byte	3 Byte
Technical data digital outputs				
Number of outputs	16 (12)	16 (12)	16 (12)	16 (12)
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	50 mA	50 mA	50 mA	50 mA

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL12	115-6BL13	115-6BL14	115-6BL32
Output voltage signal "1" at min. current	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)
Output voltage signal "1" at max. current	-	-	-	-
Output current at signal "1", rated value	0.5 A	0.5 A	0.5 A	0.5 A
Output delay of "0" to "1"	max. 100 µs	max. 100 µs	max. 100 µs	max. 100 µs
Output delay of "1" to "0"	max. 350 µs	max. 350 µs	max. 350 µs	max. 350 µs
Minimum load current	-	-	-	-
Lamp load	5 W	5 W	5 W	5 W
Switching frequency with resistive load	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz	max. 10 Hz	max. 10 Hz
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)
Short-circuit protection of output	yes, electronic	yes, electronic	yes, electronic	yes, electronic
Trigger level	1 A	1 A	1 A	1 A
Output data size	3 Byte	3 Byte	3 Byte	3 Byte
Technical data counters				
Number of counters	4	4	4	4
Counter width	32 Bit	32 Bit	32 Bit	32 Bit
Maximum input frequency	30 kHz	30 kHz	30 kHz	30 kHz
Maximum count frequency	30 kHz	30 kHz	30 kHz	30 kHz
Mode incremental encoder	✓	✓	✓	✓
Mode pulse / direction	✓	✓	✓	✓
Mode pulse	✓	✓	✓	✓
Mode frequency counter	-	-	-	-
Mode period measurement	-	-	-	-
Gate input available	✓	✓	✓	✓
Latch input available	-	-	-	-
Reset input available	-	-	-	-
Counter output available	-	-	-	-
Load and working memory				
Load memory, integrated	24 KB	32 KB	40 KB	24 KB
Work memory, integrated	16 KB	24 KB	32 KB	16 KB
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB
Hardware configuration				
Racks, max.	1	1	1	1
Modules per rack, max.	4	4	4	4
Number of integrated DP master	-	-	-	-
Number of DP master via CP	4	4	4	4
Operable function modules	4	4	4	4
Operable communication modules PtP	4	4	4	4
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	yes	yes	yes	yes
Process alarm	yes	yes	yes	yes
Diagnostic interrupt	yes	yes	yes	yes

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL12	115-6BL13	115-6BL14	115-6BL32
Diagnostic functions	no	no	no	no
Diagnostics information read-out	possible	possible	possible	possible
Supply voltage display	green LED	green LED	green LED	green LED
Group error display	red SF LED	red SF LED	red SF LED	red SF LED
Channel error display	none	none	none	none
Isolation				
Between channels of groups to	8	8	8	8
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Command processing times				
Bit instructions, min.	0.25 µs	0.25 µs	0.25 µs	0.25 µs
Word instruction, min.	1.2 µs	1.2 µs	1.2 µs	1.2 µs
Double integer arithmetic, min.	-	-	-	-
Floating-point arithmetic, min.	-	-	-	-
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256	256	256
S7 counter remanence	adjustable 0 up to 64	adjustable 0 up to 64	adjustable 0 up to 64	adjustable 0 up to 64
S7 counter remanence adjustable	C0 .. C7	C0 .. C7	C0 .. C7	C0 .. C7
Number of S7 times	256	256	256	256
S7 times remanence	adjustable 0 up to 128	adjustable 0 up to 128	adjustable 0 up to 128	adjustable 0 up to 128
S7 times remanence adjustable	not retentive	not retentive	not retentive	not retentive
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit	8192 Bit	8192 Bit
Bit memories retentive characteristic adjustable	adjustable 0 up to 256	adjustable 0 up to 256	adjustable 0 up to 256	adjustable 0 up to 256
Bit memories retentive characteristic preset	MB0 .. MB15	MB0 .. MB15	MB0 .. MB15	MB0 .. MB15
Number of data blocks	2047	2047	2047	2047
Max. data blocks size	16 KB	16 KB	16 KB	16 KB
Max. local data size per execution level	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Blocks				
Number of OBs	14	14	14	14
Maximum OB size	16 KB	16 KB	16 KB	16 KB
Number of FBs	1024	1024	1024	1024
Maximum FB size	16 KB	16 KB	16 KB	16 KB
Number of FCs	1024	1024	1024	1024
Maximum FC size	16 KB	16 KB	16 KB	16 KB
Maximum nesting depth per priority class	8	8	8	8
Maximum nesting depth additional within an error OB	1	1	1	1
Time				
Real-time clock buffered	✓	✓	✓	✓
Clock buffered period (min.)	30 d	30 d	30 d	30 d
Accuracy (max. deviation per day)	-	-	-	-
Number of operating hours counter	8	8	8	8
Value range operating hours counter	32767	32767	32767	32767

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL12	115-6BL13	115-6BL14	115-6BL32
Clock synchronization	-	-	-	-
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Output I/O address area	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Input I/O address area, decentral	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Output I/O address area, decentral	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Input process image preset	128 Byte	128 Byte	128 Byte	128 Byte
Output process image preset	128 Byte	128 Byte	128 Byte	128 Byte
Digital inputs	16 (20)	16 (20)	16 (20)	16 (20)
Digital outputs	16 (12)	16 (12)	16 (12)	16 (12)
Integrated digital inputs	16 (20)	16 (20)	16 (20)	16 (20)
Integrated digital outputs	16 (12)	16 (12)	16 (12)	16 (12)
Communication functions				
PG/OP channel	✓	✓	✓	✓
Global data communication	✓	✓	✓	✓
Number of GD circuits, max.	4	4	4	4
Size of GD packets, max.	22 Byte	22 Byte	22 Byte	22 Byte
S7 basic communication	✓	✓	✓	✓
S7 basic communication, user data per job	76 Byte	76 Byte	76 Byte	76 Byte
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
S7 communication, user data per job	160 Byte	160 Byte	160 Byte	160 Byte
Number of connections, max.	16	16	16	16
Functionality Sub-D interfaces				
Type	MP²I	MP²I	MP²I	MP²I
Type of interface	RS485	RS485	RS485	RS485
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Electrically isolated	-	-	-	-
MPI	✓	✓	✓	✓
MP²I (MPI/RS232)	✓	✓	✓	✓
DP master	-	-	-	-
DP slave	-	-	-	-
Point-to-point interface	-	-	-	-
Type	COM	COM	COM	COM
Type of interface	RS232	RS232	RS232	RS485
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, male	Sub-D, 9-pin, male	Sub-D, 9-pin, female
Electrically isolated	-	-	-	✓
MPI	-	-	-	-
MP²I (MPI/RS232)	-	-	-	-
DP master	-	-	-	-
DP slave	-	-	-	-
Point-to-point interface	✓	✓	✓	✓
CAN	-	-	-	-

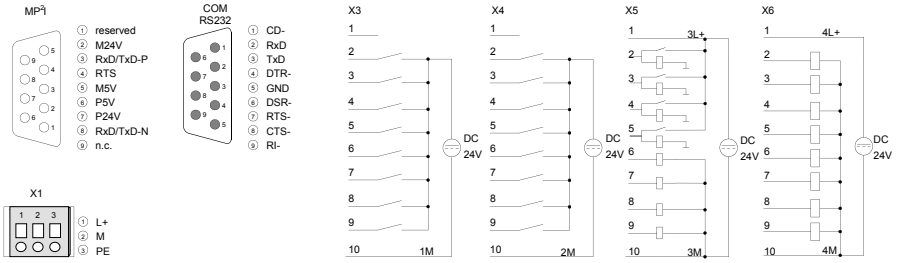
CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL12	115-6BL13	115-6BL14	115-6BL32
Functionality MPI				
Number of connections, max.	16	16	16	16
PG/OP channel	✓	✓	✓	✓
Routing	-	-	-	-
Global data communication	✓	✓	✓	✓
S7 basic communication	✓	✓	✓	✓
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s
Point-to-point communication				
PtP communication	✓	✓	✓	✓
Interface isolated	-	-	-	✓
RS232 interface	✓	✓	✓	-
RS422 interface	-	-	-	-
RS485 interface	-	-	-	✓
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, male	Sub-D, 9-pin, male	Sub-D, 9-pin, female
Transmission speed, min.	150 bit/s	150 bit/s	150 bit/s	150 bit/s
Transmission speed, max.	115.2 kbit/s	115.2 kbit/s	115.2 kbit/s	115.2 kbit/s
Cable length, max.	15 m	15 m	15 m	500 m
Point-to-point protocol				
ASCII protocol	✓	✓	✓	✓
STX/ETX protocol	✓	✓	✓	✓
3964(R) protocol	✓	✓	✓	✓
RK512 protocol	-	-	-	-
USS master protocol	✓	✓	✓	✓
Modbus master protocol	✓	✓	✓	✓
Modbus slave protocol	✓	✓	✓	✓
Special protocols	-	-	-	-
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm
Weight	302 g	302 g	302 g	302 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

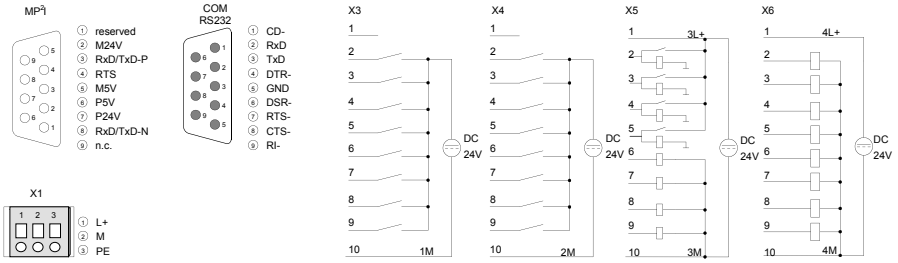
Connections, Interfaces

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

115-6BL12



115-6BL13



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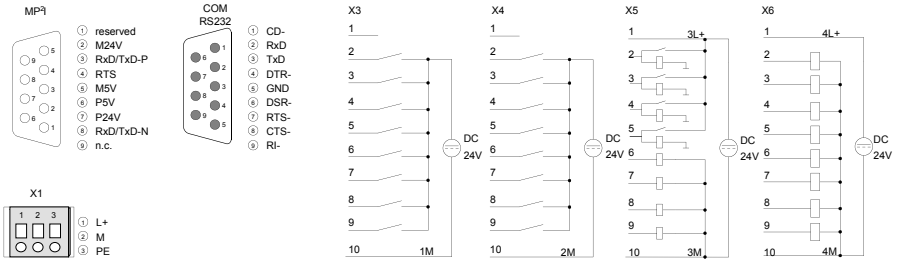
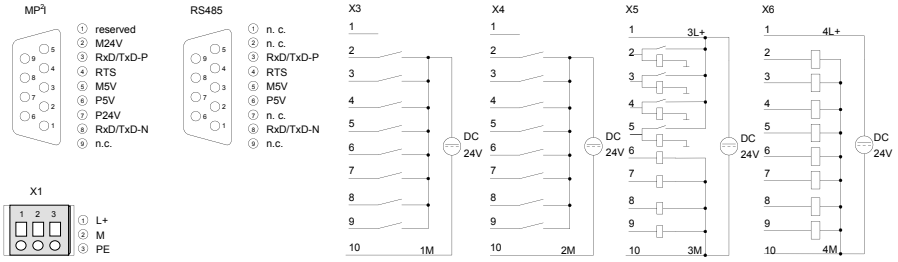


115-6BL32



CPUs STEP7 programmable, PtP

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL33	115-6BL34		
Figure				
Type	CPU 115SER	CPU 115SER		
General information				
Note	-	-		
Features	› 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 24 kB work memory, 32 kB load memory › RS485 interface	› 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 32 kB work memory, 40 kB load memory › RS485 interface		
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V		
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V		
Reverse polarity protection	✓	✓		
Current consumption (rated value)	110 mA	110 mA		
Technical data digital inputs				
Number of inputs	16 (20)	16 (20)		
Cable length, shielded	1000 m	1000 m		
Cable length, unshielded	600 m	600 m		
Rated load voltage	DC 24 V	DC 24 V		
Reverse polarity protection of rated load voltage	✓	✓		
Current consumption from load voltage L+ (without load)	-	-		
Rated value	DC 24 V	DC 24 V		
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V		
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V		
Input current for signal "1"	7 mA	7 mA		
Connection of Two-Wire-BEROs possible	-	-		
Max. permissible BERO quiescent current	1.5 mA	1.5 mA		
Input delay of "0" to "1"	3 ms	3 ms		
Input delay of "1" to "0"	3 ms	3 ms		
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1		
Initial data size	3 Byte	3 Byte		
Technical data digital outputs				
Number of outputs	16 (12)	16 (12)		
Cable length, shielded	1000 m	1000 m		
Cable length, unshielded	600 m	600 m		
Rated load voltage	DC 24 V	DC 24 V		
Reverse polarity protection of rated load voltage	-	-		
Current consumption from load voltage L+ (without load)	50 mA	50 mA		

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL33	115-6BL34		
Output voltage signal "1" at min. current	L+ (-0.8 V)	L+ (-0.8 V)		
Output voltage signal "1" at max. current	-	-		
Output current at signal "1", rated value	0.5 A	0.5 A		
Output delay of "0" to "1"	max. 100 µs	max. 100 µs		
Output delay of "1" to "0"	max. 350 µs	max. 350 µs		
Minimum load current	-	-		
Lamp load	5 W	5 W		
Switching frequency with resistive load	max. 1000 Hz	max. 1000 Hz		
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz		
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz		
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)		
Short-circuit protection of output	yes, electronic	yes, electronic		
Trigger level	1 A	1 A		
Output data size	3 Byte	3 Byte		
Technical data counters				
Number of counters	4	4		
Counter width	32 Bit	32 Bit		
Maximum input frequency	30 kHz	30 kHz		
Maximum count frequency	30 kHz	30 kHz		
Mode incremental encoder	✓	✓		
Mode pulse / direction	✓	✓		
Mode pulse	✓	✓		
Mode frequency counter	-	-		
Mode period measurement	-	-		
Gate input available	✓	✓		
Latch input available	-	-		
Reset input available	-	-		
Counter output available	-	-		
Load and working memory				
Load memory, integrated	32 KB	40 KB		
Work memory, integrated	24 KB	32 KB		
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB		
Hardware configuration				
Racks, max.	1	1		
Modules per rack, max.	4	4		
Number of integrated DP master	-	-		
Number of DP master via CP	4	4		
Operable function modules	4	4		
Operable communication modules PtP	4	4		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	yes	yes		
Process alarm	yes	yes		
Diagnostic interrupt	yes	yes		

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL33	115-6BL34		
Diagnostic functions	no	no		
Diagnostics information read-out	possible	possible		
Supply voltage display	green LED	green LED		
Group error display	red SF LED	red SF LED		
Channel error display	none	none		
Isolation				
Between channels of groups to	8	8		
Between channels and backplane bus	✓	✓		
Insulation tested with	DC 500 V	DC 500 V		
Command processing times				
Bit instructions, min.	0.25 µs	0.25 µs		
Word instruction, min.	1.2 µs	1.2 µs		
Double integer arithmetic, min.	-	-		
Floating-point arithmetic, min.	-	-		
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256		
S7 counter remanence	adjustable 0 up to 64	adjustable 0 up to 64		
S7 counter remanence adjustable	C0 .. C7	C0 .. C7		
Number of S7 times	256	256		
S7 times remanence	adjustable 0 up to 128	adjustable 0 up to 128		
S7 times remanence adjustable	not retentive	not retentive		
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit		
Bit memories retentive characteristic adjustable	adjustable 0 up to 256	adjustable 0 up to 256		
Bit memories retentive characteristic preset	MB0 .. MB15	MB0 .. MB15		
Number of data blocks	2047	2047		
Max. data blocks size	16 KB	16 KB		
Max. local data size per execution level	1024 Byte	1024 Byte		
Blocks				
Number of OBs	14	14		
Maximum OB size	16 KB	16 KB		
Number of FBs	1024	1024		
Maximum FB size	16 KB	16 KB		
Number of FCs	1024	1024		
Maximum FC size	16 KB	16 KB		
Maximum nesting depth per priority class	8	8		
Maximum nesting depth additional within an error OB	1	1		
Time				
Real-time clock buffered	✓	✓		
Clock buffered period (min.)	30 d	30 d		
Accuracy (max. deviation per day)	-	-		
Number of operating hours counter	8	8		
Value range operating hours counter	32767	32767		

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL33	115-6BL34		
Clock synchronization	-	-		
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte		
Output I/O address area	1024 Byte	1024 Byte		
Input I/O address area, decentral	1024 Byte	1024 Byte		
Output I/O address area, decentral	1024 Byte	1024 Byte		
Input process image preset	128 Byte	128 Byte		
Output process image preset	128 Byte	128 Byte		
Digital inputs	16 (20)	16 (20)		
Digital outputs	16 (12)	16 (12)		
Integrated digital inputs	16 (20)	16 (20)		
Integrated digital outputs	16 (12)	16 (12)		
Communication functions				
PG/OP channel	✓	✓		
Global data communication	✓	✓		
Number of GD circuits, max.	4	4		
Size of GD packets, max.	22 Byte	22 Byte		
S7 basic communication	✓	✓		
S7 basic communication, user data per job	76 Byte	76 Byte		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
S7 communication, user data per job	160 Byte	160 Byte		
Number of connections, max.	16	16		
Functionality Sub-D interfaces				
Type	MP²I	MP²I		
Type of interface	RS485	RS485		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Electrically isolated	-	-		
MPI	✓	✓		
MP²I (MPI/RS232)	✓	✓		
DP master	-	-		
DP slave	-	-		
Point-to-point interface	-	-		
Type	COM	COM		
Type of interface	RS485	RS485		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Electrically isolated	✓	✓		
MPI	-	-		
MP²I (MPI/RS232)	-	-		
DP master	-	-		
DP slave	-	-		
Point-to-point interface	✓	✓		
CAN	-	-		

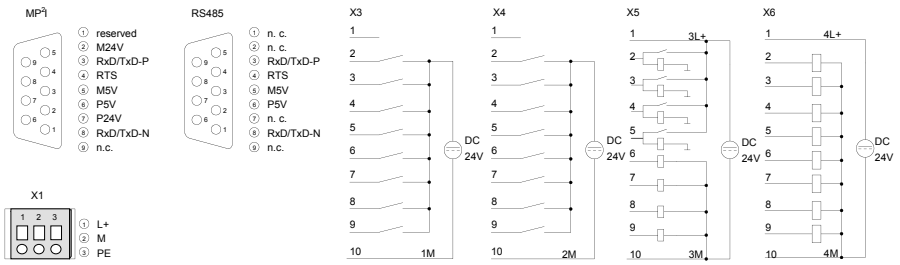
CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

Order number	115-6BL33	115-6BL34		
Functionality MPI				
Number of connections, max.	16	16		
PG/OP channel	✓	✓		
Routing	-	-		
Global data communication	✓	✓		
S7 basic communication	✓	✓		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s		
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s		
Point-to-point communication				
PtP communication	✓	✓		
Interface isolated	✓	✓		
RS232 interface	-	-		
RS422 interface	-	-		
RS485 interface	✓	✓		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Transmission speed, min.	150 bit/s	150 bit/s		
Transmission speed, max.	115.2 kbit/s	115.2 kbit/s		
Cable length, max.	500 m	500 m		
Point-to-point protocol				
ASCII protocol	✓	✓		
STX/ETX protocol	✓	✓		
3964(R) protocol	✓	✓		
RK512 protocol	-	-		
USS master protocol	✓	✓		
Modbus master protocol	✓	✓		
Modbus slave protocol	✓	✓		
Special protocols	-	-		
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6		
Mounting	Profile rail 35 mm	Profile rail 35 mm		
Mechanical data				
Dimensions (WxHxD)	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm		
Weight	302 g	302 g		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	yes	yes		

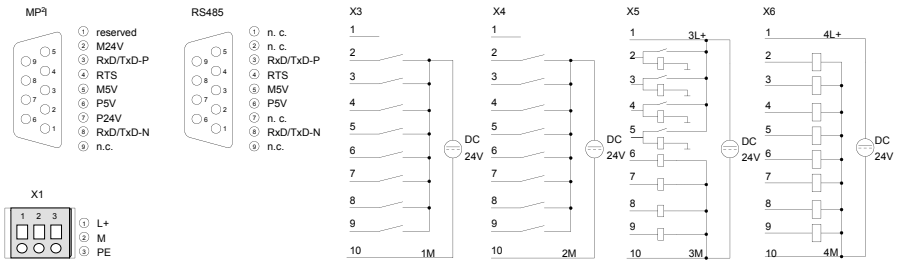
Connections, Interfaces

CPUs | CPUs STEP7 programmable, PtP						
115-6BL12 115-6BL13 115-6BL14 115-6BL32	115-6BL33 115-6BL34					

115-6BL33



115-6BL34



CPUs STEP7 programmable, DP slave

CPUs | CPUs STEP7 programmable, DP slave						
115-6BL22 115-6BL23 115-6BL24						

Order number	115-6BL22	115-6BL23	115-6BL24	
Figure				
Type	CPU 115DP	CPU 115DP	CPU 115DP	
General information				
Note	-	-	-	
Features	› 16 (20) inputs › 16 (12) outputs › 16 kB work memory, 24 kB load memory › PROFIBUS-DP slave interface	› 16 (20) inputs › 16 (12) outputs › from which are 2 PWM 50 kHz outputs › 24 kB work memory, 32 kB load memory › PROFIBUS-DP slave interface	› 16 (20) inputs › 16 (12) outputs › 32 kB work memory, 40 kB load memory › PROFIBUS-DP slave interface	
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	
Reverse polarity protection	✓	✓	✓	
Current consumption (rated value)	160 mA	160 mA	160 mA	
Technical data digital inputs				
Number of inputs	16 (20)	16 (20)	16 (20)	
Cable length, shielded	1000 m	1000 m	1000 m	
Cable length, unshielded	600 m	600 m	600 m	
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	
Reverse polarity protection of rated load voltage	✓	✓	✓	
Current consumption from load voltage L+ (without load)	-	-	-	
Rated value	DC 24 V	DC 24 V	DC 24 V	
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	
Input current for signal "1"	7 mA	7 mA	7 mA	
Connection of Two-Wire-BEROs possible	-	-	-	
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	
Input delay of "0" to "1"	3 ms	3 ms	3 ms	
Input delay of "1" to "0"	3 ms	3 ms	3 ms	
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1	
Initial data size	3 Byte	3 Byte	3 Byte	
Technical data digital outputs				
Number of outputs	16 (12)	16 (12)	16 (12)	
Cable length, shielded	1000 m	1000 m	1000 m	
Cable length, unshielded	600 m	600 m	600 m	
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	
Reverse polarity protection of rated load voltage	-	-	-	

CPUs | CPUs STEP7 programmable, DP slave						
115-6BL22 115-6BL23 115-6BL24						

Order number	115-6BL22	115-6BL23	115-6BL24	
Current consumption from load voltage L+ (without load)	50 mA	50 mA	50 mA	
Output voltage signal "1" at min. current	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)	
Output voltage signal "1" at max. current	-	-	-	
Output current at signal "1", rated value	0.5 A	0.5 A	0.5 A	
Output delay of "0" to "1"	max. 100 µs	max. 100 µs	max. 100 µs	
Output delay of "1" to "0"	max. 350 µs	max. 350 µs	max. 350 µs	
Minimum load current	-	-	-	
Lamp load	5 W	5 W	5 W	
Switching frequency with resistive load	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz	
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz	
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz	max. 10 Hz	
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)	
Short-circuit protection of output	yes, electronic	yes, electronic	yes, electronic	
Trigger level	1 A	1 A	1 A	
Output data size	3 Byte	3 Byte	3 Byte	
Technical data counters				
Number of counters	4	4	4	
Counter width	32 Bit	32 Bit	32 Bit	
Maximum input frequency	30 kHz	30 kHz	30 kHz	
Maximum count frequency	30 kHz	30 kHz	30 kHz	
Mode incremental encoder	✓	✓	✓	
Mode pulse / direction	✓	✓	✓	
Mode pulse	✓	✓	✓	
Mode frequency counter	-	-	-	
Mode period measurement	-	-	-	
Gate input available	✓	✓	✓	
Latch input available	-	-	-	
Reset input available	-	-	-	
Counter output available	-	-	-	
Load and working memory				
Load memory, integrated	24 KB	32 KB	40 KB	
Work memory, integrated	16 KB	24 KB	32 KB	
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	
Hardware configuration				
Racks, max.	1	1	1	
Modules per rack, max.	4	4	4	
Number of integrated DP master	-	-	-	
Number of DP master via CP	4	4	4	
Operable function modules	4	4	4	
Operable communication modules PtP	4	4	4	
Status information, alarms, diagnostics				
Status display	yes	yes	yes	
Interrupts	yes	yes	yes	
Process alarm	yes	yes	yes	

CPUs | CPUs STEP7 programmable, DP slave						
115-6BL22 115-6BL23 115-6BL24						

Order number	115-6BL22	115-6BL23	115-6BL24	
Diagnostic interrupt	yes	yes	yes	
Diagnostic functions	no	no	no	
Diagnostics information read-out	possible	possible	possible	
Supply voltage display	green LED	green LED	green LED	
Group error display	red SF LED	red SF LED	red SF LED	
Channel error display	none	none	none	
Isolation				
Between channels of groups to	8	8	8	
Between channels and backplane bus	✓	✓	✓	
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	
Command processing times				
Bit instructions, min.	0.25 µs	0.25 µs	0.25 µs	
Word instruction, min.	1.2 µs	1.2 µs	1.2 µs	
Double integer arithmetic, min.	-	-	-	
Floating-point arithmetic, min.	-	-	-	
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256	256	
S7 counter remanence	adjustable 0 up to 64	adjustable 0 up to 64	adjustable 0 up to 64	
S7 counter remanence adjustable	C0 .. C7	C0 .. C7	C0 .. C7	
Number of S7 times	256	256	256	
S7 times remanence	adjustable 0 up to 128	adjustable 0 up to 128	adjustable 0 up to 128	
S7 times remanence adjustable	not retentive	not retentive	not retentive	
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit	8192 Bit	
Bit memories retentive characteristic adjustable	adjustable 0 up to 256	adjustable 0 up to 256	adjustable 0 up to 256	
Bit memories retentive characteristic preset	MB0 .. MB15	MB0 .. MB15	MB0 .. MB15	
Number of data blocks	2047	2047	2047	
Max. data blocks size	16 KB	16 KB	16 KB	
Max. local data size per execution level	1024 Byte	1024 Byte	1024 Byte	
Blocks				
Number of OBs	14	14	14	
Maximum OB size	16 KB	16 KB	16 KB	
Number of FBs	1024	1024	1024	
Maximum FB size	16 KB	16 KB	16 KB	
Number of FCs	1024	1024	1024	
Maximum FC size	16 KB	16 KB	16 KB	
Maximum nesting depth per priority class	8	8	8	
Maximum nesting depth additional within an error OB	1	1	1	
Time				
Real-time clock buffered	✓	✓	✓	
Clock buffered period (min.)	30 d	30 d	30 d	
Accuracy (max. deviation per day)	-	-	-	
Number of operating hours counter	8	8	8	

CPUs | CPUs STEP7 programmable, DP slave						
115-6BL22 115-6BL23 115-6BL24						

Order number	115-6BL22	115-6BL23	115-6BL24	
Value range operating hours counter	32767	32767	32767	
Clock synchronization	-	-	-	
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte	1024 Byte	
Output I/O address area	1024 Byte	1024 Byte	1024 Byte	
Input I/O address area, decentral	1024 Byte	1024 Byte	1024 Byte	
Output I/O address area, decentral	1024 Byte	1024 Byte	1024 Byte	
Input process image preset	128 Byte	128 Byte	128 Byte	
Output process image preset	128 Byte	128 Byte	128 Byte	
Digital inputs	16 (20)	16 (20)	16 (20)	
Digital outputs	16 (12)	16 (12)	16 (12)	
Integrated digital inputs	16 (20)	16 (20)	16 (20)	
Integrated digital outputs	16 (12)	16 (12)	16 (12)	
Communication functions				
PG/OP channel	✓	✓	✓	
Global data communication	✓	✓	✓	
Number of GD circuits, max.	4	4	4	
Size of GD packets, max.	22 Byte	22 Byte	22 Byte	
S7 basic communication	✓	✓	✓	
S7 basic communication, user data per job	76 Byte	76 Byte	76 Byte	
S7 communication	✓	✓	✓	
S7 communication as server	✓	✓	✓	
S7 communication as client	-	-	-	
S7 communication, user data per job	160 Byte	160 Byte	160 Byte	
Number of connections, max.	16	16	16	
Functionality Sub-D interfaces				
Type	MP²I	MP²I	MP²I	
Type of interface	RS485	RS485	RS485	
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Electrically isolated	-	-	-	
MPI	✓	✓	✓	
MP²I (MPI/RS232)	✓	✓	✓	
DP master	-	-	-	
DP slave	-	-	-	
Point-to-point interface	-	-	-	
Type	DP	DP	DP	
Type of interface	RS485	RS485	RS485	
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Electrically isolated	✓	✓	✓	
MPI	-	-	-	
MP²I (MPI/RS232)	-	-	-	
DP master	-	-	-	
DP slave	✓	✓	✓	
Point-to-point interface	-	-	-	

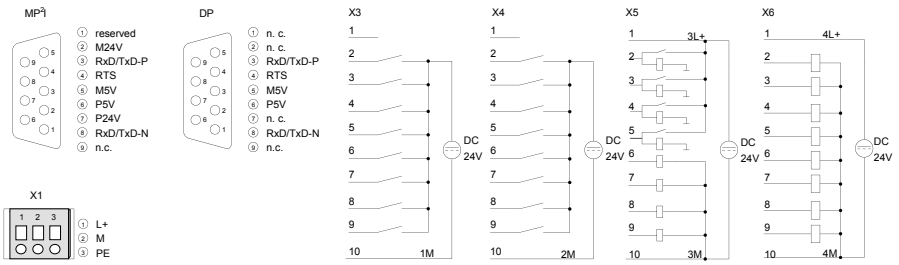
CPUs | CPUs STEP7 programmable, DP slave						
115-6BL22 115-6BL23 115-6BL24						

Order number	115-6BL22	115-6BL23	115-6BL24	
CAN	-	-	-	
Functionality MPI				
Number of connections, max.	16	16	16	
PG/OP channel	✓	✓	✓	
Routing	-	-	-	
Global data communication	✓	✓	✓	
S7 basic communication	✓	✓	✓	
S7 communication	✓	✓	✓	
S7 communication as server	✓	✓	✓	
S7 communication as client	-	-	-	
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s	
Functionality PROFIBUS slave				
PG/OP channel	-	-	-	
Routing	-	-	-	
S7 communication	-	-	-	
S7 communication as server	-	-	-	
S7 communication as client	-	-	-	
Direct data exchange (slave-to-slave communication)	-	-	-	
DPV1	-	-	-	
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s	
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	
Automatic detection of transmission speed	-	-	-	
Transfer memory inputs, max.	64 Byte	64 Byte	64 Byte	
Transfer memory outputs, max.	64 Byte	64 Byte	64 Byte	
Address areas, max.	1	1	1	
User data per address area, max.	64 Byte	64 Byte	64 Byte	
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	
Mechanical data				
Dimensions (WxHxD)	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	
Weight	330 g	330 g	330 g	
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	
Certifications				
UL508 certification	yes	yes	yes	

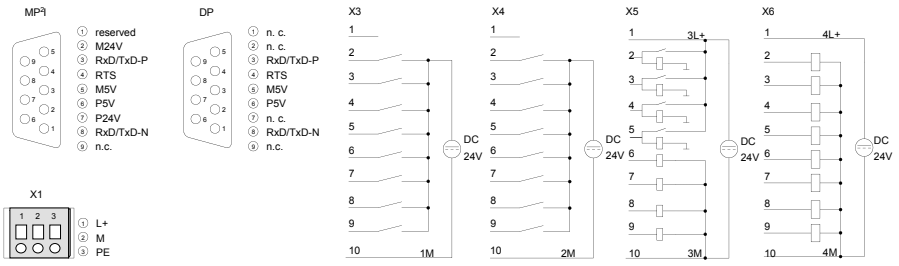
Connections, Interfaces

CPUs | CPUs STEP7 programmable, DP slave						
115-6BL22 115-6BL23 115-6BL24						

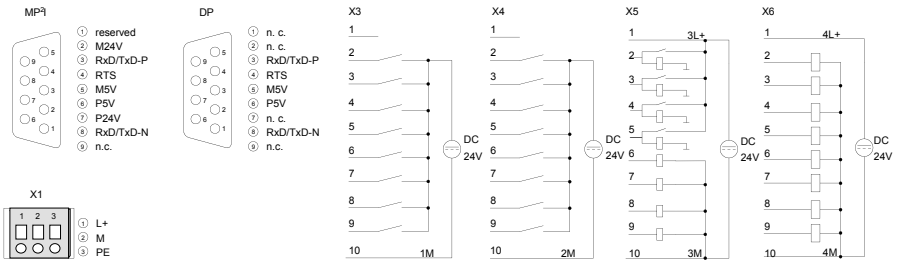
115-6BL22



115-6BL23



115-6BL24



Clamp modules

Structure and Function

Clamp modules are passive modules for 2- or 3-wire installations, the contacts are electrically connected internally vertically. They offer various connectivity options for signals, mass and plus potentials.

By the use of clamp modules distributors for a power supply can be realized in a simple way and thus offer the possibility for connection of active supplied sensors such as proximity switches. The wiring is carried out using time-saving and secure cage clamp technology

Passive clamp modules have no connection to the backplane bus.

The terminal modules are attached to the mounting surface using a 35 mm profile rail.

Characteristics

- Maintenance-free cage-clamp technology
- Maximum terminal current 10 A
- Assembly with 35 mm profile rail
- 24 months warranty

Overview

Order no.	Name/Description	Page
Clamp modules		
101-4FH50	**CM 101 - Clamp modules** › 8x11 clamps › passive	**156**

Clamp modules

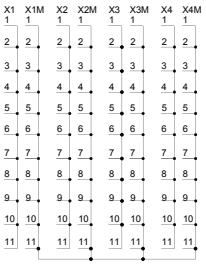
Clamp modules | Clamp modules						
101-4FH50						

Order number	101-4FH50			
Figure				
Type	CM 101			
General information				
Note	-			
Features	› 8x11 clamps › passive			
Clamp parameter				
Terminal voltage max.	DC 60 V			
Terminal current max.	10 A			
Housing				
Material	PPE / PA 6.6			
Mounting	Profile rail 35 mm			
Mechanical data				
Dimensions (WxHxD)	101.6 mm x 76 mm x 48 mm			
Weight	212 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

Connections, Interfaces

Clamp modules | Clamp modules						
101-4FH50						

101-4FH50



Signal modules digital

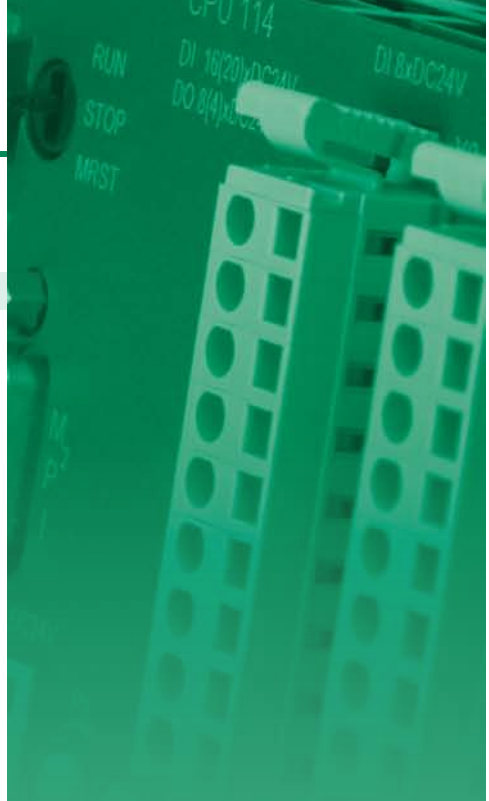
Structure and Function

Digital input and output modules acquire the binary control signals from the process level and transform them into interpretable signals for controlling. They convert the internal binary control signals into signals suitable for the process level. With the expansion modules EM 123, the number of inputs/outputs of the CPU 114/115 is expanded. The connection is made to the CPU via 1tier bus connectors supplied with the module.

Characteristics

- Up to 32 digital inputs and outputs on an expansion module
- Combinable with signal modules from the System 200V
- LED status indicator
- Maintenance-free cage clamp technology
- Front connector included
- Bus connector included
- Assembly with 35 mm profile rail
- 24 months warranty

Overview



Order no.	Name/Description	Page
Digital in/output modules		
123-4EH01	**EM 123 - Expansion module, digital** › 8 inputs/ 8 outputs › DC 24 V	**160**
123-4EJ01	**EM 123 - Expansion module, digital** › 16 inputs/ 8 outputs › DC 24 V	**160**
123-4EJ11	**EM 123 - Expansion module, digital** › 16 inputs › 8 relay outputs	**160**
123-4EJ20	**EM 123 - Expansion module, digital** › 16 inputs › AC 60...230 V › 8 relay outputs	**160**
123-4EL01	**EM 123 - Expansion module, digital** › 16 inputs/ 16 outputs › Isolated	**164**

Digital in/output modules

Signal modules digital | Digital in/output modules						
123-4EH01 123-4EJ01 123-4EJ11 123-4EJ20	123-4EL01					

Order number	123-4EH01	123-4EJ01	123-4EJ11	123-4EJ20
Figure				
Type	EM 123	EM 123	EM 123	EM 123
General information				
Note	-	-	-	-
Features	› 8 inputs/ 8 outputs › DC 24 V	› 16 inputs/ 8 outputs › DC 24 V	› 16 inputs › 8 relay outputs	› 16 inputs › AC 60...230 V › 8 relay outputs
Current consumption/power loss				
Current consumption from backplane bus	60 mA	70 mA	300 mA	320 mA
Power loss	3 W	4.5 W	4.5 W	4.6 W
Technical data digital inputs				
Number of inputs	8	16	16	16
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	-	-	-	-
Rated value	DC 24 V	DC 24 V	DC 24 V	AC/DC 60...230 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	AC/DC 0...35 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	AC/DC 60...230 V
Input voltage hysteresis	-	-	-	-
Frequency range	-	-	-	-
Input resistance	-	-	-	-
Input current for signal "1"	7 mA	7 mA	7 mA	7 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	-
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	-
Input delay of "0" to "1"	3 ms	3 ms	3 ms	25 ms
Input delay of "1" to "0"	3 ms	3 ms	3 ms	25 ms
Number of simultaneously utilizable inputs horizontal configuration	8	16	16	16
Number of simultaneously utilizable inputs vertical configuration	8	16	16	16
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1	-
Initial data size	1 Byte	2 Byte	2 Byte	2 Byte
Technical data digital outputs				
Number of outputs	8	8	8	8
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 30 V/ AC 230 V	DC 30 V/ AC 230 V
Reverse polarity protection of rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	20 mA	20 mA	-	-

Signal modules digital | Digital in/output modules						
123-4EH01 123-4EJ01 123-4EJ11 123-4EJ20	123-4EL01					

Order number	123-4EH01	123-4EJ01	123-4EJ11	123-4EJ20
Output current at signal "1", rated value	0.5 A	0.5 A	5 A	5 A
Output delay of "0" to "1"	max. 100 µs	max. 100 µs	10 ms	10 ms
Output delay of "1" to "0"	max. 350 µs	max. 350 µs	5 ms	5 ms
Minimum load current	-	-	-	-
Lamp load	-	-	-	-
Parallel switching of outputs for redundant control of a load	-	-	not possible	not possible
Parallel switching of outputs for increased power	-	-	not possible	not possible
Actuation of digital input	-	-	-	-
Switching frequency with resistive load	max. 1000 Hz	max. 1000 Hz	max. 10 Hz	max. 10 Hz
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz	-	-
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz	-	-
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)	-	-
Short-circuit protection of output	yes, electronic	yes, electronic	-	-
Trigger level	1 A	1 A	-	-
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-
Output data size	1 Byte	1 Byte	1 Byte	1 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	none
Supply voltage display	none	none	none	none
Group error display	none	none	none	none
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	-
Between channels of groups to	8	8	8	8
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	2	2	2	2
Output bytes	2	2	2	2
Parameter bytes	0	0	0	0
Diagnostic bytes	0	0	0	0
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	101.6 mm x 76 mm x 48 mm	101.6 mm x 76 mm x 48 mm	101.6 mm x 76 mm x 48 mm	101.6 mm x 76 mm x 48 mm
Weight	222 g	226 g	250 g	244 g

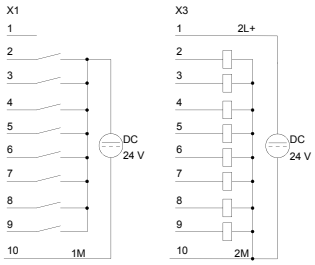
Signal modules digital | Digital in/output modules						
123-4EH01 123-4EJ01 123-4EJ11 123-4EJ20	123-4EL01					

Order number	123-4EH01	123-4EJ01	123-4EJ11	123-4EJ20
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

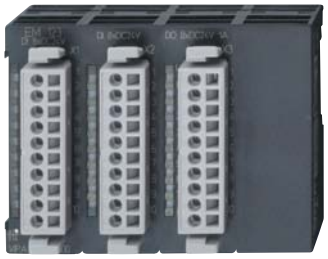
Connections, Interfaces

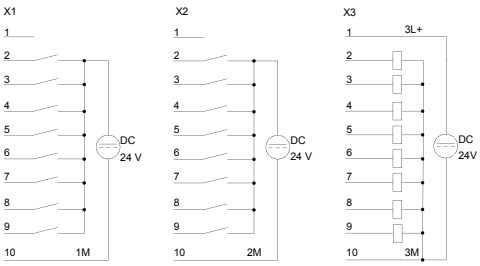
Signal modules digital | Digital in/output modules						
123-4EH01 123-4EJ01 123-4EJ11 123-4EJ20	123-4EL01					

123-4EH01

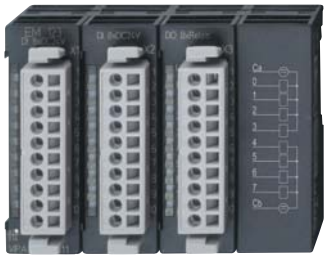


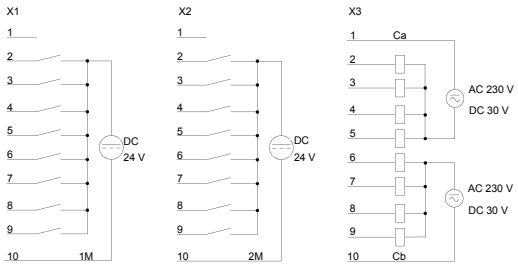
123-4EJ01



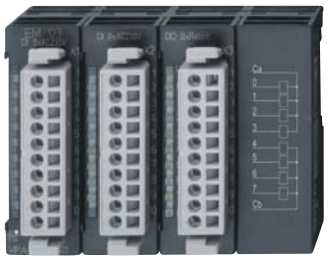


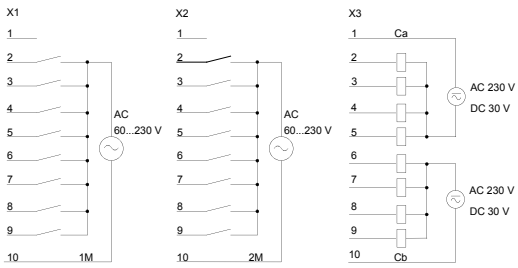
123-4EJ11





123-4EJ20





Digital in/output modules

Signal modules digital | Digital in/output modules						
123-4EH01 123-4EJ01 123-4EJ11 123-4EJ20	123-4EL01					

Order number	123-4EL01			
Figure				
Type	EM 123			
General information				
Note	-			
Features	› 16 inputs/ 16 outputs › Isolated			
Current consumption/power loss				
Current consumption from backplane bus	110 mA			
Power loss	6 W			
Technical data digital inputs				
Number of inputs	16			
Cable length, shielded	1000 m			
Cable length, unshielded	600 m			
Rated load voltage	-			
Current consumption from load voltage L+ (without load)	-			
Rated value	DC 24 V			
Input voltage for signal "0"	DC 0...5 V			
Input voltage for signal "1"	DC 15...28.8 V			
Input voltage hysteresis	-			
Frequency range	-			
Input resistance	-			
Input current for signal "1"	7 mA			
Connection of Two-Wire-BEROs possible	✓			
Max. permissible BERO quiescent current	1.5 mA			
Input delay of "0" to "1"	3 ms			
Input delay of "1" to "0"	3 ms			
Number of simultaneously utilizable inputs horizontal configuration	16			
Number of simultaneously utilizable inputs vertical configuration	16			
Input characteristic curve	IEC 61131, type 1			
Initial data size	2 Byte			
Technical data digital outputs				
Number of outputs	16			
Cable length, shielded	1000 m			
Cable length, unshielded	600 m			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	-			
Current consumption from load voltage L+ (without load)	30 mA			

Signal modules digital | Digital in/output modules						
123-4EH01 123-4EJ01 123-4EJ11 123-4EJ20	123-4EL01					

Order number	123-4EL01			
Output current at signal "1", rated value	0.5 A			
Output delay of "0" to "1"	max. 100 µs			
Output delay of "1" to "0"	max. 350 µs			
Minimum load current	-			
Lamp load	5 W			
Parallel switching of outputs for redundant control of a load	not possible			
Parallel switching of outputs for increased power	not possible			
Actuation of digital input	-			
Switching frequency with resistive load	max. 1000 Hz			
Switching frequency with inductive load	max. 0.5 Hz			
Switching frequency on lamp load	max. 10 Hz			
Internal limitation of inductive shut-off voltage	L+ (-52 V)			
Short-circuit protection of output	yes, electronic			
Trigger level	1 A			
Number of operating cycle of relay outputs	-			
Switching capacity of contacts	-			
Output data size	2 Byte			
Status information, alarms, diagnostics				
Status display	green LED per channel			
Interrupts	no			
Process alarm	no			
Diagnostic interrupt	no			
Diagnostic functions	no			
Diagnostics information read-out	none			
Supply voltage display	none			
Group error display	none			
Channel error display	none			
Isolation				
Between channels	-			
Between channels of groups to	8			
Between channels and backplane bus	✓			
Insulation tested with	DC 500 V			
Datasizes				
Input bytes	2			
Output bytes	2			
Parameter bytes	0			
Diagnostic bytes	0			
Housing				
Material	PPE / PA 6.6			
Mounting	Profile rail 35 mm			
Mechanical data				
Dimensions (WxHxD)	101.6 mm x 76 mm x 48 mm			
Weight	271 g			

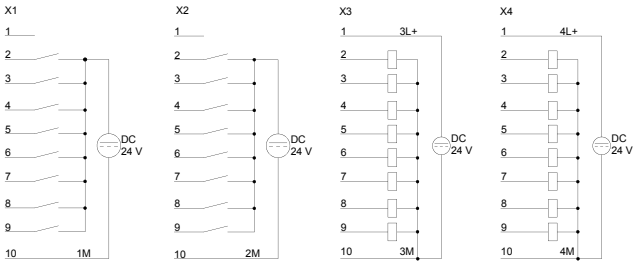
Signal modules digital | Digital in/output modules						
123-4EH01 123-4EJ01 123-4EJ11 123-4EJ20	123-4EL01					

Order number	123-4EL01			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

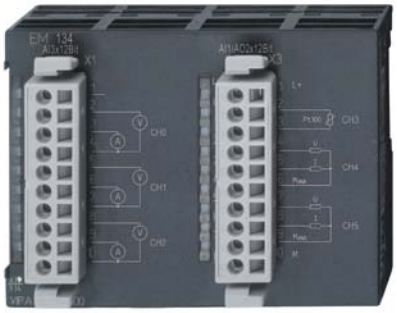
Connections, Interfaces

Signal modules digital | Digital in/output modules						
123-4EH01 123-4EJ01 123-4EJ11 123-4EJ20	123-4EL01					

123-4EL01



Signal modules analog



Structure and Function

Analog input/output modules acquire the analog control signals out of the process level and transform them into interpretable signals for controlling. They convert the internal control signals into signals suitable for the process level. With the expansion modules EM 123, the number of inputs/outputs of the CPU 114/115 is expanded. The connection is made to the CPU via 1tier bus connectors supplied with the module.

Characteristics

- Up to 6 analog inputs and outputs on an expansion module
- Combinable with signal modules from the system 200V
- LED status indicator
- Maintenance-free cage clamp technology
- Front connector included
- Bus connector included
- Assembly with 35 mm profile rail
- 24 months warranty

Overview

Order no.	Name/Description	Page
Analog in/output modules		
134-4EE00	**EM 134 - Expansion module, analog** › 3 inputs U/I › 1 input Pt, Ni, R › 2 outputs U/I › Configurable	**170**

Analog in/output modules

Signal modules analog | Analog in/output modules						
134-4EE00						

Order number	134-4EE00			
Figure				
Type	EM 134			
General information				
Note	-			
Features	› 3 inputs U/I › 1 input Pt, Ni, R › 2 outputs U/I › Configurable			
Current consumption/power loss				
Current consumption from backplane bus	70 mA			
Power loss	2 W			
Technical data analog inputs				
Number of inputs	4			
Cable length, shielded	-			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	✓			
Current consumption from load voltage L+ (without load)	55 mA			
Voltage inputs	✓			
Min. input resistance (voltage range)	120 kΩ			
Input voltage ranges	+1 V ... +5 V 0 V ... +10 V -10 V ... +10 V			
Operational limit of voltage ranges	+/-0.3% ... +/-0.7%			
Basic error limit voltage ranges with SFU	+/-0.2% ... +/-0.5%			
Current inputs	✓			
Min. input resistance (current range)	110 Ω			
Input current ranges	+4 mA ... +20 mA -20 mA ... +20 mA 0 mA ... +20 mA			
Operational limit of current ranges	+/-0.3% ... +/-0.8%			
Basic error limit current ranges with SFU	+/-0.2% ... +/-0.5%			
Resistance inputs	✓			
Resistance ranges	0 ... 600 Ohm 0 ... 3000 Ohm			
Operational limit of resistor ranges	+/-0.4%			
Basic error limit	+/-0.2%			
Resistance thermometer inputs	✓			
Resistance thermometer ranges	Pt100 Pt1000 Ni100 Ni1000			
Operational limit of resistance thermometer ranges	+/-0.6% ... +/-1.0%			

Signal modules analog | Analog in/output modules						
134-4EE00						

Order number	134-4EE00			
Basic error limit thermoresistor ranges	+/-0.4% ... +/-0.5%			
Thermocouple inputs	-			
Thermocouple ranges	-			
Operational limit of thermocouple ranges	-			
Basic error limit thermoelement ranges	-			
Programmable temperature compensation	-			
External temperature compensation	-			
Internal temperature compensation	-			
Resolution in bit	12			
Measurement principle	successive approxi-mation			
Basic conversion time	3.2 ms / channel			
Noise suppression for frequency	50 Hz, 60 Hz, 400 Hz			
Initial data size	8 Byte			
Technical data analog outputs				
Number of outputs	2			
Cable length, shielded	-			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	✓			
Current consumption from load voltage L+ (without load)	55 mA			
Voltage output short-circuit protection	✓			
Voltage outputs	✓			
Min. load resistance (voltage range)	1 kΩ			
Max. capacitive load (current range)	1 µF			
Output voltage ranges	-10 V ... +10 V +1 V ... +5 V 0 V ... +10 V			
Operational limit of voltage ranges	+/-0.4% ... +/-0.8%			
Basic error limit voltage ranges with SFU	+/-0.2% ... +/-0.4%			
Current outputs	✓			
Max. in load resistance (current range)	500 Ω			
Max. inductive load (current range)	10 mH			
Output current ranges	0 mA ... +20 mA +4 mA ... +20 mA -20 mA ... +20 mA			
Operational limit of current ranges	+/-0.3% ... +/-0.8%			
Basic error limit current ranges with SFU	+/-0.2% ... +/-0.5%			
Settling time for ohmic load	0.5 ms			
Settling time for capacitive load	1 ms			
Settling time for inductive load	1 ms			
Resolution in bit	12			
Conversion time	1.2 ms / channel			
Substitute value can be applied	yes			
Output data size	4 Byte			

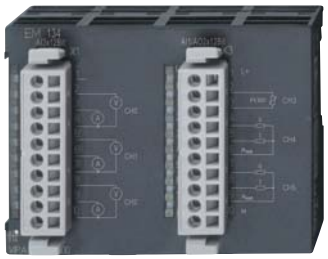
Signal modules analog | Analog in/output modules						
134-4EE00						

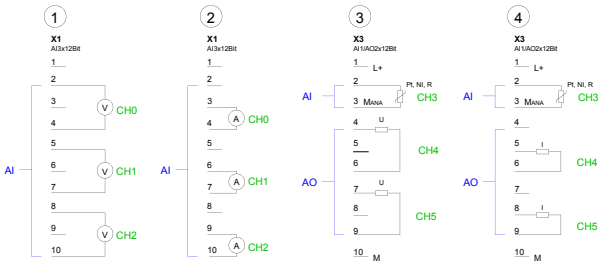
Order number	134-4EE00			
Status information, alarms, diagnostics				
Status display	none			
Interrupts	yes			
Process alarm	no			
Diagnostic interrupt	yes, parameterizable			
Diagnostic functions	yes			
Diagnostics information read-out	possible			
Supply voltage display	green LED			
Group error display	red SF LED			
Channel error display	none			
Isolation				
Between channels	-			
Between channels of groups to	-			
Between channels and backplane bus	✓			
Between channels and power supply	✓			
Max. potential difference between circuits	-			
Max. potential difference between inputs (Ucm)	DC 11 V			
Max. potential difference between Mana and Mintern (Uiso)	DC 75 V/ AC 60 V			
Max. potential difference between inputs and Mana (Ucm)	DC 11 V			
Max. potential difference between inputs and Mintern (Uiso)	DC 75 V/ AC 60 V			
Max. potential difference between Mintern and outputs	-			
Insulation tested with	DC 500 V			
Datasizes				
Input bytes	8			
Output bytes	4			
Parameter bytes	18			
Diagnostic bytes	12			
Housing				
Material	PPE / PA 6.6			
Mounting	Profile rail 35 mm			
Mechanical data				
Dimensions (WxHxD)	101.6 mm x 76 mm x 48 mm			
Weight	230 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

Connections, Interfaces

Signal modules analog | Analog in/output modules						
134-4EE00						

134-4EE00





Interface modules

Structure and Function

Fieldbus slave modules for the decentralized expansion of control systems with integrated digital inputs/outputs. The fieldbus slave modules are available in various designs.

Characteristics

- For PROFIBUS-DP and CANopen
- Up to 125 DP slaves to a DP master
- LED status indicator
- Maintenance-free cage clamp technology
- Front connector included
- Bus connector included
- Assembly with 35 mm profile rail
- 24 months warranty

Overview

Order no.	Name/Description	Page
Fieldbus slave modules with I/Os, DI		
151-4PH00	**SM 151 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 16 inputs	**176**
151-6PH00	**SM 151 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 16 inputs › 4x11 clamps	**176**
151-6PL00	**SM 151 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 32 inputs	**176**
Fieldbus slave modules with I/Os, DO		
152-4PH00	**SM 152 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 16 outputs	**180**
152-6PH00	**SM 152 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 16 outputs › 4x11 clamps	**180**
152-6PH50	**SM 152 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 16 relay outputs	**180**
152-6PL00	**SM 152 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 32 outputs	**180**
Fieldbus slave modules with I/Os, DIO		
153-4CF00	**SM 153 - CANopen slave, digital** › CAN slave › 8 channels as inputs or outputs › 2x11 clamps	**184**
153-4CH00	**SM 153 - CANopen slave, digital** › CAN slave › 8 (12) inputs › 4 (8) outputs	**184**
153-4PF00	**SM 153 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 8 channels as inputs or outputs › 2x11 clamps	**184**
153-4PH00	**SM 153 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 8 inputs › 8 outputs	**184**
153-6CH00	**SM 153 - CANopen slave, digital** › CAN slave › 8 (12) inputs › 4 (8) outputs › 4x11 clamps	**189**
153-6CL10	**SM 153 - CANopen slave, digital** › CAN slave › 24 inputs › 8 outputs	**189**
153-6PH00	**SM 153 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 8 inputs › 8 outputs › 4x11 clamps	**189**
153-6PL00	**SM 153 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 16 inputs › 16 outputs	**189**
153-6PL10	**SM 153 - PROFIBUS-DP slave, digital** › PROFIBUS-DP slave › 24 inputs › 8 outputs	**194**

Fieldbus slave modules with I/Os, DI

Interface modules | Fieldbus slave modules with I/Os, DI						
151-4PH00 151-6PH00 151-6PL00						

Order number	151-4PH00	151-6PH00	151-6PL00	
Figure				
Type	SM 151	SM 151	SM 151	
General information				
Note	-	-	-	
Features	› PROFIBUS-DP slave › 16 inputs	› PROFIBUS-DP slave › 16 inputs › 4x11 clamps	› PROFIBUS-DP slave › 32 inputs	
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	
Reverse polarity protection	✓	✓	✓	
Current consumption (no-load operation)	-	-	-	
Current consumption (rated value)	55 mA	55 mA	55 mA	
Inrush current	40 A	40 A	40 A	
I^2t	0.15 A^2s	0.15 A^2s	0.15 A^2s	
Technical data digital inputs				
Number of inputs	16	16	32	
Cable length, shielded	1000 m	1000 m	1000 m	
Cable length, unshielded	600 m	600 m	600 m	
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	
Reverse polarity protection of rated load voltage	-	-	-	
Current consumption from load voltage L+ (without load)	-	-	-	
Rated value	DC 24 V	DC 24 V	DC 24 V	
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	
Input voltage hysteresis	-	-	-	
Frequency range	-	-	-	
Input resistance	-	-	-	
Input current for signal "1"	7 mA	7 mA	7 mA	
Connection of Two-Wire-BEROs possible	✓	✓	✓	
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	
Input delay of "0" to "1"	3 ms	3 ms	3 ms	
Input delay of "1" to "0"	3 ms	3 ms	3 ms	
Number of simultaneously utilizable inputs horizontal configuration	16	16	32	
Number of simultaneously utilizable inputs vertical configuration	16	16	32	
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1	
Initial data size	2 Byte	2 Byte	4 Byte	

Interface modules | Fieldbus slave modules with I/Os, DI						
151-4PH00 151-6PH00 151-6PL00						

Order number	151-4PH00	151-6PH00	151-6PL00	
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	
Interrupts	no	no	no	
Process alarm	no	no	no	
Diagnostic interrupt	no	no	no	
Diagnostic functions	no	no	no	
Diagnostics information read-out	possible	possible	possible	
Supply voltage display	yes	yes	yes	
Group error display	red SF LED	red SF LED	red SF LED	
Channel error display	none	none	none	
Isolation				
Between channels	-	-	-	
Between channels of groups to	-	-	-	
Between channels and backplane bus	-	-	-	
Between channels and power supply	-	-	-	
Max. potential difference between circuits	-	-	-	
Max. potential difference between inputs (Ucm)	-	-	-	
Max. potential difference between Mana and Mintern (Uiso)	-	-	-	
Max. potential difference between inputs and Mana (Ucm)	-	-	-	
Max. potential difference between inputs and Mintern (Uiso)	-	-	-	
Max. potential difference between Mintern and outputs	-	-	-	
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	
Hardware configuration				
Racks, max.	-	-	-	
Modules per rack, max.	-	-	-	
Number of digital modules, max.	-	-	-	
Number of analog modules, max.	-	-	-	
Communication				
Fieldbus	PROFIBUS-DP to EN 50170	PROFIBUS-DP to EN 50170	PROFIBUS-DP to EN 50170	
Type of interface	RS485	RS485	RS485	
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Topology	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends	
Electrically isolated	✓	✓	✓	
Number of participants, max.	125	125	125	
Node addresses	1 - 99	1 - 99	1 - 99	
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s	
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	
Address range inputs, max.	2 Byte	2 Byte	4 Byte	
Address range outputs, max.	0 Byte	0 Byte	0 Byte	
Number of TxPDOs, max.	-	-	-	
Number of RxPDOs, max.	-	-	-	

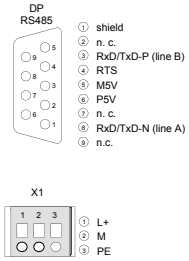
Interface modules | Fieldbus slave modules with I/Os, DI						
151-4PH00 151-6PH00 151-6PL00						

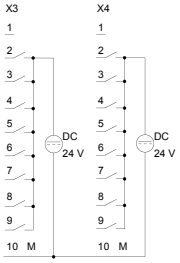
Order number	151-4PH00	151-6PH00	151-6PL00	
Datasizes				
Input bytes	1	2	4	
Output bytes	0	0	0	
Parameter bytes	7 + 5	7 + 5	7 + 5	
Diagnostic bytes	0	0	0	
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	
Mechanical data				
Dimensions (WxHxD)	101.6 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	
Weight	217 g	288 g	260 g	
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	
Certifications				
UL508 certification	yes	yes	yes	

Connections, Interfaces

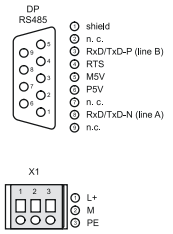
Interface modules | Fieldbus slave modules with I/Os, DI						
151-4PH00 151-6PH00 151-6PL00						

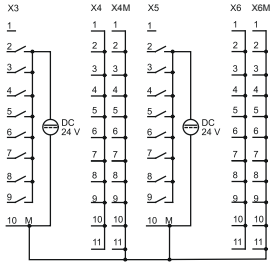
151-4PH00



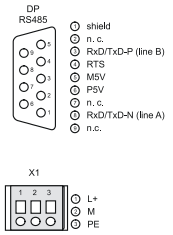


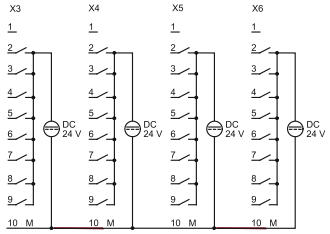
151-6PH00





151-6PL00





Fieldbus slave modules with I/Os, DO

Interface modules | Fieldbus slave modules with I/Os, DO						
152-4PH00 152-6PH00 152-6PH50 152-6PL00						

Order number	152-4PH00	152-6PH00	152-6PH50	152-6PL00
Figure				
Type	SM 152	SM 152	SM 152	SM 152
General information				
Note	-	-	-	-
Features	› PROFIBUS-DP slave › 16 outputs	› PROFIBUS-DP slave › 16 outputs › 4x11 clamps	› PROFIBUS-DP slave › 16 relay outputs	› PROFIBUS-DP slave › 32 outputs
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Reverse polarity protection	✓	✓	✓	✓
Current consumption (no-load operation)	-	-	-	-
Current consumption (rated value)	55 mA	55 mA	200 mA	55 mA
Technical data digital outputs				
Number of outputs	16	16	16	32
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 30 V/ AC 230 V	DC 24 V
Reverse polarity protection of rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	50 mA	50 mA	-	50 mA
Total current per group, horizontal configuration, 40°C	-	-	8 A	-
Total current per group, horizontal configuration, 60°C	-	-	8 A	-
Total current per group, vertical configuration	-	-	8 A	-
Output voltage signal "1" at min. current	L+ (-0.8 V)	L+ (-0.8 V)	-	L+ (-0.8 V)
Output voltage signal "1" at max. current	L+ (-1.5 V)	L+ (-1.5 V)	-	L+ (-1.5 V)
Output current at signal "1", rated value	1 A	1 A	5 A	1 A
Output current, permitted range to 40°C	-	-	-	-
Output current, permitted range to 60°C	-	-	-	-
Output current at signal "0" max. (residual current)	-	-	-	-
Output delay of "0" to "1"	150 µs	150 µs	-	150 µs
Output delay of "1" to "0"	100 µs	100 µs	-	100 µs
Minimum load current	-	-	-	-
Lamp load	5 W	5 W	-	5 W
Parallel switching of outputs for redundant control of a load	not possible	not possible	-	not possible
Parallel switching of outputs for increased power	not possible	not possible	-	not possible

Interface modules | Fieldbus slave modules with I/Os, DO						
152-4PH00 152-6PH00 152-6PH50 152-6PL00						

Order number	152-4PH00	152-6PH00	152-6PH50	152-6PL00
Actuation of digital input	✓	✓	-	✓
Switching frequency with resistive load	max. 1000 Hz	max. 1000 Hz	max. 100 Hz	max. 1000 Hz
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz	-	max. 0.5 Hz
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz	-	max. 10 Hz
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)	-	L+ (-52 V)
Short-circuit protection of output	yes, electronic	yes, electronic	-	yes, electronic
Trigger level	1.5 A	1.5 A	-	1.5 A
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-
Output data size	2 Byte	2 Byte	2 Byte	4 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	none
Supply voltage display	yes	yes	yes	yes
Group error display	red SF LED	red SF LED	red SF LED	red SF LED
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	-
Between channels of groups to	-	-	8	-
Between channels and backplane bus	-	-	✓	-
Between channels and power supply	-	-	-	-
Max. potential difference between circuits	-	-	-	-
Max. potential difference between inputs (Ucm)	-	-	-	-
Max. potential difference between Mana and Mintern (Uiso)	-	-	-	-
Max. potential difference between inputs and Mana (Ucm)	-	-	-	-
Max. potential difference between inputs and Mintern (Uiso)	-	-	-	-
Max. potential difference between Mintern and outputs	-	-	-	-
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Hardware configuration				
Racks, max.	-	-	-	-
Modules per rack, max.	-	-	-	-
Number of digital modules, max.	-	-	-	-
Number of analog modules, max.	-	-	-	-
Communication				
Fieldbus	PROFIBUS-DP to EN 50170	PROFIBUS-DP to EN 50170	PROFIBUS-DP to EN 50170	PROFIBUS-DP to EN 50170
Type of interface	RS485	RS485	RS485	RS485

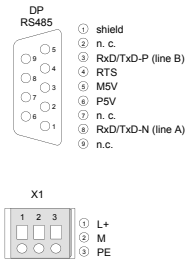
Interface modules | Fieldbus slave modules with I/Os, DO						
152-4PH00 152-6PH00 152-6PH50 152-6PL00						

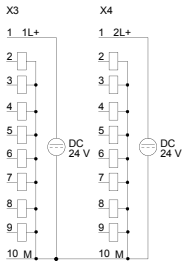
Order number	152-4PH00	152-6PH00	152-6PH50	152-6PL00
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Topology	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends
Electrically isolated	✓	✓	✓	✓
Number of participants, max.	125	125	125	125
Node addresses	1 - 99	1 - 99	1 - 99	1 - 99
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	12 Mbit/s
Address range inputs, max.	0 Byte	0 Byte	0 Byte	0 Byte
Address range outputs, max.	2 Byte	2 Byte	2 Byte	4 Byte
Number of TxPDOs, max.	-	-	-	-
Number of RxPDOs, max.	-	-	-	-
Datasizes				
Input bytes	0	0	0	0
Output bytes	2	2	2	4
Parameter bytes	7 + 5	7 + 5	7 + 5	7 + 5
Diagnostic bytes	13	13	13	13
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	101.6 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm
Weight	206 g	268 g	310 g	299 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

Connections, Interfaces

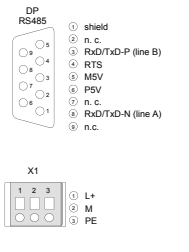
Interface modules | Fieldbus slave modules with I/Os, DO						
152-4PH00 152-6PH00 152-6PH50 152-6PL00						

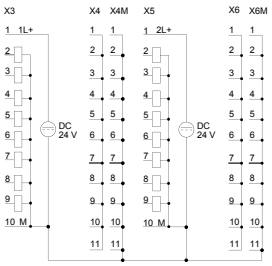
152-4PH00



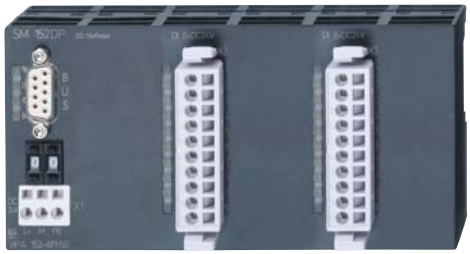


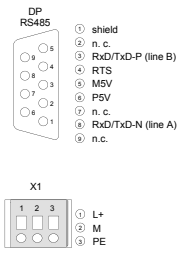
152-6PH00

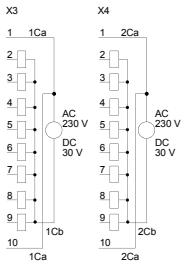




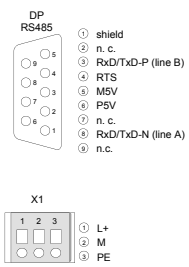
152-6PH50

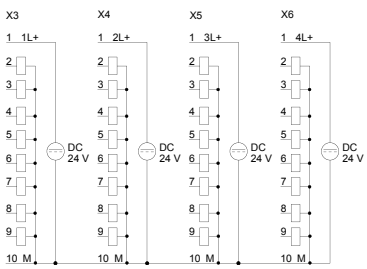






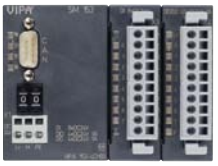
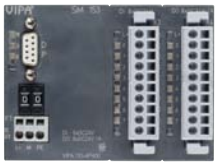
152-6PL00





Fieldbus slave modules with I/Os, DIO

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

Order number	153-4CF00	153-4CH00	153-4PF00	153-4PH00
Figure				
Type	SM 153, CANopen slave	SM 153, CANopen slave	SM 153, PB-DP slave	SM 153, PB-DP slave
General information				
Note	-	-	-	-
Features	› CAN slave › 8 channels as inputs or outputs › 2x11 clamps	› CAN slave › 8 (12) inputs › 4 (8) outputs	› PROFIBUS-DP slave › 8 channels as inputs or outputs › 2x11 clamps	› PROFIBUS-DP slave › 8 inputs › 8 outputs
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Reverse polarity protection	✓	✓	✓	✓
Current consumption (no-load operation)	-	-	-	-
Current consumption (rated value)	55 mA	55 mA	55 mA	55 mA
Technical data digital inputs				
Number of inputs	0 (8)	8 (12)	0 (8)	8 (16)
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	-	-	-	-
Rated value	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V
Input voltage hysteresis	-	-	-	-
Frequency range	-	-	-	-
Input resistance	-	-	-	-
Input current for signal "1"	7 mA	7 mA	7 mA	7 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	✓
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Input delay of "0" to "1"	3 ms	3 ms	3 ms	3 ms
Input delay of "1" to "0"	3 ms	3 ms	3 ms	3 ms
Number of simultaneously utilizable inputs horizontal configuration	8	12	8	8
Number of simultaneously utilizable inputs vertical configuration	8	12	8	8
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1
Initial data size	1 Byte	2 Byte	1 Byte	1 Byte

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

Order number	153-4CF00	153-4CH00	153-4PF00	153-4PH00
Technical data digital outputs				
Number of outputs	8 (0)	8 (4)	8 (0)	8 (4)
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	✓	✓	✓	✓
Current consumption from load voltage L+ (without load)	50 mA	50 mA	50 mA	50 mA
Total current per group, horizontal configuration, 40°C	-	-	-	-
Total current per group, horizontal configuration, 60°C	-	-	-	-
Total current per group, vertical configuration	-	-	-	-
Output voltage signal "1" at min. current	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)
Output voltage signal "1" at max. current	L+ (-1.5 V)	L+ (-1.5 V)	L+ (-1.5 V)	L+ (-1.5 V)
Output current at signal "1", rated value	1 A	1 A	1 A	1 A
Output current, permitted range to 40°C	-	-	-	-
Output current, permitted range to 60°C	-	-	-	-
Output current at signal "0" max. (residual current)	-	-	-	-
Output delay of "0" to "1"	150 µs	150 µs	150 µs	150 µs
Output delay of "1" to "0"	100 µs	100 µs	100 µs	100 µs
Minimum load current	-	-	-	-
Lamp load	5 W	5 W	5 W	5 W
Parallel switching of outputs for redundant control of a load	not possible	not possible	not possible	not possible
Parallel switching of outputs for increased power	not possible	not possible	not possible	not possible
Actuation of digital input	✓	✓	✓	✓
Switching frequency with resistive load	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz	max. 10 Hz	max. 10 Hz
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)
Short-circuit protection of output	yes, electronic	yes, electronic	yes, electronic	yes, electronic
Trigger level	1.5 A	1.5 A	1.5 A	1.5 A
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-
Output data size	1 Byte	1 Byte	1 Byte	1 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	possible	possible	possible	possible

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

Order number	153-4CF00	153-4CH00	153-4PF00	153-4PH00
Supply voltage display	yes	yes	yes	yes
Group error display	red SF LED	red SF LED	red SF LED	red SF LED
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	-
Between channels of groups to	-	-	-	-
Between channels and backplane bus	-	-	-	-
Between channels and power supply	-	-	-	-
Max. potential difference between circuits	-	-	-	-
Max. potential difference between inputs (Ucm)	-	-	-	-
Max. potential difference between Mana and Mintern (Uiso)	-	-	-	-
Max. potential difference between inputs and Mana (Ucm)	-	-	-	-
Max. potential difference between inputs and Mintern (Uiso)	-	-	-	-
Max. potential difference between Mintern and outputs	-	-	-	-
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Hardware configuration				
Racks, max.	-	-	-	-
Modules per rack, max.	-	-	-	-
Number of digital modules, max.	-	-	-	-
Number of analog modules, max.	-	-	-	-
Communication				
Fieldbus	CANopen	CANopen	PROFIBUS-DP to EN 50170	PROFIBUS-DP to EN 50170
Type of interface	CAN	CAN	RS485	RS485
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, male	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Topology	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends
Electrically isolated	✓	✓	✓	✓
Number of participants, max.	126	126	125	125
Node addresses	1 - 99	1 - 99	1 - 99	1 - 99
Transmission speed, min.	10 kbit/s	10 kbit/s	9.6 kbit/s	9.6 kbit/s
Transmission speed, max.	1 Mbit/s	1 Mbit/s	12 Mbit/s	12 Mbit/s
Address range inputs, max.	1 Byte	2 Byte	1 Byte	1 Byte
Address range outputs, max.	1 Byte	1 Byte	1 Byte	1 Byte
Number of TxPDOs, max.	1	1	-	-
Number of RxPDOs, max.	1	1	-	-
Datasizes				
Input bytes	1	2	1	1
Output bytes	1	1	1	1
Parameter bytes	-	-	7 + 5	7 + 5
Diagnostic bytes	-	-	13	13

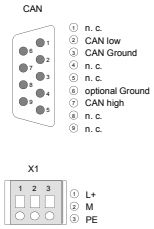
Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

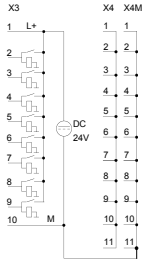
Order number	153-4CF00	153-4CH00	153-4PF00	153-4PH00
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	101.6 mm x 76 mm x 48 mm	101.6 mm x 76 mm x 48 mm	101.6 mm x 76 mm x 48 mm	101.6 mm x 76 mm x 48 mm
Weight	219 g	216 g	221 g	220 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

Connections, Interfaces

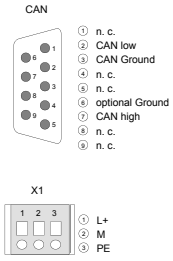
Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

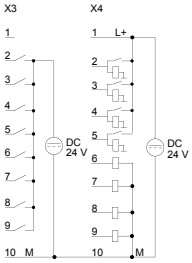
153-4CF00



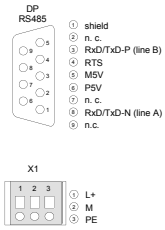


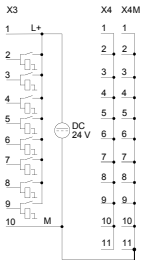
153-4CH00



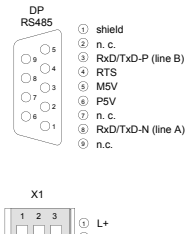


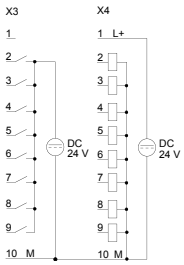
153-4PF00





153-4PH00





Fieldbus slave modules with I/Os, DIO

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

Order number	153-6CH00	153-6CL10	153-6PH00	153-6PL00
Figure				
Type	SM 153, CANopen slave	SM 153, CANopen slave	SM 153, PB-DP slave	SM 153, PB-DP slave
General information				
Note	-	-	-	-
Features	› CAN slave › 8 (12) inputs › 4 (8) outputs › 4x11 clamps	› CAN slave › 24 inputs › 8 outputs	› PROFIBUS-DP slave › 8 inputs › 8 outputs › 4x11 clamps	› PROFIBUS-DP slave › 16 inputs › 16 outputs
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Reverse polarity protection	✓	✓	✓	-
Current consumption (no-load operation)	-	-	-	-
Current consumption (rated value)	55 mA	55 mA	55 mA	55 mA
Technical data digital inputs				
Number of inputs	8 (12)	24	8	16
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	-	-	-	-
Rated value	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V
Input voltage hysteresis	-	-	-	-
Frequency range	-	-	-	-
Input resistance	-	-	-	-
Input current for signal "1"	7 mA	7 mA	7 mA	7 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	✓
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Input delay of "0" to "1"	3 ms	3 ms	3 ms	3 ms
Input delay of "1" to "0"	3 ms	3 ms	3 ms	3 ms
Number of simultaneously utilizable inputs horizontal configuration	12	24	8	16
Number of simultaneously utilizable inputs vertical configuration	12	24	8	16
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1
Initial data size	2 Byte	3 Byte	1 Byte	2 Byte

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

Order number	153-6CH00	153-6CL10	153-6PH00	153-6PL00
Technical data digital outputs				
Number of outputs	8 (4)	8	8	16
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	55 mA	55 mA	55 mA	55 mA
Total current per group, horizontal configuration, 40°C	-	-	-	-
Total current per group, horizontal configuration, 60°C	-	-	-	-
Total current per group, vertical configuration	-	-	-	-
Output voltage signal "1" at min. current	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)
Output voltage signal "1" at max. current	L+ (-1.5 V)	L+ (-1.5 V)	L+ (-1.5 V)	L+ (-1.5 V)
Output current at signal "1", rated value	1 A	1 A	1 A	1 A
Output current, permitted range to 40°C	-	-	-	-
Output current, permitted range to 60°C	-	-	-	-
Output current at signal "0" max. (residual current)	-	-	-	-
Output delay of "0" to "1"	150 µs	150 µs	150 µs	150 µs
Output delay of "1" to "0"	100 µs	100 µs	100 µs	100 µs
Minimum load current	-	-	-	-
Lamp load	5 W	5 W	5 W	5 W
Parallel switching of outputs for redundant control of a load	not possible	not possible	not possible	not possible
Parallel switching of outputs for increased power	not possible	not possible	not possible	not possible
Actuation of digital input	✓	✓	✓	✓
Switching frequency with resistive load	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz	max. 10 Hz	max. 10 Hz
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)
Short-circuit protection of output	yes, electronic	yes, electronic	yes, electronic	yes, electronic
Trigger level	1.5 A	1.5 A	1.5 A	1.5 A
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-
Output data size	1 Byte	1 Byte	1 Byte	2 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	possible	possible	possible	possible

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

Order number	153-6CH00	153-6CL10	153-6PH00	153-6PL00
Supply voltage display	yes	yes	yes	yes
Group error display	red SF LED	red SF LED	red SF LED	red SF LED
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	-
Between channels of groups to	-	-	-	-
Between channels and backplane bus	-	-	-	-
Between channels and power supply	-	-	-	-
Max. potential difference between circuits	-	-	-	-
Max. potential difference between inputs (Ucm)	-	-	-	-
Max. potential difference between Mana and Mintern (Uiso)	-	-	-	-
Max. potential difference between inputs and Mana (Ucm)	-	-	-	-
Max. potential difference between inputs and Mintern (Uiso)	-	-	-	-
Max. potential difference between Mintern and outputs	-	-	-	-
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Hardware configuration				
Racks, max.	-	-	-	-
Modules per rack, max.	-	-	-	-
Number of digital modules, max.	-	-	-	-
Number of analog modules, max.	-	-	-	-
Communication				
Fieldbus	CANopen	CANopen	PROFIBUS-DP to EN 50170	PROFIBUS-DP to EN 50170
Type of interface	CAN	CAN	RS485	RS485
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, male	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Topology	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends
Electrically isolated	✓	✓	✓	✓
Number of participants, max.	126	126	125	125
Node addresses	1 - 99	1 - 99	1 - 99	1 - 99
Transmission speed, min.	10 kbit/s	10 kbit/s	9.6 kbit/s	9.6 kbit/s
Transmission speed, max.	1 Mbit/s	1 Mbit/s	12 Mbit/s	12 Mbit/s
Address range inputs, max.	2 Byte	3 Byte	1 Byte	2 Byte
Address range outputs, max.	1 Byte	1 Byte	1 Byte	2 Byte
Number of TxPDOs, max.	1	1	-	-
Number of RxPDOs, max.	1	1	-	-
Datasizes				
Input bytes	2	3	1	2
Output bytes	1	1	1	2
Parameter bytes	-	-	7 + 5	7 + 5
Diagnostic bytes	-	-	13	13

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

Order number	153-6CH00	153-6CL10	153-6PH00	153-6PL00
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm	152.4 mm x 76 mm x 48 mm
Weight	266 g	311 g	268 g	264 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

Connections, Interfaces

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

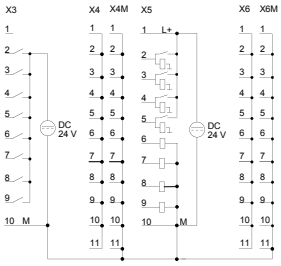
153-6CH00

CAN

① n. c.
② CAN low
③ CAN Ground
④ n. c.
⑤ n. c.
⑥ optional Ground
⑦ CAN high
⑧ n. c.
⑨ n. c.

X1

① L+
② M
③ PE



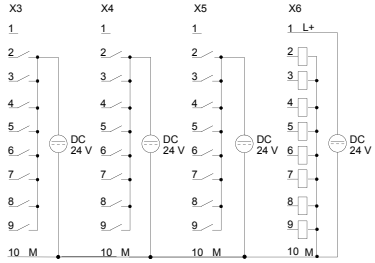
153-6CL10

CAN

① n. c.
② CAN low
③ CAN Ground
④ n. c.
⑤ n. c.
⑥ optional Ground
⑦ CAN high
⑧ n. c.
⑨ n. c.

X1

① L+
② M
③ PE



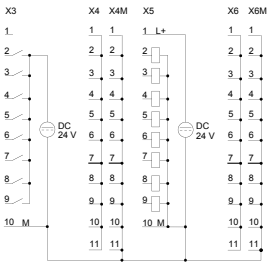
153-6PH00

DP
RS485

① shield
② n. c.
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ n. c.
⑧ RxD/TxD-N (line A)
⑨ n.c.

X1

① L+
② M
③ PE



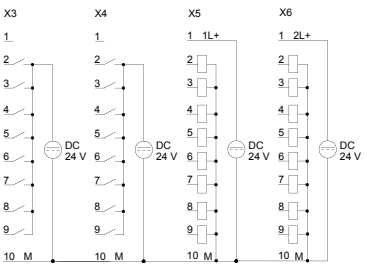
153-6PL00

DP
RS485

① shield
② n. c.
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ n. c.
⑧ RxD/TxD-N (line A)
⑨ n.c.

X1

① L+
② M
③ PE



Fieldbus slave modules with I/Os, DIO

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

Order number	153-6PL10			
Figure				
Type	SM 153, PB-DP slave			
General information				
Note	-			
Features	› PROFIBUS-DP slave › 24 inputs › 8 outputs			
Technical data power supply				
Power supply (rated value)	DC 24 V			
Power supply (permitted range)	DC 20.4...28.8 V			
Reverse polarity protection	✓			
Current consumption (no-load operation)	-			
Current consumption (rated value)	55 mA			
Technical data digital inputs				
Number of inputs	24			
Cable length, shielded	1000 m			
Cable length, unshielded	600 m			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	-			
Current consumption from load voltage L+ (without load)	-			
Rated value	DC 24 V			
Input voltage for signal "0"	DC 0...5 V			
Input voltage for signal "1"	DC 15...28.8 V			
Input voltage hysteresis	-			
Frequency range	-			
Input resistance	-			
Input current for signal "1"	7 mA			
Connection of Two-Wire-BEROs possible	✓			
Max. permissible BERO quiescent current	1.5 mA			
Input delay of "0" to "1"	3 ms			
Input delay of "1" to "0"	3 ms			
Number of simultaneously utilizable inputs horizontal configuration	24			
Number of simultaneously utilizable inputs vertical configuration	24			
Input characteristic curve	IEC 61131, type 1			
Initial data size	3 Byte			
Technical data digital outputs				
Number of outputs	8			
Cable length, shielded	1000 m			
Cable length, unshielded	600 m			
Rated load voltage	DC 24 V			

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

Order number	153-6PL10			
Reverse polarity protection of rated load voltage	-			
Current consumption from load voltage L+ (without load)	50 mA			
Total current per group, horizontal configuration, 40°C	-			
Total current per group, horizontal configuration, 60°C	-			
Total current per group, vertical configuration	-			
Output voltage signal "1" at min. current	L+ (-0.8 V)			
Output voltage signal "1" at max. current	L+ (-1.5 V)			
Output current at signal "1", rated value	1 A			
Output current, permitted range to 40°C	-			
Output current, permitted range to 60°C	-			
Output current at signal "0" max. (residual current)	-			
Output delay of "0" to "1"	150 µs			
Output delay of "1" to "0"	100 µs			
Minimum load current	-			
Lamp load	5 W			
Parallel switching of outputs for redundant control of a load	not possible			
Parallel switching of outputs for increased power	not possible			
Actuation of digital input	✓			
Switching frequency with resistive load	max. 1000 Hz			
Switching frequency with inductive load	max. 0.5 Hz			
Switching frequency on lamp load	max. 10 Hz			
Internal limitation of inductive shut-off voltage	L+ (-52 V)			
Short-circuit protection of output	yes, electronic			
Trigger level	1.5 A			
Number of operating cycle of relay outputs	-			
Switching capacity of contacts	-			
Output data size	1 Byte			
Status information, alarms, diagnostics				
Status display	green LED per channel			
Interrupts	no			
Process alarm	no			
Diagnostic interrupt	no			
Diagnostic functions	no			
Diagnostics information read-out	possible			
Supply voltage display	yes			
Group error display	red SF LED			
Channel error display	none			

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

Order number	153-6PL10			
Isolation				
Between channels	-			
Between channels of groups to	-			
Between channels and backplane bus	-			
Between channels and power supply	-			
Max. potential difference between circuits	-			
Max. potential difference between inputs (Ucm)	-			
Max. potential difference between Mana and Mintern (Uiso)	-			
Max. potential difference between inputs and Mana (Ucm)	-			
Max. potential difference between inputs and Mintern (Uiso)	-			
Max. potential difference between Mintern and outputs	-			
Insulation tested with	DC 500 V			
Hardware configuration				
Racks, max.	-			
Modules per rack, max.	-			
Number of digital modules, max.	-			
Number of analog modules, max.	-			
Communication				
Fieldbus	PROFIBUS-DP to EN 50170			
Type of interface	RS485			
Connector	Sub-D, 9-pin, female			
Topology	Linear bus with bus termination at both ends			
Electrically isolated	✓			
Number of participants, max.	125			
Node addresses	1 - 99			
Transmission speed, min.	9.6 kbit/s			
Transmission speed, max.	12 Mbit/s			
Address range inputs, max.	3 Byte			
Address range outputs, max.	1 Byte			
Number of TxPDOs, max.	-			
Number of RxPDOs, max.	-			
Datasizes				
Input bytes	3			
Output bytes	1			
Parameter bytes	7 + 5			
Diagnostic bytes	13			

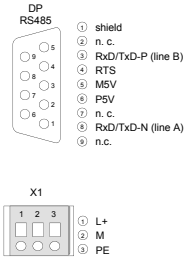
Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

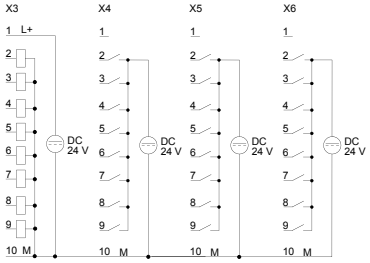
Order number	153-6PL10			
Housing				
Material	PPE / PA 6.6			
Mounting	Profile rail 35 mm			
Mechanical data				
Dimensions (WxHxD)	152.4 mm x 76 mm x 48 mm			
Weight	264 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

Connections, Interfaces

Interface modules | Fieldbus slave modules with I/Os, DIO						
153-4CF00 153-4CH00 153-4PF00 153-4PH00	153-6CH00 153-6CL10 153-6PH00 153-6PL00	153-6PL10				

153-6PL10





100V accessories

Structure and Function

System accessories expand the use of the system and facilitate starting.

Note: Bus connector, front connector and label strips are supplied with the modules.

Memory Expansion

MMC cards can be used to store program and data.

Bus Connectors

By using backplane bus connectors, communication between the modules is realized.

35 mm Profile Rail

With the help of 35 mm profile rails. the respective modules can be mounted directly on the mounting surface. The profile rail can be ordered in various lengths.

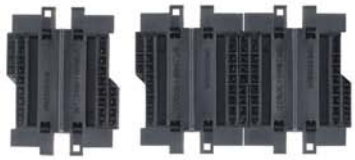
Front Connectors

The front connectors are included and supplied with the CPU and signal modules, but may also be ordered separately as spare parts.

Manuals

The technical documentation of the respective assemblies comprises various manuals with the necessary hardware and programming information, detailed descriptions of each module, and instructions for structure and assembly.

Bus connectors



Order number	Type	Description	Note
290-0AA10	Bus connector	1-tier	

35 mm profile rail

Order number	Type	Description	Note
290-1AF00	35 mm profile rail	length 2000 mm	
290-1AF30	35 mm profile rail	length 530 mm	

Front connector

Order number	Type	Description	Note
292-1AF00	Front connector	10 pin with cage clamps (included in the scope of delivery of signal modules)	

MMC memory

Order number	Type	Description	Note
953-0KX10	MMC - MultiMediaCard	Extension memory for VIPA CPUs 11x, 21x, 24x, 31x, 51x, and 208-1DP01, CC 03 (for load memory not necessary)	

Manuals and operating instructions

Order number	Title	Contents	Language
HB100D	Manual System 100V, German	HB100D_CM, HB100D_EM, HB100D_SM-PB, HB100D_SM-CAN	DE
HB100E	Manual System 100V, English	HB100E_CM, HB100E_EM, HB100E_SM-PB, HB100E_SM-CAN	EN
HB100D_CM	Manual System 100V - CM	CM - Clamps modules	DE
HB100E_CM	Manual System 100V - CM	CM - Clamps modules	EN
HB100D_CPU	Manual System 100V - CPU	CPU 11x, incl. operations list	DE
HB100E_CPU	Manual System 100V - CPU	CPU 11x, incl. operations list	EN
HB100D_EM	Manual System 100V - EM	EM - Expansion modules	DE
HB100E_EM	Manual System 100V - EM	EM - Expansion modules	EN
HB100D_SM-CAN	Manual System 100V - SM-CAN	SM-CAN - Block I/O CAN	DE
HB100E_SM-CAN	Manual System 100V - SM-CAN	SM-CAN - Block I/O CAN	EN
HB100D_SM-PB	Manual System 100V - SM-PB	SM-PB - Block I/O PROFIBUS	DE
HB100E_SM-PB	Manual System 100V - SM-PB	SM-PB - Block I/O PROFIBUS	EN

At a glance

200V

the modular control system

System description 200V

Structure and Concept

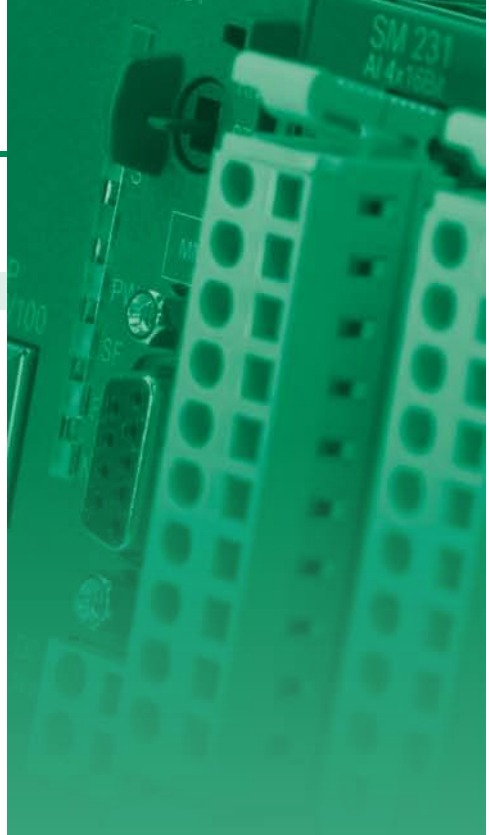
200V is a highly compact and modular expandable system.

The system is designed for centralized and decentralized automation tasks.

With a central extension of a maximum of 32 modules directly to the CPU and up to 126 fieldbus slave modules with a further maximum of 32 modules per fieldbus slave module, 200V is highly flexible. The module size allows use in almost any automation environment.

The assembly is extremely simple. The bus connector for communication between the modules and the CPU can be easily inserted into a 35 mm standard rail, and then 200V modules are snapped on – finished.

Included with the supply of the signal and function modules are front connectors and labeling strips.



Performance and Application

200V is designed for centralized and decentralized automation tasks in the manufacturing and process industry up to medium power range.

Programming

200V is programmed with VIPA WinPLC7 or with Siemens STEP7 in LAD, FBD and STL.

Memory

The CPUs in 200V have the work and load memory already integrated. Depending on the CPU version, users can choose from 48 kByte to 128 kByte work memory. In addition, MMC cards for storing program and data are supported.

Functions

For the connection of sensors and actuators, a variety of signaling modules are available for acquiring digital and analog signals in and out of the process.

For positioning tasks and path measurement various SSI, servo and stepper modules can be chosen.

The counter modules in 200V also support complex and fast counting tasks in the manufacturing and process industry to calculate the comparative features and the connection of sensors, such as photoelectric barriers.

Communication

For the connection of serial devices, e.g. scanner or printer, and for the integration of systems from other manufacturers, the system offers a full complement of serial communication processors.

Ethernet communication processors incorporates 200V horizontally and vertically into the existing network structures, and thus make all relevant data connected to the MES and ERP systems available.

200V possesses fieldbus master and slave modules with various fieldbus protocols and can therefore function, manufacturer-independent, as master control as well as subordinate fieldbus slave unit.

CPUs

CPUs-Central Modules

Central Processing Units (CPU) control and regulate processes in plant and machinery. The CPUs are selected according to application with the appropriate performance and work memory and can be extended with signal and function modules, as well as communication processors.

The system 200V CPUs are designed for small and medium-sized applications and represent as universal automation systems an ideal solution for applications in centralized and decentralized structures.

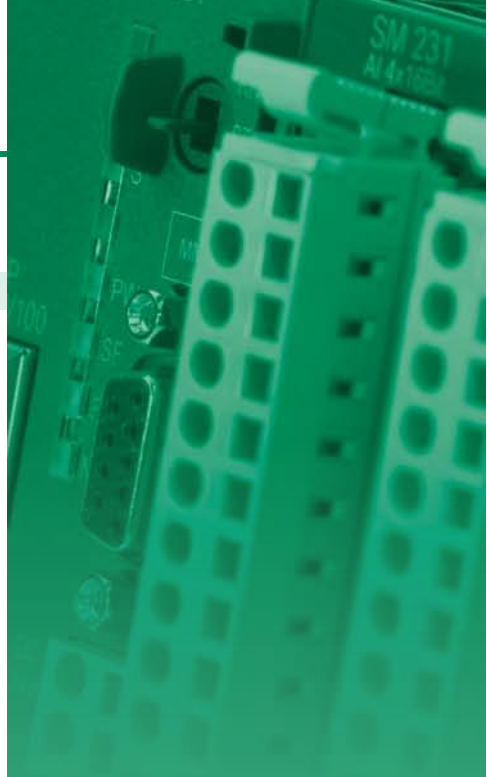
For the construction of the control a wide CPU-range in various performance classes are available. The various CPUs differ in work memory, address range, number of connections and processing time.

The CPUs of the system 200V are particularly suitable for industrial use and for general control and automation tasks in the medium performance range.

Characteristics

- Programmable with VIPA WinPLC7 or Siemens STEP7
- Integrated work memory, operation without additional memory card possible
- Integrated flash ROM memory for continuous saving of program and data
- Integrated accumulator-backed RAM memory
- Support of standard MMC cards for saving of program and data
- Suitable for centralized and decentralized applications
- Modular expandable, up to 32 modules can be used
- Integrated real time clock as well as MPI interface on board
- Front integrated status LEDs
- Assembly with 35 mm profile rail
- 24 months warranty

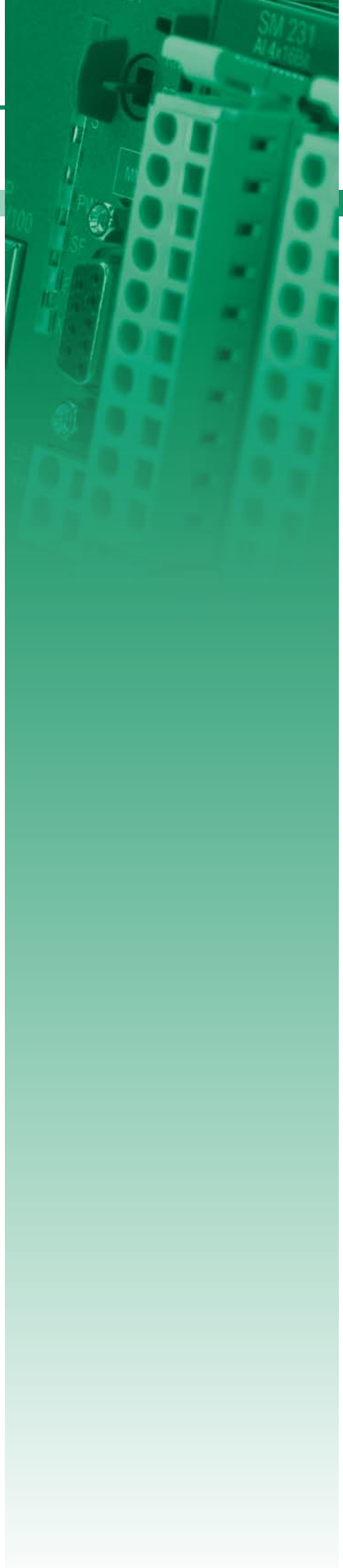
Overview



Order no.	Name/Description	Page
CPUs STEP7 programmable, standard		
214-1BA03	**CPU 214 - PLC CPU** › 96 kB work memory › 144 kB load memory	**211**
214-1BC03	**CPU 214 - PLC CPU** › 48 kB work memory › 80 kB load memory	**211**
215-1BA03	**CPU 215 - PLC CPU** › 128 kB work memory › 192 kB load memory	**211**
CPUs STEP7 programmable, NET-CPUs		
214-2BE03	**CPU 214PG - PLC CPU** › Twisted pair Ethernet via RJ45 › 96 kB work memory › 144 kB load memory	**216**
214-2BT13	**CPU 214NET - PLC CPU** › Ethernet CP 243 › Twisted pair Ethernet via RJ45 › 96 kB work memory › 144 kB load memory	**216**
215-2BE03	**CPU 215PG - PLC CPU** › Twisted pair Ethernet via RJ45 › 128 kB work memory › 192 kB load memory	**216**
215-2BT13	**CPU 215NET - PLC CPU** › Ethernet CP 243 › Twisted pair Ethernet via RJ45 › 128 kB work memory › 192 kB load memory	**216**
CPUs STEP7 programmable, PtP		
214-2BS03	**CPU 214SER - PLC CPU** › Serial communication via 2x RS232 › 96 kB work memory › 144 kB load memory	**221**
214-2BS13	**CPU 214SER - PLC CPU** › Serial communication via RS232 › 96 kB work memory › 144 kB load memory	**221**
214-2BS33	**CPU 214SER - PLC CPU** › Serial communication via RS485 › 96 kB work memory › 144 kB load memory	**221**
215-2BS03	**CPU 215SER - PLC CPU** › Serial communication via 2x RS232 › 128 kB work memory › 192 kB load memory	**221**
215-2BS13	**CPU 215SER - PLC CPU** › Serial communication via RS232 › 128 kB work memory › 192 kB load memory	**226**
215-2BS33	**CPU 215SER - PLC CPU** › Serial communication via RS485 › 128 kB work memory › 192 kB load memory	**226**
CPUs STEP7 programmable, DP master		
214-2BM03	**CPU 214DPM - PLC CPU** › PROFIBUS-DP master › 96 kB work memory › 144 kB load memory	**231**
215-2BM03	**CPU 215DPM - PLC CPU** › PROFIBUS-DP master › 128 kB work memory › 192 kB load memory	**231**
CPUs STEP7 programmable, DP slave		
214-2BP03	**CPU 214DP - PLC CPU** › PROFIBUS-DP slave › 96 kB work memory › 144 kB load memory	**236**

Overview

Order no.	Name/Description	Page
215-2BP03	**CPU 215DP - PLC CPU** › PROFIBUS-DP slave › 128 kB work memory › 192 kB load memory	**236**
CPUs STEP7 programmable, CAN master		
214-2CM03	**CPU 214CAN - PLC CPU** › CANopen master › 96 kB work memory › 144 kB load memory	**241**
215-2CM03	**CPU 215CAN - PLC CPU** › CANopen master › 128 kB work memory › 192 kB load memory	**241**



CPUs STEP7 programmable, standard

CPUs | CPUs STEP7 programmable, standard						
214-1BA03 214-1BC03 215-1BA03						

Order number	214-1BA03	214-1BC03	215-1BA03	
Figure				
Type	CPU 214	CPU 214C	CPU 215	
General information				
Note	-	-	-	
Features	› 96 kB work memory › 144 kB load memory	› 48 kB work memory › 80 kB load memory	› 128 kB work memory › 192 kB load memory	
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	
Reverse polarity protection	✓	✓	✓	
Current consumption (no-load operation)	-	-	-	
Current consumption (rated value)	1.5 A	1.5 A	1.5 A	
Inrush current	65 A	65 A	65 A	
I^2t	0.75 A^2s	0.75 A^2s	0.75 A^2s	
Max. current drain at backplane bus	3 A	3 A	3 A	
Power loss	3.5 W	3.5 W	3.5 W	
Load and working memory				
Load memory, integrated	144 KB	80 KB	192 KB	
Load memory, maximum	-	-	-	
Work memory, integrated	96 KB	48 KB	128 KB	
Work memory, maximal	-	-	-	
Memory divided in 50% program / 50% data	-	-	-	
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	
Hardware configuration				
Racks, max.	4	4	4	
Modules per rack, max.	total max. 32	total max. 32	total max. 32	
Number of integrated DP master	-	-	-	
Number of DP master via CP	8	8	8	
Operable function modules	32	32	32	
Operable communication modules PtP	32	32	32	
Operable communication modules LAN	-	-	-	
Status information, alarms, diagnostics				
Status display	yes	yes	yes	
Interrupts	no	no	no	
Process alarm	no	no	no	
Diagnostic interrupt	no	no	no	
Command processing times				
Bit instructions, min.	0.18 µs	0.18 µs	0.18 µs	
Word instruction, min.	0.78 µs	0.78 µs	0.78 µs	
Double integer arithmetic, min.	-	-	-	

CPUs | CPUs STEP7 programmable, standard						
214-1BA03 214-1BC03 215-1BA03						

Order number	214-1BA03	214-1BC03	215-1BA03	
Floating-point arithmetic, min.	-	-	-	
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256	256	
Number of S7 times	256	256	256	
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit	8192 Bit	
Number of data blocks	2047	2047	2047	
Max. data blocks size	16 KB	16 KB	16 KB	
Max. local data size per execution level	1024 Byte	1024 Byte	1024 Byte	
Blocks				
Number of OBs	14	14	14	
Number of FBs	1024	1024	1024	
Number of FCs	1024	1024	1024	
Maximum nesting depth per priority class	8	8	8	
Maximum nesting depth additional within an error OB	1	1	1	
Time				
Real-time clock buffered	✓	✓	✓	
Clock buffered period (min.)	30 d	30 d	30 d	
Accuracy (max. deviation per day)	10 s	10 s	10 s	
Number of operating hours counter	8	8	8	
Clock synchronization	-	-	-	
Synchronization via MPI	-	-	-	
Synchronization via Ethernet (NTP)	-	-	-	
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte	1024 Byte	
Output I/O address area	1024 Byte	1024 Byte	1024 Byte	
Input process image maximal	128 Byte	128 Byte	128 Byte	
Output process image maximal	128 Byte	128 Byte	128 Byte	
Digital inputs	8192	8192	8192	
Digital outputs	8192	8192	8192	
Digital inputs central	512	512	512	
Digital outputs central	512	512	512	
Integrated digital inputs	-	-	-	
Integrated digital outputs	-	-	-	
Analog inputs	512	512	512	
Analog outputs	512	512	512	
Analog inputs, central	128	128	128	
Analog outputs, central	128	128	128	
Integrated analog inputs	-	-	-	
Integrated analog outputs	-	-	-	

CPUs | CPUs STEP7 programmable, standard						
214-1BA03 214-1BC03 215-1BA03						

Order number	214-1BA03	214-1BC03	215-1BA03	
Communication functions				
PG/OP channel	✓	✓	✓	
Global data communication	✓	✓	✓	
Number of GD circuits, max.	4	4	4	
Size of GD packets, max.	22 Byte	22 Byte	22 Byte	
S7 basic communication	✓	✓	✓	
S7 basic communication, user data per job	76 Byte	76 Byte	76 Byte	
S7 communication	✓	✓	✓	
S7 communication as server	✓	✓	✓	
S7 communication as client	-	-	-	
S7 communication, user data per job	160 Byte	160 Byte	160 Byte	
Number of connections, max.	16	16	16	
Functionality Sub-D interfaces				
Type	MP²I	MP²I	MP²I	
Type of interface	RS485	RS485	RS485	
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Electrically isolated	-	-	-	
MPI	✓	✓	✓	
MP²I (MPI/RS232)	✓	✓	✓	
DP master	-	-	-	
DP slave	-	-	-	
Point-to-point interface	-	-	-	
Functionality MPI				
Number of connections, max.	16	16	16	
PG/OP channel	✓	✓	✓	
Routing	-	-	-	
Global data communication	✓	✓	✓	
S7 basic communication	✓	✓	✓	
S7 communication	✓	✓	✓	
S7 communication as server	✓	✓	✓	
S7 communication as client	-	-	-	
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s	
Datasizes				
Input bytes	0	0	0	
Output bytes	0	0	0	
Parameter bytes	3	3	3	
Diagnostic bytes	0	0	0	

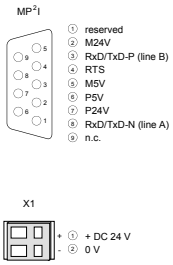
CPUs | CPUs STEP7 programmable, standard						
214-1BA03 214-1BC03 215-1BA03						

Order number	214-1BA03	214-1BC03	215-1BA03	
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 80 mm	25.4 mm x 76 mm x 80 mm	25.4 mm x 76 mm x 80 mm	
Weight	100 g	100 g	100 g	
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	
Certifications				
UL508 certification	in preparation	in preparation	in preparation	

Connections, Interfaces

CPUs | CPUs STEP7 programmable, standard						
214-1BA03 214-1BC03 215-1BA03						

214-1BA03



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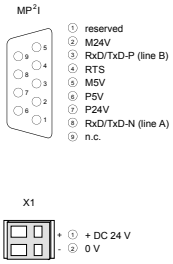
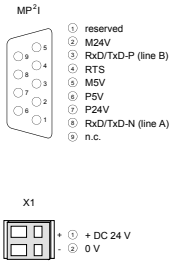


215-1BA03



CPUs STEP7 programmable, NET-CPUs

CPUs | CPUs STEP7 programmable, NET-CPUs						
214-2BE03 214-2BT13 215-2BE03 215-2BT13						

Order number	214-2BE03	214-2BT13	215-2BE03	215-2BT13
Figure				
Type	CPU 214NET	CPU 214NET	CPU 215NET	CPU 215NET
General information				
Note	-	-	-	-
Features	› Twisted pair Ethernet via RJ45 › 96 kB work memory › 144 kB load memory	› Ethernet CP 243 › Twisted pair Ethernet via RJ45 › 96 kB work memory › 144 kB load memory	› Twisted pair Ethernet via RJ45 › 128 kB work memory › 192 kB load memory	› Ethernet CP 243 › Twisted pair Ethernet via RJ45 › 128 kB work memory › 192 kB load memory
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Reverse polarity protection	✓	✓	✓	✓
Current consumption (no-load operation)	-	-	-	-
Current consumption (rated value)	1.5 A	1.5 A	1.5 A	1.5 A
Inrush current	65 A	65 A	65 A	65 A
I^2t	0.75 A^2s	0.75 A^2s	0.75 A^2s	0.75 A^2s
Max. current drain at backplane bus	3 A	3 A	3 A	3 A
Power loss	6 W	6 W	6 W	6 W
Load and working memory				
Load memory, integrated	144 KB	144 KB	192 KB	192 KB
Load memory, maximum	-	-	-	-
Work memory, integrated	96 KB	96 KB	128 KB	128 KB
Work memory, maximal	-	-	-	-
Memory divided in 50% program / 50% data	-	-	-	-
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB
Hardware configuration				
Racks, max.	4	4	4	4
Modules per rack, max.	total max. 32	total max. 32	total max. 32	total max. 32
Number of integrated DP master	-	-	-	-
Number of DP master via CP	8	8	8	8
Operable function modules	32	32	32	32
Operable communication modules PtP	32	32	32	32
Operable communication modules LAN	-	-	-	-
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no

CPUs | CPUs STEP7 programmable, NET-CPUs						
214-2BE03 214-2BT13 215-2BE03 215-2BT13						

Order number	214-2BE03	214-2BT13	215-2BE03	215-2BT13
Command processing times				
Bit instructions, min.	0.18 µs	0.18 µs	0.18 µs	0.18 µs
Word instruction, min.	0.78 µs	0.78 µs	0.78 µs	0.78 µs
Double integer arithmetic, min.	-	-	-	-
Floating-point arithmetic, min.	-	-	-	-
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256	256	256
Number of S7 times	256	256	256	256
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit	8192 Bit	8192 Bit
Number of data blocks	2047	2047	2047	2047
Max. data blocks size	16 KB	16 KB	16 KB	16 KB
Max. local data size per execution level	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Blocks				
Number of OBs	14	14	14	14
Number of FBs	1024	1024	1024	1024
Number of FCs	1024	1024	1024	1024
Maximum nesting depth per priority class	8	8	8	8
Maximum nesting depth additional within an error OB	1	1	1	1
Time				
Real-time clock buffered	✓	✓	✓	✓
Clock buffered period (min.)	30 d	30 d	30 d	30 d
Accuracy (max. deviation per day)	10 s	10 s	10 s	10 s
Number of operating hours counter	8	8	8	8
Clock synchronization	-	-	-	-
Synchronization via MPI	-	-	-	-
Synchronization via Ethernet (NTP)	-	-	-	-
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Output I/O address area	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Input process image maximal	128 Byte	128 Byte	128 Byte	128 Byte
Output process image maximal	128 Byte	128 Byte	128 Byte	128 Byte
Digital inputs	8192	8192	8192	8192
Digital outputs	8192	8192	8192	8192
Digital inputs central	512	512	512	512
Digital outputs central	512	512	512	512
Integrated digital inputs	-	-	-	-
Integrated digital outputs	-	-	-	-
Analog inputs	512	512	512	512
Analog outputs	512	512	512	512
Analog inputs, central	128	128	128	128
Analog outputs, central	128	128	128	128

CPUs | CPUs STEP7 programmable, NET-CPUs						
214-2BE03 214-2BT13 215-2BE03 215-2BT13						

Order number	214-2BE03	214-2BT13	215-2BE03	215-2BT13
Integrated analog inputs	-	-	-	-
Integrated analog outputs	-	-	-	-
Communication functions				
PG/OP channel	✓	✓	✓	✓
Global data communication	✓	✓	✓	✓
Number of GD circuits, max.	4	4	4	4
Size of GD packets, max.	22 Byte	22 Byte	22 Byte	22 Byte
S7 basic communication	✓	✓	✓	✓
S7 basic communication, user data per job	76 Byte	76 Byte	76 Byte	76 Byte
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
S7 communication, user data per job	160 Byte	160 Byte	160 Byte	160 Byte
Number of connections, max.	16	16	16	16
Functionality Sub-D interfaces				
Type	MP²I	MP²I	MP²I	MP²I
Type of interface	RS485	RS485	RS485	RS485
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Electrically isolated	-	-	-	-
MPI	✓	✓	✓	✓
MP²I (MPI/RS232)	✓	✓	✓	✓
DP master	-	-	-	-
DP slave	-	-	-	-
Point-to-point interface	-	-	-	-
Functionality MPI				
Number of connections, max.	16	16	16	16
PG/OP channel	✓	✓	✓	✓
Routing	-	-	-	-
Global data communication	✓	✓	✓	✓
S7 basic communication	✓	✓	✓	✓
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s
Functionality RJ45 interfaces				
Type	TP	TP	TP	TP
Type of interface	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit
Connector	RJ45	RJ45	RJ45	RJ45
Electrically isolated	✓	✓	✓	✓
PG/OP channel	✓	✓	✓	✓
Productive connections	✓	✓	✓	✓

CPUs | CPUs STEP7 programmable, NET-CPUs						
214-2BE03 214-2BT13 215-2BE03 215-2BT13						

Order number	214-2BE03	214-2BT13	215-2BE03	215-2BT13
Ethernet communication CP				
Number of productive connections, max.	16	16	16	16
Number of productive connections by Siemens NetPro, max.	16	16	16	16
S7 connections	-	-	-	-
User data per S7 connection, max.	-	-	-	-
TCP-connections	FETCH PASSIV, WRITE PASSIV, Connection of passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	FETCH PASSIV, WRITE PASSIV, Connection of passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling
User data per TCP connection, max.	64 KB	64 KB	64 KB	64 KB
ISO-connections	-	SEND and RECEIVE	-	SEND and RECEIVE
User data per ISO connection, max.	-	8 KB	-	8 KB
ISO on TCP connections (RFC 1006)	FETCH PASSIV, WRITE PASSIV, Connection of passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	FETCH PASSIV, WRITE PASSIV, Connection of passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling
User data per ISO on TCP connection, max.	32 KB	32 KB	32 KB	32 KB
UDP-connections	-	-	-	-
User data per UDP connection, max.	-	2 KB	-	2 KB
UDP-multicast-connections	-	SEND and RECEIVE (max. 16 Multicast groups)	-	SEND and RECEIVE (max. 16 Multicast groups)
UDP-broadcast-connections	-	SEND	-	SEND
Datasizes				
Input bytes	0	0	0	0
Output bytes	0	0	0	0
Parameter bytes	3	3	3	3
Diagnostic bytes	0	0	0	0
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm
Weight	150 g	150 g	150 g	150 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	in preparation	in preparation	in preparation	in preparation

Connections, Interfaces

CPUs | CPUs STEP7 programmable, NET-CPUs						
214-2BE03 214-2BT13 215-2BE03 215-2BT13						

214-2BE03

MP²I

1	reserved
2	M24V
3	RxD/TxD-P (line B)
4	RTS
5	M5V
6	P5V
7	P24V
8	RxD/TxD-N (line A)
9	n.c.

RJ45

1	Transmit +
2	Transmit -
3	Receive +
4	-
5	-
6	Receive -
7	-
8	-

X1

+	1	+ DC 24 V
-	2	0 V

214-2BT13

MP²I

1	reserved
2	M24V
3	RxD/TxD-P (line B)
4	RTS
5	M5V
6	P5V
7	P24V
8	RxD/TxD-N (line A)
9	n.c.

RJ45

1	Transmit +
2	Transmit -
3	Receive +
4	-
5	-
6	Receive -
7	-
8	-

X1

+	1	+ DC 24 V
-	2	0 V

215-2BE03

MP²I

1	reserved
2	M24V
3	RxD/TxD-P (line B)
4	RTS
5	M5V
6	P5V
7	P24V
8	RxD/TxD-N (line A)
9	n.c.

RJ45

1	Transmit +
2	Transmit -
3	Receive +
4	-
5	-
6	Receive -
7	-
8	-

X1

+	1	+ DC 24 V
-	2	0 V

215-2BT13

MP²I

1	reserved
2	M24V
3	RxD/TxD-P (line B)
4	RTS
5	M5V
6	P5V
7	P24V
8	RxD/TxD-N (line A)
9	n.c.

RJ45

1	Transmit +
2	Transmit -
3	Receive +
4	-
5	-
6	Receive -
7	-
8	-

X1

+	1	+ DC 24 V
-	2	0 V

CPUs STEP7 programmable, PtP

CPUs | CPUs STEP7 programmable, PtP						
214-2BS03 214-2BS13 214-2BS33 215-2BS03	215-2BS13 215-2BS33					

Order number	214-2BS03	214-2BS13	214-2BS33	215-2BS03
Figure				
Type	CPU 214SER	CPU 214SER	CPU 214SER	CPU 215SER
General information				
Note	-	-	-	-
Features	› Serial communication via 2x RS232 › 96 kB work memory › 144 kB load memory	› Serial communication via RS232 › 96 kB work memory › 144 kB load memory	› Serial communication via RS485 › 96 kB work memory › 144 kB load memory	› Serial communication via 2x RS232 › 128 kB work memory › 192 kB load memory
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Reverse polarity protection	✓	✓	✓	✓
Current consumption (no-load operation)	-	-	-	-
Current consumption (rated value)	1.5 A	1.5 A	1.5 A	1.5 A
Inrush current	65 A	65 A	65 A	65 A
I^2t	0.75 A^2s	0.75 A^2s	0.75 A^2s	0.75 A^2s
Max. current drain at backplane bus	3 A	3 A	3 A	3 A
Power loss	5 W	5 W	5 W	5 W
Load and working memory				
Load memory, integrated	144 KB	144 KB	144 KB	192 KB
Load memory, maximum	-	-	-	-
Work memory, integrated	96 KB	96 KB	96 KB	128 KB
Work memory, maximal	-	-	-	-
Memory divided in 50% program / 50% data	-	-	-	-
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB
Hardware configuration				
Racks, max.	4	4	4	4
Modules per rack, max.	total max. 32	total max. 32	total max. 32	total max. 32
Number of integrated DP master	-	-	-	-
Number of DP master via CP	8	8	8	8
Operable function modules	32	32	32	32
Operable communication modules PtP	32	32	32	32
Operable communication modules LAN	-	-	-	-
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no

CPUs | CPUs STEP7 programmable, PtP						
214-2BS03 214-2BS13 214-2BS33 215-2BS03	215-2BS13 215-2BS33					

Order number	214-2BS03	214-2BS13	214-2BS33	215-2BS03
Command processing times				
Bit instructions, min.	0.18 µs	0.18 µs	0.18 µs	0.18 µs
Word instruction, min.	0.78 µs	0.78 µs	0.78 µs	0.78 µs
Double integer arithmetic, min.	-	-	-	-
Floating-point arithmetic, min.	-	-	-	-
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256	256	256
Number of S7 times	256	256	256	256
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit	8192 Bit	8192 Bit
Number of data blocks	2047	2047	2047	2047
Max. data blocks size	16 KB	16 KB	16 KB	16 KB
Max. local data size per execution level	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Blocks				
Number of OBs	14	14	14	14
Number of FBs	1024	1024	1024	1024
Number of FCs	1024	1024	1024	1024
Maximum nesting depth per priority class	8	8	8	8
Maximum nesting depth additional within an error OB	1	1	1	1
Time				
Real-time clock buffered	✓	✓	✓	✓
Clock buffered period (min.)	30 d	30 d	30 d	30 d
Accuracy (max. deviation per day)	10 s	10 s	10 s	10 s
Number of operating hours counter	8	8	8	8
Clock synchronization	-	-	-	-
Synchronization via MPI	-	-	-	-
Synchronization via Ethernet (NTP)	-	-	-	-
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Output I/O address area	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Input process image maximal	128 Byte	128 Byte	128 Byte	128 Byte
Output process image maximal	128 Byte	128 Byte	128 Byte	128 Byte
Digital inputs	8192	8192	8192	8192
Digital outputs	8192	8192	8192	8192
Digital inputs central	512	512	512	512
Digital outputs central	512	512	512	512
Integrated digital inputs	-	-	-	-
Integrated digital outputs	-	-	-	-
Analog inputs	512	512	512	512
Analog outputs	512	512	512	512
Analog inputs, central	128	128	128	128
Analog outputs, central	128	128	128	128
Integrated analog inputs	-	-	-	-
Integrated analog outputs	-	-	-	-

CPUs | CPUs STEP7 programmable, PtP						
214-2BS03 214-2BS13 214-2BS33 215-2BS03	215-2BS13 215-2BS33					

Order number	214-2BS03	214-2BS13	214-2BS33	215-2BS03
Communication functions				
PG/OP channel	✓	✓	✓	✓
Global data communication	✓	✓	✓	✓
Number of GD circuits, max.	4	4	4	4
Size of GD packets, max.	22 Byte	22 Byte	22 Byte	22 Byte
S7 basic communication	✓	✓	✓	✓
S7 basic communication, user data per job	76 Byte	76 Byte	76 Byte	76 Byte
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
S7 communication, user data per job	160 Byte	160 Byte	160 Byte	160 Byte
Number of connections, max.	16	16	16	16
Functionality Sub-D interfaces				
Type	MP²I	MP²I	MP²I	MP²I
Type of interface	RS485	RS485	RS485	RS485
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Electrically isolated	-	-	-	-
MPI	✓	✓	✓	✓
MP²I (MPI/RS232)	✓	✓	✓	✓
DP master	-	-	-	-
DP slave	-	-	-	-
Point-to-point interface	-	-	-	-
Type	COM1	COM	COM	COM1
Type of interface	RS232	RS232	RS485	RS232
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, male	Sub-D, 9-pin, female	Sub-D, 9-pin, male
Electrically isolated	-	-	✓	-
MPI	-	-	-	-
MP²I (MPI/RS232)	-	-	-	-
DP master	-	-	-	-
DP slave	-	-	-	-
Point-to-point interface	✓	✓	✓	✓
CAN	-	-	-	-
Type	COM2	-	-	COM2
Type of interface	RS232	-	-	RS232
Connector	Sub-D, 9-pin, male	-	-	Sub-D, 9-pin, male
Electrically isolated	-	-	-	-
MPI	-	-	-	-
MP²I (MPI/RS232)	-	-	-	-
DP master	-	-	-	-
DP slave	-	-	-	-
Point-to-point interface	✓	-	-	✓

CPUs | CPUs STEP7 programmable, PtP						
214-2BS03 214-2BS13 214-2BS33 215-2BS03	215-2BS13 215-2BS33					

Order number	214-2BS03	214-2BS13	214-2BS33	215-2BS03
Functionality MPI				
Number of connections, max.	16	16	16	16
PG/OP channel	✓	✓	✓	✓
Routing	-	-	-	-
Global data communication	✓	✓	✓	✓
S7 basic communication	✓	✓	✓	✓
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s
Point-to-point communication				
PtP communication	✓	✓	✓	✓
Interface isolated	-	-	✓	-
RS232 interface	✓	✓	-	✓
RS422 interface	-	-	-	-
RS485 interface	-	-	✓	-
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, male	Sub-D, 9-pin, female	Sub-D, 9-pin, male
Transmission speed, min.	150 bit/s	150 bit/s	150 bit/s	150 bit/s
Transmission speed, max.	115.2 kbit/s	115.2 kbit/s	115.2 kbit/s	115.2 kbit/s
Cable length, max.	15 m	15 m	500 m	15 m
Point-to-point protocol				
ASCII protocol	✓	✓	✓	✓
STX/ETX protocol	✓	✓	✓	✓
3964(R) protocol	✓	✓	✓	✓
RK512 protocol	✓	-	-	✓
USS master protocol	-	✓	✓	-
Modbus master protocol	-	✓	✓	-
Modbus slave protocol	-	✓	✓	-
Special protocols	-	-	-	-
Datasizes				
Input bytes	0	0	0	0
Output bytes	0	0	0	0
Parameter bytes	3	3	3	3
Diagnostic bytes	0	0	0	0
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm
Weight	150 g	150 g	150 g	150 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	in preparation	in preparation	in preparation	in preparation

Connections, Interfaces

CPUs | CPUs STEP7 programmable, PtP						
214-2BS03 214-2BS13 214-2BS33 215-2BS03	215-2BS13 215-2BS33					

214-2BS03

COM1 RS232

1	CD-
2	RxD
3	TxD
4	DTR-
5	GND
6	DSR-
7	RTS-
8	CTS-
9	RI-

MP²I

1	reserved
2	M24V
3	RxD/TxD-P (line B)
4	RTS
5	M5V
6	P5V
7	P24V
8	RxD/TxD-N (line A)
9	n.c.

COM2 RS232

1	CD-
2	RxD
3	TxD
4	DTR-
5	GND
6	DSR-
7	RTS-
8	CTS-
9	RI-

X1

+ 1	+ DC 24 V
- 2	0 V

214-2BS13

COM RS232

1	CD-
2	RxD
3	TxD
4	DTR-
5	GND
6	DSR-
7	RTS-
8	CTS-
9	RI-

MP²I

1	reserved
2	M24V
3	RxD/TxD-P (line B)
4	RTS
5	M5V
6	P5V
7	P24V
8	RxD/TxD-N (line A)
9	n.c.

X1

+ 1	+ DC 24 V
- 2	0 V

214-2BS33

COM RS485

1	n. c.
2	n. c.
3	RxD/TxD-P (line B)
4	RTS
5	M5V
6	P5V
7	n. c.
8	RxD/TxD-N (line A)
9	n.c.

MP²I

1	reserved
2	M24V
3	RxD/TxD-P (line B)
4	RTS
5	M5V
6	P5V
7	P24V
8	RxD/TxD-N (line A)
9	n.c.

X1

+ 1	+ DC 24 V
- 2	0 V

215-2BS03

COM1 RS232

1	CD-
2	RxD
3	TxD
4	DTR-
5	GND
6	DSR-
7	RTS-
8	CTS-
9	RI-

MP²I

1	reserved
2	M24V
3	RxD/TxD-P (line B)
4	RTS
5	M5V
6	P5V
7	P24V
8	RxD/TxD-N (line A)
9	n.c.

COM2 RS232

1	CD-
2	RxD
3	TxD
4	DTR-
5	GND
6	DSR-
7	RTS-
8	CTS-
9	RI-

X1

+ 1	+ DC 24 V
- 2	0 V

CPUs STEP7 programmable, PtP

CPUs | CPUs STEP7 programmable, PtP						
214-2BS03 214-2BS13 214-2BS33 215-2BS03	215-2BS13 215-2BS33					

Order number	215-2BS13	215-2BS33		
Figure				
Type	CPU 215SER	CPU 215SER		
General information				
Note	-	-		
Features	› Serial communication via RS232 › 128 kB work memory › 192 kB load memory	› Serial communication via RS485 › 128 kB work memory › 192 kB load memory		
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V		
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V		
Reverse polarity protection	✓	✓		
Current consumption (no-load operation)	-	-		
Current consumption (rated value)	1.5 A	1.5 A		
Inrush current	65 A	65 A		
I^2t	0.75 A^2s	0.75 A^2s		
Max. current drain at backplane bus	3 A	3 A		
Power loss	5 W	5 W		
Load and working memory				
Load memory, integrated	192 KB	192 KB		
Load memory, maximum	-	-		
Work memory, integrated	128 KB	128 KB		
Work memory, maximal	-	-		
Memory divided in 50% program / 50% data	-	-		
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB		
Hardware configuration				
Racks, max.	4	4		
Modules per rack, max.	total max. 32	total max. 32		
Number of integrated DP master	-	-		
Number of DP master via CP	8	8		
Operable function modules	32	32		
Operable communication modules PtP	32	32		
Operable communication modules LAN	-	-		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	no	no		
Process alarm	no	no		
Diagnostic interrupt	no	no		

CPUs | CPUs STEP7 programmable, PtP						
214-2BS03 214-2BS13 214-2BS33 215-2BS03	215-2BS13 215-2BS33					

Order number	215-2BS13	215-2BS33		
Command processing times				
Bit instructions, min.	0.18 µs	0.18 µs		
Word instruction, min.	0.78 µs	0.78 µs		
Double integer arithmetic, min.	-	-		
Floating-point arithmetic, min.	-	-		
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256		
Number of S7 times	256	256		
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit		
Number of data blocks	2047	2047		
Max. data blocks size	16 KB	16 KB		
Max. local data size per execution level	1024 Byte	1024 Byte		
Blocks				
Number of OBs	14	14		
Number of FBs	1024	1024		
Number of FCs	1024	1024		
Maximum nesting depth per priority class	8	8		
Maximum nesting depth additional within an error OB	1	1		
Time				
Real-time clock buffered	✓	✓		
Clock buffered period (min.)	30 d	30 d		
Accuracy (max. deviation per day)	10 s	10 s		
Number of operating hours counter	8	8		
Clock synchronization	-	-		
Synchronization via MPI	-	-		
Synchronization via Ethernet (NTP)	-	-		
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte		
Output I/O address area	1024 Byte	1024 Byte		
Input process image maximal	128 Byte	128 Byte		
Output process image maximal	128 Byte	128 Byte		
Digital inputs	8192	8192		
Digital outputs	8192	8192		
Digital inputs central	512	512		
Digital outputs central	512	512		
Integrated digital inputs	-	-		
Integrated digital outputs	-	-		
Analog inputs	512	512		
Analog outputs	512	512		
Analog inputs, central	128	128		
Analog outputs, central	128	128		
Integrated analog inputs	-	-		
Integrated analog outputs	-	-		

CPUs | CPUs STEP7 programmable, PtP						
214-2BS03 214-2BS13 214-2BS33 215-2BS03	215-2BS13 215-2BS33					

Order number	215-2BS13	215-2BS33		
Communication functions				
PG/OP channel	✓	✓		
Global data communication	✓	✓		
Number of GD circuits, max.	4	4		
Size of GD packets, max.	22 Byte	22 Byte		
S7 basic communication	✓	✓		
S7 basic communication, user data per job	76 Byte	76 Byte		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
S7 communication, user data per job	160 Byte	160 Byte		
Number of connections, max.	16	16		
Functionality Sub-D interfaces				
Type	MP²I	MP²I		
Type of interface	RS485	RS485		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Electrically isolated	-	-		
MPI	✓	✓		
MP²I (MPI/RS232)	✓	✓		
DP master	-	-		
DP slave	-	-		
Point-to-point interface	-	-		
Type	COM	COM		
Type of interface	RS232	RS485		
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, female		
Electrically isolated	-	✓		
MPI	-	-		
MP²I (MPI/RS232)	-	-		
DP master	-	-		
DP slave	-	-		
Point-to-point interface	✓	✓		
CAN	-	-		
Type	-	-		
Type of interface	-	-		
Connector	-	-		
Electrically isolated	-	-		
MPI	-	-		
MP²I (MPI/RS232)	-	-		
DP master	-	-		
DP slave	-	-		
Point-to-point interface	-	-		

CPUs | CPUs STEP7 programmable, PtP						
214-2BS03 214-2BS13 214-2BS33 215-2BS03	215-2BS13 215-2BS33					

Order number	215-2BS13	215-2BS33		
Functionality MPI				
Number of connections, max.	16	16		
PG/OP channel	✓	✓		
Routing	-	-		
Global data communication	✓	✓		
S7 basic communication	✓	✓		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s		
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s		
Point-to-point communication				
PtP communication	✓	✓		
Interface isolated	-	✓		
RS232 interface	✓	-		
RS422 interface	-	-		
RS485 interface	-	✓		
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, female		
Transmission speed, min.	150 bit/s	150 bit/s		
Transmission speed, max.	115.2 kbit/s	115.2 kbit/s		
Cable length, max.	15 m	500 m		
Point-to-point protocol				
ASCII protocol	✓	✓		
STX/ETX protocol	✓	✓		
3964(R) protocol	✓	✓		
RK512 protocol	-	-		
USS master protocol	✓	✓		
Modbus master protocol	✓	✓		
Modbus slave protocol	✓	✓		
Special protocols	-	-		
Datasizes				
Input bytes	0	0		
Output bytes	0	0		
Parameter bytes	3	3		
Diagnostic bytes	0	0		
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6		
Mounting	Profile rail 35 mm	Profile rail 35 mm		
Mechanical data				
Dimensions (WxHxD)	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm		
Weight	150 g	150 g		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	in preparation	in preparation		

Connections, Interfaces

CPUs | CPUs STEP7 programmable, PtP						
214-2BS03 214-2BS13 214-2BS33 215-2BS03	215-2BS13 215-2BS33					

215-2BS13

COM
RS232

①	CD-
②	RxD
③	TxD
④	DTR-
⑤	GND
⑥	DSR-
⑦	RTS-
⑧	CTS-
⑨	RI-

MP²I

①	reserved
②	M24V
③	RxD/TxD-P (line B)
④	RTS
⑤	M5V
⑥	P5V
⑦	P24V
⑧	RxD/TxD-N (line A)
⑨	n.c.

X1

+	①	+ DC 24 V
-	②	0 V

215-2BS33

COM
RS485

①	n. c.
②	n. c.
③	RxD/TxD-P (line B)
④	RTS
⑤	M5V
⑥	P5V
⑦	n. c.
⑧	RxD/TxD-N (line A)
⑨	n.c.

MP²I

①	reserved
②	M24V
③	RxD/TxD-P (line B)
④	RTS
⑤	M5V
⑥	P5V
⑦	P24V
⑧	RxD/TxD-N (line A)
⑨	n.c.

X1

+	①	+ DC 24 V
-	②	0 V

CPUs STEP7 programmable, DP master

CPUs | CPUs STEP7 programmable, DP master						
214-2BM03 215-2BM03						

Order number	214-2BM03	215-2BM03		
Figure				
Type	CPU 214DPM	CPU 215DPM		
General information				
Note	-	-		
Features	› PROFIBUS-DP master › 96 kB work memory › 144 kB load memory	› PROFIBUS-DP master › 128 kB work memory › 192 kB load memory		
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V		
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V		
Reverse polarity protection	✓	✓		
Current consumption (no-load operation)	-	-		
Current consumption (rated value)	1.5 A	1.5 A		
Inrush current	65 A	65 A		
I^2t	0.75 A^2s	0.75 A^2s		
Max. current drain at backplane bus	3 A	3 A		
Power loss	5 W	5 W		
Load and working memory				
Load memory, integrated	144 KB	192 KB		
Load memory, maximum	-	-		
Work memory, integrated	96 KB	128 KB		
Work memory, maximal	-	-		
Memory divided in 50% program / 50% data	-	-		
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB		
Hardware configuration				
Racks, max.	4	4		
Modules per rack, max.	total max. 32	total max. 32		
Number of integrated DP master	1	1		
Number of DP master via CP	8	8		
Operable function modules	32	32		
Operable communication modules PtP	32	32		
Operable communication modules LAN	-	-		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	no	no		
Process alarm	no	no		
Diagnostic interrupt	no	no		

CPUs | CPUs STEP7 programmable, DP master						
214-2BM03 215-2BM03						

Order number	214-2BM03	215-2BM03		
Command processing times				
Bit instructions, min.	0.18 µs	0.18 µs		
Word instruction, min.	0.78 µs	0.78 µs		
Double integer arithmetic, min.	-	-		
Floating-point arithmetic, min.	-	-		
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256		
Number of S7 times	256	256		
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit		
Number of data blocks	2047	2047		
Max. data blocks size	16 KB	16 KB		
Max. local data size per execution level	1024 Byte	1024 Byte		
Blocks				
Number of OBs	14	14		
Number of FBs	1024	1024		
Number of FCs	1024	1024		
Maximum nesting depth per priority class	8	8		
Maximum nesting depth additional within an error OB	1	1		
Time				
Real-time clock buffered	✓	✓		
Clock buffered period (min.)	30 d	30 d		
Accuracy (max. deviation per day)	10 s	10 s		
Number of operating hours counter	8	8		
Clock synchronization	-	-		
Synchronization via MPI	-	-		
Synchronization via Ethernet (NTP)	-	-		
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte		
Output I/O address area	1024 Byte	1024 Byte		
Input process image maximal	128 Byte	128 Byte		
Output process image maximal	128 Byte	128 Byte		
Digital inputs	8192	8192		
Digital outputs	8192	8192		
Digital inputs central	512	512		
Digital outputs central	512	512		
Integrated digital inputs	-	-		
Integrated digital outputs	-	-		
Analog inputs	512	512		
Analog outputs	512	512		
Analog inputs, central	128	128		
Analog outputs, central	128	128		
Integrated analog inputs	-	-		
Integrated analog outputs	-	-		

CPUs | CPUs STEP7 programmable, DP master						
214-2BM03 215-2BM03						

Order number	214-2BM03	215-2BM03		
Communication functions				
PG/OP channel	✓	✓		
Global data communication	✓	✓		
Number of GD circuits, max.	4	4		
Size of GD packets, max.	22 Byte	22 Byte		
S7 basic communication	✓	✓		
S7 basic communication, user data per job	76 Byte	76 Byte		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
S7 communication, user data per job	160 Byte	160 Byte		
Number of connections, max.	16	16		
Functionality Sub-D interfaces				
Type	MP²I	MP²I		
Type of interface	RS485	RS485		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Electrically isolated	-	-		
MPI	✓	✓		
MP²I (MPI/RS232)	✓	✓		
DP master	-	-		
DP slave	-	-		
Point-to-point interface	-	-		
Type	DP	DP		
Type of interface	RS485	RS485		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Electrically isolated	✓	✓		
MPI	-	-		
MP²I (MPI/RS232)	-	-		
DP master	✓	✓		
DP slave	-	-		
Point-to-point interface	-	-		
CAN	-	-		
Functionality MPI				
Number of connections, max.	16	16		
PG/OP channel	✓	✓		
Routing	-	-		
Global data communication	✓	✓		
S7 basic communication	✓	✓		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s		
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s		

CPUs | CPUs STEP7 programmable, DP master						
214-2BM03 215-2BM03						

Order number	214-2BM03	215-2BM03		
Functionality PROFIBUS master				
PG/OP channel	✓	✓		
Routing	-	-		
S7 basic communication	-	-		
S7 communication	-	-		
S7 communication as server	-	-		
S7 communication as client	-	-		
Equidistance support	-	-		
Isochronous mode	-	-		
SYNC/FREEZE	-	-		
Activation/deactivation of DP slaves	✓	✓		
Direct data exchange (slave-to-slave communication)	-	-		
DPV1	-	-		
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s		
Transmission speed, max.	12 Mbit/s	12 Mbit/s		
Number of DP slaves, max.	64	64		
Address range inputs, max.	1 KB	1 KB		
Address range outputs, max.	1 KB	1 KB		
User data inputs per slave, max.	244 Byte	244 Byte		
User data outputs per slave, max.	244 Byte	244 Byte		
Datasizes				
Input bytes	0	0		
Output bytes	0	0		
Parameter bytes	4	4		
Diagnostic bytes	0	0		
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6		
Mounting	Profile rail 35 mm	Profile rail 35 mm		
Mechanical data				
Dimensions (WxHxD)	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm		
Weight	150 g	150 g		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	in preparation	in preparation		

Connections, Interfaces

CPUs | CPUs STEP7 programmable, DP master						
214-2BM03 215-2BM03						

214-2BM03

DP master

①	shield
②	n. c.
③	RxD/TxD-P (line B)
④	RTS
⑤	M5V
⑥	P5V
⑦	n. c.
⑧	RxD/TxD-N (line A)
⑨	n.c.

MP²I

①	reserved
②	M24V
③	RxD/TxD-P (line B)
④	RTS
⑤	M5V
⑥	P5V
⑦	P24V
⑧	RxD/TxD-N (line A)
⑨	n.c.

X1

+	①	+ DC 24 V
-	②	0 V

215-2BM03

DP master

①	shield
②	n. c.
③	RxD/TxD-P (line B)
④	RTS
⑤	M5V
⑥	P5V
⑦	n. c.
⑧	RxD/TxD-N (line A)
⑨	n.c.

MP²I

①	reserved
②	M24V
③	RxD/TxD-P (line B)
④	RTS
⑤	M5V
⑥	P5V
⑦	P24V
⑧	RxD/TxD-N (line A)
⑨	n.c.

X1

+	①	+ DC 24 V
-	②	0 V

CPUs STEP7 programmable, DP slave

CPUs | CPUs STEP7 programmable, DP slave						
214-2BP03 215-2BP03						

Order number	214-2BP03	215-2BP03		
Figure				
Type	CPU 214DP	CPU 215DP		
General information				
Note	-	-		
Features	› PROFIBUS-DP slave › 96 kB work memory › 144 kB load memory	› PROFIBUS-DP slave › 128 kB work memory › 192 kB load memory		
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V		
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V		
Reverse polarity protection	✓	✓		
Current consumption (no-load operation)	-	-		
Current consumption (rated value)	1.5 A	1.5 A		
Inrush current	65 A	65 A		
I^2t	0.75 A^2s	0.75 A^2s		
Max. current drain at backplane bus	3 A	3 A		
Power loss	5 W	5 W		
Load and working memory				
Load memory, integrated	144 KB	192 KB		
Load memory, maximum	-	-		
Work memory, integrated	96 KB	128 KB		
Work memory, maximal	-	-		
Memory divided in 50% program / 50% data	-	-		
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB		
Hardware configuration				
Racks, max.	4	4		
Modules per rack, max.	total max. 32	total max. 32		
Number of integrated DP master	-	-		
Number of DP master via CP	8	8		
Operable function modules	32	32		
Operable communication modules PtP	32	32		
Operable communication modules LAN	-	-		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	no	no		
Process alarm	no	no		
Diagnostic interrupt	no	no		

CPUs | CPUs STEP7 programmable, DP slave						
214-2BP03 215-2BP03						

Order number	214-2BP03	215-2BP03		
Command processing times				
Bit instructions, min.	0.18 µs	0.18 µs		
Word instruction, min.	0.78 µs	0.78 µs		
Double integer arithmetic, min.	-	-		
Floating-point arithmetic, min.	-	-		
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256		
Number of S7 times	256	256		
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit		
Number of data blocks	2047	2047		
Max. data blocks size	16 KB	16 KB		
Max. local data size per execution level	1024 Byte	1024 Byte		
Blocks				
Number of OBs	14	14		
Number of FBs	1024	1024		
Number of FCs	1024	1024		
Maximum nesting depth per priority class	8	8		
Maximum nesting depth additional within an error OB	1	1		
Time				
Real-time clock buffered	✓	✓		
Clock buffered period (min.)	30 d	30 d		
Accuracy (max. deviation per day)	10 s	10 s		
Number of operating hours counter	8	8		
Clock synchronization	-	-		
Synchronization via MPI	-	-		
Synchronization via Ethernet (NTP)	-	-		
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte		
Output I/O address area	1024 Byte	1024 Byte		
Input process image maximal	128 Byte	128 Byte		
Output process image maximal	128 Byte	128 Byte		
Digital inputs	8192	8192		
Digital outputs	8192	8192		
Digital inputs central	512	512		
Digital outputs central	512	512		
Integrated digital inputs	-	-		
Integrated digital outputs	-	-		
Analog inputs	512	512		
Analog outputs	512	512		
Analog inputs, central	128	128		
Analog outputs, central	128	128		
Integrated analog inputs	-	-		
Integrated analog outputs	-	-		

CPUs | CPUs STEP7 programmable, DP slave						
214-2BP03 215-2BP03						

Order number	214-2BP03	215-2BP03		
Communication functions				
PG/OP channel	✓	✓		
Global data communication	✓	✓		
Number of GD circuits, max.	4	4		
Size of GD packets, max.	22 Byte	22 Byte		
S7 basic communication	✓	✓		
S7 basic communication, user data per job	76 Byte	76 Byte		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
S7 communication, user data per job	160 Byte	160 Byte		
Number of connections, max.	16	16		
Functionality Sub-D interfaces				
Type	MP²I	MP²I		
Type of interface	RS485	RS485		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Electrically isolated	-	-		
MPI	✓	✓		
MP²I (MPI/RS232)	✓	✓		
DP master	-	-		
DP slave	-	-		
Point-to-point interface	-	-		
Type	DP	DP		
Type of interface	RS485	RS485		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Electrically isolated	✓	✓		
MPI	-	-		
MP²I (MPI/RS232)	-	-		
DP master	-	-		
DP slave	✓	✓		
Point-to-point interface	-	-		
CAN	-	-		
Functionality MPI				
Number of connections, max.	16	16		
PG/OP channel	✓	✓		
Routing	-	-		
Global data communication	✓	✓		
S7 basic communication	✓	✓		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s		
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s		

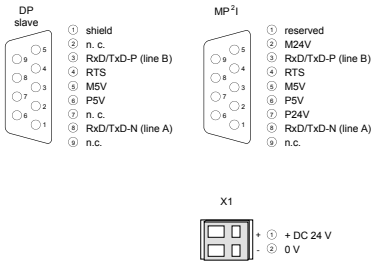
CPUs | CPUs STEP7 programmable, DP slave						
214-2BP03 215-2BP03						

Order number	214-2BP03	215-2BP03		
Functionality PROFIBUS slave				
PG/OP channel	-	-		
Routing	-	-		
S7 communication	-	-		
S7 communication as server	-	-		
S7 communication as client	-	-		
Direct data exchange (slave-to-slave communication)	-	-		
DPV1	-	-		
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s		
Transmission speed, max.	12 Mbit/s	12 Mbit/s		
Automatic detection of transmission speed	-	-		
Transfer memory inputs, max.	64 Byte	64 Byte		
Transfer memory outputs, max.	64 Byte	64 Byte		
Address areas, max.	1	1		
User data per address area, max.	64 Byte	64 Byte		
Datasizes				
Input bytes	0	0		
Output bytes	0	0		
Parameter bytes	16	16		
Diagnostic bytes	0	0		
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6		
Mounting	Profile rail 35 mm	Profile rail 35 mm		
Mechanical data				
Dimensions (WxHxD)	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm		
Weight	150 g	150 g		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	in preparation	in preparation		

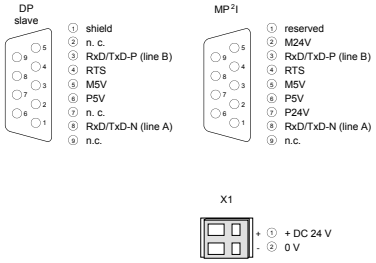
Connections, Interfaces

CPUs | CPUs STEP7 programmable, DP slave						
214-2BP03 215-2BP03						

214-2BP03



215-2BP03



CPUs STEP7 programmable, CAN master

CPUs | CPUs STEP7 programmable, CAN master						
214-2CM03 215-2CM03						

Order number	214-2CM03	215-2CM03		
Figure				
Type	CPU 214CAN	CPU 215CAN		
General information				
Note	-	-		
Features	› CANopen master › 96 kB work memory › 144 kB load memory	› CANopen master › 128 kB work memory › 192 kB load memory		
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V		
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V		
Reverse polarity protection	✓	✓		
Current consumption (no-load operation)	-	-		
Current consumption (rated value)	1.5 A	1.5 A		
Inrush current	65 A	65 A		
I^2t	0.75 A^2s	0.75 A^2s		
Max. current drain at backplane bus	3 A	3 A		
Power loss	5 W	5 W		
Load and working memory				
Load memory, integrated	144 KB	192 KB		
Load memory, maximum	-	-		
Work memory, integrated	96 KB	128 KB		
Work memory, maximal	-	-		
Memory divided in 50% program / 50% data	-	-		
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB		
Hardware configuration				
Racks, max.	4	4		
Modules per rack, max.	total max. 32	total max. 32		
Number of integrated DP master	-	-		
Number of DP master via CP	8	8		
Operable function modules	32	32		
Operable communication modules PtP	32	32		
Operable communication modules LAN	-	-		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	no	no		
Process alarm	no	no		
Diagnostic interrupt	no	no		

CPUs | CPUs STEP7 programmable, CAN master						
214-2CM03 215-2CM03						

Order number	214-2CM03	215-2CM03		
Command processing times				
Bit instructions, min.	0.18 µs	0.18 µs		
Word instruction, min.	0.78 µs	0.78 µs		
Double integer arithmetic, min.	-	-		
Floating-point arithmetic, min.	-	-		
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256		
Number of S7 times	256	256		
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit		
Number of data blocks	2047	2047		
Max. data blocks size	16 KB	16 KB		
Max. local data size per execution level	1024 Byte	1024 Byte		
Blocks				
Number of OBs	14	14		
Number of FBs	1024	1024		
Number of FCs	1024	1024		
Maximum nesting depth per priority class	8	8		
Maximum nesting depth additional within an error OB	1	1		
Time				
Real-time clock buffered	✓	✓		
Clock buffered period (min.)	30 d	30 d		
Accuracy (max. deviation per day)	10 s	10 s		
Number of operating hours counter	8	8		
Clock synchronization	-	-		
Synchronization via MPI	-	-		
Synchronization via Ethernet (NTP)	-	-		
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte		
Output I/O address area	1024 Byte	1024 Byte		
Input process image maximal	128 Byte	128 Byte		
Output process image maximal	128 Byte	128 Byte		
Digital inputs	8192	8192		
Digital outputs	8192	8192		
Digital inputs central	512	512		
Digital outputs central	512	512		
Integrated digital inputs	-	-		
Integrated digital outputs	-	-		
Analog inputs	512	512		
Analog outputs	512	512		
Analog inputs, central	128	128		
Analog outputs, central	128	128		
Integrated analog inputs	-	-		
Integrated analog outputs	-	-		

CPUs | CPUs STEP7 programmable, CAN master						
214-2CM03 215-2CM03						

Order number	214-2CM03	215-2CM03		
Communication functions				
PG/OP channel	✓	✓		
Global data communication	✓	✓		
Number of GD circuits, max.	4	4		
Size of GD packets, max.	22 Byte	22 Byte		
S7 basic communication	✓	✓		
S7 basic communication, user data per job	76 Byte	76 Byte		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
S7 communication, user data per job	160 Byte	160 Byte		
Number of connections, max.	16	16		
Functionality Sub-D interfaces				
Type	MP²I	MP²I		
Type of interface	RS485	RS485		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Electrically isolated	-	-		
MPI	✓	✓		
MP²I (MPI/RS232)	✓	✓		
DP master	-	-		
DP slave	-	-		
Point-to-point interface	-	-		
Type	CAN	CAN		
Type of interface	CAN	CAN		
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, male		
Electrically isolated	✓	✓		
MPI	-	-		
MP²I (MPI/RS232)	-	-		
DP master	-	-		
DP slave	-	-		
Point-to-point interface	-	-		
CAN	✓	✓		
Functionality MPI				
Number of connections, max.	16	16		
PG/OP channel	✓	✓		
Routing	-	-		
Global data communication	✓	✓		
S7 basic communication	✓	✓		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s		
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s		

CPUs | CPUs STEP7 programmable, CAN master						
214-2CM03 215-2CM03						

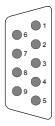
Order number	214-2CM03	215-2CM03		
Datasizes				
Input bytes	0	0		
Output bytes	0	0		
Parameter bytes	3	3		
Diagnostic bytes	0	0		
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6		
Mounting	Profile rail 35 mm	Profile rail 35 mm		
Mechanical data				
Dimensions (WxHxD)	50.8 mm x 76 mm x 80 mm	50.8 mm x 76 mm x 80 mm		
Weight	150 g	150 g		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	in preparation	in preparation		

Connections, Interfaces

CPUs | CPUs STEP7 programmable, CAN master						
214-2CM03 215-2CM03						

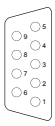
214-2CM03

CAN



① n. c.
② CAN low
③ CAN Ground
④ n. c.
⑤ shield
⑥ Ground
⑦ CAN high
⑧ n. c.
⑨ n. c.

MP²I



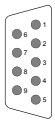
① reserved
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X1

+ ① + DC 24 V
- ② 0 V

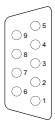
215-2CM03

CAN



① n. c.
② CAN low
③ CAN Ground
④ n. c.
⑤ shield
⑥ Ground
⑦ CAN high
⑧ n. c.
⑨ n. c.

MP²I



① reserved
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X1

+ ① + DC 24 V
- ② 0 V

Clamp modules

Structure and Function

Clamp modules are passive modules for 2- or 3-wire installations, the contacts are electrically connected internally vertically. They offer various connectivity options for signals, mass and plus potentials.

By the use of clamp modules distributors for a power supply can be realized in a simple way and thus offer the possibility for connection of active supplied sensors such as proximity switches. Wiring is carried out by means of time saving and secure cage clamp technology.

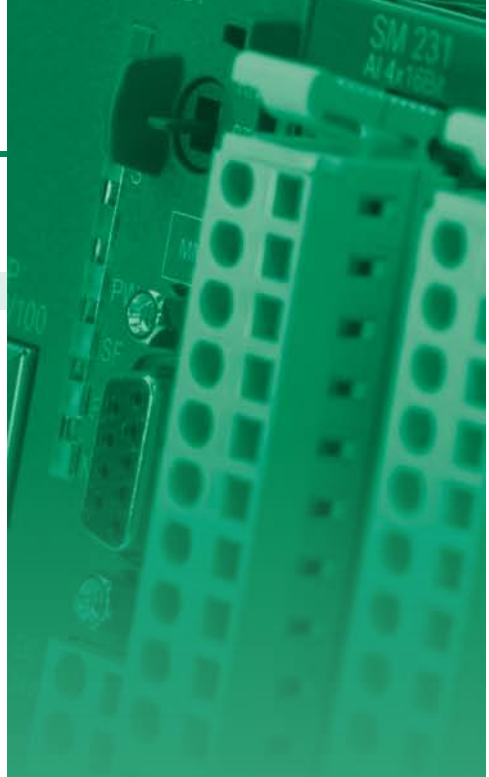
Passive terminal modules have no connection to the backplane bus. Therefore during the assembly of the terminal modules the signal passage to post-positioned assemblies via backplane bus connectors must be ensured. The terminal modules are attached to the mounting surface using a 35 mm profile rail.

Characteristics

- Maintenance-free cage clamp technology
- Color-coded terminals
- Maximum terminal current 10 A
- Compact design
- Assembly with 35 mm profile rail
- 24 months warranty

Overview

Order no.	Name/Description	Page
Clamp modules		
201-1AA00	**CM 201 - Double clamps module** › Dual terminals › 2x11 clamps, gray/gray › Passive	**248**
201-1AA10	**CM 201 - Double clamps module** › Dual terminals › 2x11 clamps, green-yellow/gray › Passive	**248**
201-1AA20	**CM 201 - Double clamps module** › Dual terminals › 2x11 clamps, red/blue › Passive	**248**
201-1AA40	**CM 201 - 4-tier clamps module** › Quad terminals › 2x5 clamps gray/gray › 2x6 clamps red/blue › Passive	**248**



Clamp modules

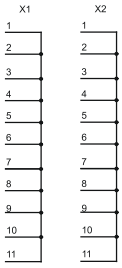
Clamp modules | Clamp modules						
201-1AA00 201-1AA10 201-1AA20 201-1AA40						

Order number	201-1AA00	201-1AA10	201-1AA20	201-1AA40
Figure				
Type	CM 201	CM 201	CM 201	CM 201
General information				
Note	-	-	-	-
Features	› Dual terminals › 2x11 clamps, gray/gray › Passive	› Dual terminals › 2x11 clamps, green-yellow/gray › Passive	› Dual terminals › 2x11 clamps, red/blue › Passive	› Quad terminals › 2x5 clamps gray/gray › 2x6 clamps red/blue › Passive
Clamp parameter				
Terminal voltage max.	DC 60 V	DC 60 V	DC 60 V	DC 60 V
Terminal current max.	10 A	10 A	10 A	10 A
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 80 mm	25.4 mm x 76 mm x 80 mm	25.4 mm x 76 mm x 80 mm	25.4 mm x 76 mm x 80 mm
Weight	90 g	90 g	90 g	90 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

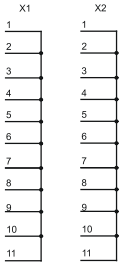
Connections, Interfaces

Clamp modules | Clamp modules						
201-1AA00 201-1AA10 201-1AA20 201-1AA40						

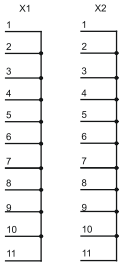
201-1AA00



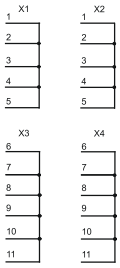
201-1AA10



201-1AA20



201-1AA40



Power supply

Structure and Function

Power supply modules are used to supply the system as well as the sensors and actuators with direct current. They convert the mains AC voltage into a DC voltage of 24 V.

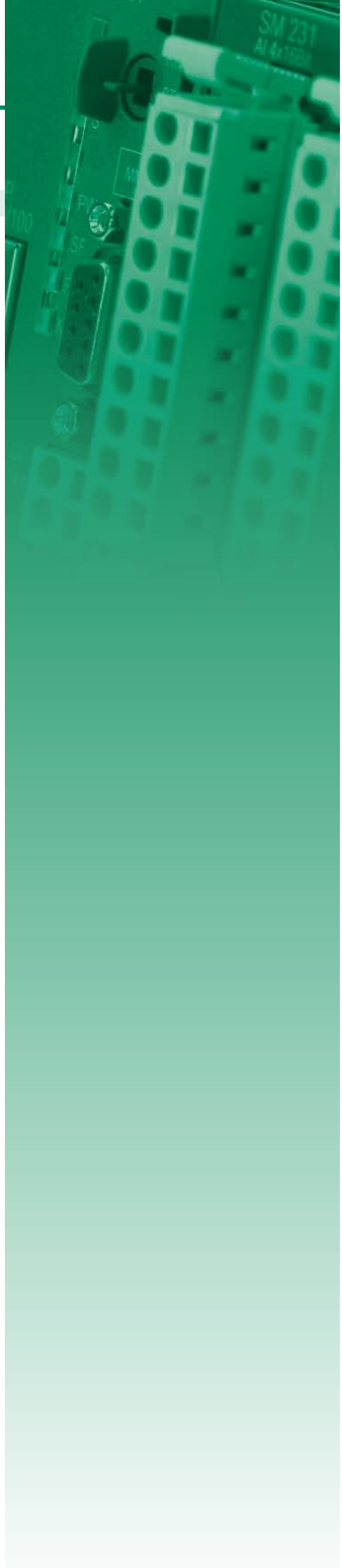
Power supply modules can be fixed on a 35 mm profile rail either combined with system 200V components or as "stand-alone" modules.

The power supply has no connection to the backplane bus.

Characteristics

- Automatic wide range input detection (AC 100 V - 240 V)
- Connection to single phase AC mains
- Output current 2 A
- Nominal output voltage DC 24 V
- Front integrated status LEDs for fault diagnosis
- Protection against short circuit, overload and open circuit
- IP 20 protection
- Compact design
- Assembly with 35 mm profile rail
- 24 month warranty

Overview



Order no.	Name/Description	Page
Power supply		
207-1BA00	**PS 207 - Power supply** › AC 100...240 V w/o manual intervention › Output voltage DC 24 V	**252**
207-2BA20	**PS 207 - Power supply** › AC 100...240 V w/o manual intervention › Output voltage DC 24 V › Terminal module with 2x11 clamps	**252**

Power supply

Power supply | Power supply						
207-1BA00 207-2BA20						

Order number	207-1BA00	207-2BA20		
Figure				
Type	PS 207	PS 207		
General information				
Note	-	-		
Features	› AC 100...240 V w/o manual intervention › Output voltage DC 24 V	› AC 100...240 V w/o manual intervention › Output voltage DC 24 V › Terminal module with 2x11 clamps		
Technical data power supply				
Input voltage (rated value)	AC 100...240 V	AC 100...240 V		
Input voltage (permitted range)	AC 100...240 V	AC 100...240 V		
Mains frequency (rated value)	50...60 Hz	50...60 Hz		
Mains frequency (permitted range)	47...63 Hz	47...63 Hz		
Input voltage (at 120 V)	0.53 A	0.53 A		
Input voltage (at 230 V)	0.24 A	0.24 A		
Inrush current (at 25 °C)	30 A	30 A		
Power consumption typ.	53 W	53 W		
Output voltage (rated value)	24 V	24 V		
Output current (rated value)	2 A	2 A		
Power supply parallel switchable	✓	✓		
Protect type	Short circuit, overload, over temperature	Short circuit, overload, over temperature		
Ripple of output voltage (max.), BW=20 MHz	100 mV	100 mV		
Efficiency typ.	90 %	90 %		
Power loss typ.	5 W	5 W		
Clamp parameter				
Terminal voltage max.	-	DC 60 V		
Terminal current max.	-	10 A		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	no	no		
Process alarm	no	no		
Diagnostic interrupt	no	no		
Diagnostic functions	no	no		
Diagnostics information read-out	none	none		
Supply voltage display	none	none		
Group error display	none	none		
Channel error display	none	none		

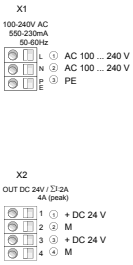
Power supply | Power supply						
207-1BA00 207-2BA20						

Order number	207-1BA00	207-2BA20		
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6		
Mounting	Profile rail 35 mm	Profile rail 35 mm		
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm	50.8 mm x 76 mm x 78 mm		
Weight	150 g	210 g		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	yes	yes		

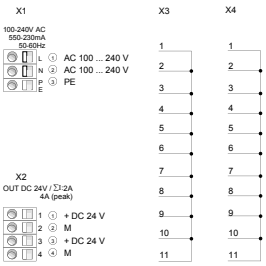
Connections, Interfaces

Power supply | Power supply						
207-1BA00 207-2BA20						

207-1BA00



207-2BA20



Signal modules digital

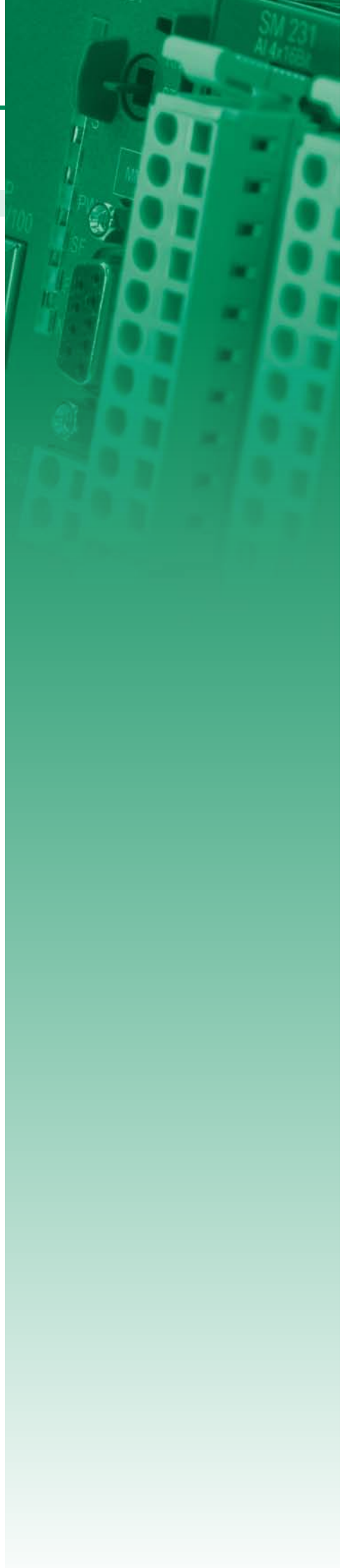
Structure and Function

Digital modules for connection of sensors and actuators are the interface of the PLC to the process. Digital input modules acquire the binary control signals from the process level and transform them into interpretable signals for the control. Digital output modules convert the internal binary control signals into signals suitable for the process level. There are digital modules with 4 to 32 channels available.

Characteristics

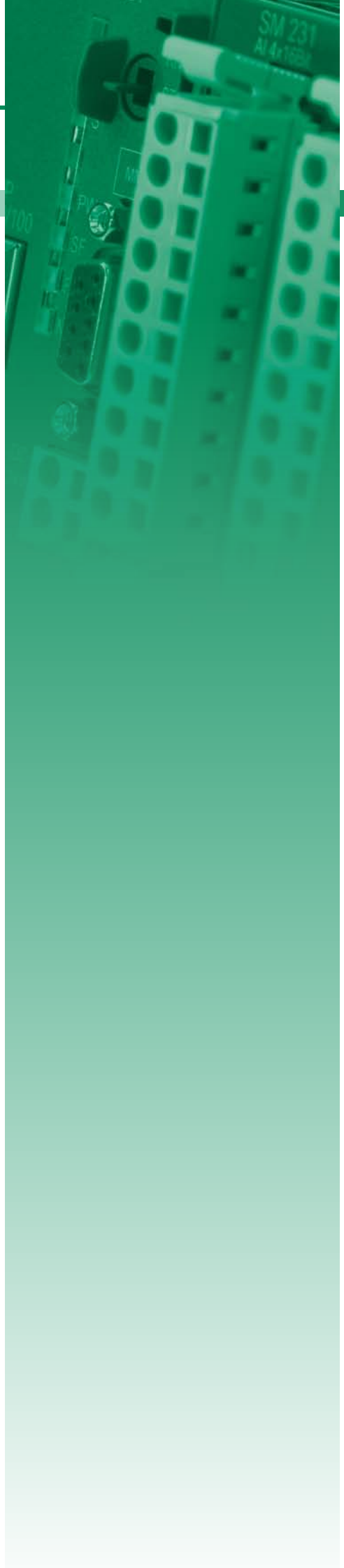
- Large selection, modules are available for all popular applications
- Compact design
- LED status indicator
- Electrically isolated to the backplane bus
- Maintenance-free cage-clamp technology
- Label cards included
- Front connector included
- Assembly with 35 mm profile rail
- 24 month warranty

Overview



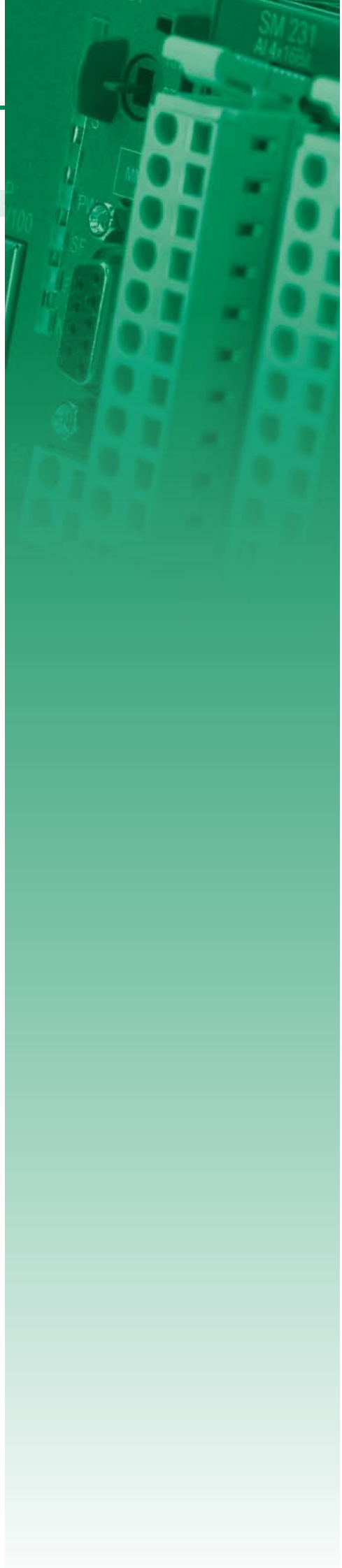
Order no.	Name/Description	Page
Digital input modules		
221-1BF00	**SM 221 - Digital input** › 8 inputs	**260**
221-1BF10	**SM 221 - Digital input** › 8 inputs, › Delay time 0.2 ms	**260**
221-1BF21	**SM 221 - Digital input** › 8 alarm inputs › Delay time 0.2 ms	**260**
221-1BF30	**SM 221 - Digital input ECO** › 8 inputs	**260**
221-1BF40	**SM 221 - Digital input** › 8 inputs › for fast, short signals (pulse)	**263**
221-1BF50	**SM 221 - Digital input** › 8 inputs › Active low input	**263**
221-1BH00	**SM 221 - Digital input** › 16 inputs › LED status display on the conversion module UB4x	**263**
221-1BH10	**SM 221 - Digital input** › 16 inputs	**263**
221-1BH30	**SM 221 - Digital input ECO** › 16 inputs	**266**
221-1BH50	**SM 221 - Digital input** › 16 inputs › Active low input › LED status display on conversion module UB4x	**266**
221-1BH51	**SM 221 - Digital input** › 16 inputs › Active low input	**266**
221-1FD00	**SM 221 - Digital input** › 4 inputs › AC/DC 90...230 V › Isolation per channel	**266**
221-1FF20	**SM 221 - Digital input** › 8 inputs › AC/DC 60...230 V	**269**
221-1FF30	**SM 221 - Digital input** › 8 inputs › AC/DC 24...48 V	**269**
221-1FF40	**SM 221 - Digital input** › 8 inputs › AC 230 V › Hysteresis	**269**
221-1FF50	**SM 221 - Digital input** › 8 inputs › AC 180...265 V	**269**
221-2BL10	**SM 221 - Digital input** › 32 inputs	**272**
KSD221-1BH00	**SM 221 Set - Digital input** › 16 inputs › LED status display on conversion module UB48D	**272**
KS221-1BH00	**SM 221 Set - Digital input** › 16 inputs › LED status display on conversion module UB48	**272**
Digital input with counter		
221-1BH20	**SM 221 - Digital input** › 16 inputs › 2 inputs are configurable as counter › LED status display	**275**

Overview



Order no.	Name/Description	Page
Digital output modules		
222-1BF00	**SM 222 - Digital output** › 8 outputs › Output current 1A	**278**
222-1BF10	**SM 222 - Digital output** › 8 outputs › Output current 2 A	**278**
222-1BF20	**SM 222 - Digital output** › 8 outputs › Isolation in 4 groups per 2 outputs › Output current 2 A	**278**
222-1BF30	**SM 222 - Digital output ECO** › 8 outputs › Output current 0.5 A	**278**
222-1BF50	**SM 222 - Digital output** › 8 Low-Side outputs › Output current 0.5 A	**281**
222-1BH00	**SM 222 - Digital output** › 16 outputs › Output current 0.5 A › LED status display on conversion module UB4x	**281**
222-1BH10	**SM 222 - Digital output** › 16 outputs › Output current 1 A	**281**
222-1BH20	**SM 222 - Digital output** › 16 outputs › Output current 2 A	**281**
222-1BH30	**SM 222 - Digital output ECO** › 16 outputs › Output current 0.5 A	**284**
222-1BH50	**SM 222 - Digital output** › 16 Low-Side outputs › Output current 0.5 A	**284**
222-1BH51	**SM 222 - Digital output** › 16 Low-Side outputs › Output current 0.5A	**284**
222-1DB00	**SM 222 - Digital output** › 2 outputs › AC 100...240 V › Output current 2 A › Software dimmer for resistive, inductive or capacitive load › Frequency range 47...63 Hz	**284**
222-1FD10	**SM 222 - Digital output** › 8 isolated solid-state outputs › AC 230 V/ DC 400 V › Output current 0.5 A	**287**
222-1FF00	**SM 222 - Digital output** › 8 solide-state outputs › AC 230 V/ DC 400 V › Output current 0.5 A	**287**
222-1HD10	**SM 222 - Digital output** › 4 isolated relay outputs › AC 230 V/ DC 30 V › Output current 5 A	**287**
222-1HD20	**SM 222 - Digital output** › 4 isolated relay outputs › AC 230 V/ DC 30 V › Output current 16 A	**287**
222-1HF00	**SM 222 - Digital output** › 8 relay outputs › AC 230 V/ DC 30 V › Output current 5 A	**290**
222-2BL10	**SM 222 - Digital output** › 32 outputs › Output current 1 A	**290**
KSD222-1BH00	**SM 222 Set - Digital output** › 16 outputs › LED status display on conversion module UB48D › Output current 0.5 A	**290**
KS222-1BH00	**SM 222 Set - Digital output** › 16 outputs › LED status display on conversion module UB48 › Output current 0.5 A	**290**

Overview



Order no.	Name/Description	Page
Digital in/output modules		
223-1BF00	**SM 223 - Digital in-/output** › 8 channels (as input or output) › Output current 1 A › Diagnostics function	**293**
223-2BL10	**SM 223 - Digital in-/output** › 16 inputs/ 16 outputs › DC 24 V › Output current 1 A	**293**

Digital input modules

Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

Order number	221-1BF00	221-1BF10	221-1BF21	221-1BF30
Figure				
Type	SM 221	SM 221	SM 221	SM 221
General information				
Note	-	-	-	-
Features	› 8 inputs	› 8 inputs, › Delay time 0.2 ms	› 8 alarm inputs › Delay time 0.2 ms	› 8 inputs
Current consumption/power loss				
Current consumption from backplane bus	25 mA	25 mA	25 mA	25 mA
Power loss	2 W	2 W	2 W	2 W
Technical data digital inputs				
Number of inputs	8	8	8	8
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	-	-	-	-
Rated value	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V
Input voltage hysteresis	-	-	-	-
Frequency range	-	-	-	-
Input resistance	-	-	-	-
Input current for signal "1"	7 mA	7 mA	7 mA	7 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	✓
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Input delay of "0" to "1"	3 ms	0.2 ms	0.2 ms	3 ms
Input delay of "1" to "0"	3 ms	0.2 ms	0.2 ms	3 ms
Number of simultaneously utilizable inputs horizontal configuration	8	8	8	8
Number of simultaneously utilizable inputs vertical configuration	8	8	8	8
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1
Initial data size	1 Byte	1 Byte	1 Byte	1 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	none
Supply voltage display	none	none	none	none
Group error display	none	none	none	none

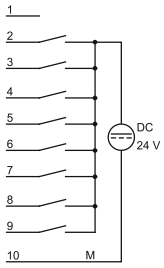
Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

Order number	221-1BF00	221-1BF10	221-1BF21	221-1BF30
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	-
Between channels of groups to	8	8	8	8
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	1	1	1	1
Output bytes	0	0	0	0
Parameter bytes	0	0	0	0
Diagnostic bytes	0	0	0	0
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm
Weight	60 g	90 g	90 g	90 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

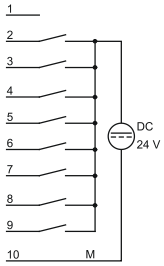
Connections, Interfaces

Signal modules digital | Digital input modules						
221-1BF00	221-1BF40	221-1BH30	221-1FF20	221-2BL10		
221-1BF10	221-1BF50	221-1BH50	221-1FF30	KSD221-1BH00		
221-1BF21	221-1BH00	221-1BH51	221-1FF40	KS221-1BH00		
221-1BF30	221-1BH10	221-1FD00	221-1FF50			

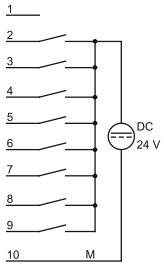
221-1BF00



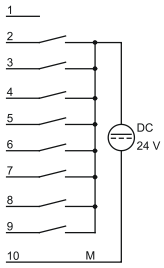
221-1BF10



221-1BF21



221-1BF30



Digital input modules

Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

Order number	221-1BF40	221-1BF50	221-1BH00	221-1BH10
Figure				
Type	SM 221	SM 221	SM 221	SM 221
General information				
Note	-	-	-	-
Features	› 8 inputs › for fast, short signals (pulse)	› 8 inputs › Active low input	› 16 inputs › LED status display on the conversion module UB4x	› 16 inputs
Current consumption/power loss				
Current consumption from backplane bus	25 mA	10 mA	35 mA	40 mA
Power loss	2 W	2 W	3.5 W	3.5 W
Technical data digital inputs				
Number of inputs	8	8	16	16
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	-	-	-	-
Rated value	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Input voltage for signal "0"	DC 0...5 V	DC 15...28.8 V	DC 0...5 V	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V	DC 0...5 V	DC 15...28.8 V	DC 15...28.8 V
Input voltage hysteresis	-	-	-	-
Frequency range	-	-	-	-
Input resistance	-	-	-	-
Input current for signal "1"	7 mA	7 mA	7 mA	7 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	✓
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Input delay of "0" to "1"	0.2 ms	3 ms	3 ms	3 ms
Input delay of "1" to "0"	0.2 ms	3 ms	3 ms	3 ms
Number of simultaneously utilizable inputs horizontal configuration	8	8	16	16
Number of simultaneously utilizable inputs vertical configuration	8	8	16	16
Input characteristic curve	IEC 61131, type 1	-	IEC 61131, type 1	IEC 61131, type 1
Initial data size	1 Byte	1 Byte	2 Byte	2 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	none	green LED per channel
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	none
Supply voltage display	none	none	none	none

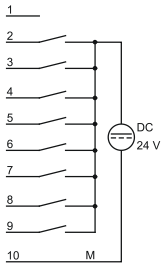
Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

Order number	221-1BF40	221-1BF50	221-1BH00	221-1BH10
Group error display	none	none	none	none
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	-
Between channels of groups to	8	8	16	16
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	1	1	2	2
Output bytes	0	0	0	0
Parameter bytes	0	0	0	0
Diagnostic bytes	0	0	0	0
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm
Weight	90 g	100 g	70 g	90 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	-	yes	yes	yes

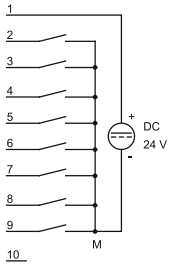
Connections, Interfaces

Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

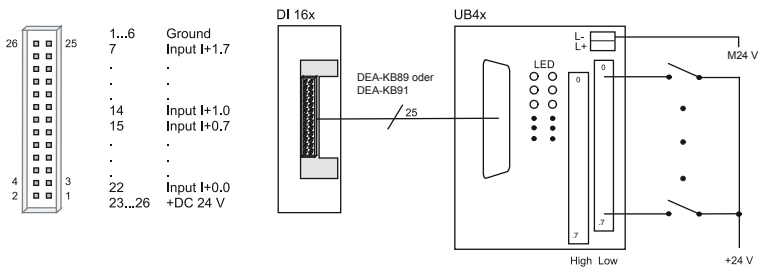
221-1BF40



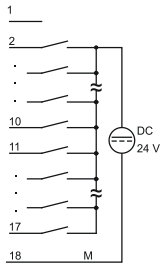
221-1BF50



221-1BH00



221-1BH10



Digital input modules

Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

Order number	221-1BH30	221-1BH50	221-1BH51	221-1FD00
Figure				
Type	SM 221	SM 221	SM 221	SM 221
General information				
Note	-	-	-	-
Features	› 16 inputs	› 16 inputs › Active low input › LED status display on conversion module UB4x	› 16 inputs › Active low input	› 4 inputs › AC/DC 90...230 V › Isolation per channel
Current consumption/power loss				
Current consumption from backplane bus	45 mA	40 mA	20 mA	40 mA
Power loss	3.5 W	3.5 W	3.5 W	2 W
Technical data digital inputs				
Number of inputs	16	16	16	4
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	-	-	-	-
Rated value	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	AC/DC 90...230 V
Input voltage for signal "0"	DC 0...5 V	DC 15...28.8 V	DC 15...28.8 V	AC/DC 0...35 V
Input voltage for signal "1"	DC 15...28.8 V	DC 0...5 V	DC 0...5 V	AC/DC 90...230 V
Input voltage hysteresis	-	-	-	-
Frequency range	-	-	-	50...60 Hz
Input resistance	-	-	-	136 kΩ
Input current for signal "1"	7 mA	7 mA	7 mA	-
Connection of Two-Wire-BEROs possible	✓	✓	✓	-
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	-
Input delay of "0" to "1"	3 ms	3 ms	3 ms	25 ms
Input delay of "1" to "0"	3 ms	3 ms	3 ms	25 ms
Number of simultaneously utilizable inputs horizontal configuration	16	16	16	4
Number of simultaneously utilizable inputs vertical configuration	16	16	16	4
Input characteristic curve	IEC 61131, type 1	-	-	-
Initial data size	2 Byte	2 Byte	2 Byte	4 Bit
Status information, alarms, diagnostics				
Status display	green LED per channel	none	green LED per channel	green LED per channel
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	none

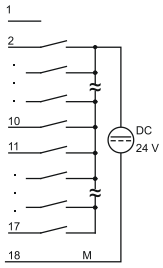
Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

Order number	221-1BH30	221-1BH50	221-1BH51	221-1FD00
Supply voltage display	none	none	none	none
Group error display	none	none	none	none
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	✓
Between channels of groups to	16	16	16	1
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	2	2	2	1
Output bytes	0	0	0	0
Parameter bytes	0	0	0	0
Diagnostic bytes	0	0	0	0
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm
Weight	90 g	70 g	90 g	90 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

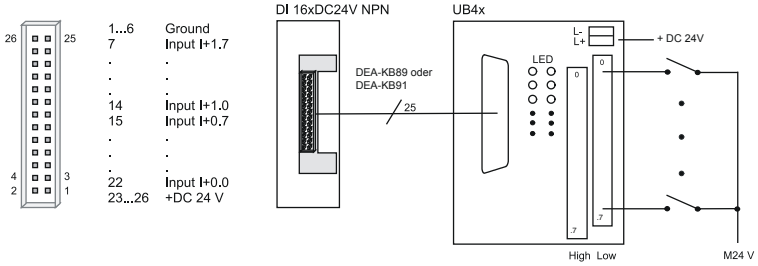
Connections, Interfaces

Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

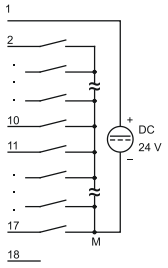
221-1BH30



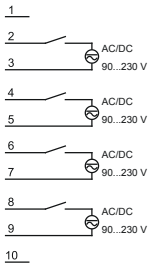
221-1BH50



221-1BH51



221-1FD00



Digital input modules

Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

Order number	221-1FF20	221-1FF30	221-1FF40	221-1FF50
Figure				
Type	SM 221	SM 221	SM 221	SM 221
General information				
Note	-	-	-	-
Features	› 8 inputs › AC/DC 60...230 V	› 8 inputs › AC/DC 24...48 V	› 8 inputs › AC 230 V › Hysteresis	› 8 inputs › AC 180...265 V
Current consumption/power loss				
Current consumption from backplane bus	60 mA	60 mA	60 mA	80 mA
Power loss	3 W	2 W	3 W	3 W
Technical data digital inputs				
Number of inputs	8	8	8	8
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	-	-	-	-
Rated value	AC/DC 60...230 V	AC/DC 24...48 V	AC 230 V	AC/DC 180...265 V
Input voltage for signal "0"	AC/DC 0...35 V	AC/DC 0...8 V	AC 0...70 V	AC/DC 0...150 V
Input voltage for signal "1"	AC/DC 60...230 V	AC/DC 18...48 V	AC 190...260 V	AC/DC 180...265 V
Input voltage hysteresis	-	-	AC 90...160 V	-
Frequency range	50...60 Hz	50...60 Hz	50 Hz	50...60 Hz
Input resistance	136 kΩ	16.4 kΩ	136 kΩ	136 kΩ
Input current for signal "1"	-	-	-	-
Connection of Two-Wire-BEROs possible	-	-	-	-
Max. permissible BERO quiescent current	-	-	-	-
Input delay of "0" to "1"	25 ms	25 ms	25 ms	25 ms
Input delay of "1" to "0"	25 ms	25 ms	25 ms	25 ms
Number of simultaneously utilizable inputs horizontal configuration	8	8	8	8
Number of simultaneously utilizable inputs vertical configuration	8	8	8	8
Input characteristic curve	-	-	-	-
Initial data size	1 Byte	1 Byte	1 Byte	1 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	none
Supply voltage display	none	none	none	none

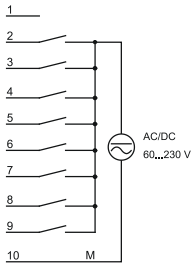
Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

Order number	221-1FF20	221-1FF30	221-1FF40	221-1FF50
Group error display	none	none	none	none
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	-
Between channels of groups to	8	8	8	8
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	1	1	1	1
Output bytes	0	0	0	0
Parameter bytes	0	0	0	0
Diagnostic bytes	0	0	0	0
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm
Weight	100 g	90 g	100 g	90 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

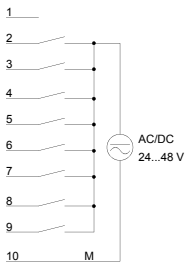
Connections, Interfaces

Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

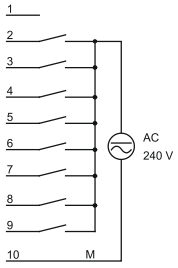
221-1FF20



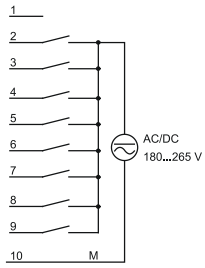
221-1FF30



221-1FF40



221-1FF50



Digital input modules

Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

Order number	221-2BL10	KSD221-1BH00	KS221-1BH00	
Figure				
Type	SM 221	SM 221, Set	SM 221, Set	
General information				
Note	-	-	-	
Features	› 32 inputs	› 16 inputs › LED status display on conversion module UB48D	› 16 inputs › LED status display on conversion module UB48	
Current consumption/power loss				
Current consumption from backplane bus	40 mA	35 mA	35 mA	
Power loss	6.5 W	3.5 W	3.5 W	
Technical data digital inputs				
Number of inputs	32	16	16	
Cable length, shielded	1000 m	1000 m	1000 m	
Cable length, unshielded	600 m	600 m	600 m	
Rated load voltage	-	-	-	
Current consumption from load voltage L+ (without load)	-	-	-	
Rated value	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	
Input voltage hysteresis	-	-	-	
Frequency range	-	-	-	
Input resistance	-	-	-	
Input current for signal "1"	7 mA	7 mA	7 mA	
Connection of Two-Wire-BEROs possible	✓	✓	✓	
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	
Input delay of "0" to "1"	3 ms	3 ms	3 ms	
Input delay of "1" to "0"	3 ms	3 ms	3 ms	
Number of simultaneously utilizable inputs horizontal configuration	16	16	16	
Number of simultaneously utilizable inputs vertical configuration	16	16	16	
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1	
Initial data size	4 Byte	2 Byte	2 Byte	
Status information, alarms, diagnostics				
Status display	green LED per channel	none	none	
Interrupts	no	no	no	
Process alarm	no	no	no	
Diagnostic interrupt	no	no	no	
Diagnostic functions	no	no	no	
Diagnostics information read-out	none	none	none	
Supply voltage display	none	none	none	

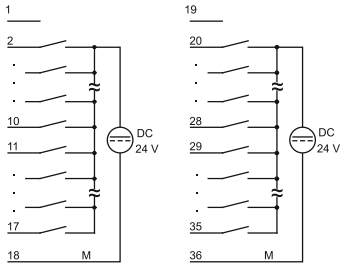
Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

Order number	221-2BL10	KSD221-1BH00	KS221-1BH00	
Group error display	none	none	none	
Channel error display	none	none	none	
Isolation				
Between channels	-	-	-	
Between channels of groups to	16	16	16	
Between channels and backplane bus	✓	✓	✓	
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	
Datasizes				
Input bytes	4	2	2	
Output bytes	0	0	0	
Parameter bytes	0	0	0	
Diagnostic bytes	0	0	0	
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	
Mechanical data				
Dimensions (WxHxD)	50.8 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	
Weight	140 g	70 g	70 g	
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	
Certifications				
UL508 certification	yes	yes	yes	

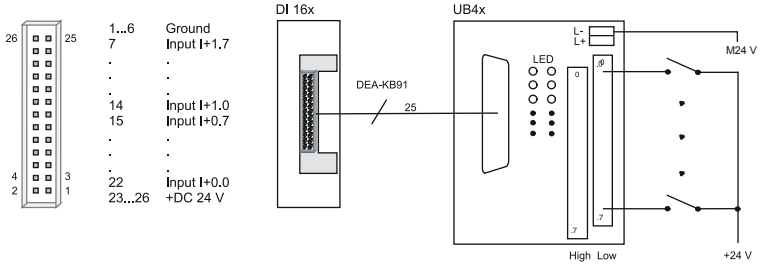
Connections, Interfaces

Signal modules digital | Digital input modules						
221-1BF00 221-1BF10 221-1BF21 221-1BF30	221-1BF40 221-1BF50 221-1BH00 221-1BH10	221-1BH30 221-1BH50 221-1BH51 221-1FD00	221-1FF20 221-1FF30 221-1FF40 221-1FF50	221-2BL10 KSD221-1BH00 KS221-1BH00		

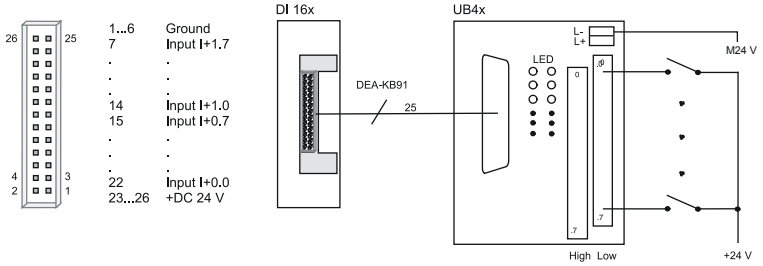
221-2BL10



KSD221-1BH00



KS221-1BH00



Digital input with counter

Signal modules digital | Digital input with counter						
221-1BH20						

Order number	221-1BH20			
Figure				
Type	SM 221			
General information				
Note	-			
Features	› 16 inputs › 2 inputs are configurable as counter › LED status display			
Current consumption/power loss				
Current consumption from backplane bus	85 mA			
Power loss	3.5 W			
Technical data digital inputs				
Number of inputs	16			
Cable length, shielded	1000 m			
Cable length, unshielded	600 m			
Rated load voltage	-			
Reverse polarity protection of rated load voltage	-			
Current consumption from load voltage L+ (without load)	-			
Rated value	DC 20.4...28.8 V			
Input voltage for signal "0"	DC 0...5 V			
Input voltage for signal "1"	DC 15...28.8 V			
Input voltage hysteresis	-			
Frequency range	-			
Input resistance	-			
Input current for signal "1"	7 mA			
Connection of Two-Wire-BEROs possible	✓			
Max. permissible BERO quiescent current	1.5 mA			
Input delay of "0" to "1"	3 ms			
Input delay of "1" to "0"	3 ms			
Number of simultaneously utilizable inputs horizontal configuration	16			
Number of simultaneously utilizable inputs vertical configuration	16			
Input characteristic curve	IEC 61131, type 1			
Initial data size	6 Byte			
Technical data counters				
Number of counters	1			
Counter width	32 Bit			
Maximum input frequency	100 kHz			
Maximum count frequency	400 kHz			
Mode incremental encoder	✓			

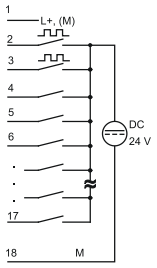
Signal modules digital | Digital input with counter						
221-1BH20						

Order number	221-1BH20			
Mode pulse / direction	✓			
Mode pulse	✓			
Mode frequency counter	✓			
Mode period measurement	✓			
Gate input available	-			
Latch input available	-			
Reset input available	-			
Counter output available	-			
Status information, alarms, diagnostics				
Status display	green LED per channel			
Interrupts	no			
Process alarm	no			
Diagnostic interrupt	no			
Diagnostic functions	no			
Diagnostics information read-out	none			
Supply voltage display	none			
Group error display	none			
Channel error display	none			
Isolation				
Between channels	-			
Between channels of groups to	16			
Between channels and backplane bus	✓			
Insulation tested with	DC 500 V			
Datasizes				
Input bytes	6			
Output bytes	6			
Parameter bytes	5			
Diagnostic bytes	0			
Housing				
Material	PPE / PA 6.6			
Mounting	Profile rail 35 mm			
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm			
Weight	90 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

Connections, Interfaces

Signal modules digital | Digital input with counter						
221-1BH20						

221-1BH20



Digital output modules

Signal modules digital | Digital output modules						
222-1BF00	222-1BF50	222-1BH30	222-1FD10	222-1HF00		
222-1BF10	222-1BH00	222-1BH50	222-1FF00	222-2BL10		
222-1BF20	222-1BH10	222-1BH51	222-1HD10	KSD222-1BH00		
222-1BF30	222-1BH20	222-1DB00	222-1HD20	KS222-1BH00		

Order number	222-1BF00	222-1BF10	222-1BF20	222-1BF30
Figure				
Type	SM 222	SM 222	SM 222	SM 222, ECO
General information				
Note	-	-	-	-
Features	› 8 outputs › Output current 1A	› 8 outputs › Output current 2 A	› 8 outputs › Isolation in 4 groups per 2 outputs › Output current 2 A	› 8 outputs › Output current 0.5 A
Current consumption/power loss				
Current consumption from backplane bus	70 mA	70 mA	70 mA	70 mA
Power loss	2 W	3 W	3 W	2 W
Technical data digital outputs				
Number of outputs	8	8	8	8
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Current consumption from load voltage L+ (without load)	10 mA	10 mA	10 mA	10 mA
Total current per group, horizontal configuration, 40°C	8 A	10 A	4 A	4 A
Total current per group, horizontal configuration, 60°C	8 A	10 A	4 A	4 A
Total current per group, vertical configuration	8 A	10 A	4 A	4 A
Output current at signal "1", rated value	1 A	2 A	2 A	0.5 A
Output delay of "0" to "1"	150 µs	150 µs	150 µs	max. 100 µs
Output delay of "1" to "0"	100 µs	100 µs	100 µs	max. 350 µs
Minimum load current	-	-	-	-
Lamp load	5 W	5 W	5 W	5 W
Parallel switching of outputs for redundant control of a load	not possible	not possible	not possible	not possible
Parallel switching of outputs for increased power	not possible	not possible	not possible	not possible
Actuation of digital input	✓	✓	✓	✓
Switching frequency with resistive load	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz	max. 10 Hz	max. 10 Hz
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)
Short-circuit protection of output	yes, electronic	yes, electronic	yes, electronic	yes, electronic
Trigger level	1.5 A	3 A	3 A	1 A
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-

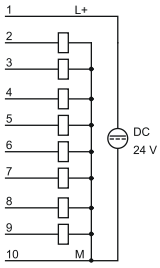
Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

Order number	222-1BF00	222-1BF10	222-1BF20	222-1BF30
Output data size	1 Byte	1 Byte	1 Byte	1 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	none
Supply voltage display	green LED per group	green LED per group	green LED per group	green LED per group
Group error display	red SF LED	red SF LED	red LED per group	red SF LED
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	✓	-
Between channels of groups to	8	8	2	8
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	0	0	0	0
Output bytes	1	1	1	1
Parameter bytes	0	0	0	0
Diagnostic bytes	0	0	0	0
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm
Weight	100 g	100 g	90 g	90 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

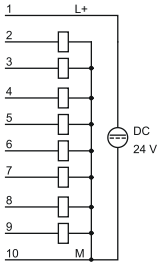
Connections, Interfaces

Signal modules digital | Digital output modules						
222-1BF00	222-1BF50	222-1BH30	222-1FD10	222-1HF00		
222-1BF10	222-1BH00	222-1BH50	222-1FF00	222-2BL10		
222-1BF20	222-1BH10	222-1BH51	222-1HD10	KSD222-1BH00		
222-1BF30	222-1BH20	222-1DB00	222-1HD20	KS222-1BH00		

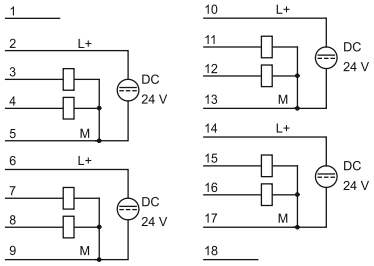
222-1BF00



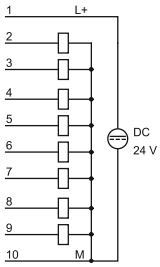
222-1BF10



222-1BF20



222-1BF30



Digital output modules

Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

Order number	222-1BF50	222-1BH00	222-1BH10	222-1BH20
Figure				
Type	SM 222	SM 222	SM 222	SM 222
General information				
Note	-	-	-	-
Features	› 8 Low-Side outputs › Output current 0.5 A	› 16 outputs › Output current 0.5 A › LED status display on conversion module UB4x	› 16 outputs › Output current 1 A	› 16 outputs › Output current 2 A
Current consumption/power loss				
Current consumption from backplane bus	50 mA	120 mA	120 mA	120 mA
Power loss	1.5 W	3.5 W	3.5 W	3.5 W
Technical data digital outputs				
Number of outputs	8	16	16	16
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Current consumption from load voltage L+ (without load)	15 mA	10 mA	10 mA	10 mA
Total current per group, horizontal configuration, 40°C	4 A	8 A	10 A	10 A
Total current per group, horizontal configuration, 60°C	4 A	8 A	10 A	10 A
Total current per group, vertical configuration	4 A	8 A	10 A	10 A
Output current at signal "1", rated value	0.5 A	0.5 A	1 A	2 A
Output delay of "0" to "1"	30 µs	150 µs	150 µs	150 µs
Output delay of "1" to "0"	100 µs	100 µs	100 µs	100 µs
Minimum load current	-	-	-	-
Lamp load	5 W	5 W	5 W	5 W
Parallel switching of outputs for redundant control of a load	not possible	not possible	not possible	not possible
Parallel switching of outputs for increased power	not possible	not possible	not possible	not possible
Actuation of digital input	✓	✓	✓	✓
Switching frequency with resistive load	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz	max. 10 Hz	max. 10 Hz
Internal limitation of inductive shut-off voltage	+45 V	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)
Short-circuit protection of output	yes, electronic	yes, electronic	yes, electronic	yes, electronic
Trigger level	1.7 A	1.5 A	1.5 A	3 A
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-

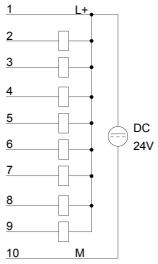
Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

Order number	222-1BF50	222-1BH00	222-1BH10	222-1BH20
Output data size	1 Byte	2 Byte	2 Byte	2 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	none	green LED per channel	green LED per channel
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	none
Supply voltage display	green LED per group	none	green LED per group	green LED per group
Group error display	red SF LED	none	red SF LED	red SF LED
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	-
Between channels of groups to	8	16	16	16
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	0	0	0	0
Output bytes	1	2	2	2
Parameter bytes	0	0	0	0
Diagnostic bytes	0	0	0	0
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm
Weight	90 g	80 g	90 g	100 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

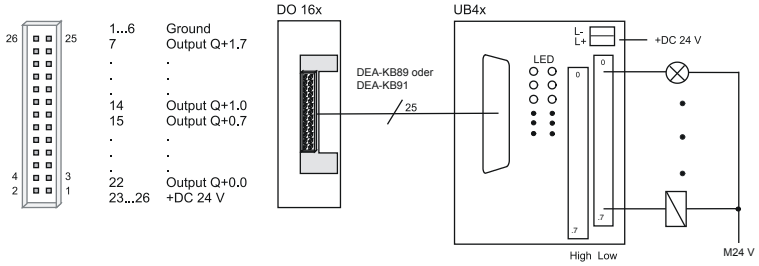
Connections, Interfaces

Signal modules digital | Digital output modules						
222-1BF00	222-1BF50	222-1BH30	222-1FD10	222-1HF00		
222-1BF10	222-1BH00	222-1BH50	222-1FF00	222-2BL10		
222-1BF20	222-1BH10	222-1BH51	222-1HD10	KSD222-1BH00		
222-1BF30	222-1BH20	222-1DB00	222-1HD20	KS222-1BH00		

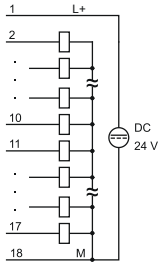
222-1BF50



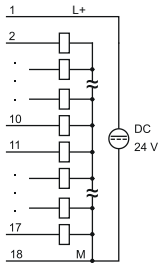
222-1BH00



222-1BH10



222-1BH20



Digital output modules

Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

Order number	222-1BH30	222-1BH50	222-1BH51	222-1DB00
Figure				
Type	SM 222, ECO	SM 222	SM 222	SM 222
General information				
Note	-	-	-	-
Features	› 16 outputs › Output current 0.5 A	› 16 Low-Side outputs › Output current 0.5 A	› 16 Low-Side outputs › Output current 0.5A	› 2 outputs › AC 100...240 V › Output current 2 A › Software dimmer for resistive, inductive or capacitive load › Frequency range 47...63 Hz
Current consumption/power loss				
Current consumption from backplane bus	120 mA	120 mA	90 mA	190 mA
Power loss	3.5 W	3.5 W	2.5 W	6 W
Technical data digital outputs				
Number of outputs	16	16	16	2
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	AC 100...240 V
Current consumption from load voltage L+ (without load)	10 mA	10 mA	25 mA	15 mA
Total current per group, horizontal configuration, 40°C	8 A	8 A	8 A	4 A
Total current per group, horizontal configuration, 60°C	8 A	8 A	8 A	3 A
Total current per group, vertical configuration	8 A	8 A	8 A	4 A
Output current at signal "1", rated value	0.5 A	0.5 A	0.5 A	2 A
Output delay of "0" to "1"	max. 100 µs	100 µs	30 µs	max. 1 AC cycle
Output delay of "1" to "0"	max. 350 µs	150 µs	100 µs	max. 1 AC cycle
Minimum load current	-	-	-	-
Lamp load	5 W	5 W	5 W	460 W
Parallel switching of outputs for redundant control of a load	not possible	not possible	possible (only outputs group)	not possible
Parallel switching of outputs for increased power	not possible	not possible	not possible	not possible
Actuation of digital input	✓	✓	✓	-
Switching frequency with resistive load	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz	-
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz	-
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz	max. 10 Hz	-
Internal limitation of inductive shut-off voltage	L+ (-52 V)	+45 V	+45 V	-
Short-circuit protection of output	yes, electronic	yes, electronic	yes, electronic	yes, electronic
Trigger level	1 A	1.5 A	1.7 A	4 A

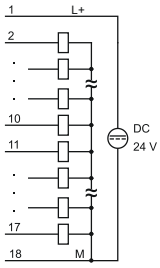
Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

Order number	222-1BH30	222-1BH50	222-1BH51	222-1DB00
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-
Output data size	2 Byte	2 Byte	2 Byte	4 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	none	green LED per channel	none
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	yes, parameterizable
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	possible
Supply voltage display	green LED per group	none	green LED per group	green LED per group
Group error display	red SF LED	none	red SF LED	red SF LED
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	-
Between channels of groups to	16	16	16	-
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 4000 V
Datasizes				
Input bytes	0	0	0	0
Output bytes	2	2	2	4
Parameter bytes	0	0	0	17
Diagnostic bytes	0	0	0	10
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm
Weight	90 g	80 g	90 g	70 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	-

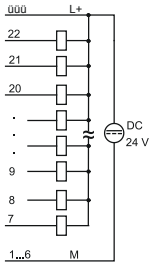
Connections, Interfaces

Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

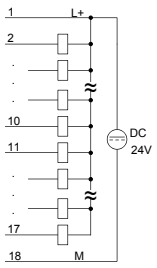
222-1BH30



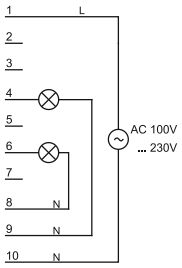
222-1BH50



222-1BH51



222-1DB00



Digital output modules

Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

Order number	222-1FD10	222-1FF00	222-1HD10	222-1HD20
Figure				
Type	SM 222	SM 222	SM 222	SM 222
General information				
Note	-	-	-	-
Features	› 8 isolated solid-state outputs › AC 230 V/ DC 400 V › Output current 0.5 A	› 8 solide-state outputs › AC 230 V/ DC 400 V › Output current 0.5 A	› 4 isolated relay outputs › AC 230 V/ DC 30 V › Output current 5 A	› 4 isolated relay outputs › AC 230 V/ DC 30 V › Output current 16 A
Current consumption/power loss				
Current consumption from backplane bus	100 mA	150 mA	160 mA	200 mA
Power loss	1.5 W	1.5 W	2 W	2 W
Technical data digital outputs				
Number of outputs	4	8	4	4
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	AC 230 V	AC 230 V	AC 230 V	AC 230 V
Current consumption from load voltage L+ (without load)	-	-	-	-
Total current per group, horizontal configuration, 40°C	-	-	-	-
Total current per group, horizontal configuration, 60°C	-	-	-	-
Total current per group, vertical configuration	-	-	-	-
Output current at signal "1", rated value	0.5 A	0.5 A	5 A	16 A
Output delay of "0" to "1"	-	-	10 ms	10 ms
Output delay of "1" to "0"	-	-	5 ms	10 ms
Minimum load current	-	-	-	-
Lamp load	-	-	-	-
Parallel switching of outputs for redundant control of a load	not possible	not possible	-	-
Parallel switching of outputs for increased power	not possible	not possible	-	-
Actuation of digital input	-	-	-	-
Switching frequency with resistive load	max. 100 Hz	max. 100 Hz	max. 10 Hz	max. 10 Hz
Switching frequency with inductive load	-	-	-	-
Switching frequency on lamp load	-	-	-	-
Internal limitation of inductive shut-off voltage	-	-	-	-
Short-circuit protection of output	-	-	-	-
Trigger level	-	-	-	-
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	5 A	16 A

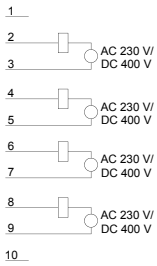
Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

Order number	222-1FD10	222-1FF00	222-1HD10	222-1HD20
Output data size	1 Byte	1 Byte	1 Byte	1 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	none
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	none
Supply voltage display	none	none	none	none
Group error display	none	none	none	none
Channel error display	none	none	none	none
Isolation				
Between channels	✓	-	✓	✓
Between channels of groups to	1	-	1	1
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	0	0	0	0
Output bytes	1	1	1	1
Parameter bytes	0	0	0	0
Diagnostic bytes	0	0	0	0
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm
Weight	100 g	100 g	100 g	120 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

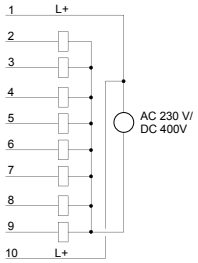
Connections, Interfaces

Signal modules digital | Digital output modules						
222-1BF00	222-1BF50	222-1BH30	222-1FD10	222-1HF00		
222-1BF10	222-1BH00	222-1BH50	222-1FF00	222-2BL10		
222-1BF20	222-1BH10	222-1BH51	222-1HD10	KSD222-1BH00		
222-1BF30	222-1BH20	222-1DB00	222-1HD20	KS222-1BH00		

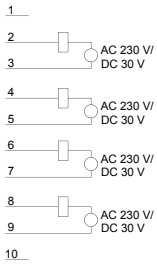
222-1FD10



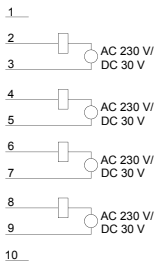
222-1FF00



222-1HD10



222-1HD20



Digital output modules

Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

Order number	222-1HF00	222-2BL10	KSD222-1BH00	KS222-1BH00
Figure				
Type	SM 222	SM 222	SM 222, Set	SM 222, Set
General information				
Note	-	-	-	-
Features	› 8 relay outputs › AC 230 V/ DC 30 V › Output current 5 A	› 32 outputs › Output current 1 A	› 16 outputs › LED status display on conversion module UB48D › Output current 0.5 A	› 16 outputs › LED status display on conversion module UB48 › Output current 0.5 A
Current consumption/power loss				
Current consumption from backplane bus	300 mA	180 mA	120 mA	120 mA
Power loss	2 W	6.5 W	3.5 W	3.5 W
Technical data digital outputs				
Number of outputs	8	32	16	16
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 30 V/ AC 230 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Current consumption from load voltage L+ (without load)	-	15 mA	10 mA	10 mA
Total current per group, horizontal configuration, 40°C	8 A	10 A	8 A	8 A
Total current per group, horizontal configuration, 60°C	8 A	10 A	8 A	8 A
Total current per group, vertical configuration	8 A	10 A	8 A	8 A
Output current at signal "1", rated value	5 A	1 A	0.5 A	0.5 A
Output delay of "0" to "1"	10 ms	150 µs	150 µs	150 µs
Output delay of "1" to "0"	5 ms	100 µs	100 µs	100 µs
Minimum load current	-	-	-	-
Lamp load	-	5 W	-	-
Parallel switching of outputs for redundant control of a load	-	not possible	not possible	not possible
Parallel switching of outputs for increased power	-	not possible	not possible	not possible
Actuation of digital input	-	✓	✓	✓
Switching frequency with resistive load	max. 10 Hz	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz
Switching frequency with inductive load	-	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz
Switching frequency on lamp load	-	max. 10 Hz	max. 10 Hz	max. 10 Hz
Internal limitation of inductive shut-off voltage	-	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)
Short-circuit protection of output	-	yes, electronic	yes, electronic	yes, electronic
Trigger level	-	1.5 A	1.5 A	1.5 A
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	5 A	-	-	-

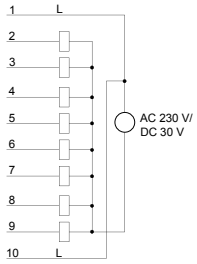
Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

Order number	222-1HF00	222-2BL10	KSD222-1BH00	KS222-1BH00
Output data size	1 Byte	4 Byte	2 Byte	2 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	none	none
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	none
Supply voltage display	none	green LED per group	none	none
Group error display	none	red SF LED	none	none
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	-
Between channels of groups to	-	16	16	16
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	0	0	0	0
Output bytes	1	4	2	2
Parameter bytes	0	0	0	0
Diagnostic bytes	0	0	0	0
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	50.8 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm
Weight	110 g	150 g	80 g	80 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

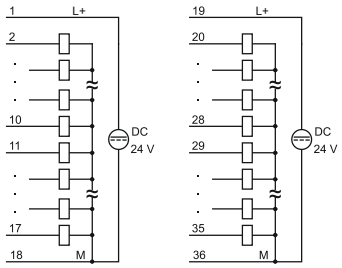
Connections, Interfaces

Signal modules digital | Digital output modules						
222-1BF00 222-1BF10 222-1BF20 222-1BF30	222-1BF50 222-1BH00 222-1BH10 222-1BH20	222-1BH30 222-1BH50 222-1BH51 222-1DB00	222-1FD10 222-1FF00 222-1HD10 222-1HD20	222-1HF00 222-2BL10 KSD222-1BH00 KS222-1BH00		

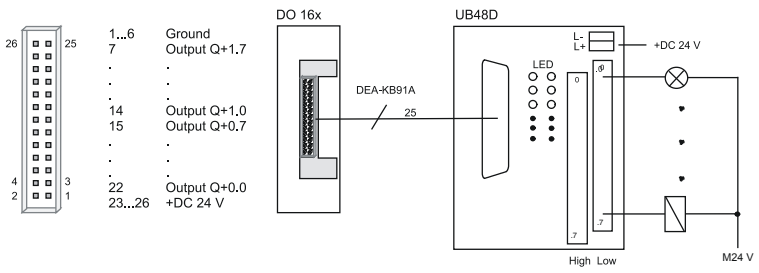
222-1HF00



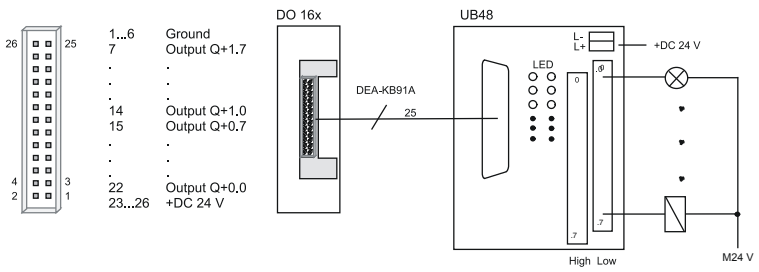
222-2BL10



KSD222-1BH00

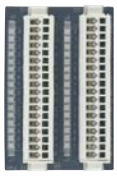


KS222-1BH00



Digital in/output modules

Signal modules digital | Digital in/output modules						
223-1BF00 223-2BL10						

Order number	223-1BF00	223-2BL10		
Figure				
Type	SM 223	SM 223		
General information				
Note	-	-		
Features	› 8 channels (as input or output) › Output current 1 A › Diagnostics function	› 16 inputs/ 16 outputs › DC 24 V › Output current 1 A		
Current consumption/power loss				
Current consumption from backplane bus	65 mA	120 mA		
Power loss	2 W	6.5 W		
Technical data digital inputs				
Number of inputs	8	16		
Cable length, shielded	1000 m	1000 m		
Cable length, unshielded	600 m	600 m		
Rated load voltage	-	-		
Current consumption from load voltage L+ (without load)	-	-		
Rated value	DC 20.4...28.8 V	DC 20.4...28.8 V		
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V		
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V		
Input voltage hysteresis	-	-		
Frequency range	-	-		
Input resistance	-	-		
Input current for signal "1"	7 mA	7 mA		
Connection of Two-Wire-BEROs possible	✓	✓		
Max. permissible BERO quiescent current	1.5 mA	1.5 mA		
Input delay of "0" to "1"	3 ms	3 ms		
Input delay of "1" to "0"	3 ms	3 ms		
Number of simultaneously utilizable inputs horizontal configuration	8	8		
Number of simultaneously utilizable inputs vertical configuration	8	8		
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1		
Initial data size	1 Byte	2 Byte		
Technical data digital outputs				
Number of outputs	8	16		
Cable length, shielded	1000 m	1000 m		
Cable length, unshielded	600 m	600 m		
Rated load voltage	DC 20.4...28.8 V	DC 20.4...28.8 V		
Reverse polarity protection of rated load voltage	-	-		

Signal modules digital | Digital in/output modules						
223-1BF00 223-2BL10						

Order number	223-1BF00	223-2BL10		
Current consumption from load voltage L+ (without load)	10 mA	10 mA		
Output current at signal "1", rated value	1 A	1 A		
Output delay of "0" to "1"	150 µs	150 µs		
Output delay of "1" to "0"	100 µs	100 µs		
Minimum load current	-	-		
Lamp load	5 W	5 W		
Parallel switching of outputs for redundant control of a load	not possible	not possible		
Parallel switching of outputs for increased power	not possible	not possible		
Actuation of digital input	✓	✓		
Switching frequency with resistive load	max. 1000 Hz	max. 1000 Hz		
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz		
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz		
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)		
Short-circuit protection of output	yes, electronic	yes, electronic		
Trigger level	1.7 A	1.7 A		
Number of operating cycle of relay outputs	-	-		
Switching capacity of contacts	-	-		
Output data size	1 Byte	2 Byte		
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel		
Interrupts	no	no		
Process alarm	no	no		
Diagnostic interrupt	no	no		
Diagnostic functions	no	no		
Diagnostics information read-out	none	none		
Supply voltage display	green LED	green LED		
Group error display	red SF LED	red SF LED		
Channel error display	none	none		
Isolation				
Between channels	-	-		
Between channels of groups to	8	16		
Between channels and backplane bus	✓	✓		
Insulation tested with	DC 500 V	DC 500 V		
Datasizes				
Input bytes	1	2		
Output bytes	1	2		
Parameter bytes	0	0		
Diagnostic bytes	0	0		

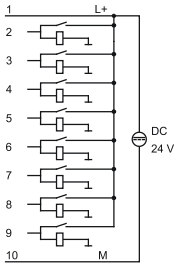
Signal modules digital | Digital in/output modules						
223-1BF00 223-2BL10						

Order number	223-1BF00	223-2BL10		
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6		
Mounting	Profile rail 35 mm	Profile rail 35 mm		
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm		
Weight	100 g	150 g		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	yes	yes		

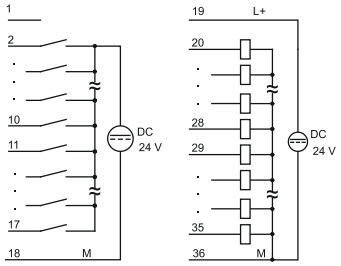
Connections, Interfaces

Signal modules digital | Digital in/output modules						
223-1BF00 223-2BL10						

223-1BF00



223-2BL10



Signal modules analog

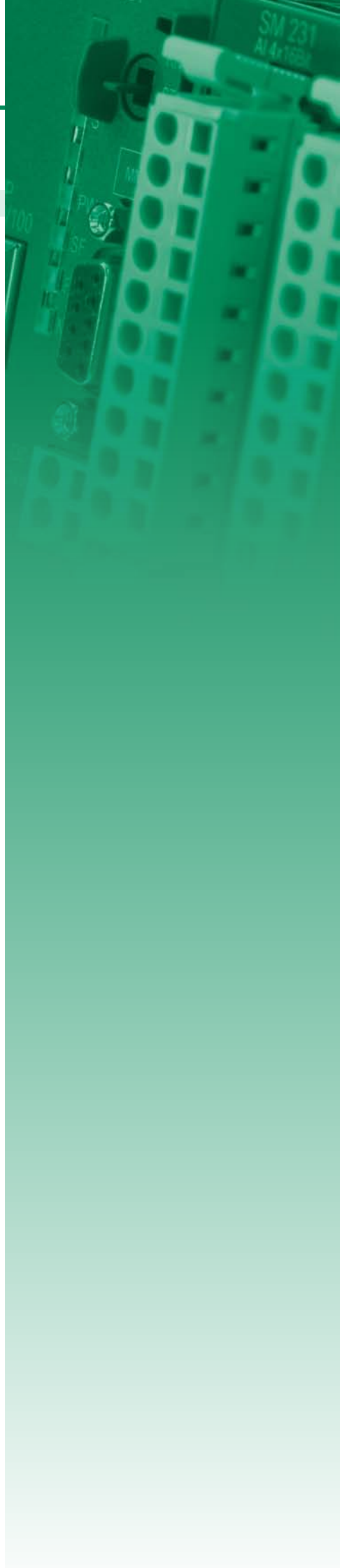
Structure and Function

Analog modules for connection of sensors and actuators are the interface of the PLC to the process. Analog input modules acquire the analog control signals from the process level and transform them into interpretable signals for the control. Analog output modules convert the internal control signals into signals suitable for the process level. There are analog modules with 4 to 8 channels available.

Characteristics

- Large selection, 4 and 8 channel, available for various measurement encoders (U, I, TC, R)
- Electrically isolated to the backplane bus
- Compact design
- LED Status Indicator
- Maintenance-free cage-clamp technology
- Label cards included
- Front connector included
- Assembly with 35 mm profile rail
- 24 month warranty

Overview



Order no.	Name/Description	Page
Analog input modules		
231-1BD30	**SM 231 - Analog input ECO** › 4 inputs › Configurable › Voltage +/-10 V	**300**
231-1BD40	**SM 231 - Analog input ECO** › 4 inputs › Configurable › Current 4...20 mA, +/-20 mA	**300**
231-1BD53	**SM 231 - Analog input** › 4 inputs › Configurable › Voltage, current › Resistance › Resistance thermometer, thermocouple	**300**
231-1BD60	**SM 231 - Analog input** › 4 input 12 bit › Current 4...20 mA › Potential separated per channel	**300**
231-1BD70	**SM 231 - Analog input** › 4 input 12 bit › Voltage +/-10 V › Potential separated per channel	**304**
231-1BF00	**SM 231 - Analog input** › 8 inputs › Configurable › Voltage 0...60 mV › Resistance thermometer, thermocouple	**304**
231-1FD00	**SM 231 - Analog input FAST** › 4 fast inputs › Configurable › Voltage, current › Cycle time 0.8 ms	**304**
Analog output modules		
232-1BD30	**SM 232 - Analog output ECO** › 4 outputs › Configurable › Voltage +/-10 V, 0..10 V	**308**
232-1BD40	**SM 232 - Analog output ECO** › 4 outputs › Configurable › Current 0(4)...20mA	**308**
232-1BD51	**SM 232 - Analog output** › 4 outputs › Configurable › Voltage, current	**308**
Analog in/output modules		
234-1BD50	**SM 234 - Analog in-/output** › 2 inputs/2 outputs › Configurable › Voltage, current	**311**
234-1BD60	**SM 234 - Analog in-/output** › 4 inputs/2 outputs › Configurable › Voltage, current › Resistance, resistance thermometer	**311**
Combination modules		
238-2BC00	**SM 238C - Digital in-/output, counter, analog in-/output** › 16 (12) digital inputs › 0 (4) digital outputs › max. 3 counter › 4 analog inputs › 2 analog outputs	**315**

Analog input modules

Signal modules analog | Analog input modules						
231-1BD30 231-1BD40 231-1BD53 231-1BD60	231-1BD70 231-1BF00 231-1FD00					

Order number	231-1BD30	231-1BD40	231-1BD53	231-1BD60
Figure				
Type	SM 231, ECO	SM 231, ECO	SM 231	SM 231
General information				
Note	-	-	-	-
Features	› 4 inputs › Configurable › Voltage +/-10 V	› 4 inputs › Configurable › Current 4...20 mA, +/-20 mA	› 4 inputs › Configurable › Voltage, current › Resistance › Resistance thermo-meter, thermocouple	› 4 input 12 bit › Current 4...20 mA › Potential separated per channel
Current consumption/power loss				
Current consumption from backplane bus	120 mA	120 mA	280 mA	280 mA
Power loss	0.6 W	0.6 W	1.4 W	1.4 W
Technical data analog inputs				
Number of inputs	4	4	4	4
Cable length, shielded	200 m	200 m	200 m	200 m
Rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	-	-	-	-
Voltage inputs	✓	-	✓	-
Min. input resistance (voltage range)	100 kΩ	-	20 MΩ	-
Input voltage ranges	-10 V ... +10 V	-	-50 mV ... +50 mV -400 mV ... +400 mV -4 V ... +4 V -10 V ... +10 V	-
Operational limit of voltage ranges	+/-0.2%	-	+/-0.3% ... +/-0.6%	-
Basic error limit voltage ranges with SFU	+/-0.1%	-	+/-0.2% ... +/-0.4%	-
Current inputs	-	✓	✓	✓
Min. input resistance (current range)	-	110 Ω	85 Ω	20 Ω
Input current ranges	-	-20 mA ... +20 mA +4 mA ... +20 mA	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA	+4 mA ... +20 mA
Operational limit of current ranges	-	+/-0.2% ... +/-0.5%	+/-0.3% ... +/-0.8%	-
Basic error limit current ranges with SFU	-	+/-0.1% ... +/-0.2%	+/-0.2% ... +/-0.5%	-
Resistance inputs	-	-	✓	-
Resistance ranges	-	-	0 ... 60 Ohm 0 ... 600 Ohm 0 ... 3000 Ohm 0 ... 6000 Ohm	-
Operational limit of resistor ranges	-	-	+/-0.4% ... +/-0.8%	-
Basic error limit	-	-	+/-0.2% ... +/-0.4%	-
Resistance thermometer inputs	-	-	✓	-

Signal modules analog | Analog input modules						
231-1BD30 231-1BD40 231-1BD53 231-1BD60	231-1BD70 231-1BF00 231-1FD00					

Order number	231-1BD30	231-1BD40	231-1BD53	231-1BD60
Resistance thermometer ranges	-	-	Pt100, Pt1000 KTY81-152 Ni100, Ni1000 Cu50 KTY81-110 KTY81-120 KTY81-121 KTY81-122 KTY81-150 KTY81-151	-
Operational limit of resistance thermometer ranges	-	-	+/-0.4% ... +/-1.4%	-
Basic error limit thermoresistor ranges	-	-	+/-0.2% ... +/-0.7%	-
Thermocouple inputs	-	-	✓	-
Thermocouple ranges	-	-	type J type K type N type R type S type E type T	-
Operational limit of thermocouple ranges	-	-	+/-1.5%	-
Basic error limit thermoelement ranges	-	-	+/-1.0%	-
Programmable temperature compensation	-	-	✓	-
External temperature compensation	-	-	✓	-
Internal temperature compensation	-	-	✓	-
Resolution in bit	13	13	16	12
Measurement principle	successive approximation	successive approximation	Sigma-Delta	successive approximation
Basic conversion time	2 ms / channel	2 ms / channel	7 ms ... 272 ms	-
Noise suppression for frequency	f=50 Hz...400 Hz	f=50 Hz...400 Hz	none	-
Initial data size	8 Byte	8 Byte	8 Byte	8 Byte
Status information, alarms, diagnostics				
Status display	none	none	none	none
Interrupts	no	no	yes	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	yes, parameterizable	no
Diagnostic functions	no	no	yes	no
Diagnostics information read-out	none	none	possible	none
Supply voltage display	none	none	none	none
Group error display	red SF LED	red SF LED	none	none
Channel error display	none	none	red LED per channel	red LED per channel
Isolation				
Between channels	-	-	-	✓
Between channels of groups to	-	-	-	1
Between channels and backplane bus	✓	✓	✓	✓
Between channels and power supply	-	-	-	✓
Max. potential difference between circuits	-	-	-	DC 75 V/ AC 60 V
Max. potential difference between inputs (Ucm)	DC 2 V	DC 2 V	DC 4 V	DC 75 V/ AC 60 V
Max. potential difference between Mana and Mintern (Uiso)	-	-	-	DC 75 V/ AC 60 V

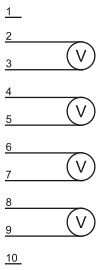
Signal modules analog | Analog input modules						
231-1BD30 231-1BD40 231-1BD53 231-1BD60	231-1BD70 231-1BF00 231-1FD00					

Order number	231-1BD30	231-1BD40	231-1BD53	231-1BD60
Max. potential difference between inputs and Mana (Ucm)	-	-	-	-
Max. potential difference between inputs and Mintern (Uiso)	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V
Max. potential difference between Mintern and outputs	-	-	-	-
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	8	8	8	8
Output bytes	0	0	0	0
Parameter bytes	12	12	12	3
Diagnostic bytes	0	0	12	0
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm
Weight	90 g	90 g	100 g	90 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

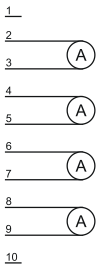
Connections, Interfaces

Signal modules analog | Analog input modules						
231-1BD30 231-1BD40 231-1BD53 231-1BD60	231-1BD70 231-1BF00 231-1FD00					

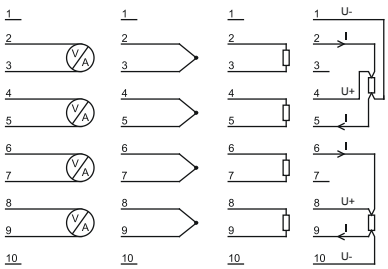
231-1BD30



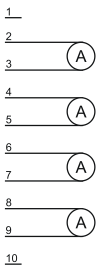
231-1BD40



231-1BD53



231-1BD60



Analog input modules

Signal modules analog | Analog input modules						
231-1BD30 231-1BD40 231-1BD53 231-1BD60	231-1BD70 231-1BF00 231-1FD00					

Order number	231-1BD70	231-1BF00	231-1FD00	
Figure				
Type	SM 231	SM 231	SM 231	
General information				
Note	-	-	-	
Features	› 4 input 12 bit › Voltage +/-10 V › Potential separated per channel	› 8 inputs › Configurable › Voltage 0...60 mV › Resistance thermo-meter, thermocouple	› 4 fast inputs › Configurable › Voltage, current › Cycle time 0.8 ms	
Current consumption/power loss				
Current consumption from backplane bus	280 mA	280 mA	300 mA	
Power loss	1.4 W	1.4 W	1.5 W	
Technical data analog inputs				
Number of inputs	4	8	4	
Cable length, shielded	200 m	200 m	200 m	
Rated load voltage	-	-	-	
Current consumption from load voltage L+ (without load)	-	-	-	
Voltage inputs	✓	✓	✓	
Min. input resistance (voltage range)	83 kΩ	2 MΩ	10 MΩ	
Input voltage ranges	-10 V ... +10 V	0 mV ... +60 mV	-400 mV ... +400 mV -4 V ... +4 V -10 V ... +10 V	
Operational limit of voltage ranges	-	-	+/-0.2% ... +/-0.4%	
Basic error limit voltage ranges with SFU	-	+/-0.1%	+/-0.1% ... +/-0.3%	
Current inputs	-	-	✓	
Min. input resistance (current range)	-	-	57 Ω	
Input current ranges	-	-	+4 mA ... +20 mA -20 mA ... +20 mA	
Operational limit of current ranges	-	-	+/-0.2% ... +/-0.5%	
Basic error limit current ranges with SFU	-	-	+/-0.1% ... +/-0.3%	
Resistance inputs	-	-	-	
Resistance ranges	-	-	-	
Operational limit of resistor ranges	-	-	-	
Basic error limit	-	-	-	
Resistance thermometer inputs	-	✓	-	
Resistance thermometer ranges	-	Pt100	-	
Operational limit of resistance thermome-ter ranges	-	-	-	
Basic error limit thermoresistor ranges	-	±0.15% (2-wire) ±0.15% (4-wire)	-	
Thermocouple inputs	-	✓	-	
Thermocouple ranges	-	type J type K type T	-	

Signal modules analog | Analog input modules						
231-1BD30 231-1BD40 231-1BD53 231-1BD60	231-1BD70 231-1BF00 231-1FD00					

Order number	231-1BD70	231-1BF00	231-1FD00	
Operational limit of thermocouple ranges	-	-	-	
Basic error limit thermoelement ranges	-	±0.1% (Compensation external) ±1.0% (internal)	-	
Programmable temperature compensation	-	✓	-	
External temperature compensation	-	✓	-	
Internal temperature compensation	-	✓	-	
Resolution in bit	12	16	16	
Measurement principle	successive approximation	Sigma-Delta	successive approximation	
Basic conversion time	-	6.75 ms ... 268 ms	0.2 ms/channel	
Noise suppression for frequency	-	50 Hz and 60 Hz	-	
Initial data size	8 Byte	16 Byte	8 Byte	
Status information, alarms, diagnostics				
Status display	none	none	none	
Interrupts	no	yes	yes	
Process alarm	no	no	yes, parameterizable	
Diagnostic interrupt	no	yes, parameterizable	yes, parameterizable	
Diagnostic functions	no	yes	yes	
Diagnostics information read-out	none	possible	possible	
Supply voltage display	none	none	none	
Group error display	none	red SF LED	none	
Channel error display	none	red LED per channel	red LED per channel	
Isolation				
Between channels	✓	-	-	
Between channels of groups to	1	-	-	
Between channels and backplane bus	✓	✓	✓	
Between channels and power supply	✓	-	-	
Max. potential difference between circuits	DC 75 V/ AC 60 V	-	-	
Max. potential difference between inputs (Ucm)	DC 75 V/ AC 60 V	DC 15 V	DC 2 V	
Max. potential difference between Mana and Mintern (Uiso)	DC 75 V/ AC 60 V	-	-	
Max. potential difference between inputs and Mana (Ucm)	-	-	-	
Max. potential difference between inputs and Mintern (Uiso)	DC 75 V/ AC 60 V	DC 75 V/ AC 15 V	DC 75 V/ AC 60 V	
Max. potential difference between Mintern and outputs	-	-	-	
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	
Datasizes				
Input bytes	8	16	8	
Output bytes	0	0	0	
Parameter bytes	3	12	34	
Diagnostic bytes	0	12	12	

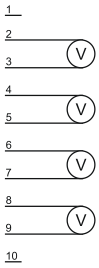
Signal modules analog | Analog input modules						
231-1BD30 231-1BD40 231-1BD53 231-1BD60	231-1BD70 231-1BF00 231-1FD00					

Order number	231-1BD70	231-1BF00	231-1FD00	
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	
Weight	90 g	90 g	90 g	
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	
Certifications				
UL508 certification	yes	yes	yes	

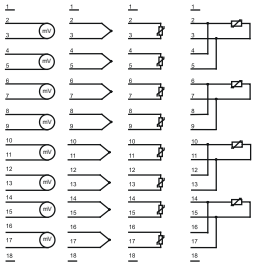
Connections, Interfaces

Signal modules analog | Analog input modules						
231-1BD30 231-1BD40 231-1BD53 231-1BD60	231-1BD70 231-1BF00 231-1FD00					

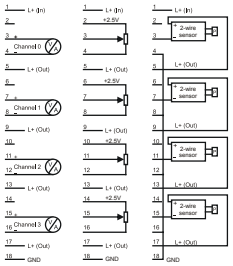
231-1BD70



231-1BF00



231-1FD00



Analog output modules

Signal modules analog | Analog output modules						
232-1BD30 232-1BD40 232-1BD51						

Order number	232-1BD30	232-1BD40	232-1BD51	
Figure				
Type	SM 232, ECO	SM 232, ECO	SM 232	
General information				
Note	-	-	-	
Features	› 4 outputs › Configurable › Voltage +/-10 V, 0..10 V	› 4 outputs › Configurable › Current 0(4)...20mA	› 4 outputs › Configurable › Voltage, current	
Current consumption/power loss				
Current consumption from backplane bus	60 mA	60 mA	75 mA	
Power loss	2.7 W	1.5 W	1.8 W	
Technical data analog outputs				
Number of outputs	4	4	4	
Cable length, shielded	200 m	200 m	200 m	
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	
Reverse polarity protection of rated load voltage	✓	✓	✓	
Current consumption from load voltage L+ (without load)	100 mA	50 mA	60 mA	
Voltage output short-circuit protection	✓	-	✓	
Voltage outputs	✓	-	✓	
Min. load resistance (voltage range)	5 kΩ	-	1 kΩ	
Max. capacitive load (current range)	1 µF	-	1 µF	
Output voltage ranges	-10 V ... +10 V 0 V ... +10 V	-	-10 V ... +10 V +1 V ... +5 V 0 V ... +10 V	
Operational limit of voltage ranges	+/-0.4%	-	+/-0.4% ... +/-0.8%	
Basic error limit voltage ranges with SFU	+/-0.2%	-	+/-0.2% ... +/-0.4%	
Current outputs	-	✓	✓	
Max. in load resistance (current range)	-	350 Ω	500 Ω	
Max. inductive load (current range)	-	10 mH	10 mH	
Output current ranges	-	0 mA ... +20 mA +4 mA ... +20 mA	0 mA ... +20 mA +4 mA ... +20 mA -20 mA ... +20 mA	
Operational limit of current ranges	-	+/-0.4%	+/-0.3% ... +/-0.8%	
Basic error limit current ranges with SFU	-	+/-0.2%	+/-0.2% ... +/-0.5%	
Settling time for ohmic load	1.5 ms	0.03 ms	0.05 ms	
Settling time for capacitive load	3 ms	-	0.5 ms	
Settling time for inductive load	-	1.5 ms	0.1 ms	
Resolution in bit	12	12	12	
Conversion time	0.7 ms / all channels	0.7 ms / all channels	0.45 ms / channel	
Substitute value can be applied	no	no	no	
Output data size	8 Byte	8 Byte	8 Byte	

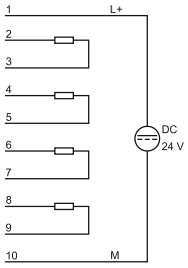
Signal modules analog | Analog output modules						
232-1BD30 232-1BD40 232-1BD51						

Order number	232-1BD30	232-1BD40	232-1BD51	
Status information, alarms, diagnostics				
Status display	none	none	none	
Interrupts	no	no	yes	
Process alarm	no	no	no	
Diagnostic interrupt	no	no	yes, parameterizable	
Diagnostic functions	no	no	yes	
Diagnostics information read-out	none	none	possible	
Supply voltage display	green LED	green LED	none	
Group error display	none	none	red SF LED	
Channel error display	none	none	none	
Isolation				
Between channels	-	-	-	
Between channels of groups to	-	-	-	
Between channels and backplane bus	✓	✓	✓	
Between channels and power supply	✓	✓	✓	
Max. potential difference between circuits	-	-	-	
Max. potential difference between inputs (Ucm)	-	-	-	
Max. potential difference between Mana and Mintern (Uiso)	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V	
Max. potential difference between inputs and Mana (Ucm)	-	-	-	
Max. potential difference between inputs and Mintern (Uiso)	-	-	-	
Max. potential difference between Mintern and outputs	-	-	-	
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	
Datasizes				
Input bytes	0	0	0	
Output bytes	8	8	8	
Parameter bytes	8	8	8	
Diagnostic bytes	0	0	4	
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm	
Weight	80 g	80 g	100 g	
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	
Certifications				
UL508 certification	yes	yes	yes	

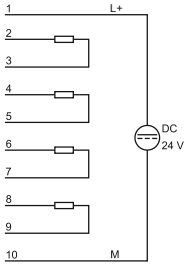
Connections, Interfaces

Signal modules analog | Analog output modules						
232-1BD30 232-1BD40 232-1BD51						

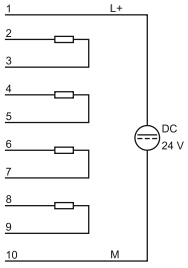
232-1BD30



232-1BD40



232-1BD51



Analog in/output modules

Signal modules analog | Analog in/output modules						
234-1BD50 234-1BD60						

Order number	234-1BD50	234-1BD60		
Figure				
Type	SM 234	SM 234		
General information				
Note	-	-		
Features	› 2 inputs/2 outputs › Configurable › Voltage, current	› 4 inputs/2 outputs › Configurable › Voltage, current › Resistance, resistance thermometer		
Current consumption/power loss				
Current consumption from backplane bus	100 mA	100 mA		
Power loss	2.9 W	2.9 W		
Technical data analog inputs				
Number of inputs	2	4		
Cable length, shielded	200 m	200 m		
Rated load voltage	DC 24 V	DC 24 V		
Reverse polarity protection of rated load voltage	✓	✓		
Current consumption from load voltage L+ (without load)	70 mA	70 mA		
Voltage inputs	✓	✓		
Min. input resistance (voltage range)	100 kΩ	120 kΩ		
Input voltage ranges	+1 V ... +5 V 0 V ... +10 V -10 V ... +10 V	+1 V ... +5 V 0 V ... +10 V -10 V ... +10 V -400 mV ... +400 mV -4 V ... +4 V		
Operational limit of voltage ranges	-	+/-0.3% ... +/-0.7%		
Basic error limit voltage ranges with SFU	+/-0.2% ... +/-0.6%	+/-0.2% ... +/-0.5%		
Current inputs	✓	✓		
Min. input resistance (current range)	50 Ω	90 Ω		
Input current ranges	+4 mA ... +20 mA 0 mA ... +20 mA -20 mA ... +20 mA	+4 mA ... +20 mA 0 mA ... +20 mA -20 mA ... +20 mA		
Operational limit of current ranges	-	+/-0.3% ... +/-0.8%		
Basic error limit current ranges with SFU	+/-0.3% ... +/-0.8%	+/-0.2% ... +/-0.5%		
Resistance inputs	-	✓		
Resistance ranges	-	0 ... 600 Ohm 0 ... 3000 Ohm		
Operational limit of resistor ranges	-	+/-0.4%		
Basic error limit	-	+/-0.2%		
Resistance thermometer inputs	-	✓		
Resistance thermometer ranges	-	Pt100 Pt1000 Ni100 Ni1000		

Signal modules analog | Analog in/output modules						
234-1BD50 234-1BD60						

Order number	234-1BD50	234-1BD60		
Operational limit of resistance thermometer ranges	-	+/-0.4% ... +/-1.0%		
Basic error limit thermoresistor ranges	-	+/-0.2% ... +/-0.5%		
Thermocouple inputs	-	-		
Thermocouple ranges	-	-		
Operational limit of thermocouple ranges	-	-		
Basic error limit thermoelement ranges	-	-		
Programmable temperature compensation	-	-		
External temperature compensation	-	-		
Internal temperature compensation	-	-		
Resolution in bit	16	16		
Measurement principle	Sigma-Delta	Sigma-Delta		
Basic conversion time	6.75 ms - 268 ms	7 ms - 272 ms		
Noise suppression for frequency	50 Hz and 60 Hz	50 Hz and 60 Hz		
Initial data size	4 Byte	4 Byte		
Technical data analog outputs				
Number of outputs	2	2		
Cable length, shielded	200 m	200 m		
Rated load voltage	DC 24 V	DC 24 V		
Reverse polarity protection of rated load voltage	✓	✓		
Current consumption from load voltage L+ (without load)	70 mA	70 mA		
Voltage output short-circuit protection	✓	✓		
Voltage outputs	✓	✓		
Min. load resistance (voltage range)	1 kΩ	1 kΩ		
Max. capacitive load (current range)	1 µF	1 µF		
Output voltage ranges	-10 V ... +10 V +1 V ... +5 V 0 V ... +10 V	-10 V ... +10 V +1 V ... +5 V 0 V ... +10 V		
Operational limit of voltage ranges	-	+/-0.4% ... +/-0.8%		
Basic error limit voltage ranges with SFU	+/-0.2% ... +/-0.6%	+/-0.2% ... +/-0.4%		
Current outputs	✓	✓		
Max. in load resistance (current range)	500 Ω	500 Ω		
Max. inductive load (current range)	10 mH	10 mH		
Output current ranges	-20 mA ... +20 mA +4 mA ... +20 mA 0 mA ... +20 mA	-20 mA ... +20 mA +4 mA ... +20 mA 0 mA ... +20 mA		
Operational limit of current ranges	-	+/-0.3% ... +/-0.8%		
Basic error limit current ranges with SFU	+/-0.3% ... +/-0.8%	+/-0.2% ... +/-0.5%		
Settling time for ohmic load	0.05 ms	0.3 ms		
Settling time for capacitive load	0.5 ms	1 ms		
Settling time for inductive load	0.1 ms	0.5 ms		
Resolution in bit	12	12		
Conversion time	2.5 ms/all channels	1.5 ms/channel		
Substitute value can be applied	yes	yes		
Output data size	4 Byte	4 Byte		

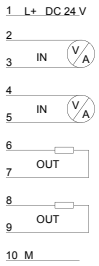
Signal modules analog | Analog in/output modules						
234-1BD50 234-1BD60						

Order number	234-1BD50	234-1BD60		
Status information, alarms, diagnostics				
Status display	none	none		
Interrupts	yes	yes		
Process alarm	no	no		
Diagnostic interrupt	yes, parameterizable	yes, parameterizable		
Diagnostic functions	yes	yes		
Diagnostics information read-out	possible	possible		
Supply voltage display	green LED	none		
Group error display	red SF LED	red SF LED		
Channel error display	none	none		
Isolation				
Between channels	-	-		
Between channels of groups to	-	-		
Between channels and backplane bus	✓	✓		
Between channels and power supply	✓	✓		
Max. potential difference between circuits	-	-		
Max. potential difference between inputs (Ucm)	-	DC 4 V		
Max. potential difference between Mana and Mintern (Uiso)	DC 75 V/ AC 60 V	-		
Max. potential difference between inputs and Mana (Ucm)	-	-		
Max. potential difference between inputs and Mintern (Uiso)	-	DC 75 V/ AC 60 V		
Max. potential difference between Mintern and outputs	-	-		
Insulation tested with	DC 500 V	DC 500 V		
Datasizes				
Input bytes	4	8		
Output bytes	4	4		
Parameter bytes	14	18		
Diagnostic bytes	12	12		
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6		
Mounting	Profile rail 35 mm	Profile rail 35 mm		
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 88 mm	25.4 mm x 76 mm x 88 mm		
Weight	110 g	100 g		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	yes	yes		

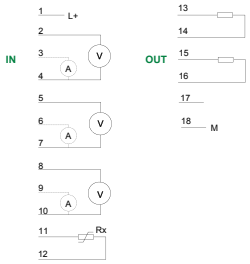
Connections, Interfaces

Signal modules analog | Analog in/output modules						
234-1BD50 234-1BD60						

234-1BD50



234-1BD60



Combination modules

Signal modules analog | Combination modules						
238-2BC00						

Order number	238-2BC00			
Figure				
Type	SM 238C, Digital In-/ Output, Counter, Analog In-/Output			
General information				
Note	-			
Features	› 16 (12) digital inputs › 0 (4) digital outputs › max. 3 counter › 4 analog inputs › 2 analog outputs			
Current consumption/power loss				
Current consumption from backplane bus	280 mA			
Power loss	5.5 W			
Technical data digital inputs				
Number of inputs	16			
Cable length, shielded	1000 m			
Cable length, unshielded	600 m			
Rated load voltage	-			
Current consumption from load voltage L+ (without load)	-			
Rated value	DC 20.4...28.8 V			
Input voltage for signal "0"	DC 0...5 V			
Input voltage for signal "1"	DC 15...28.8 V			
Input voltage hysteresis	-			
Frequency range	-			
Input resistance	-			
Input current for signal "1"	7 mA			
Connection of Two-Wire-BEROs possible	✓			
Max. permissible BERO quiescent current	1.5 mA			
Input delay of "0" to "1"	3 ms			
Input delay of "1" to "0"	3 ms			
Number of simultaneously utilizable inputs horizontal configuration	-			
Number of simultaneously utilizable inputs vertical configuration	-			
Input characteristic curve	IEC 61131, type 1			
Initial data size	16 Byte			
Technical data digital outputs				
Number of outputs	4			
Cable length, shielded	1000 m			
Cable length, unshielded	600 m			
Rated load voltage	DC 20.4...28.8 V			

Signal modules analog | Combination modules						
238-2BC00						

Order number	238-2BC00			
Reverse polarity protection of rated load voltage	-			
Current consumption from load voltage L+ (without load)	20 mA			
Total current per group, horizontal configuration, 40°C	-			
Total current per group, horizontal configuration, 60°C	-			
Total current per group, vertical configuration	-			
Output voltage signal "1" at min. current	-			
Output voltage signal "1" at max. current	L+ (-0.8 V)			
Output current at signal "1", rated value	1 A			
Output current, permitted range to 40°C	-			
Output current, permitted range to 60°C	-			
Output current at signal "0" max. (residual current)	-			
Output delay of "0" to "1"	150 µs			
Output delay of "1" to "0"	100 µs			
Minimum load current	-			
Lamp load	5 W			
Parallel switching of outputs for redundant control of a load	not possible			
Parallel switching of outputs for increased power	not possible			
Actuation of digital input	✓			
Switching frequency with resistive load	max. 1000 Hz			
Switching frequency with inductive load	max. 0.5 Hz			
Switching frequency on lamp load	max. 10 Hz			
Internal limitation of inductive shut-off voltage	L+ (-52 V)			
Short-circuit protection of output	yes, electronic			
Trigger level	1.5 A			
Number of operating cycle of relay outputs	-			
Switching capacity of contacts	-			
Output data size	16 Byte			
Technical data analog inputs				
Number of inputs	4			
Cable length, shielded	200 m			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	✓			
Current consumption from load voltage L+ (without load)	70 mA			
Voltage inputs	✓			
Min. input resistance (voltage range)	120 kΩ			

Signal modules analog | Combination modules						
238-2BC00						

Order number	238-2BC00			
Input voltage ranges	+1 V ... +5 V 0 V ... +10 V -10 V ... +10 V -400 mV ... +400 mV -4 V ... +4 V			
Operational limit of voltage ranges	+/-0.3% ... +/-0.7%			
Basic error limit voltage ranges with SFU	+/-0.2% ... +/-0.5%			
Current inputs	✓			
Min. input resistance (current range)	90 Ω			
Input current ranges	+4 mA ... +20 mA 0 mA ... +20 mA -20 mA ... +20 mA			
Operational limit of current ranges	+/-0.3% ... +/-0.8%			
Basic error limit current ranges with SFU	+/-0.2% ... +/-0.5%			
Resistance inputs	✓			
Resistance ranges	0 ... 600 Ohm 0 ... 3000 Ohm			
Operational limit of resistor ranges	+/-0.4%			
Basic error limit	+/-0.2%			
Resistance thermometer inputs	✓			
Resistance thermometer ranges	Pt100 Pt1000 Ni100 Ni1000			
Operational limit of resistance thermometer ranges	+/-0.4% ... +/-1.0%			
Basic error limit thermoresistor ranges	+/-0.2% ... +/-0.5%			
Thermocouple inputs	-			
Thermocouple ranges	-			
Operational limit of thermocouple ranges	-			
Basic error limit thermoelement ranges	-			
Programmable temperature compensation	-			
External temperature compensation	-			
Internal temperature compensation	-			
Resolution in bit	16			
Measurement principle	Sigma-Delta			
Basic conversion time	7 ms - 272 ms			
Noise suppression for frequency	50 Hz and 60 Hz			
Initial data size	8 Byte			
Technical data analog outputs				
Number of outputs	2			
Cable length, shielded	200 m			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	✓			
Current consumption from load voltage L+ (without load)	70 mA			
Voltage output short-circuit protection	✓			
Voltage outputs	✓			
Min. load resistance (voltage range)	1 kΩ			

Signal modules analog | Combination modules						
238-2BC00						

Order number	238-2BC00			
Max. capacitive load (current range)	1 µF			
Output voltage ranges	-10 V ... +10 V +1 V ... +5 V 0 V ... +10 V			
Operational limit of voltage ranges	+/-0.4% ... +/-0.8%			
Basic error limit voltage ranges with SFU	+/-0.2% ... +/-0.4%			
Current outputs	✓			
Max. in load resistance (current range)	500 Ω			
Max. inductive load (current range)	10 mH			
Output current ranges	-20 mA ... +20 mA 0 mA ... +20 mA 0 mA ... +20 mA			
Operational limit of current ranges	+/-0.3% ... +/-0.8%			
Basic error limit current ranges with SFU	+/-0.2% ... +/-0.5%			
Settling time for ohmic load	0.3 ms			
Settling time for capacitive load	1 ms			
Settling time for inductive load	0.5 ms			
Resolution in bit	12			
Conversion time	1.50 ms			
Substitute value can be applied	yes			
Output data size	4 Byte			
Status information, alarms, diagnostics				
Status display	yes			
Interrupts	yes			
Process alarm	yes, parameterizable			
Diagnostic interrupt	yes, parameterizable			
Diagnostic functions	yes			
Diagnostics information read-out	possible			
Supply voltage display	green LED per group			
Group error display	red SF LED			
Channel error display	none			
Isolation				
Between channels	-			
Between channels of groups to	-			
Between channels and backplane bus	✓			
Between channels and power supply	✓			
Max. potential difference between circuits	-			
Max. potential difference between inputs (Ucm)	DC 4 V			
Max. potential difference between Mana and Mintern (Uiso)	-			
Max. potential difference between inputs and Mana (Ucm)	-			
Max. potential difference between inputs and Mintern (Uiso)	DC 75 V/ AC 60 V			
Max. potential difference between Mintern and outputs	-			
Insulation tested with	DC 500 V			

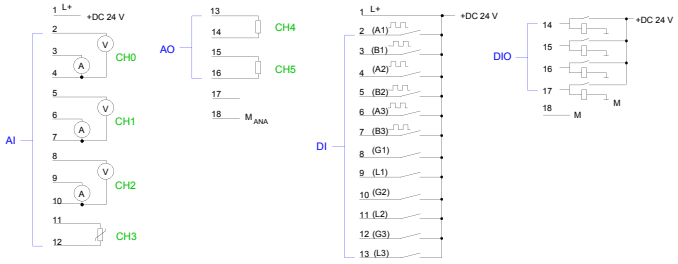
Signal modules analog | Combination modules						
238-2BC00						

Order number	238-2BC00			
Datasizes				
Input bytes	8 + 16			
Output bytes	4 + 16			
Parameter bytes	18 + 71			
Diagnostic bytes	12 + 12			
Housing				
Material	PPE / PA 6.6			
Mounting	Profile rail 35 mm			
Mechanical data				
Dimensions (WxHxD)	50.8 mm x 76 mm x 88 mm			
Weight	150 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

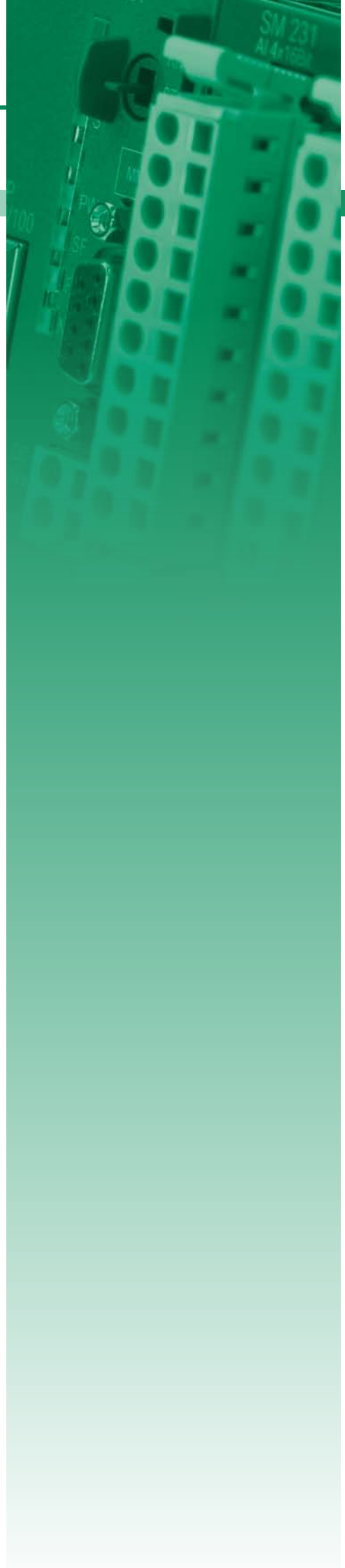
Connections, Interfaces

Signal modules analog | Combination modules						
238-2BC00						

238-2BC00



Communication processors



Structure and Function

Communications processors are used to connect different target and source systems, e.g. via Ethernet to higher-level ERP systems or serially to scanners, printers and other peripherals.

CP 240 - serial

The communication processors CP 240 serial enable the serial process coupling to different target and source systems. Depending on the module they have a RS232 and/or a RS485 interface.

CP 240 - EnOcean

The CP 240 EnOcean enables process coupling on the basis of the EnOcean wireless communication. EnOcean is a battery-free radio system that, due to the short signal duration of 0.5 ms and 10 mW transmitting power, has an energy requirement of only 50 µWs. Here, the system uses the energy from the smallest changes in pressure or temperature to power the sensors.

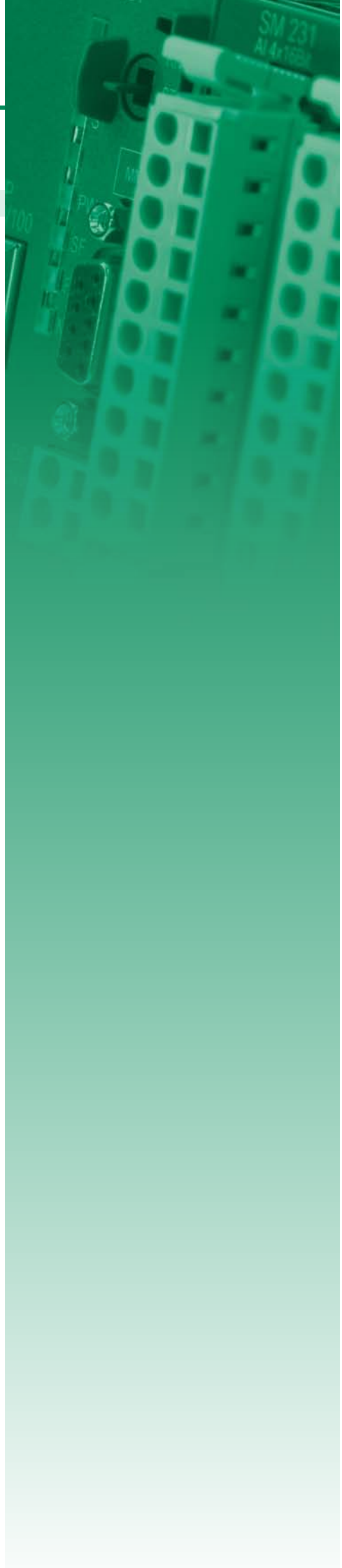
CP 240 - M-Bus

In the case of the CP 240 M-Bus, the process coupling takes place on the basis of the M-Bus communication. The M-Bus System (Metering Bus) is a European-standardized 2-wire fieldbus for acquiring consumption data. Here, the data is transmitted serially via a reverse polarity protected 2-wire line from slave systems (meters) to a master system.

Characteristics

- Support for all standard protocols (ASCII, STX/ETX, 3964(R), RK512 and Modbus (master, slave)
- Internal communication via VIPA FCs
- Compact design
- LED status indicator
- Electrically isolated to the backplane bus
- Assembly with 35 mm profile rail
- 24 month warranty

Overview



Order no.	Name/Description	Page
RS232/422/485 and other CPs		
240-1DA10	**CM 240 - Mini-switch** › 4 Ports for 10/100 MBit/s › "plug and play" through Auto-MDI/MDIX-crossover for 100BASE-TX and 10BASE-T › LEDs for activity, speed and collision	**324**
240-1BA20	**CP 240 - Communication processor** › RS232 interface	**324**
240-1CA20	**CP 240 - Communication processor** › RS485 interface	**324**
240-1CA21	**CP 240 - Communication processor** › RS422/485 interface	**324**
240-1EA20	**CP 240 - Communication processor** › 16 Byte parameter data › The transceiver module works at 868.3 MHz	**327**
240-1FA20	**CP 240 - Communication processor** › Standardized bus system acc. DIN 1434-3 › 6 slaves connectable	**327**
Fieldbus master modules		
208-1CA00	**IM 208CAN - CANopen master** › CANopen master › 125 CAN slaves connectable › Project engineering under VIPA WinCoCT › 40 Transmit PDOs, 40 Receive PDOs	**330**
208-1DP01	**IM 208DP - PROFIBUS-DP master** › PROFIBUS-DP master › 125 DP slaves connectable	**330**
208-1DP11	**IM 208DPO - PROFIBUS-DP master** › PROFIBUS-DP master › 16 DP slaves connectable › FO interface	**330**

RS232/422/485 and other CPs

Communication processors | RS232/422/485 and other CPs						
240-1DA10 240-1BA20 240-1CA20 240-1CA21	240-1EA20 240-1FA20					

Order number	240-1DA10	240-1BA20	240-1CA20	240-1CA21
Figure				
Type	CM 240, 4port Mini-Switch	CP 240, PtP RS232	CP 240, RS485	CP 240, RS422/485
General information				
Note	-	-	-	-
Features	› 4 Ports for 10/100 MBit/s › "plug and play" through Auto-MDI/MDIX-crossover for 100BASE-TX and 10BASE-T › LEDs for activity, speed and collision	› RS232 interface	› RS485 interface	› RS422/485 interface
Current consumption/power loss				
Current consumption from backplane bus	450 mA	150 mA	150 mA	150 mA
Power loss	2 W	0.75 W	0.75 W	0.75 W
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	possible	possible	possible
Supply voltage display	none	yes	yes	yes
Group error display	none	red LED	red LED	red LED
Channel error display	none	none	none	none
Functionality Sub-D interfaces				
Type	-	-	-	-
Type of interface	-	RS232	RS485	RS422/485
Connector	-	Sub-D, 9-pin, male	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Electrically isolated	-	✓	✓	✓
MPI	-	-	-	-
MP²I (MPI/RS232)	-	-	-	-
DP master	-	-	-	-
DP slave	-	-	-	-
Point-to-point interface	-	✓	✓	✓
Point-to-point communication				
PtP communication	-	✓	✓	✓
Interface isolated	✓	✓	✓	✓
RS232 interface	-	✓	-	-
RS422 interface	-	-	-	✓
RS485 interface	-	-	✓	✓
Connector	RJ45	Sub-D, 9-pin, male	Sub-D, 9-pin, female	Sub-D, 9-pin, female

Communication processors | RS232/422/485 and other CPs						
240-1DA10 240-1BA20 240-1CA20 240-1CA21	240-1EA20 240-1FA20					

Order number	240-1DA10	240-1BA20	240-1CA20	240-1CA21
Transmission speed, min.	10 Mbit/s	150 bit/s	150 bit/s	150 bit/s
Transmission speed, max.	100 Mbit/s	115.2 kbit/s	115.2 kbit/s	115.2 kbit/s
Cable length, max.	-	15 m	1200 m	1200 m
Point-to-point protocol				
ASCII protocol	-	✓	✓	✓
STX/ETX protocol	-	✓	✓	✓
3964(R) protocol	-	✓	✓	✓
RK512 protocol	-	✓	✓	✓
USS master protocol	-	-	-	-
Modbus master protocol	-	✓	✓	✓
Modbus slave protocol	-	✓	✓	✓
Special protocols	-	-	-	-
Datasizes				
Input bytes	-	16	16	16
Output bytes	-	16	16	16
Parameter bytes	-	16	16	16
Diagnostic bytes	-	0	0	0
Housing				
Material	PPE / PA 6.6	PPE	PPE	PPE
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm
Weight	50 g	80 g	80 g	80 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

Connections, Interfaces

Communication processors | RS232/422/485 and other CPs						
240-1DA10 240-1BA20 240-1CA20 240-1CA21	240-1EA20 240-1FA20					

240-1DA10

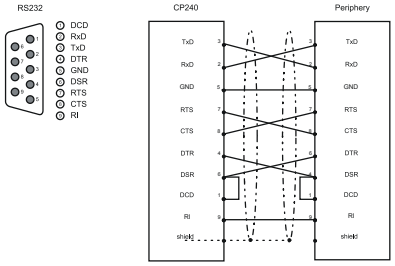
4 x RJ45

1 Transmit +
2 Transmit -
3 Receive +
4 -
5 -
6 Receive -
7 -
8 -

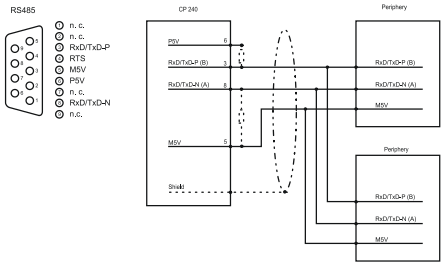
DC 5 ... 24 V

1 Ground
2 0 V
3 + DC 24 V

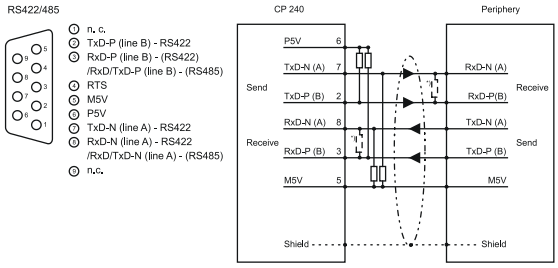
240-1BA20



240-1CA20



240-1CA21



RS232/422/485 and other CPs

Communication processors | RS232/422/485 and other CPs						
240-1DA10 240-1BA20 240-1CA20 240-1CA21	240-1EA20 240-1FA20					

Order number	240-1EA20	240-1FA20		
Figure				
Type	CP 240, EnOcean	CP 240, M-Bus		
General information				
Note	-	-		
Features	› 16 Byte parameter data › The transceiver module works at 868.3 MHz	› Standardized bus system acc. DIN 1434-3 › 6 slaves connectable		
Current consumption/power loss				
Current consumption from backplane bus	120 mA	300 mA		
Power loss	0.75 W	1.5 W		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	no	no		
Process alarm	no	no		
Diagnostic interrupt	no	no		
Diagnostic functions	no	no		
Diagnostics information read-out	none	none		
Supply voltage display	yes	yes		
Group error display	red LED	red LED		
Channel error display	none	none		
Functionality Sub-D interfaces				
Type	-	-		
Type of interface	-	-		
Connector	-	-		
Electrically isolated	-	-		
MPI	-	-		
MP²I (MPI/RS232)	-	-		
DP master	-	-		
DP slave	-	-		
Point-to-point interface	-	-		
Point-to-point communication				
PtP communication	-	-		
Interface isolated	-	✓		
RS232 interface	-	-		
RS422 interface	-	-		
RS485 interface	-	-		
Connector	SMA antenna socket	-		
Transmission speed, min.	-	300 bit/s		
Transmission speed, max.	9.6 kbit/s	9.6 kbit/s		
Cable length, max.	-	-		

Communication processors | RS232/422/485 and other CPs						
240-1DA10 240-1BA20 240-1CA20 240-1CA21	240-1EA20 240-1FA20					

Order number	240-1EA20	240-1FA20		
Point-to-point protocol				
ASCII protocol	-	-		
STX/ETX protocol	-	-		
3964(R) protocol	-	-		
RK512 protocol	-	-		
USS master protocol	-	-		
Modbus master protocol	-	-		
Modbus slave protocol	-	-		
Special protocols	EnOcean	M-Bus master		
Datasizes				
Input bytes	16	16		
Output bytes	16	16		
Parameter bytes	16	16		
Diagnostic bytes	0	0		
Housing				
Material	PPE	PPE / PA 6.6		
Mounting	Profile rail 35 mm	Profile rail 35 mm		
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm		
Weight	80 g	80 g		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	yes	yes		

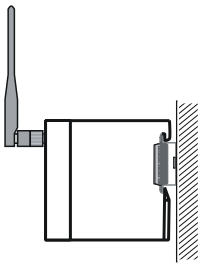
Connections, Interfaces

Communication processors | RS232/422/485 and other CPs						
240-1DA10 240-1BA20 240-1CA20 240-1CA21	240-1EA20 240-1FA20					

240-1EA20

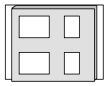
ANT.

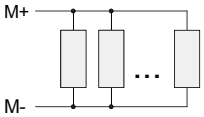
① SMA antenna



240-1FA20

M-Bus





Fieldbus master modules

Communication processors | Fieldbus master modules						
208-1CA00 208-1DP01 208-1DP11						

Order number	208-1CA00	208-1DP01	208-1DP11	
Figure				
Type	IM 208CAN, CANopen master	IM 208DP, PROFIBUS-DP master	IM 208DPO, PROFIBUS-DP master FO interface	
General information				
Note	-	-	-	
Features	› CANopen master › 125 CAN slaves connectable › Project engineering under VIPA WinCoCT › 40 Transmit PDOs, 40 Receive PDOs	› PROFIBUS-DP master › 125 DP slaves connectable	› PROFIBUS-DP master › 16 DP slaves connectable › FO interface	
Current consumption/power loss				
Current consumption from backplane bus	300 mA	450 mA	450 mA	
Power loss	1.5 W	2 W	2 W	
Status information, alarms, diagnostics				
Status display	yes	yes	yes	
Interrupts	yes, parameterizable	yes, parameterizable	yes, parameterizable	
Process alarm	no	yes, parameterizable	yes, parameterizable	
Diagnostic interrupt	yes, parameterizable	yes, parameterizable	yes, parameterizable	
Diagnostic functions	yes	yes	yes	
Diagnostics information read-out	possible	possible	possible	
Supply voltage display	none	none	none	
Group error display	red LED	red LED	red LED	
Channel error display	none	none	none	
Functionality Sub-D interfaces				
Type	-	-	-	
Type of interface	CAN	RS485	FOC	
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, female	2-pin FOC POF/HCS	
Electrically isolated	✓	✓	✓	
MPI	-	-	-	
MP²I (MPI/RS232)	-	-	-	
DP master	-	✓	✓	
DP slave	-	✓	✓	
Point-to-point interface	-	-	-	
Housing				
Material	PPE	PPE	PPE	
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	

Communication processors | Fieldbus master modules						
208-1CA00 208-1DP01 208-1DP11						

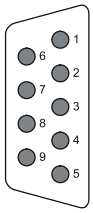
Order number	208-1CA00	208-1DP01	208-1DP11	
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm	
Weight	80 g	90 g	100 g	
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	
Certifications				
UL508 certification	yes	yes	yes	

Connections, Interfaces

Communication processors | Fieldbus master modules						
208-1CA00 208-1DP01 208-1DP11						

208-1CA00

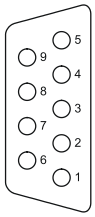
CAN



① n. c.
② CAN low
③ CAN Ground
④ n. c.
⑤ shield
⑥ optional Ground
⑦ CAN high
⑧ n. c.
⑨ n. c.

208-1DP01

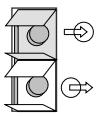
DP
RS485



① shield
② n. c.
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ n. c.
⑧ RxD/TxD-N (line A)
⑨ n.c.

208-1DP11

LWL



① Rx
② Tx

Function modules

Structure and Function

Function modules are intelligent modules, the technological tasks such as position determination, counting and positioning, and other complex functions in the automation run autonomously.

FM 250 - SSI Modules

The SSI module enables the connection of absolute coded reading recorders with an SSI interface. The module converts the serial information of the reading recorder into parallel information and makes this available to the controller. There is a possibility to transmit the data in gray or binary code. In addition to the SSI signals clock, data and encoder supply there are two additional outputs that can be set or reset when crossing.

FM 250 - Counter

The counter counts the pulses of the connected sensor and processes these stimuli according to the selected module. The module has 2 or 4 channels at a width of 32 bit or 16 bit respectively, with 20 counter modes and two DC 24 V outputs, which are controlled depending on the mode.

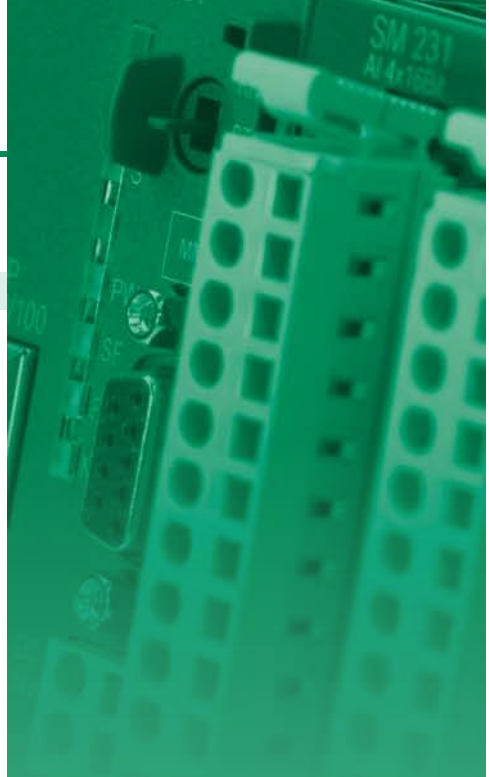
FM 253/254 – Positioning Modules

Positioning modules can be used for point-to-point positioning and for complex travel profiles with the highest standards of accuracy, dynamism and speed. The FM 253 is a Positioning module for controlling a stepper motor. Stepper motors are used when maximum torque at low speeds is required and the target position is to be achieved and maintained without overshooting. The FM 254 is a positioning module for controlling a servo drive. The module operates independently and is controlled by a corresponding application program from the CPU. The module has 3 inputs for connecting limit switches and can control 2 outputs.

Characteristics

- Compact design
- LED status indicator
- Electrically isolated to the backplane bus
- Assembly with 35 mm profile rail
- 24 month warranty

Overview



Order no.	Name/Description	Page
Counter modules		
250-1BA00	**FM 250 - Counter module** › 2/4 channels with 32/16 Bit › DC 24 V or via backplane bus › Free configurable DC 24 V outputs (1 A) › Up to 1 MHz	**336**
SSI modules		
250-1BS00	**FM 250S - SSI module** › 1 SSI channel › Direct power supply to the SSI transducer › Baud rate: 100/300/600 kBit/s (default: 300 kBit/s) › 2 configurable digital outputs, one may be used as hold input	**340**
Positioning modules		
253-1BA00	**FM 253 - Positioning module** › Positioning module for 1axis drive with stepper › 3 inputs for connecting end switches and 2 outputs	**344**
254-1BA00	**FM 254 - Positioning module** › Positioning module for 1axis drive with servo › For drives with an analog set point interface (+/-10 V control voltage) › 3 inputs for connecting end switches and 2 outputs	**344**

Counter modules

Function modules | Counter modules						
250-1BA00						

Order number	250-1BA00			
Figure				
Type	FM 250			
General information				
Note	-			
Features	› 2/4 channels with 32/16 Bit › DC 24 V or via backplane bus › Free configurable DC 24 V outputs (1 A) › Up to 1 MHz			
Current consumption/power loss				
Current consumption from backplane bus	80 mA			
Power loss	2.5 W			
Technical data digital inputs				
Number of inputs	6			
Cable length, shielded	1000 m			
Cable length, unshielded	600 m			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	✓			
Current consumption from load voltage L+ (without load)	-			
Rated value	-			
Input voltage for signal "0"	DC 0...5 V			
Input voltage for signal "1"	DC 15...28.8 V			
Input voltage hysteresis	-			
Frequency range	-			
Input resistance	2 kΩ			
Input current for signal "1"	14 mA			
Connection of Two-Wire-BEROs possible	-			
Max. permissible BERO quiescent current	-			
Input delay of "0" to "1"	0,8 µs			
Input delay of "1" to "0"	0,8 µs			
Number of simultaneously utilizable inputs horizontal configuration	6			
Number of simultaneously utilizable inputs vertical configuration	6			
Input characteristic curve	-			
Initial data size	10 Byte			
Technical data digital outputs				
Number of outputs	2			
Cable length, shielded	1000 m			
Cable length, unshielded	600 m			

Function modules | Counter modules						
250-1BA00						

Order number	250-1BA00			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	✓			
Current consumption from load voltage L+ (without load)	10 mA			
Total current per group, horizontal configuration, 40°C	-			
Total current per group, horizontal configuration, 60°C	-			
Total current per group, vertical configuration	-			
Output voltage signal "1" at min. current	L+ (-0.8 V)			
Output voltage signal "1" at max. current	-			
Output current at signal "1", rated value	2 A			
Output current, permitted range to 40°C	-			
Output current, permitted range to 60°C	-			
Output current at signal "0" max. (residual current)	-			
Output delay of "0" to "1"	max. 100 µs			
Output delay of "1" to "0"	max. 500 µs			
Minimum load current	-			
Lamp load	10 W			
Parallel switching of outputs for redundant control of a load	-			
Parallel switching of outputs for increased power	-			
Actuation of digital input	-			
Switching frequency with resistive load	max. 1000 Hz			
Switching frequency with inductive load	max. 0.5 Hz			
Switching frequency on lamp load	max. 10 Hz			
Internal limitation of inductive shut-off voltage	L+ (-52 V)			
Short-circuit protection of output	yes, electronic			
Trigger level	3 A			
Number of operating cycle of relay outputs	-			
Switching capacity of contacts	-			
Output data size	10 Byte			
Technical data counters				
Number of counters	2			
Counter width	1x32 Bit / 2x16 Bit			
Maximum input frequency	1 MHz			
Maximum count frequency	1 MHz			
Mode incremental encoder	✓			
Mode pulse / direction	✓			
Mode pulse	✓			
Mode frequency counter	✓			
Mode period measurement	✓			
Gate input available	✓			

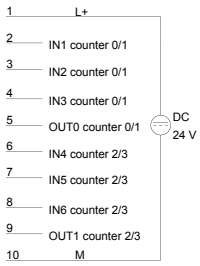
Function modules | Counter modules						
250-1BA00						

Order number	250-1BA00			
Latch input available	-			
Reset input available	✓			
Counter output available	✓			
Status information, alarms, diagnostics				
Status display	yes			
Interrupts	no			
Process alarm	no			
Diagnostic interrupt	no			
Diagnostic functions	no			
Diagnostics information read-out	none			
Supply voltage display	yes			
Group error display	red LED			
Channel error display	none			
Isolation				
Between channels	-			
Between channels of groups to	-			
Between channels and backplane bus	✓			
Between channels and power supply	-			
Max. potential difference between circuits	-			
Max. potential difference between inputs (Ucm)	-			
Max. potential difference between Mana and Mintern (Uiso)	-			
Max. potential difference between inputs and Mana (Ucm)	-			
Max. potential difference between inputs and Mintern (Uiso)	-			
Max. potential difference between Mintern and outputs	-			
Insulation tested with	DC 500 V			
Datasizes				
Input bytes	10			
Output bytes	10			
Parameter bytes	4			
Diagnostic bytes	0			
Housing				
Material	PPE / PA 6.6			
Mounting	Profile rail 35 mm			
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm			
Weight	230 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

Connections, Interfaces

Function modules | Counter modules						
250-1BA00						

250-1BA00



SSI modules

Function modules | SSI modules						
250-1BS00						

Order number	250-1BS00			
Figure				
Type	FM 250S			
General information				
Note	-			
Features	› 1 SSI channel › Direct power supply to the SSI transducer › Baud rate: 100/300/600 kBit/s (default: 300 kBit/s) › 2 configurable digital outputs, one may be used as hold input			
Current consumption/power loss				
Current consumption from backplane bus	120 mA			
Power loss	1 W			
Technical data digital inputs				
Number of inputs	2			
Cable length, shielded	1000 m			
Cable length, unshielded	600 m			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	✓			
Current consumption from load voltage L+ (without load)	-			
Rated value	-			
Input voltage for signal "0"	Differential signal RS422			
Input voltage for signal "1"	Differential signal RS422			
Input voltage hysteresis	-			
Frequency range	-			
Input resistance	-			
Input current for signal "1"	-			
Connection of Two-Wire-BEROs possible	-			
Max. permissible BERO quiescent current	-			
Input delay of "0" to "1"	-			
Input delay of "1" to "0"	-			
Number of simultaneously utilizable inputs horizontal configuration	-			
Number of simultaneously utilizable inputs vertical configuration	-			
Input characteristic curve	-			
Initial data size	4 Byte			
Technical data digital outputs				
Number of outputs	2			
Cable length, shielded	1000 m			
Cable length, unshielded	600 m			

Function modules | SSI modules						
250-1BS00						

Order number	250-1BS00			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	✓			
Current consumption from load voltage L+ (without load)	5 mA			
Total current per group, horizontal configuration, 40°C	2 A			
Total current per group, horizontal configuration, 60°C	-			
Total current per group, vertical configuration	-			
Output voltage signal "1" at min. current	-			
Output voltage signal "1" at max. current	L+ (-0.8 V)			
Output current at signal "1", rated value	1 A			
Output current, permitted range to 40°C	-			
Output current, permitted range to 60°C	-			
Output current at signal "0" max. (residual current)	-			
Output delay of "0" to "1"	max. 100 µs			
Output delay of "1" to "0"	max. 350 µs			
Minimum load current	-			
Lamp load	5 W			
Parallel switching of outputs for redundant control of a load	-			
Parallel switching of outputs for increased power	-			
Actuation of digital input	-			
Switching frequency with resistive load	max. 1000 Hz			
Switching frequency with inductive load	max. 0.5 Hz			
Switching frequency on lamp load	max. 10 Hz			
Internal limitation of inductive shut-off voltage	L+ (-52 V)			
Short-circuit protection of output	yes, electronic			
Trigger level	1.8 A			
Number of operating cycle of relay outputs	-			
Switching capacity of contacts	-			
Output data size	4 Byte			
Status information, alarms, diagnostics				
Status display	yes			
Interrupts	no			
Process alarm	no			
Diagnostic interrupt	no			
Diagnostic functions	no			
Diagnostics information read-out	none			
Supply voltage display	yes			
Group error display	yes			
Channel error display	none			

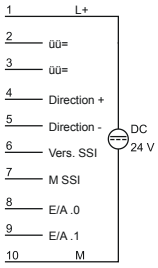
Function modules | SSI modules						
250-1BS00						

Order number	250-1BS00			
Isolation				
Between channels	-			
Between channels of groups to	-			
Between channels and backplane bus	✓			
Between channels and power supply	-			
Max. potential difference between circuits	-			
Max. potential difference between inputs (Ucm)	-			
Max. potential difference between Mana and Mintern (Uiso)	-			
Max. potential difference between inputs and Mana (Ucm)	-			
Max. potential difference between inputs and Mintern (Uiso)	-			
Max. potential difference between Mintern and outputs	-			
Insulation tested with	DC 500 V			
Datasizes				
Input bytes	4			
Output bytes	4			
Parameter bytes	6			
Diagnostic bytes	0			
Housing				
Material	PPE / PA 6.6			
Mounting	Profile rail 35 mm			
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm			
Weight	100 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

Connections, Interfaces

Function modules | SSI modules						
250-1BS00						

250-1BS00



Positioning modules

Function modules | Positioning modules						
253-1BA00 254-1BA00						

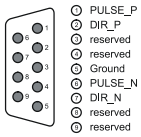
Order number	253-1BA00	254-1BA00		
Figure				
Type	FM 253	FM 254		
General information				
Note	-	-		
Features	› Positioning module for 1axis drive with stepper › 3 inputs for connecting end switches and 2 outputs	› Positioning module for 1axis drive with servo › For drives with an analog set point interface (+/-10 V control voltage) › 3 inputs for connecting end switches and 2 outputs		
Current consumption/power loss				
Current consumption from backplane bus	500 mA	200 mA		
Power loss	3 W	2.5 W		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	no	no		
Process alarm	no	no		
Diagnostic interrupt	no	no		
Diagnostic functions	no	no		
Diagnostics information read-out	none	none		
Supply voltage display	yes	yes		
Group error display	red LED	red LED		
Channel error display	none	none		
Datasizes				
Input bytes	16	16		
Output bytes	16	16		
Parameter bytes	18	18		
Diagnostic bytes	0	0		
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6		
Mounting	Profile rail 35 mm	Profile rail 35 mm		
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm		
Weight	90 g	130 g		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	yes	yes		

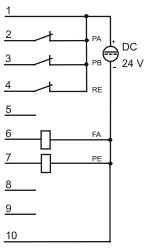
Connections, Interfaces

Function modules | Positioning modules						
253-1BA00 254-1BA00						

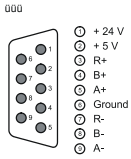
253-1BA00

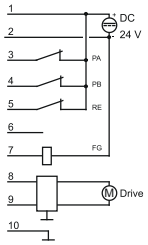
Stepper





254-1BA00





Interface modules

Structure and Function

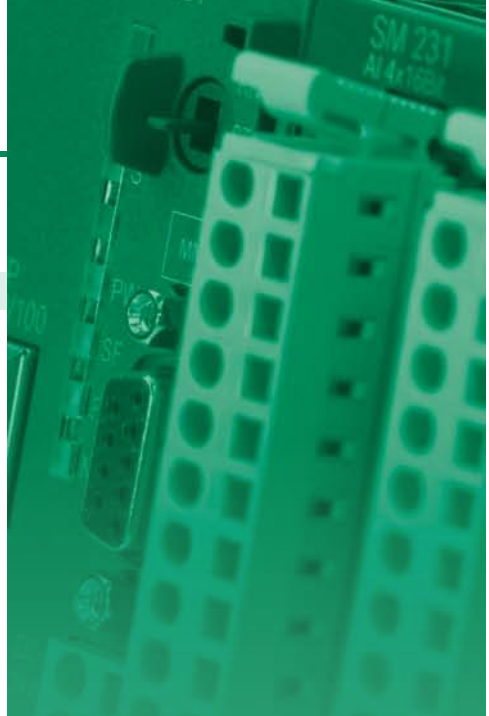
Interface modules extend deployed control systems with up to three peripheral lines (central max. 32 modules).

Fieldbus slave modules are used for the decentralized expansion of control systems (with a fieldbus master interface in or on the CPU) with up to 128 fieldbus slave modules, plus peripheral modules.

Characteristics (Fieldbus slave modules)

- Available for PROFIBUS, CANopen, INTERBUS, DeviceNet, Ethernet
- Cross manufacturer mixed operation is possible
- Depending on the version also with fiber-optic interface
- Advanced diagnostics
- Electrically isolated to the backplane bus
- LED status indicator
- Compact design
- Assembly with 35 mm profile rail
- 24 month warranty

Overview



Order no.	Name/Description	Page
Row interface connection		
260-1AA00	**IM 260 - Interface module** › Only be used in conjunction with the PC 288 or a CPU	**348**
261-1CA00	**IM 261 - Interface module** › Only be used in conjunction with the PC 288 or a CPU	**348**
Fieldbus slave modules without I/Os		
253-1CA01	**IM 253CAN - CANopen slave** › CANopen slave › 10 Rx and 10 Tx PDO › 2 SDOs › PDO linking › PDO mapping	**351**
253-1CA30	**IM 253CAN - CANopen slave ECO** › CANopen slave › 10 Rx and 10 Tx PDO › 2 SDOs › PDO linking › PDO mapping	**351**
253-1DN00	**IM 253DN - DeviceNET slave** › Group 2 only Device - employs predefined connection set › Baud rates: 125, 250, 500 kBit/s › For max. 32 peripheral modules (8 analog)	**351**
253-1DP01	**IM 253DP - PROFIBUS-DP slave** › PROFIBUS-DP slave (DP-V0, DP-V1) › For max. 32 peripheral modules (16 analog) › 244 Byte input and 244 Byte output data	**351**
253-1DP11	**IM 253DPO - PROFIBUS-DP slave** › PROFIBUS-DP slave (DP-V0, DP-V1) › For max. 32 peripheral modules (16 analog) › 244 Byte input and 244 Byte output data	**354**
253-1DP31	**IM 253DP - PROFIBUS-DP slave ECO** › PROFIBUS-DP slave (DP-V0, DP-V1) › For max. 8 peripheral modules › 244 Byte input and 244 Byte output data	**354**
253-2DP50	**IM 253DPR - PROFIBUS-DP slave** › PROFIBUS-DP slave › 2 redundant channels › For max. 32 peripheral modules (16 analog) › 152 Byte input and 152 Byte output data	**354**
253-1IB00	**IM 253IBS - INTERBUS slave** › INTERBUS slave › For 16 input and 16 output modules	**354**
253-1NE00	**IM 253NET - Ethernet slave** › Ethernet coupler with Modbus/TCP and Siemens S5 Header protocol › For max. 32 peripheral modules › Max. 256 Byte I/O data › RJ45 jack 100BaseTX, 10BaseT	**357**

Row interface connection

Interface modules | Row interface connection						
260-1AA00 261-1CA00						

Order number	260-1AA00	261-1CA00		
Figure				
Type	IM 260, Basic interface	IM 261, Row interface		
General information				
Note	-	-		
Features	› Only be used in conjunction with the PC 288 or a CPU	› Only be used in conjunction with the PC 288 or a CPU		
Technical data power supply				
Power supply (rated value)	DC 24 V	-		
Power supply (permitted range)	DC 20.4...28.8 V	-		
Reverse polarity protection	✓	-		
Current consumption (no-load operation)	50 mA	-		
Current consumption (rated value)	1.9 A	-		
Inrush current	-	-		
Max. current drain at backplane bus	4 A	1.5 A		
Max. current drain load supply	-	-		
Power loss	2 W	1 W		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	no	no		
Process alarm	no	no		
Diagnostic interrupt	no	no		
Diagnostic functions	no	no		
Diagnostics information read-out	none	none		
Supply voltage display	yes	yes		
Group error display	none	none		
Channel error display	none	none		
Hardware configuration				
Racks, max.	4	1		
Modules per rack, max.	16	16		
Number of digital modules, max.	16	16		
Number of analog modules, max.	16	16		
Housing				
Material	PPE / PA 6.6	PPE		
Mounting	Profile rail 35 mm	Profile rail 35 mm		
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm		
Weight	100 g	90 g		

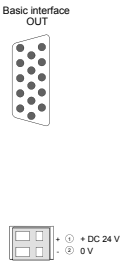
Interface modules | Row interface connection						
260-1AA00 261-1CA00						

Order number	260-1AA00	261-1CA00		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	yes	yes		

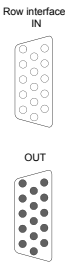
Connections, Interfaces

Interface modules | Row interface connection						
260-1AA00 261-1CA00						

260-1AA00



261-1CA00



Fieldbus slave modules without I/Os

Interface modules | Fieldbus slave modules without I/Os						
253-1CA01 253-1CA30 253-1DN00 253-1DP01	253-1DP11 253-1DP31 253-2DP50 253-1IB00	253-1NE00				

Order number	253-1CA01	253-1CA30	253-1DN00	253-1DP01
Figure				
Type	IM 253CAN, CANopen slave	IM 253CAN, CANopen slave	IM 253DN, DeviceNET slave	IM 253DP, PROFIBUS-DP slave
General information				
Note	-	-	-	-
Features	› CANopen slave › 10 Rx and 10 Tx PDO › 2 SDOs › PDO linking › PDO mapping	› CANopen slave › 10 Rx and 10 Tx PDO › 2 SDOs › PDO linking › PDO mapping	› Group 2 only Device - employs predefined connection set › Baud rates: 125, 250, 500 kBit/s › For max. 32 peripheral modules (8 analog)	› PROFIBUS-DP slave (DP-V0, DP-V1) › For max. 32 peripheral modules (16 analog) › 244 Byte input and 244 Byte output data
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Reverse polarity protection	✓	✓	✓	✓
Current consumption (no-load operation)	50 mA	50 mA	50 mA	70 mA
Current consumption (rated value)	800 mA	300 mA	800 mA	1 A
Inrush current	65 A	60 A	65 A	65 A
I^2t	0.85 A^2s	0.4 A^2s	0.85 A^2s	0.85 A^2s
Max. current drain at backplane bus	3.5 A	0.8 A	3.5 A	3.5 A
Max. current drain load supply	-	-	-	-
Power loss	2 W	1.5 W	2 W	2.5 W
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	yes, parameterizable	yes, parameterizable	no	yes, parameterizable
Process alarm	no	no	no	yes, parameterizable
Diagnostic interrupt	yes, parameterizable	yes, parameterizable	no	yes, parameterizable
Diagnostic functions	yes, parameterizable	yes, parameterizable	yes	yes, parameterizable
Diagnostics information read-out	possible	possible	none	possible
Supply voltage display	yes	yes	yes	green LED
Service Indicator	-	-	-	-
Group error display	yes	yes	yes	yes
Channel error display	none	none	none	none
Hardware configuration				
Racks, max.	1	1	1	1
Modules per rack, max.	32	8	32	32
Number of digital modules, max.	32	8	32	32
Number of analog modules, max.	16	8	8	16
Communication				
Fieldbus	CANopen	CANopen	DeviceNet	PROFIBUS-DP to EN 50170
Type of interface	CAN	CAN	CAN	RS485

Interface modules | Fieldbus slave modules without I/Os						
253-1CA01 253-1CA30 253-1DN00 253-1DP01	253-1DP11 253-1DP31 253-2DP50 253-1IB00	253-1NE00				

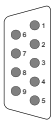
Order number	253-1CA01	253-1CA30	253-1DN00	253-1DP01
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, male	5-pin Open Style Connector	Sub-D, 9-pin, female
Topology	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends
Electrically isolated	✓	✓	✓	✓
Number of participants, max.	127	127	64	125
Node addresses	1 - 99	1 - 99	0 - 63	1 - 99
Transmission speed, min.	10 kbit/s	10 kbit/s	125 kbit/s	9.6 kbit/s
Transmission speed, max.	1 Mbit/s	1 Mbit/s	500 kbit/s	12 Mbit/s
Address range inputs, max.	80 Byte	80 Byte	256 Byte	244 Byte
Address range outputs, max.	80 Byte	80 Byte	256 Byte	244 Byte
Number of TxPDOs, max.	10	10	-	-
Number of RxPDOs, max.	10	10	-	-
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm
Weight	100 g	90 g	90 g	100 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

Connections, Interfaces

Interface modules | Fieldbus slave modules without I/Os						
253-1CA01 253-1CA30 253-1DN00 253-1DP01	253-1DP11 253-1DP31 253-2DP50 253-1IB00	253-1NE00				

253-1CA01

CAN



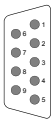
① n. c.
② CAN low
③ CAN Ground
④ n. c.
⑤ shield
⑥ optional Ground
⑦ CAN high
⑧ n. c.
⑨ n. c.

X1

+ ① + DC 24 V
- ② 0 V

253-1CA30

CAN



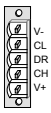
① n. c.
② CAN low
③ CAN Ground
④ n. c.
⑤ shield
⑥ optional Ground
⑦ CAN high
⑧ n. c.
⑨ n. c.

X1

+ ① + DC 24 V
- ② 0 V

253-1DN00

DeviceNet



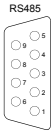
V- ③ GND
CL ④ CAN low
DR ⑤ Drain
CH ⑥ CAN high
V+ ⑦ DC 24 V

X1

+ ① + DC 24 V
- ② 0 V

253-1DP01

DP
RS485



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X1

+ ① + DC 24 V
- ② 0 V

Fieldbus slave modules without I/Os

Interface modules | Fieldbus slave modules without I/Os						
253-1CA01 253-1CA30 253-1DN00 253-1DP01	253-1DP11 253-1DP31 253-2DP50 253-1IB00	253-1NE00				

Order number	253-1DP11	253-1DP31	253-2DP50	253-1IB00
Figure				
Type	IM 253DPO, PROFIBUS-DP slave	IM 253DP, PROFIBUS-DP slave	IM 253DPR, PROFIBUS-DP slave	IM 253IBS, INTERBUS slave
General information				
Note	-	-	-	-
Features	› PROFIBUS-DP slave (DP-V0, DP-V1) › For max. 32 peripheral modules (16 analog) › 244 Byte input and 244 Byte output data	› PROFIBUS-DP slave (DP-V0, DP-V1) › For max. 8 peripheral modules › 244 Byte input and 244 Byte output data	› PROFIBUS-DP slave › 2 redundant channels › For max. 32 peripheral modules (16 analog) › 152 Byte input and 152 Byte output data	› INTERBUS slave › For 16 input and 16 output modules
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Reverse polarity protection	✓	✓	✓	✓
Current consumption (no-load operation)	70 mA	50 mA	80 mA	50 mA
Current consumption (rated value)	1 A	300 mA	1 A	800 mA
Inrush current	65 A	60 A	65 A	60 A
I^2t	0.85 A^2s	0.4 A^2s	0.85 A^2s	0.6 A^2s
Max. current drain at backplane bus	3.5 A	0.8 A	3.5 A	3.5 A
Max. current drain load supply	-	-	-	-
Power loss	2.5 W	1.5 W	2.5 W	2 W
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	yes, parameterizable	yes, parameterizable	yes, parameterizable	no
Process alarm	yes, parameterizable	yes, parameterizable	yes, parameterizable	no
Diagnostic interrupt	yes, parameterizable	yes, parameterizable	yes, parameterizable	no
Diagnostic functions	yes, parameterizable	yes, parameterizable	yes, parameterizable	no
Diagnostics information read-out	possible	possible	none	none
Supply voltage display	green LED	green LED	green LED	green LED
Service Indicator	-	-	-	-
Group error display	red SF LED	red SF LED	yes	red LED
Channel error display	none	none	none	none
Hardware configuration				
Racks, max.	1	1	1	1
Modules per rack, max.	32	8	32	16
Number of digital modules, max.	32	8	32	16
Number of analog modules, max.	16	8	16	4
Communication				
Fieldbus	PROFIBUS-DP to EN 50170	PROFIBUS-DP to EN 50170	PROFIBUS-DP to EN 50170	INTERBUS-S to DIN 19258
Type of interface	FOC	RS485	RS485	RS422
Connector	2-pin FOC POF/HCS	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, male (in) and female (out)

Interface modules | Fieldbus slave modules without I/Os						
253-1CA01 253-1CA30 253-1DN00 253-1DP01	253-1DP11 253-1DP31 253-2DP50 253-1IB00	253-1NE00				

Order number	253-1DP11	253-1DP31	253-2DP50	253-1IB00
Topology	Line structure with two-wire FOC	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends	Ring with integrated return line
Electrically isolated	✓	✓	✓	✓
Number of participants, max.	125	125	125	256
Node addresses	1 - 99	1 - 125	1 - 125	-
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s	-
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	500 kbit/s
Address range inputs, max.	244 Byte	244 Byte	152 Byte	20 Byte
Address range outputs, max.	244 Byte	244 Byte	152 Byte	20 Byte
Number of TxPDOs, max.	-	-	-	-
Number of RxPDOs, max.	-	-	-	-
Housing				
Material	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6	PPE / PA 6.6
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm	50.8 mm x 76 mm x 78 mm	25.4 mm x 76 mm x 78 mm
Weight	110 g	90 g	90 g	100 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

Connections, Interfaces

Interface modules | Fieldbus slave modules without I/Os						
253-1CA01 253-1CA30 253-1DN00 253-1DP01	253-1DP11 253-1DP31 253-2DP50 253-1IB00	253-1NE00				

253-1DP11

LWL

IN
① Send
② Receive

OUT
③ Send
④ Receive

X1

\+ ① + DC 24 V
\- ② 0 V

253-1DP31

DP slave
RS485

① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X1

\+ ① + DC 24 V
\- ② 0 V

253-2DP50

DP1 / DP2
RS485

① shield
② n. c.
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ n. c.
⑧ RxD/TxD-N (line A)
⑨ n.c.

X1

\+ ① + DC 24 V
\- ② 0 V

253-1IB00

IBS
Inbound bus line

① DO
② DI
③ GND1
④ GND
⑤ n. c.
⑥ /DO
⑦ /DI
⑧ +5V
⑨ reserved

DC 24 V
1 +
2 -

IBS
Outbound bus line

① DO
② DI
③ GND1
④ GND
⑤ n. c.
⑥ /DO
⑦ /DI
⑧ +5V
⑨ reserved

Fieldbus slave modules without I/Os

Interface modules | Fieldbus slave modules without I/Os						
253-1CA01 253-1CA30 253-1DN00 253-1DP01	253-1DP11 253-1DP31 253-2DP50 253-1IB00	253-1NE00				

Order number	253-1NE00			
Figure				
Type	IM 253NET, Ethernet slave			
General information				
Note	-			
Features	› Ethernet coupler with Modbus/TCP and Siemens S5 Header protocol › For max. 32 peripheral modules › Max. 256 Byte I/O data › RJ45 jack 100BaseTX, 10BaseT			
Technical data power supply				
Power supply (rated value)	DC 24 V			
Power supply (permitted range)	DC 20.4...28.8 V			
Reverse polarity protection	✓			
Current consumption (no-load operation)	80 mA			
Current consumption (rated value)	1 A			
Inrush current	65 A			
I^2t	0.85 A^2s			
Max. current drain at backplane bus	3.5 A			
Max. current drain load supply	-			
Power loss	2.5 W			
Status information, alarms, diagnostics				
Status display	yes			
Interrupts	no			
Process alarm	no			
Diagnostic interrupt	no			
Diagnostic functions	no			
Diagnostics information read-out	possible			
Supply voltage display	yes			
Service Indicator	-			
Group error display	red LED			
Channel error display	none			
Hardware configuration				
Racks, max.	1			
Modules per rack, max.	32			
Number of digital modules, max.	32			
Number of analog modules, max.	16			

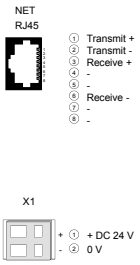
Interface modules | Fieldbus slave modules without I/Os						
253-1CA01 253-1CA30 253-1DN00 253-1DP01	253-1DP11 253-1DP31 253-2DP50 253-1IB00	253-1NE00				

Order number	**253-1NE00**			
Communication				
Fieldbus	Ethernet MODBUS/ TCP and Siemens S5 Header			
Type of interface	Ethernet 10/100 MBit			
Connector	RJ45			
Topology	Star topology			
Electrically isolated	✓			
Number of participants, max.	8			
Node addresses	IP V4 address			
Transmission speed, min.	10 Mbit/s			
Transmission speed, max.	100 Mbit/s			
Address range inputs, max.	256 Byte			
Address range outputs, max.	256 Byte			
Number of TxPDOs, max.	-			
Number of RxPDOs, max.	-			
Housing				
Material	PPE / PA 6.6			
Mounting	Profile rail 35 mm			
Mechanical data				
Dimensions (WxHxD)	25.4 mm x 76 mm x 78 mm			
Weight	90 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

Connections, Interfaces

Interface modules | Fieldbus slave modules without I/Os						
253-1CA01 253-1CA30 253-1DN00 253-1DP01	253-1DP11 253-1DP31 253-2DP50 253-1IB00	253-1NE00				

253-1NE00



200V accessories

Structure and Function

System accessories expand the use of the system and facilitate starting.

Note: Front connectors and label strips are supplied with the modules.

Memory Extension

MMC cards can be used to store program and data.

Bus Connectors

By using backplane bus connectors, communication between the modules is realized. The backplane bus connectors are insulated and available in various designs (1, 2, 4 or 8 times width).

35 mm Profile Rail

With the help of 35 mm profile rails, the respective modules can be mounted directly on the mounting surface. The profile rail is can be ordered in various lengths.

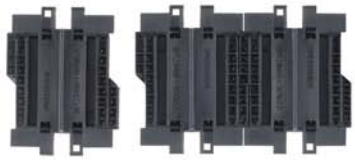
Front Connectors

The front connectors are supplied with the CPU and signal modules, but can also be ordered separately as spare parts.

Manuals

The technical documentation of the respective modules encompasses various manuals with the necessary hardware and programming information, detailed descriptions of each module, and instructions for structure and assembly.

Bus connectors



Order number	Type	Description	Note
290-0AA10	Bus connector	1-tier	
290-0AA20	Bus connector	2-tier	
290-0AA40	Bus connector	4-tier	
290-0AA80	Bus connector	8-tier	

35 mm profile rail

Order number	Type	Description	Note
290-1AF00	35 mm profile rail	length 2000 mm	
290-1AF30	35 mm profile rail	length 530 mm	

Front connector

Order number	Type	Description	Note
292-1AF00	Front connector	10 pin with cage clamps (included in the scope of delivery of signal modules)	
292-1AH00	Front connector	18 pin with cage clamps (included in the scope of delivery of signal modules)	

Cables

Order number	Type	Description	Note
260-1XY05	Connection cable	Connection cable for interface modules, length 0.5 m	
260-1XY10	Connection cable	Connection cable for interface modules, length 1.0 m	
260-1XY15	Connection cable	Connection cable for interface modules, length 1.5 m	
260-1XY20	Connection cable	Connection cable for interface modules, length 2.0 m	
260-1XY25	Connection cable	Connection cable for interface modules, length 2.5 m	

Antennas, connectors etc.

Order number	Type	Description	Note
970-0CM00	CM 240 - Jack	For communication processor CM 240 - mini switch, external DC 24 V power supply	
240-0EA00	CP 240 - Portable Antenna	EnOcean Antenna portable, incl. SMA connector	
240-0EA10	CP 240 - Magnetic base antenna	EnOcean Antenna magnetic base, incl. 150 cm cable and SMA connector	

MMC memory

Order number	Type	Description	Note
953-0KX10	MMC - MultiMediaCard	Extension memory for VIPA CPUs 11x, 21x, 24x, 31x, 51x, and 208-1DP01, CC 03 (for load memory not necessary)	

Labelling

Order number	Type	Description	Note
292-1XY10	Labelling cards	I/O labelling, perforated, 10 sheets each 8 cards	
292-1XY20	Clip-on cards	Module labelling, perforated, 10 sheets each 108 cards	
292-1XY00	Labelling cards	I/O labelling, with transparent cover foil, 10 pieces	

Manuals and operating instructions

Order number	Title	Contents	Language
HB97D	Manual System 200V, German	HB97D_PS-CM, HB97D_SM, HB97D_CP, HB97D_IM, HB97D_FM	DE
HB97E	Manual System 200V, English	HB97E_PS-CM, HB97E_SM, HB97E_CP, HB97E_IM, HB97E_FM	EN
HB97D_CP	Manual System 200V - CP	CP 240 Communication processors	DE
HB97E_CP	Manual System 200V - CP	CP 240 Communication processors	EN
HB97D_CPU	Manual System 200V - CPU	CPU 21x, incl. operations list	DE
HB97E_CPU	Manual System 200V - CPU	CPU 21x, incl. operations list	EN
HB99D_CPU	Manual CPU 24x, German	CPU 24x, incl. operations list	DE
HB99E_CPU	Manual CPU 24x, English	CPU 24x, incl. operations list	EN
HB97D_FM	Manual System 200V - FM	FM - Function modules	DE
HB97E_FM	Manual System 200V - FM	FM - Function modules	EN
HB97D_IM	Manual System 200V - IM	IM - Interface modules	DE
HB97E_IM	Manual System 200V - IM	IM - Interface modules	EN
HB97D_PS-CM	Manual System 200V - PS-CM	PS-CM - Power supply / Expansion modules	DE
HB97E_PS-CM	Manual System 200V - PS-CM	PS-CM - Power supply / Expansion modules	EN
HB97D_SM	Manual System 200V - SM	SM - Signal modules	DE
HB97E_SM	Manual System 200V - SM	SM - Signal modules	EN

At a glance

300S

the High-Speed control system

System description 300S

Structure and Concept

300S is both a compact and a modular expandable system.

300S is designed for centralized and decentralized automation tasks in the manufacturing and process industry up to the highest power range.

With a central extension of up to 32 modules directly to the CPU and up to 126 fieldbus slave modules, it is deployable almost anywhere. The module size allows use in almost any automation environment.

The assembly is extremely simple. First, the backplane bus connectors for communication between the modules and the CPU are entered from behind and then the modules are individually placed and secured on the rail and screwed down.

The backplane bus connectors are supplied with the I/O modules. In the SPEED-Bus, the bus connection takes place via a SPEED-Bus terminal strip (PCB) integrated in the profile rail. The SPEED-Bus modules are mounted on the left of the CPU - depending on bus length 2, 6 or 10 SPEED-Bus modules can be deployed.

Performance and Application

300S is designed for centralized and decentralized automation tasks. The integrated SPEED7 ASIC system 300S is among the world's fastest automation systems. A wide range of CPU options makes the system universally deployable. The selection ranges from C-class CPUs with integrated I/O peripherals for smaller applications up to CPU versions with built-in Ethernet, fieldbus master interfaces, and High-Speed-Bus.

The CPU versions with integrated SPEED-Bus have been especially developed for automation tasks with very high demands on performance. Furthermore special high-speed modules for communication and for digital as well as analog signal processing are available.

Programming

300S is programmed with VIPA WinPLC7 or with Siemens STEP7 in LAD, FBD and STL.

Memory

The CPUs in 300S have the work and load memory already integrated. Depending on the CPU variant different work memory are available for the user. The work and load memory can be adapted to the needs of memory card by plugging in an MCC memory expansion card. To back up program and data standard MMC cards are also supported.

Functions

For the connection of sensors and actuators, a variety of signal modules are available for recording digital and analog signals into and out of the process is available - also as high-speed modules for SPEED-Bus.

Measurements and the control of pressures, temperatures, flow rates and levels are realized at the highest level with the measurement and control modules.

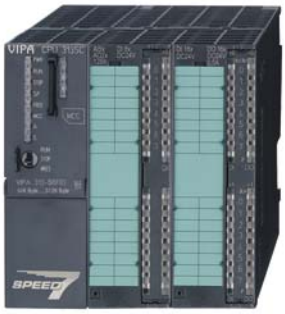
Communication

An Ethernet programming interface is integrated on all CPUs in system 300S. Ethernet communication processors link 300S horizontally and vertically into network structures. Therefore, all relevant data are made available to the connected host systems.

300S offers fieldbus master and slave modules with different fieldbus protocols and can act as a master controller or as a subordinate fieldbus slave unit.

Multi-master applications with very high performance of communication can be implemented via the fieldbus master module for SPEED-Bus.

CPUs



CPUs-Central Modules

Central Processing Units (CPU) control and regulate processes in plant and machinery. The CPUs are selected according to application with the appropriate performance and work memory and can be extended with signal and function modules, as well as communication processors.

The System 300S CPUs are designed command compatible to Siemens STEP7 and for medium and large applications.

The CPUs are based on the SPEED7 technology. Here, the CPU is supported by co-processors. The integrated SPEED7 ASIC system is among the world's fastest automation systems.

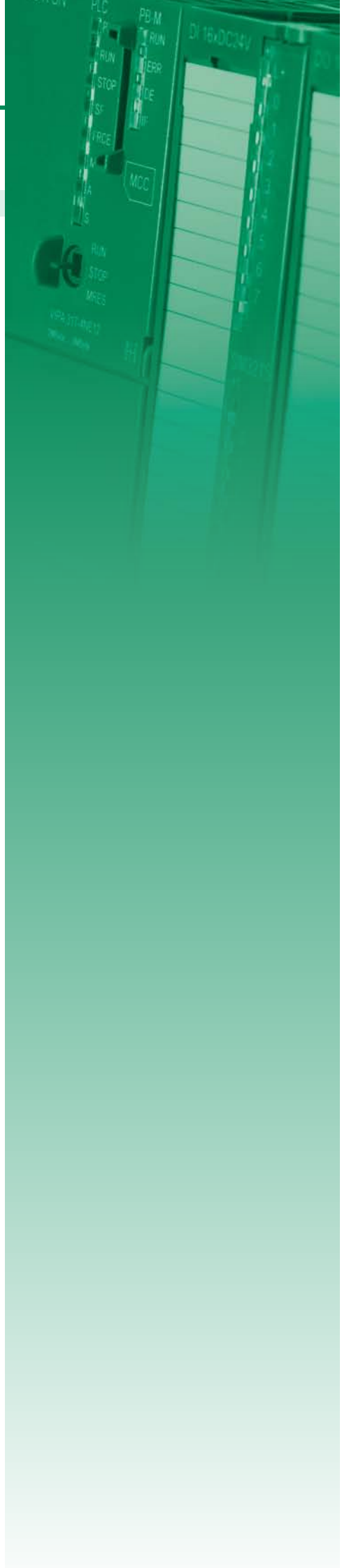
A wide range of CPU options makes the system universally deployable: From C-class CPUs with integrated I/O peripherals for smaller applications up to CPU versions with integrated Ethernet, fieldbus master interfaces, and high-speed bus.

The CPUs of System 300S make possible short machine cycle times due to their high processing speed, and are therefore particularly suitable for complex control and automation tasks in the manufacturing and process industries. The compact CPUs with integrated I/Os are designed especially for cost-sensitive applications.

Characteristics

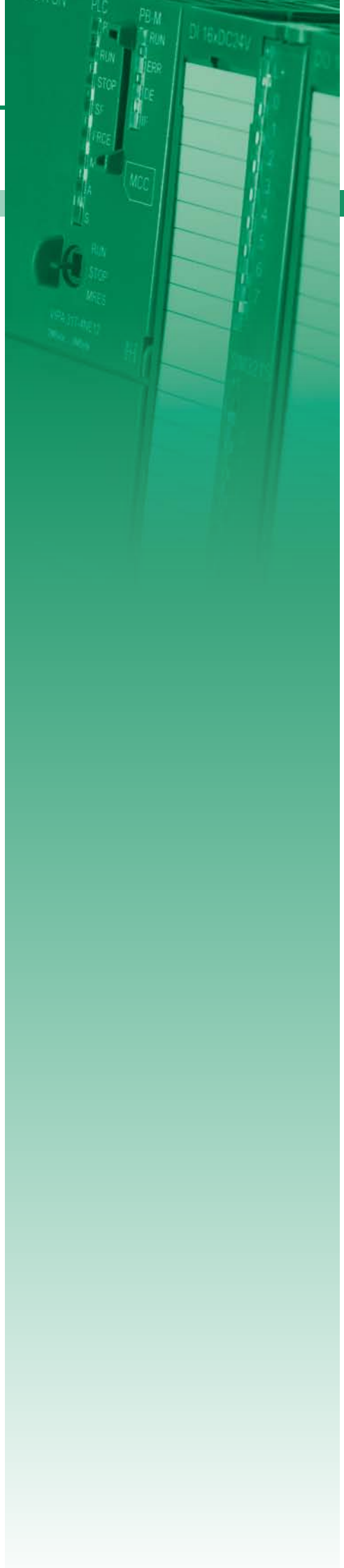
- High-speed control system
- Programmable with WinPLC7 or Siemens STEP7
- Integrated work memory, operation without a memory card
- Integrated accumulator-backed RAM memory
- Flexible work memory extension through MCC memory extension card
- Support of MMC cards for saving of program and data
- SPEED-Bus for extension with high-speed signal modules and communication processors (CPU 314ST, 317SE, 317SN ans 317PN)
- Ethernet, PROFIBUS-DP and MPI interfaces on board
- PROFIBUS-DP master/DP slave or PtP (switchable)
- Centralized and decentralized use and modular extendable
- Integrated real-time clock and front-integrated status LEDs
- 24 month warranty

Overview



Order no.	Name/Description	Page
CPUs STEP7 programmable, standard		
314-2AG12	**CPU 314SB/DPM - SPEED7 technology** › SPEED7 technology › 256 kB work memory › Memory extension (max. 512 kB) › PROFIBUS-DP master / PtP (switchable)	**371**
314-2AG13	**CPU 314SB/DPM - SPEED7 technology** › SPEED7 technology › 256 kB work memory › Memory extension (max. 512 kB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	**371**
314-2BG03	**CPU 314SE/DPS - SPEED7 technology** › SPEED7 technology › 128 kB work memory › Memory extension (max. 512 kB) › PROFIBUS-DP slave / PtP (switchable) › Configurable via TIA-Portal	**371**
315-2AG12	**CPU 315SB/DPM - SPEED7 technology** › SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable)	**371**
315-2AG13	**CPU 315SB/DPM - SPEED7 technology** › SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	**378**
317-2AJ12	**CPU 317SE/DPM - SPEED7 technology** › SPEED7 technology, SPEED-Bus › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master / PtP (switchable)	**378**
317-2AJ13	**CPU 317SE/DPM - SPEED7 technology** › SPEED7 technology, SPEED-Bus › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	**378**
CPUs STEP7 programmable, NET-CPUs		
315-4NE12	**CPU 315SN/NET - SPEED7 technology** › SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable) › CP 343 integrated	**385**
315-4NE13	**CPU 315SN/NET - SPEED7 technology** › SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable) › CP 343 integrated › Configurable via TIA-Portal	**385**
317-4NE12	**CPU 317SN/NET - SPEED7 technology** › SPEED7 technology, SPEED-Bus › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master / PtP (switchable) › CP 343 integrated	**385**
317-4NE13	**CPU 317SN/NET - SPEED7 technology** › SPEED7 technology, SPEED-Bus › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master / PtP (switchable) › CP 343 integrated › Configurable via TIA-Portal	**385**

Overview



Order no.	Name/Description	Page
CPUs STEP7 programmable, PROFINET		
315-4PN12	**CPU 315SN/NET - SPEED7 technology** › SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable) › PROFINET controller integrated › Configurable via TIA-Portal	**393**
315-4PN33	**CPU 315SN/NET ECO - SPEED7 technology** › SPEED7 technology › 512 KB work memory › PtP › PROFINET controller integrated › Configurable via TIA-Portal › Available at Q4/2012	**393**
317-4PN12	**CPU 317SN/NET - SPEED7 technology** › SPEED7 technology, SPEED-Bus › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master / PtP (switchable) › PROFINET Controller integrated › Configurable via TIA-Portal	**393**
CPUs STEP7 programmable, class C		
312-5BE13	**CPU 312SC - SPEED7 technology** › SPEED7 technology › 16 x DI, 8 x DO › 64 kB work memory › Memory extension (max. 512 kB) › PtP interface › Configurable via TIA-Portal	**401**
313-5BF13	**CPU 313SC - SPEED7 technology** › SPEED7 technology › 24 x DI, 16 x DO, 4 x AI, 2 x AO, 1xAI Pt100 › 128 kB work memory › Memory extension (max. 512 kB) › PtP interface › Configurable via TIA-Portal	**401**
313-6CF13	**CPU 313SC/DPM - SPEED7 technology** › SPEED7 technology › 16 x DI, 16 x DO › 128 kB work memory › Memory extension (max 512 kB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	**401**
314-6CF02	**CPU 314ST/DPM - SPEED7 technology** › SPEED7 technology, SPEED-Bus › 8 x DI, 8 x DO, 4 x AI, 2 x AO, 1xAI Pt100 › 512 kB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable)	**401**
314-6CF03	**CPU 314ST/DPM - SPEED7 technology** › SPEED7 technology, SPEED-Bus › 8 x DI, 8 x DO, 4 x AI, 2 x AO, 1xAI Pt100 › 512 kB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	**412**
314-6CG13	**CPU 314SC/DPM - SPEED7 technology** › SPEED7 technology › 24 x DI, 16 x DO, 8 x DIO, 4 x AI, 1 x AI Pt100, 2xAO › 256 kB work memory › Memory extension (max. 1 MB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	**412**

CPUs STEP7 programmable, standard

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

Order number	314-2AG12	314-2AG13	314-2BG03	315-2AG12
Figure				
Type	CPU 314SB/DPM	CPU 314SB/DPM	CPU 314SE/DPS	CPU 315SB/DPM
General information				
Note	-	-	-	-
Features	› SPEED7 technology › 256 kB work memory › Memory extension (max. 512 kB) › PROFIBUS-DP master / PtP (switchable)	› SPEED7 technology › 256 kB work memory › Memory extension (max. 512 kB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	› SPEED7 technology › 128 kB work memory › Memory extension (max. 512 kB) › PROFIBUS-DP slave / PtP (switchable) › Configurable via TIA-Portal	› SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable)
SPEED-Bus	-	-	-	-
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Reverse polarity protection	✓	✓	✓	✓
Current consumption (no-load operation)	200 mA	200 mA	180 mA	200 mA
Current consumption (rated value)	1 A	1 A	900 mA	1 A
Inrush current	5 A	5 A	8 A	5 A
I^2t	0.5 A^2s	0.5 A^2s	0.7 A^2s	0.5 A^2s
Max. current drain at backplane bus	2.5 A	2.5 A	3 A	2.5 A
Power loss	6 W	6 W	6 W	6 W
Load and working memory				
Load memory, integrated	512 KB	512 KB	512 KB	2 MB
Load memory, maximum	512 KB	512 KB	512 KB	2 MB
Work memory, integrated	256 KB	256 KB	128 KB	1 MB
Work memory, maximal	512 KB	512 KB	512 KB	2 MB
Memory divided in 50% program / 50% data	✓	✓	✓	✓
Memory card slot	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB
Hardware configuration				
Racks, max.	4	4	4	4
Modules per rack, max.	8 in multiple-, 32 in a single-rack configuration	8 in multiple-, 32 in a single-rack configuration	8 in multiple-, 32 in a single-rack configuration	8 in multiple-, 32 in a single-rack configuration
Number of integrated DP master	1	1	-	1
Number of DP master via CP	4	4	4	4
Operable function modules	8	8	8	8
Operable communication modules PtP	8	8	8	8
Operable communication modules LAN	8	8	8	8
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	no	no	no	no

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

Order number	314-2AG12	314-2AG13	314-2BG03	315-2AG12
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Command processing times				
Bit instructions, min.	0.01 µs	0.01 µs	0.02 µs	0.01 µs
Word instruction, min.	0.01 µs	0.01 µs	0.02 µs	0.01 µs
Double integer arithmetic, min.	0.01 µs	0.01 µs	0.02 µs	0.01 µs
Floating-point arithmetic, min.	0.06 µs	0.06 µs	0.12 µs	0.06 µs
Timers/Counters and their retentive characteristics				
Number of S7 counters	512	512	512	512
Number of S7 times	512	512	512	512
Data range and retentive characteristic				
Number of flags	8192 Byte	8192 Byte	8192 Byte	8192 Byte
Number of data blocks	4095	4095	4095	4095
Max. data blocks size	64 KB	64 KB	64 KB	64 KB
Max. local data size per execution level	510 Byte	1024 Byte	510 Byte	510 Byte
Blocks				
Number of OBs	24	24	15	24
Number of FBs	2048	2048	2048	2048
Number of FCs	2048	2048	2048	2048
Maximum nesting depth per priority class	8	8	8	8
Maximum nesting depth additional within an error OB	4	4	4	4
Time				
Real-time clock buffered	✓	✓	✓	✓
Clock buffered period (min.)	6 W	6 W	6 W	6 W
Accuracy (max. deviation per day)	10 s	10 s	10 s	10 s
Number of operating hours counter	8	8	8	8
Clock synchronization	✓	✓	✓	✓
Synchronization via MPI	Master/Slave	Master/Slave	Master/Slave	Master/Slave
Synchronization via Ethernet (NTP)	no	no	no	no
Address areas (I/O)				
Input I/O address area	8192 Byte	8192 Byte	2048 Byte	8192 Byte
Output I/O address area	8192 Byte	8192 Byte	2048 Byte	8192 Byte
Input process image maximal	2048 Byte	2048 Byte	128 Byte	2048 Byte
Output process image maximal	2048 Byte	2048 Byte	128 Byte	2048 Byte
Digital inputs	65536	65536	16384	65536
Digital outputs	65536	65536	16385	65536
Digital inputs central	1024	1024	1024	1024
Digital outputs central	1024	1024	1024	1024
Integrated digital inputs	-	-	-	-
Integrated digital outputs	-	-	-	-
Analog inputs	4096	4096	1024	4096
Analog outputs	4096	4096	1024	4096
Analog inputs, central	256	256	256	256
Analog outputs, central	256	256	256	256

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

Order number	314-2AG12	314-2AG13	314-2BG03	315-2AG12
Integrated analog inputs	-	-	-	-
Integrated analog outputs	-	-	-	-
Communication functions				
PG/OP channel	✓	✓	✓	✓
Global data communication	✓	✓	✓	✓
Number of GD circuits, max.	8	8	8	8
Size of GD packets, max.	54 Byte	54 Byte	22 Byte	54 Byte
S7 basic communication	✓	✓	✓	✓
S7 basic communication, user data per job	76 Byte	76 Byte	76 Byte	76 Byte
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
S7 communication, user data per job	160 Byte	160 Byte	160 Byte	160 Byte
Number of connections, max.	32	32	32	32
Functionality Sub-D interfaces				
Type	X2	X2	X2	X2
Type of interface	RS485	RS485	RS485	RS485
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Electrically isolated	✓	✓	-	✓
MPI	✓	✓	✓	✓
MP²I (MPI/RS232)	-	-	-	-
DP master	-	-	-	-
DP slave	-	-	-	-
Point-to-point interface	-	-	-	-
Type	X3	X3	X3	X3
Type of interface	RS485	RS485	RS485	RS485
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Electrically isolated	✓	✓	✓	✓
MPI	-	-	-	-
MP²I (MPI/RS232)	-	-	-	-
DP master	✓	✓	-	✓
DP slave	✓	✓	✓	✓
Point-to-point interface	✓	✓	✓	✓
CAN	-	-	-	-
Functionality MPI				
Number of connections, max.	32	32	32	32
PG/OP channel	✓	✓	✓	✓
Routing	✓	✓	-	✓
Global data communication	✓	✓	✓	✓
S7 basic communication	✓	✓	✓	✓
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

Order number	314-2AG12	314-2AG13	314-2BG03	315-2AG12
Transmission speed, max.	12 Mbit/s	12 Mbit/s	187.5 kbit/s	12 Mbit/s
Functionality PROFIBUS master				
PG/OP channel	✓	✓	-	✓
Routing	✓	✓	-	✓
S7 basic communication	✓	✓	-	✓
S7 communication	✓	✓	-	✓
S7 communication as server	✓	✓	-	✓
S7 communication as client	-	-	-	-
Equidistance support	-	-	-	-
Isochronous mode	-	-	-	-
SYNC/FREEZE	✓	✓	-	✓
Activation/deactivation of DP slaves	✓	✓	-	✓
Direct data exchange (slave-to-slave communication)	-	-	-	-
DPV1	✓	✓	-	✓
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s	-	9.6 kbit/s
Transmission speed, max.	12 Mbit/s	12 Mbit/s	-	12 Mbit/s
Number of DP slaves, max.	124	124	-	124
Address range inputs, max.	8 KB	8 KB	-	8 KB
Address range outputs, max.	8 KB	8 KB	-	8 KB
User data inputs per slave, max.	244 Byte	244 Byte	-	244 Byte
User data outputs per slave, max.	244 Byte	244 Byte	-	244 Byte
Functionality PROFIBUS slave				
PG/OP channel	✓	✓	-	✓
Routing	✓	✓	-	✓
S7 communication	✓	✓	-	✓
S7 communication as server	✓	✓	-	✓
S7 communication as client	-	-	-	-
Direct data exchange (slave-to-slave communication)	-	-	-	-
DPV1	✓	✓	✓	✓
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	12 Mbit/s
Automatic detection of transmission speed	-	-	-	-
Transfer memory inputs, max.	244 Byte	244 Byte	244 Byte	244 Byte
Transfer memory outputs, max.	244 Byte	244 Byte	244 Byte	244 Byte
Address areas, max.	32	32	32	32
User data per address area, max.	32 Byte	32 Byte	32 Byte	32 Byte
Point-to-point communication				
PtP communication	✓	✓	✓	✓
Interface isolated	✓	✓	✓	✓
RS232 interface	-	-	-	-
RS422 interface	-	-	-	-
RS485 interface	✓	✓	✓	✓
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Transmission speed, min.	150 bit/s	150 bit/s	150 bit/s	150 bit/s

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

Order number	314-2AG12	314-2AG13	314-2BG03	315-2AG12
Transmission speed, max.	115.5 kbit/s	115.5 kbit/s	115.5 kbit/s	115.5 kbit/s
Cable length, max.	500 m	500 m	500 m	500 m
Point-to-point protocol				
ASCII protocol	✓	✓	✓	✓
STX/ETX protocol	✓	✓	✓	✓
3964(R) protocol	✓	✓	✓	✓
RK512 protocol	-	-	-	-
USS master protocol	✓	✓	✓	✓
Modbus master protocol	✓	✓	✓	✓
Modbus slave protocol	-	-	-	-
Special protocols	-	-	-	-
Functionality RJ45 interfaces				
Type	X4	X4	X4	X4
Type of interface	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit
Connector	RJ45	RJ45	RJ45	RJ45
Electrically isolated	✓	✓	✓	✓
PG/OP channel	✓	✓	✓	✓
Productive connections	-	-	-	-
Housing				
Material	PPE	PPE	PPE	PPE
Mounting	Rail System 300	Rail System 300	Rail System 300	Rail System 300
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm
Weight	290 g	290 g	235 g	290 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	in preparation	in preparation	yes	yes

Connections, Interfaces

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

314-2AG12

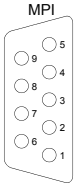
X1

+ ① + DC 24 V
- ② 0 V

X4

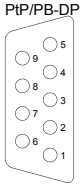
① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

X2
MPI



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X3
PtP/PB-DP



① shield
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

314-2AG13

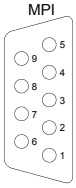
X1

+ ① + DC 24 V
- ② 0 V

X4

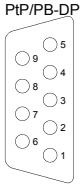
① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

X2
MPI



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X3
PtP/PB-DP



① shield
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

314-2BG03

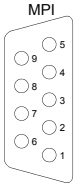
X1

+ ① + DC 24 V
- ② 0 V

X4

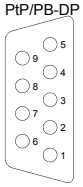
① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

X2
MPI



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X3
PtP/PB-DP



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

315-2AG12

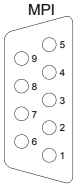
X1

+ ① + DC 24 V
- ② 0 V

X4

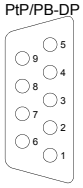
① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

X2
MPI



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X3
PtP/PB-DP



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

CPUs STEP7 programmable, standard

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

Order number	315-2AG13	317-2AJ12	317-2AJ13	
Figure				
Type	CPU 315SB/DPM	CPU 317SE/DPM	CPU 317SE/DPM	
General information				
Note	-	-	-	
Features	› SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	› SPEED7 technology, SPEED-Bus › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master / PtP (switchable)	› SPEED7 technology, SPEED-Bus › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	
SPEED-Bus	-	✓	✓	
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	
Reverse polarity protection	✓	✓	✓	
Current consumption (no-load operation)	200 mA	200 mA	200 mA	
Current consumption (rated value)	1 A	1.5 A	1.5 A	
Inrush current	5 A	5 A	5 A	
I^2t	0.5 A^2s	0.5 A^2s	0.5 A^2s	
Max. current drain at backplane bus	2.5 A	4 A	4 A	
Power loss	6 W	6.5 W	6.5 W	
Load and working memory				
Load memory, integrated	2 MB	8 MB	8 MB	
Load memory, maximum	2 MB	8 MB	8 MB	
Work memory, integrated	1 MB	2 MB	2 MB	
Work memory, maximal	2 MB	8 MB	8 MB	
Memory divided in 50% program / 50% data	✓	✓	✓	
Memory card slot	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	
Hardware configuration				
Racks, max.	4	4	4	
Modules per rack, max.	8 in multiple-, 32 in a single-rack configuration	8 in multiple-, 32 in a single-rack configuration	8 in multiple-, 32 in a single-rack configuration	
Number of integrated DP master	1	1	1	
Number of DP master via CP	4	4	4	
Operable function modules	8	8	8	
Operable communication modules PtP	8	16	16	
Operable communication modules LAN	8	8	8	
Status information, alarms, diagnostics				
Status display	yes	yes	yes	
Interrupts	no	no	no	

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

Order number	315-2AG13	317-2AJ12	317-2AJ13	
Process alarm	no	no	no	
Diagnostic interrupt	no	no	no	
Command processing times				
Bit instructions, min.	0.01 µs	0.01 µs	0.01 µs	
Word instruction, min.	0.01 µs	0.01 µs	0.01 µs	
Double integer arithmetic, min.	0.01 µs	0.01 µs	0.01 µs	
Floating-point arithmetic, min.	0.06 µs	0.06 µs	0.06 µs	
Timers/Counters and their retentive characteristics				
Number of S7 counters	512	2048	2048	
Number of S7 times	512	2048	2048	
Data range and retentive characteristic				
Number of flags	8192 Byte	16384 Byte	16384 Byte	
Number of data blocks	4095	8190	8190	
Max. data blocks size	64 KB	64 KB	64 KB	
Max. local data size per execution level	1024 Byte	510 Byte	1024 Byte	
Blocks				
Number of OBs	24	24	24	
Number of FBs	2048	8192	8192	
Number of FCs	2048	8192	8192	
Maximum nesting depth per priority class	8	16	16	
Maximum nesting depth additional within an error OB	4	4	4	
Time				
Real-time clock buffered	✓	✓	✓	
Clock buffered period (min.)	6 W	6 W	6 W	
Accuracy (max. deviation per day)	10 s	10 s	10 s	
Number of operating hours counter	8	8	8	
Clock synchronization	✓	✓	✓	
Synchronization via MPI	Master/Slave	Master/Slave	Master/Slave	
Synchronization via Ethernet (NTP)	no	no	no	
Address areas (I/O)				
Input I/O address area	8192 Byte	8192 Byte	8192 Byte	
Output I/O address area	8192 Byte	8192 Byte	8192 Byte	
Input process image maximal	2048 Byte	2048 Byte	2048 Byte	
Output process image maximal	2048 Byte	2048 Byte	2048 Byte	
Digital inputs	65536	65536	65536	
Digital outputs	65536	65536	65536	
Digital inputs central	1024	1024	1024	
Digital outputs central	1024	1024	1024	
Integrated digital inputs	-	-	-	
Integrated digital outputs	-	-	-	
Analog inputs	4096	4096	4096	
Analog outputs	4096	4096	4096	
Analog inputs, central	256	256	256	
Analog outputs, central	256	256	256	

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

Order number	315-2AG13	317-2AJ12	317-2AJ13	
Integrated analog inputs	-	-	-	
Integrated analog outputs	-	-	-	
Communication functions				
PG/OP channel	✓	✓	✓	
Global data communication	✓	✓	✓	
Number of GD circuits, max.	8	8	8	
Size of GD packets, max.	54 Byte	54 Byte	54 Byte	
S7 basic communication	✓	✓	✓	
S7 basic communication, user data per job	76 Byte	76 Byte	76 Byte	
S7 communication	✓	✓	✓	
S7 communication as server	✓	✓	✓	
S7 communication as client	-	-	-	
S7 communication, user data per job	160 Byte	160 Byte	160 Byte	
Number of connections, max.	32	32	32	
Functionality Sub-D interfaces				
Type	X2	X2	X2	
Type of interface	RS485	RS485	RS485	
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Electrically isolated	✓	✓	✓	
MPI	✓	✓	✓	
MP²I (MPI/RS232)	-	-	-	
DP master	-	-	-	
DP slave	-	-	-	
Point-to-point interface	-	-	-	
Type	X3	X3	X3	
Type of interface	RS485	RS485	RS485	
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Electrically isolated	✓	✓	✓	
MPI	-	-	-	
MP²I (MPI/RS232)	-	-	-	
DP master	✓	✓	✓	
DP slave	✓	✓	✓	
Point-to-point interface	✓	✓	✓	
CAN	-	-	-	
Functionality MPI				
Number of connections, max.	32	32	32	
PG/OP channel	✓	✓	✓	
Routing	✓	✓	✓	
Global data communication	✓	✓	✓	
S7 basic communication	✓	✓	✓	
S7 communication	✓	✓	✓	
S7 communication as server	✓	✓	✓	
S7 communication as client	-	-	-	
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

Order number	315-2AG13	317-2AJ12	317-2AJ13	
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	
Functionality PROFIBUS master				
PG/OP channel	✓	✓	✓	
Routing	✓	✓	✓	
S7 basic communication	✓	✓	✓	
S7 communication	✓	✓	✓	
S7 communication as server	✓	✓	✓	
S7 communication as client	-	-	-	
Equidistance support	-	-	-	
Isochronous mode	-	-	-	
SYNC/FREEZE	✓	✓	✓	
Activation/deactivation of DP slaves	✓	✓	✓	
Direct data exchange (slave-to-slave communication)	-	-	-	
DPV1	✓	✓	✓	
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s	
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	
Number of DP slaves, max.	124	124	124	
Address range inputs, max.	8 KB	8 KB	8 KB	
Address range outputs, max.	8 KB	8 KB	8 KB	
User data inputs per slave, max.	244 Byte	244 Byte	244 Byte	
User data outputs per slave, max.	244 Byte	244 Byte	244 Byte	
Functionality PROFIBUS slave				
PG/OP channel	✓	✓	✓	
Routing	✓	✓	✓	
S7 communication	✓	✓	✓	
S7 communication as server	✓	✓	✓	
S7 communication as client	-	-	-	
Direct data exchange (slave-to-slave communication)	-	-	-	
DPV1	✓	✓	✓	
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s	
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	
Automatic detection of transmission speed	-	-	-	
Transfer memory inputs, max.	244 Byte	244 Byte	244 Byte	
Transfer memory outputs, max.	244 Byte	244 Byte	244 Byte	
Address areas, max.	32	32	32	
User data per address area, max.	32 Byte	32 Byte	32 Byte	
Point-to-point communication				
PtP communication	✓	✓	✓	
Interface isolated	✓	✓	✓	
RS232 interface	-	-	-	
RS422 interface	-	-	-	
RS485 interface	✓	✓	✓	
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Transmission speed, min.	150 bit/s	150 bit/s	150 bit/s	

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

Order number	315-2AG13	317-2AJ12	317-2AJ13	
Transmission speed, max.	115.5 kbit/s	115.5 kbit/s	115.5 kbit/s	
Cable length, max.	500 m	500 m	500 m	
Point-to-point protocol				
ASCII protocol	✓	✓	✓	
STX/ETX protocol	✓	✓	✓	
3964(R) protocol	✓	✓	✓	
RK512 protocol	-	-	-	
USS master protocol	✓	✓	✓	
Modbus master protocol	✓	✓	✓	
Modbus slave protocol	-	-	-	
Special protocols	-	-	-	
Functionality RJ45 interfaces				
Type	X4	X5	X5	
Type of interface	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit	
Connector	RJ45	RJ45	RJ45	
Electrically isolated	✓	✓	✓	
PG/OP channel	✓	✓	✓	
Productive connections	-	-	-	
Housing				
Material	PPE	PPE	PPE	
Mounting	Rail System 300	Rail System 300	Rail System 300	
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	80 mm x 125 mm x 120 mm	80 mm x 125 mm x 120 mm	
Weight	290 g	420 g	420 g	
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	
Certifications				
UL508 certification	in preparation	yes	in preparation	

Connections, Interfaces

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

315-2AG13

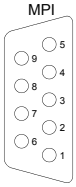
X1

① + DC 24 V
② 0 V

X4

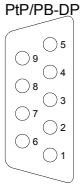
① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

X2
MPI



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X3
PtP/PB-DP



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

317-2AJ12

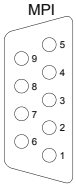
X1

① + DC 24 V
② 0 V

X5

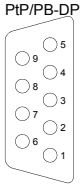
① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

X2
MPI



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X3
PtP/PB-DP



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

CPUs | CPUs STEP7 programmable, standard						
314-2AG12 314-2AG13 314-2BG03 315-2AG12	315-2AG13 317-2AJ12 317-2AJ13					

317-2AJ13

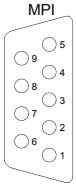
X1

+ ① + DC 24 V
- ② 0 V

X5

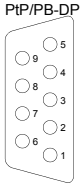
① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

X2
MPI



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X3
PtP/PB-DP



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

CPUs STEP7 programmable, NET-CPUs

CPUs | CPUs STEP7 programmable, NET-CPUs						
315-4NE12 315-4NE13 317-4NE12 317-4NE13						

Order number	315-4NE12	315-4NE13	317-4NE12	317-4NE13
Figure				
Type	CPU 315SN/NET	CPU 315SN/NET	CPU 317SN/NET	CPU 317SN/NET
General information				
Note	-	-	-	-
Features	› SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable) › CP 343 integrated	› SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable) › CP 343 integrated › Configurable via TIA-Portal	› SPEED7 technology, SPEED-Bus › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master / PtP (switchable) › CP 343 integrated	› SPEED7 technology, SPEED-Bus › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master / PtP (switchable) › CP 343 integrated › Configurable via TIA-Portal
SPEED-Bus	-	-	✓	✓
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Reverse polarity protection	✓	✓	✓	✓
Current consumption (no-load operation)	270 mA	270 mA	270 mA	270 mA
Current consumption (rated value)	1 A	1 A	1.5 A	1.5 A
Inrush current	5 A	5 A	5 A	5 A
I^2t	0.5 A^2s	0.5 A^2s	0.5 A^2s	0.5 A^2s
Max. current drain at backplane bus	2.5 A	2.5 A	4 A	4 A
Power loss	8.5 W	8.5 W	10 W	10 W
Load and working memory				
Load memory, integrated	2 MB	2 MB	8 MB	8 MB
Load memory, maximum	2 MB	2 MB	8 MB	8 MB
Work memory, integrated	1 MB	1 MB	2 MB	2 MB
Work memory, maximal	2 MB	2 MB	8 MB	8 MB
Memory divided in 50% program / 50% data	✓	✓	✓	✓
Memory card slot	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB
Hardware configuration				
Racks, max.	4	4	4	4
Modules per rack, max.	8 in multiple-, 32 in a single-rack configuration	8 in multiple-, 32 in a single-rack configuration	8 in multiple-, 32 in a single-rack configuration	8 in multiple-, 32 in a single-rack configuration
Number of integrated DP master	1	1	1	1
Number of DP master via CP	4	4	4	4
Operable function modules	8	8	8	8
Operable communication modules PtP	8	8	16	16
Operable communication modules LAN	8	8	8	8

CPUs | CPUs STEP7 programmable, NET-CPUs						
315-4NE12 315-4NE13 317-4NE12 317-4NE13						

Order number	315-4NE12	315-4NE13	317-4NE12	317-4NE13
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Command processing times				
Bit instructions, min.	0.01 µs	0.01 µs	0.01 µs	0.01 µs
Word instruction, min.	0.01 µs	0.01 µs	0.01 µs	0.01 µs
Double integer arithmetic, min.	0.01 µs	0.01 µs	0.01 µs	0.01 µs
Floating-point arithmetic, min.	0.06 µs	0.06 µs	0.06 µs	0.06 µs
Timers/Counters and their retentive characteristics				
Number of S7 counters	512	512	2048	2048
Number of S7 times	512	512	2048	2048
Data range and retentive characteristic				
Number of flags	8192 Byte	8192 Byte	16384 Byte	16384 Byte
Number of data blocks	4095	4095	8190	8190
Max. data blocks size	64 KB	64 KB	64 KB	64 KB
Max. local data size per execution level	510 Byte	1024 Byte	510 Byte	1024 Byte
Blocks				
Number of OBs	24	24	24	24
Number of FBs	2048	2048	8191	8191
Number of FCs	2048	2048	8191	8191
Maximum nesting depth per priority class	8	8	16	16
Maximum nesting depth additional within an error OB	4	4	4	4
Time				
Real-time clock buffered	✓	✓	✓	✓
Clock buffered period (min.)	6 W	6 W	6 W	6 W
Accuracy (max. deviation per day)	10 s	10 s	10 s	10 s
Number of operating hours counter	8	8	8	8
Clock synchronization	✓	✓	✓	✓
Synchronization via MPI	Master/Slave	Master/Slave	Master/Slave	Master/Slave
Synchronization via Ethernet (NTP)	Slave	Slave	Slave	Slave
Address areas (I/O)				
Input I/O address area	8192 Byte	8192 Byte	8192 Byte	8192 Byte
Output I/O address area	8192 Byte	8192 Byte	8192 Byte	8192 Byte
Input process image maximal	2048 Byte	2048 Byte	8192 Byte	8192 Byte
Output process image maximal	2048 Byte	2048 Byte	8192 Byte	8192 Byte
Digital inputs	65536	65536	65536	65536
Digital outputs	65536	65536	65536	65536
Digital inputs central	1024	1024	1024	1024
Digital outputs central	1024	1024	1024	1024
Integrated digital inputs	-	-	-	-
Integrated digital outputs	-	-	-	-
Analog inputs	4096	4096	4096	4096

CPUs | CPUs STEP7 programmable, NET-CPUs						
315-4NE12 315-4NE13 317-4NE12 317-4NE13						

Order number	315-4NE12	315-4NE13	317-4NE12	317-4NE13
Analog outputs	4096	4096	4096	4096
Analog inputs, central	256	256	256	256
Analog outputs, central	256	256	256	256
Integrated analog inputs	-	-	-	-
Integrated analog outputs	-	-	-	-
Communication functions				
PG/OP channel	✓	✓	✓	✓
Global data communication	✓	✓	✓	✓
Number of GD circuits, max.	8	8	8	8
Size of GD packets, max.	54 Byte	54 Byte	54 Byte	54 Byte
S7 basic communication	✓	✓	✓	✓
S7 basic communication, user data per job	76 Byte	76 Byte	76 Byte	76 Byte
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
S7 communication, user data per job	160 Byte	160 Byte	160 Byte	160 Byte
Number of connections, max.	32	32	32	32
Functionality Sub-D interfaces				
Type	X2	X2	X2	X2
Type of interface	RS485	RS485	RS485	RS485
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Electrically isolated	✓	✓	✓	✓
MPI	✓	✓	✓	✓
MP²I (MPI/RS232)	-	-	-	-
DP master	-	-	-	-
DP slave	-	-	-	-
Point-to-point interface	-	-	-	-
Type	X3	X3	X3	X3
Type of interface	RS485	RS485	RS485	RS485
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Electrically isolated	✓	✓	✓	✓
MPI	-	-	-	-
MP²I (MPI/RS232)	-	-	-	-
DP master	✓	✓	✓	✓
DP slave	✓	✓	✓	✓
Point-to-point interface	✓	✓	✓	✓
CAN	-	-	-	-
Functionality MPI				
Number of connections, max.	32	32	32	32
PG/OP channel	✓	✓	✓	✓
Routing	✓	✓	✓	✓
Global data communication	✓	✓	✓	✓
S7 basic communication	✓	✓	✓	✓
S7 communication	✓	✓	✓	✓

CPUs | CPUs STEP7 programmable, NET-CPUs						
315-4NE12 315-4NE13 317-4NE12 317-4NE13						

Order number	315-4NE12	315-4NE13	317-4NE12	317-4NE13
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	12 Mbit/s
Functionality PROFIBUS master				
PG/OP channel	✓	✓	✓	✓
Routing	✓	✓	✓	✓
S7 basic communication	✓	✓	✓	✓
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
Equidistance support	-	-	-	-
Isochronous mode	-	-	-	-
SYNC/FREEZE	✓	✓	✓	✓
Activation/deactivation of DP slaves	✓	✓	✓	✓
Direct data exchange (slave-to-slave communication)	-	-	-	-
DPV1	✓	✓	✓	✓
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	12 Mbit/s
Number of DP slaves, max.	124	124	124	124
Address range inputs, max.	8 KB	8 KB	8 KB	8 KB
Address range outputs, max.	8 KB	8 KB	8 KB	8 KB
User data inputs per slave, max.	244 Byte	244 Byte	244 Byte	244 Byte
User data outputs per slave, max.	244 Byte	244 Byte	244 Byte	244 Byte
Functionality PROFIBUS slave				
PG/OP channel	✓	✓	✓	✓
Routing	✓	✓	✓	✓
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
Direct data exchange (slave-to-slave communication)	-	-	-	-
DPV1	✓	✓	✓	✓
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	12 Mbit/s
Automatic detection of transmission speed	-	-	-	-
Transfer memory inputs, max.	244 Byte	244 Byte	244 Byte	244 Byte
Transfer memory outputs, max.	244 Byte	244 Byte	244 Byte	244 Byte
Address areas, max.	32	32	32	32
User data per address area, max.	32 Byte	32 Byte	32 Byte	32 Byte
Point-to-point communication				
PtP communication	✓	✓	✓	✓
Interface isolated	✓	✓	✓	✓
RS232 interface	-	-	-	-
RS422 interface	-	-	-	-

CPUs | CPUs STEP7 programmable, NET-CPUs						
315-4NE12 315-4NE13 317-4NE12 317-4NE13						

Order number	315-4NE12	315-4NE13	317-4NE12	317-4NE13
RS485 interface	✓	✓	✓	✓
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Transmission speed, min.	150 bit/s	150 bit/s	150 bit/s	150 bit/s
Transmission speed, max.	115.5 kbit/s	115.5 kbit/s	115.5 kbit/s	115.5 kbit/s
Cable length, max.	500 m	500 m	500 m	500 m
Point-to-point protocol				
ASCII protocol	✓	✓	✓	✓
STX/ETX protocol	✓	✓	✓	✓
3964(R) protocol	✓	✓	✓	✓
RK512 protocol	-	-	-	-
USS master protocol	✓	✓	✓	✓
Modbus master protocol	✓	✓	✓	✓
Modbus slave protocol	-	-	-	-
Special protocols	-	-	-	-
Functionality RJ45 interfaces				
Type	X5	X5	X5	X5
Type of interface	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit
Connector	RJ45	RJ45	RJ45	RJ45
Electrically isolated	✓	✓	✓	✓
PG/OP channel	✓	✓	✓	✓
Productive connections	-	-	-	-
Type	X8	X8	X8	X8
Type of interface	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit
Connector	RJ45	RJ45	RJ45	RJ45
Electrically isolated	✓	✓	✓	✓
PG/OP channel	✓	✓	✓	✓
Productive connections	-	-	-	-
Ethernet communication CP				
Number of productive connections, max.	8	8	64	64
Number of productive connections by Siemens NetPro, max.	8	8	16	16
S7 connections	USEND, URCV, BSEND, BRCV, GET, PUT, Connection of active and passive data handling	USEND, URCV, BSEND, BRCV, GET, PUT, Connection of active and passive data handling	USEND, URCV, BSEND, BRCV, GET, PUT, Connection of active and passive data handling	USEND, URCV, BSEND, BRCV, GET, PUT, Connection of active and passive data handling
User data per S7 connection, max.	32 KB	32 KB	32 KB	32 KB
TCP-connections	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling
User data per TCP connection, max.	64 KB	64 KB	64 KB	64 KB
ISO-connections	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling
User data per ISO connection, max.	8 KB	8 KB	8 KB	8 KB

CPUs | CPUs STEP7 programmable, NET-CPUs						
315-4NE12 315-4NE13 317-4NE12 317-4NE13						

Order number	315-4NE12	315-4NE13	317-4NE12	317-4NE13
ISO on TCP connections (RFC 1006)	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling
User data per ISO on TCP connection, max.	32 KB	32 KB	32 KB	32 KB
UDP-connections	TUSEND, TURCV	TUSEND, TURCV	TUSEND, TURCV	TUSEND, TURCV
User data per UDP connection, max.	2 KB	2 KB	2 KB	2 KB
UDP-multicast-connections	SEND and RECEIVE (max. 8 Multicast groups)	SEND and RECEIVE (max. 8 Multicast groups)	SEND and RECEIVE (max. 16 Multicast groups)	SEND and RECEIVE (max. 16 Multicast groups)
UDP-broadcast-connections	SEND	SEND	SEND	SEND
Ethernet open communication				
Number of connections, max.	8	8	8	8
User data per ISO on TCP connection, max.	8 KB	8 KB	8 KB	8 KB
User data per native TCP connection, max.	8 KB	8 KB	8 KB	8 KB
User data per ad hoc TCP connection, max.	1460 Byte	1460 Byte	1460 Byte	1460 Byte
User data per UDP connection, max.	1472 Byte	1472 Byte	1472 Byte	1472 Byte
Housing				
Material	PPE	PPE	PPE	PPE
Mounting	Rail System 300	Rail System 300	Rail System 300	Rail System 300
Mechanical data				
Dimensions (WxHxD)	80 mm x 125 mm x 120 mm	80 mm x 125 mm x 120 mm	80 mm x 125 mm x 120 mm	80 mm x 125 mm x 120 mm
Weight	430 g	430 g	440 g	440 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	in preparation	yes	in preparation

Connections, Interfaces

CPUs | CPUs STEP7 programmable, NET-CPUs						
315-4NE12 315-4NE13 317-4NE12 317-4NE13						

315-4NE12

X1

+	①	+ DC 24 V
-	②	0 V

X2
MPI

①	n. c.
②	M24V
③	RxD/TxD-P (line B)
④	RTS
⑤	M5V
⑥	P5V
⑦	P24V
⑧	RxD/TxD-N (line A)
⑨	n.c.

X3
PtP/PB-DP

①	n. c.
②	M24V
③	RxD/TxD-P (line B)
④	RTS
⑤	M5V
⑥	P5V
⑦	P24V
⑧	RxD/TxD-N (line A)
⑨	n.c.

X5

①	Transmit +
②	Transmit -
③	Receive +
④	-
⑤	-
⑥	Receive -
⑦	-
⑧	-

X8

①	Transmit +
②	Transmit -
③	Receive +
④	-
⑤	-
⑥	Receive -
⑦	-
⑧	-

315-4NE13

X1

+	①	+ DC 24 V
-	②	0 V

X2
MPI

①	n. c.
②	M24V
③	RxD/TxD-P (line B)
④	RTS
⑤	M5V
⑥	P5V
⑦	P24V
⑧	RxD/TxD-N (line A)
⑨	n.c.

X3
PtP/PB-DP

①	n. c.
②	M24V
③	RxD/TxD-P (line B)
④	RTS
⑤	M5V
⑥	P5V
⑦	P24V
⑧	RxD/TxD-N (line A)
⑨	n.c.

X5

①	Transmit +
②	Transmit -
③	Receive +
④	-
⑤	-
⑥	Receive -
⑦	-
⑧	-

X8

①	Transmit +
②	Transmit -
③	Receive +
④	-
⑤	-
⑥	Receive -
⑦	-
⑧	-

CPUs | CPUs STEP7 programmable, NET-CPUs						
315-4NE12 315-4NE13 317-4NE12 317-4NE13						

317-4NE12

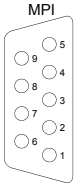
X1

+ ① + DC 24 V
- ② 0 V

X5

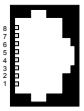
① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

X2
MPI



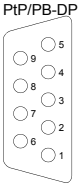
① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X8



① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

X3
PtP/PB-DP



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

317-4NE13

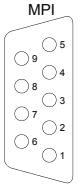
X1

+ ① + DC 24 V
- ② 0 V

X5

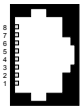
① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

X2
MPI



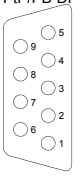
① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X8



① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

X3
PtP/PB-DP



① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

CPUs STEP7 programmable, PROFINET

CPUs | CPUs STEP7 programmable, PROFINET						
315-4PN12 315-4PN33 317-4PN12						

Order number	315-4PN12	315-4PN33	317-4PN12	
Figure				
Type	CPU 315SN/PN	CPU 315SN/PN	CPU 317SN/PN	
General information				
Note	Update of PROFINET and Shared-Device functions in Q4/2012	Update of PROFINET and Shared-Device functions in Q4/2012	Update of PROFINET and Shared-Device functions in Q4/2012	
Features	› SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable) › PROFINET controller integrated › Configurable via TIA-Portal	› SPEED7 technology › 512 KB work memory › PtP › PROFINET controller integrated › Configurable via TIA-Portal › Available at Q4/2012	› SPEED7 technology, SPEED-Bus › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master / PtP (switchable) › PROFINET Controller integrated › Configurable via TIA-Portal	
SPEED-Bus	-	-	✓	
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	
Reverse polarity protection	✓	✓	✓	
Current consumption (no-load operation)	270 mA	270 mA	270 mA	
Current consumption (rated value)	1.1 A	1.1 A	1.5 A	
Inrush current	6 A	6 A	6 A	
I^2t	0.28 A^2s	0.28 A^2s	0.28 A^2s	
Max. current drain at backplane bus	2.5 A	2.5 A	4 A	
Power loss	8.5 W	8.5 W	10 W	
Load and working memory				
Load memory, integrated	2 MB	512 KB	8 MB	
Load memory, maximum	2 MB	512 KB	8 MB	
Work memory, integrated	1 MB	512 KB	2 MB	
Work memory, maximal	2 MB	512 KB	8 MB	
Memory divided in 50% program / 50% data	✓	✓	✓	
Memory card slot	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	
Hardware configuration				
Racks, max.	4	4	4	
Modules per rack, max.	8 in multiple-, 32 in a single-rack configuration	8 in multiple-, 32 in a single-rack configuration	8 in multiple-, 32 in a single-rack configuration	
Number of integrated DP master	1	0	1	
Number of DP master via CP	4	4	4	
Operable function modules	8	8	8	
Operable communication modules PtP	8	8	16	
Operable communication modules LAN	8	8	8	

CPUs | CPUs STEP7 programmable, PROFINET						
315-4PN12 315-4PN33 317-4PN12						

Order number	315-4PN12	315-4PN33	317-4PN12	
Status information, alarms, diagnostics				
Status display	yes	yes	yes	
Interrupts	no	no	no	
Process alarm	no	no	no	
Diagnostic interrupt	no	no	no	
Command processing times				
Bit instructions, min.	0.01 µs	0.01 µs	0.01 µs	
Word instruction, min.	0.01 µs	0.01 µs	0.01 µs	
Double integer arithmetic, min.	0.01 µs	0.01 µs	0.01 µs	
Floating-point arithmetic, min.	0.06 µs	0.06 µs	0.06 µs	
Timers/Counters and their retentive characteristics				
Number of S7 counters	512	512	2048	
Number of S7 times	512	512	2048	
Data range and retentive characteristic				
Number of flags	8192 Byte	8192 Byte	16384 Byte	
Number of data blocks	4095	4095	8189	
Max. data blocks size	64 KB	64 KB	64 KB	
Max. local data size per execution level	1024 Byte	1024 Byte	1024 Byte	
Blocks				
Number of OBs	24	24	24	
Number of FBs	2048	2048	8191	
Number of FCs	2048	2048	8191	
Maximum nesting depth per priority class	8	8	16	
Maximum nesting depth additional within an error OB	4	4	4	
Time				
Real-time clock buffered	✓	✓	✓	
Clock buffered period (min.)	6 W	6 W	6 W	
Accuracy (max. deviation per day)	10 s	10 s	10 s	
Number of operating hours counter	8	8	8	
Clock synchronization	✓	✓	✓	
Synchronization via MPI	Master/Slave	Master/Slave	Master/Slave	
Synchronization via Ethernet (NTP)	Slave	Slave	Slave	
Address areas (I/O)				
Input I/O address area	2048 Byte	2048 Byte	8192 Byte	
Output I/O address area	2048 Byte	2048 Byte	8192 Byte	
Input process image maximal	2048 Byte	2048 Byte	8192 Byte	
Output process image maximal	2048 Byte	2048 Byte	8192 Byte	
Digital inputs	16384	16384	65536	
Digital outputs	16384	16384	65536	
Digital inputs central	1024	1024	1024	
Digital outputs central	1024	1024	1024	
Integrated digital inputs	-	-	-	
Integrated digital outputs	-	-	-	
Analog inputs	1024	1024	4096	

CPUs | CPUs STEP7 programmable, PROFINET						
315-4PN12 315-4PN33 317-4PN12						

Order number	315-4PN12	315-4PN33	317-4PN12	
Analog outputs	1024	1024	4096	
Analog inputs, central	256	256	256	
Analog outputs, central	256	256	256	
Integrated analog inputs	-	-	-	
Integrated analog outputs	-	-	-	
Communication functions				
PG/OP channel	✓	✓	✓	
Global data communication	✓	✓	✓	
Number of GD circuits, max.	8	8	8	
Size of GD packets, max.	22 Byte	22 Byte	22 Byte	
S7 basic communication	✓	✓	✓	
S7 basic communication, user data per job	76 Byte	76 Byte	76 Byte	
S7 communication	✓	✓	✓	
S7 communication as server	✓	✓	✓	
S7 communication as client	-	-	-	
S7 communication, user data per job	160 Byte	160 Byte	160 Byte	
Number of connections, max.	32	32	32	
Functionality Sub-D interfaces				
Type	X2	X2	X2	
Type of interface	RS485	RS485	RS485	
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Electrically isolated	✓	✓	✓	
MPI	✓	✓	✓	
MP²I (MPI/RS232)	-	-	-	
DP master	-	-	-	
DP slave	-	-	-	
Point-to-point interface	-	-	-	
Type	X3	X3	X3	
Type of interface	RS485	RS485	RS485	
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Electrically isolated	✓	✓	✓	
MPI	-	-	-	
MP²I (MPI/RS232)	-	-	-	
DP master	✓	-	✓	
DP slave	✓	-	✓	
Point-to-point interface	✓	✓	✓	
CAN	-	-	-	
Functionality MPI				
Number of connections, max.	32	32	32	
PG/OP channel	✓	✓	✓	
Routing	✓	✓	✓	
Global data communication	✓	✓	✓	
S7 basic communication	✓	✓	✓	
S7 communication	✓	✓	✓	

CPUs | CPUs STEP7 programmable, PROFINET						
315-4PN12 315-4PN33 317-4PN12						

Order number	315-4PN12	315-4PN33	317-4PN12	
S7 communication as server	✓	✓	✓	
S7 communication as client	-	-	-	
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	
Functionality PROFIBUS master				
PG/OP channel	✓	-	✓	
Routing	✓	-	✓	
S7 basic communication	✓	-	✓	
S7 communication	✓	-	✓	
S7 communication as server	✓	-	✓	
S7 communication as client	-	-	-	
Equidistance support	-	-	-	
Isochronous mode	-	-	-	
SYNC/FREEZE	✓	-	✓	
Activation/deactivation of DP slaves	✓	-	✓	
Direct data exchange (slave-to-slave communication)	-	-	-	
DPV1	✓	-	✓	
Transmission speed, min.	9.6 kbit/s	-	9.6 kbit/s	
Transmission speed, max.	12 Mbit/s	-	12 Mbit/s	
Number of DP slaves, max.	124	-	124	
Address range inputs, max.	8 KB	-	8 KB	
Address range outputs, max.	8 KB	-	8 KB	
User data inputs per slave, max.	244 Byte	-	244 Byte	
User data outputs per slave, max.	244 Byte	-	244 Byte	
Functionality PROFIBUS slave				
PG/OP channel	✓	-	✓	
Routing	✓	-	✓	
S7 communication	✓	-	✓	
S7 communication as server	✓	-	✓	
S7 communication as client	-	-	-	
Direct data exchange (slave-to-slave communication)	-	-	-	
DPV1	✓	-	✓	
Transmission speed, min.	9.6 kbit/s	-	9.6 kbit/s	
Transmission speed, max.	12 Mbit/s	-	12 Mbit/s	
Automatic detection of transmission speed	-	-	-	
Transfer memory inputs, max.	244 Byte	-	244 Byte	
Transfer memory outputs, max.	244 Byte	-	244 Byte	
Address areas, max.	32	-	32	
User data per address area, max.	32 Byte	-	32 Byte	
Functionality PROFINET I/O controller				
Realtime Class	-	-	-	
Conformance Class	PROFINET IO	PROFINET IO	PROFINET IO	
Number of PN IO devices	32	32	32	
IRT support	-	-	-	

CPUs | CPUs STEP7 programmable, PROFINET						
315-4PN12 315-4PN33 317-4PN12						

Order number	315-4PN12	315-4PN33	317-4PN12	
Prioritized start-up	-	-	-	
Number of PN IO lines	1	1	1	
Address range inputs, max.	2 KB	2 KB	4 KB	
Address range outputs, max.	2 KB	2 KB	4 KB	
Transmiting clock	1 ms	1 ms	1 ms	
Update time	1 ms .. 512 ms	1 ms .. 512 ms	1 ms .. 512 ms	
Point-to-point communication				
PtP communication	✓	✓	✓	
Interface isolated	✓	✓	✓	
RS232 interface	-	-	-	
RS422 interface	-	-	-	
RS485 interface	✓	✓	✓	
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Transmission speed, min.	150 bit/s	150 bit/s	150 bit/s	
Transmission speed, max.	115.5 kbit/s	115.5 kbit/s	115.5 kbit/s	
Cable length, max.	500 m	500 m	500 m	
Point-to-point protocol				
ASCII protocol	✓	✓	✓	
STX/ETX protocol	✓	✓	✓	
3964(R) protocol	✓	✓	✓	
RK512 protocol	-	-	-	
USS master protocol	✓	✓	✓	
Modbus master protocol	✓	✓	✓	
Modbus slave protocol	-	-	-	
Special protocols	-	-	-	
Functionality RJ45 interfaces				
Type	X5	X5	X5	
Type of interface	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit	
Connector	RJ45	RJ45	RJ45	
Electrically isolated	✓	✓	✓	
PG/OP channel	✓	✓	✓	
Productive connections	-	-	-	
Type	X8	X8	X8	
Type of interface	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit	
Connector	RJ45	RJ45	RJ45	
Electrically isolated	✓	✓	✓	
PG/OP channel	✓	✓	✓	
Productive connections	-	-	-	
Ethernet communication CP				
Number of productive connections, max.	8	8	24	
Number of productive connections by Siemens NetPro, max.	8	8	16	
S7 connections	USEND, URCV, BSEND, BRCV, GET, PUT, Connection of active and passive data handling	USEND, URCV, BSEND, BRCV, GET, PUT, Connection of active and passive data handling	USEND, URCV, BSEND, BRCV, GET, PUT, Connection of active and passive data handling	

CPUs | CPUs STEP7 programmable, PROFINET						
315-4PN12 315-4PN33 317-4PN12						

Order number	315-4PN12	315-4PN33	317-4PN12	
User data per S7 connection, max.	32 KB	32 KB	32 KB	
TCP-connections	FETCH PASSIV, WRITE PASSIV, Connection of passive data handling	FETCH PASSIV, WRITE PASSIV, Connection of passive data handling	FETCH PASSIV, WRITE PASSIV, Connection of passive data handling	
User data per TCP connection, max.	64 KB	64 KB	64 KB	
ISO-connections	-	-	-	
User data per ISO connection, max.	-	-	-	
ISO on TCP connections (RFC 1006)	FETCH PASSIV, WRITE PASSIV, Connection of passive data handling	FETCH PASSIV, WRITE PASSIV, Connection of passive data handling	FETCH PASSIV, WRITE PASSIV, Connection of passive data handling	
User data per ISO on TCP connection, max.	32 KB	32 KB	32 KB	
UDP-connections	TUSEND, TURCV	TUSEND, TURCV	TUSEND, TURCV	
User data per UDP connection, max.	-	-	-	
UDP-multicast-connections	-	-	-	
UDP-broadcast-connections	-	-	-	
Ethernet open communication				
Number of connections, max.	8	8	24	
User data per ISO on TCP connection, max.	8 KB	8 KB	8 KB	
User data per native TCP connection, max.	8 KB	8 KB	8 KB	
User data per ad hoc TCP connection, max.	1460 Byte	1460 Byte	1460 Byte	
User data per UDP connection, max.	1472 Byte	1472 Byte	1472 Byte	
Housing				
Material	PPE	PPE	PPE	
Mounting	Rail System 300	Rail System 300	Rail System 300	
Mechanical data				
Dimensions (WxHxD)	80 mm x 125 mm x 120 mm	80 mm x 125 mm x 120 mm	80 mm x 125 mm x 120 mm	
Weight	430 g	430 g	440 g	
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	
Certifications				
UL508 certification	in preparation	in preparation	in preparation	

Connections, Interfaces

CPUs | CPUs STEP7 programmable, PROFINET						
315-4PN12 315-4PN33 317-4PN12						

315-4PN12

X1

+ ①	+ DC 24 V
- ②	0 V

X5

①	Transmit +
②	Transmit -
③	Receive +
④	-
⑤	-
⑥	Receive -
⑦	-
⑧	-

X2
MPI

①	n. c.
②	M24V
③	RxD/TxD-P (line B)
④	RTS
⑤	M5V
⑥	P5V
⑦	P24V
⑧	RxD/TxD-N (line A)
⑨	n.c.

X8

①	Transmit +
②	Transmit -
③	Receive +
④	-
⑤	-
⑥	Receive -
⑦	-
⑧	-

X3
PtP/PB-DP

①	shield
②	M24V
③	RxD/TxD-P (line B)
④	RTS
⑤	M5V
⑥	P5V
⑦	P24V
⑧	RxD/TxD-N (line A)
⑨	n.c.

315-4PN33

X1

+ ①	+ DC 24 V
- ②	0 V

X5

①	Transmit +
②	Transmit -
③	Receive +
④	-
⑤	-
⑥	Receive -
⑦	-
⑧	-

X2
MPI

①	n. c.
②	M24V
③	RxD/TxD-P (line B)
④	RTS
⑤	M5V
⑥	P5V
⑦	P24V
⑧	RxD/TxD-N (line A)
⑨	n.c.

X8

①	Transmit +
②	Transmit -
③	Receive +
④	-
⑤	-
⑥	Receive -
⑦	-
⑧	-

X3
PtP

①	shield
②	M24V
③	RxD/TxD-P (line B)
④	RTS
⑤	M5V
⑥	P5V
⑦	P24V
⑧	RxD/TxD-N (line A)
⑨	n.c.

CPUs | CPUs STEP7 programmable, PROFINET						
315-4PN12 315-4PN33 317-4PN12						

317-4PN12

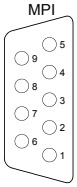
X1

+ ① + DC 24 V
- ② 0 V

X5

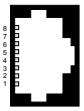
① Transmit +
② Transmit -
③ Receive +
④ n. c.
⑤ n. c.
⑥ Receive -
⑦ n. c.
⑧ n. c.

X2
MPI



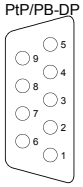
① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X8



① Transmit +
② Transmit -
③ Receive +
④ n. c.
⑤ n. c.
⑥ Receive -
⑦ n. c.
⑧ n. c.

X3
PtP/PB-DP



① shield
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

CPUs STEP7 programmable, class C

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	312-5BE13	313-5BF13	313-6CF13	314-6CF02
Figure				
Type	CPU 312SC	CPU 313SC	CPU 313SC/DPM	CPU 314ST/DPM
General information				
Note	-	-	-	-
Features	› SPEED7 technology › 16 x DI, 8 x DO › 64 kB work memory › Memory extension (max. 512 kB) › PtP interface › Configurable via TIA-Portal	› SPEED7 technology › 24 x DI, 16 x DO, 4 x AI, 2 x AO, 1xAI Pt100 › 128 kB work memory › Memory extension (max. 512 kB) › PtP interface › Configurable via TIA-Portal	› SPEED7 technology › 16 x DI, 16 x DO › 128 kB work memory › Memory extension (max 512 kB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	› SPEED7 technology, SPEED-Bus › 8 x DI, 8 x DO, 4 x AI, 2 x AO, 1xAI Pt100 › 512 kB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable)
SPEED-Bus	-	-	-	✓
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Reverse polarity protection	✓	✓	✓	✓
Current consumption (no-load operation)	135 mA	240 mA	200 mA	300 mA
Current consumption (rated value)	500 mA	700 mA	900 mA	1 A
Inrush current	11 A	11 A	11 A	5 A
I^2t	0.7 A^2s	0.7 A^2s	0.7 A^2s	0.5 A^2s
Max. current drain at backplane bus	3 A	3 A	3 A	2.5 A
Power loss	8 W	14 W	14 W	14 W
Technical data digital inputs				
Number of inputs	16	24	16	8
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	✓	✓	✓	✓
Current consumption from load voltage L+ (without load)	70 mA	70 mA	70 mA	70 mA
Rated value	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V
Input voltage hysteresis	-	-	-	-
Frequency range	-	-	-	-
Input resistance	-	-	-	-
Input current for signal "1"	6 mA	6 mA	6 mA	6 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	✓
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Input delay of "0" to "1"	0.1 / 0.35 ms	0.1 / 0.35 ms	0.1 / 0.35 ms	parameterizable 2.56µs - 40ms

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	312-5BE13	313-5BF13	313-6CF13	314-6CF02
Input delay of "1" to "0"	0.1 / 0.35 ms	0.1 / 0.35 ms	0.1 / 0.35 ms	parameterizable 2.56µs - 40ms
Number of simultaneously utilizable inputs horizontal configuration	16	24	16	8
Number of simultaneously utilizable inputs vertical configuration	16	24	16	8
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1
Initial data size	2 Byte	3 Byte	2 Byte	34 Byte
Technical data digital outputs				
Number of outputs	8	16	16	8
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	100 mA	100 mA	100 mA	30 mA
Total current per group, horizontal configuration, 40°C	3 A	3 A	3 A	4 A
Total current per group, horizontal configuration, 60°C	2 A	2 A	2 A	3 A
Total current per group, vertical configuration	2 A	2 A	2 A	3 A
Output voltage signal "1" at min. current	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)
Output voltage signal "1" at max. current	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)
Output current at signal "1", rated value	0.5 A	0.5 A	0.5 A	0.5 A
Output current, permitted range to 40°C	5 mA to 0.6 A	5 mA to 0.6 A	5 mA to 0.6 A	5 mA to 0.6 A
Output current, permitted range to 60°C	5 mA to 0.6 A	5 mA to 0.6 A	5 mA to 0.6 A	5 mA to 0.6 A
Output current at signal "0" max. (residual current)	0.5 mA	0.5 mA	0.5 mA	100 µA
Output delay of "0" to "1"	100 µs	100 µs	100 µs	100 µs
Output delay of "1" to "0"	100 µs	100 µs	100 µs	100 µs
Minimum load current	-	-	-	-
Lamp load	5 W	5 W	5 W	5 W
Parallel switching of outputs for redundant control of a load	possible	possible	possible	possible
Parallel switching of outputs for increased power	not possible	not possible	not possible	not possible
Actuation of digital input	✓	✓	✓	✓
Switching frequency with resistive load	max. 2.5 kHz	max. 2.5 kHz	max. 2.5 kHz	max. 2.5 kHz
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz
Switching frequency on lamp load	max. 2.5 kHz	max. 2.5 kHz	max. 2.5 kHz	max. 2.5 kHz
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)
Short-circuit protection of output	yes, electronic	yes, electronic	yes, electronic	yes, electronic
Trigger level	1 A	1 A	1 A	1 A
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-

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Order number	312-5BE13	313-5BF13	313-6CF13	314-6CF02
Output data size	1 Byte	2 Byte	2 Byte	18 Byte
Technical data analog inputs				
Number of inputs	-	5	-	5
Cable length, shielded	-	200 m	-	200 m
Rated load voltage	-	DC 24 V	-	DC 24 V
Reverse polarity protection of rated load voltage	-	✓	-	✓
Current consumption from load voltage L+ (without load)	-	-	-	85 mA
Voltage inputs	-	✓	-	✓
Min. input resistance (voltage range)	-	100 kΩ	-	120 kΩ
Input voltage ranges	-	0 V ... +10 V -10 V ... +10 V	-	-10 V ... +10 V 0 V ... +10 V
Operational limit of voltage ranges	-	+/-0.3%	-	+/-0.3%
Basic error limit voltage ranges with SFU	-	+/-0.2%	-	+/-0.3%
Current inputs	-	✓	-	✓
Min. input resistance (current range)	-	100 Ω	-	85 Ω
Input current ranges	-	0 mA ... +20 mA -20 mA ... +20 mA +4 mA ... +20 mA	-	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA
Operational limit of current ranges	-	+/-0.3%	-	+/-0.3%
Basic error limit current ranges with SFU	-	+/-0.2%	-	+/-0.2%
Resistance inputs	-	✓	-	✓
Resistance ranges	-	0 ... 600 Ohm	-	0 ... 600 Ohm
Operational limit of resistor ranges	-	+/-0.4%	-	+/-0.4%
Basic error limit	-	+/-0.2%	-	+/-0.2%
Resistance thermometer inputs	-	✓	-	✓
Resistance thermometer ranges	-	Pt100	-	Pt100 Pt1000 Ni100 Ni1000
Operational limit of resistance thermometer ranges	-	+/-0.6%	-	+/-0.6%
Basic error limit thermoresistor ranges	-	+/-0.4%	-	+/-0.4%
Thermocouple inputs	-	-	-	-
Thermocouple ranges	-	-	-	-
Operational limit of thermocouple ranges	-	-	-	-
Basic error limit thermoelement ranges	-	-	-	-
Programmable temperature compensation	-	-	-	-
External temperature compensation	-	-	-	-
Internal temperature compensation	-	-	-	-
Resolution in bit	-	12	-	12
Measurement principle	-	successive approximation	-	Sigma-Delta
Basic conversion time	-	1 ms	-	6 ms
Noise suppression for frequency	-	80 dB	-	80 dB
Initial data size	-	10 Byte	-	10 Byte

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312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	312-5BE13	313-5BF13	313-6CF13	314-6CF02
Technical data analog outputs				
Number of outputs	-	2	-	2
Cable length, shielded	-	200 m	-	200 m
Rated load voltage	-	-	-	DC 24 V
Reverse polarity protection of rated load voltage	-	-	-	✓
Current consumption from load voltage L+ (without load)	-	-	-	-
Voltage output short-circuit protection	-	✓	-	-
Voltage outputs	-	✓	-	✓
Min. load resistance (voltage range)	-	1 kΩ	-	1 kΩ
Max. capacitive load (current range)	-	1 µF	-	1 µF
Output voltage ranges	-	-10 V ... +10 V 0 V ... +10 V	-	-10 V ... +10 V 0 V ... +10 V
Operational limit of voltage ranges	-	+/-0.2%	-	+/-0.4%
Basic error limit voltage ranges with SFU	-	+/-0.1%	-	+/-0.3%
Current outputs	-	✓	-	✓
Max. in load resistance (current range)	-	500 Ω	-	500 Ω
Max. inductive load (current range)	-	100 µH	-	10 mH
Output current ranges	-	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA	-	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA
Operational limit of current ranges	-	+/-0.3%	-	+/-0.4%
Basic error limit current ranges with SFU	-	+/-0.2%	-	+/-0.3%
Settling time for ohmic load	-	0.5 ms	-	0.2 ms
Settling time for capacitive load	-	0.5 ms	-	0.5 ms
Settling time for inductive load	-	0.5 ms	-	0.2 ms
Resolution in bit	-	12	-	12
Conversion time	-	1 ms	-	1 ms
Substitute value can be applied	-	no	-	yes
Output data size	-	4 Byte	-	4 Byte
Technical data counters				
Number of counters	2	3	3	4
Counter width	32 Bit	32 Bit	32 Bit	32 Bit
Maximum input frequency	10 kHz	30 kHz	30 kHz	100 kHz
Maximum count frequency	10 kHz	30 kHz	30 kHz	100 kHz
Mode incremental encoder	✓	✓	✓	✓
Mode pulse / direction	✓	✓	✓	✓
Mode pulse	✓	✓	✓	✓
Mode frequency counter	-	-	-	-
Mode period measurement	-	-	-	-
Gate input available	✓	✓	✓	✓
Latch input available	✓	✓	✓	✓
Reset input available	-	-	-	✓
Counter output available	✓	✓	✓	✓

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	312-5BE13	313-5BF13	313-6CF13	314-6CF02
Load and working memory				
Load memory, integrated	512 KB	512 KB	512 KB	2 MB
Load memory, maximum	512 KB	512 KB	512 KB	2 MB
Work memory, integrated	64 KB	128 KB	128 KB	512 KB
Work memory, maximal	512 KB	512 KB	512 KB	2 MB
Memory divided in 50% program / 50% data	✓	✓	✓	✓
Memory card slot	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB
Hardware configuration				
Racks, max.	1	4	4	4
Modules per rack, max.	8	8	8	8 in multiple-, 32 in a single-rack configuration
Number of integrated DP master	0	0	1	1
Number of DP master via CP	4	4	4	4
Operable function modules	8	8	8	8
Operable communication modules PtP	8	8	8	8
Operable communication modules LAN	8	8	8	8
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	yes	yes	yes	yes
Process alarm	yes	yes	yes	no
Diagnostic interrupt	yes	yes	yes	yes, parameterizable
Diagnostic functions	no	no	no	yes
Diagnostics information read-out	possible	possible	possible	possible
Supply voltage display	green LED	green LED	green LED	green LED
Group error display	red SF LED	red SF LED	red SF LED	red SF LED
Channel error display	red LED per group	red LED per group	red LED per group	red LED per group
Command processing times				
Bit instructions, min.	0.02 µs	0.02 µs	0.02 µs	0.01 µs
Word instruction, min.	0.02 µs	0.02 µs	0.02 µs	0.01 µs
Double integer arithmetic, min.	0.02 µs	0.02 µs	0.02 µs	0.01 µs
Floating-point arithmetic, min.	0.12 µs	0.12 µs	0.12 µs	0.06 µs
Timers/Counters and their retentive characteristics				
Number of S7 counters	512	512	512	512
Number of S7 times	512	512	512	512
Data range and retentive characteristic				
Number of flags	8192 Byte	8192 Byte	8192 Byte	8192 Byte
Number of data blocks	4095	4095	4095	4095
Max. data blocks size	64 KB	64 KB	64 KB	64 KB
Max. local data size per execution level	510 Byte	510 Byte	510 Byte	510 Byte
Blocks				
Number of OBs	15	15	15	24
Number of FBs	2048	2048	2048	2048
Number of FCs	2048	2048	2048	2048
Maximum nesting depth per priority class	8	8	8	8

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312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	312-5BE13	313-5BF13	313-6CF13	314-6CF02
Maximum nesting depth additional within an error OB	4	4	4	4
Time				
Real-time clock buffered	✓	✓	✓	✓
Clock buffered period (min.)	6 W	6 W	6 W	6 W
Accuracy (max. deviation per day)	10 s	10 s	10 s	10 s
Number of operating hours counter	8	8	8	8
Clock synchronization	✓	✓	✓	✓
Synchronization via MPI	Master/Slave	Master/Slave	Master/Slave	Master/Slave
Synchronization via Ethernet (NTP)	no	no	no	no
Address areas (I/O)				
Input I/O address area	1024 Byte	1024 Byte	1024 Byte	8192 Byte
Output I/O address area	1024 Byte	1024 Byte	1024 Byte	8192 Byte
Input process image maximal	128 Byte	128 Byte	128 Byte	2048 Byte
Output process image maximal	128 Byte	128 Byte	128 Byte	2048 Byte
Digital inputs	272	1016	8064	65536
Digital outputs	264	1008	8064	65536
Digital inputs central	272	1016	1008	1032
Digital outputs central	264	1008	1008	1032
Integrated digital inputs	16	24	16	8
Integrated digital outputs	8	16	16	8
Analog inputs	64	253	503	1024
Analog outputs	64	250	503	1024
Analog inputs, central	64	253	248	261
Analog outputs, central	64	250	248	258
Integrated analog inputs	0	5	0	5
Integrated analog outputs	0	2	0	2
Communication functions				
PG/OP channel	✓	✓	✓	✓
Global data communication	✓	✓	✓	✓
Number of GD circuits, max.	4	4	4	4
Size of GD packets, max.	22 Byte	22 Byte	22 Byte	22 Byte
S7 basic communication	✓	✓	✓	✓
S7 basic communication, user data per job	76 Byte	76 Byte	76 Byte	76 Byte
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
S7 communication, user data per job	160 Byte	160 Byte	160 Byte	160 Byte
Number of connections, max.	32	32	32	32
Functionality Sub-D interfaces				
Type	X2	X2	X2	X2
Type of interface	RS485	RS485	RS485	RS485
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Electrically isolated	-	-	-	✓
MPI	✓	✓	✓	✓

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	312-5BE13	313-5BF13	313-6CF13	314-6CF02
MP²I (MPI/RS232)	-	-	-	-
DP master	-	-	-	-
DP slave	-	-	-	-
Point-to-point interface	-	-	-	-
Type	X3	X3	X3	X3
Type of interface	RS485	RS485	RS485	RS485
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Electrically isolated	✓	✓	✓	✓
MPI	-	-	-	-
MP²I (MPI/RS232)	-	-	-	-
DP master	-	-	✓	✓
DP slave	-	-	✓	✓
Point-to-point interface	✓	✓	✓	✓
CAN	-	-	-	-
Functionality MPI				
Number of connections, max.	32	32	32	32
PG/OP channel	✓	✓	✓	✓
Routing	-	-	✓	✓
Global data communication	✓	✓	✓	✓
S7 basic communication	✓	✓	✓	✓
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s	12 Mbit/s
Functionality PROFIBUS master				
PG/OP channel	-	-	✓	✓
Routing	-	-	✓	✓
S7 basic communication	-	-	✓	✓
S7 communication	-	-	✓	✓
S7 communication as server	-	-	✓	✓
S7 communication as client	-	-	-	-
Equidistance support	-	-	-	-
Isochronous mode	-	-	-	-
SYNC/FREEZE	-	-	✓	✓
Activation/deactivation of DP slaves	-	-	✓	✓
Direct data exchange (slave-to-slave communication)	-	-	-	-
DPV1	-	-	✓	✓
Transmission speed, min.	-	-	9.6 kbit/s	9.6 kbit/s
Transmission speed, max.	-	-	12 Mbit/s	12 Mbit/s
Number of DP slaves, max.	-	-	32	124
Address range inputs, max.	-	-	1 KB	1 KB
Address range outputs, max.	-	-	1 KB	1 KB
User data inputs per slave, max.	-	-	244 Byte	244 Byte

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	312-5BE13	313-5BF13	313-6CF13	314-6CF02
User data outputs per slave, max.	-	-	244 Byte	244 Byte
Functionality PROFIBUS slave				
PG/OP channel	-	-	✓	✓
Routing	-	-	✓	✓
S7 communication	-	-	✓	✓
S7 communication as server	-	-	✓	✓
S7 communication as client	-	-	-	-
Direct data exchange (slave-to-slave communication)	-	-	-	-
DPV1	-	-	✓	✓
Transmission speed, min.	-	-	9.6 kbit/s	9.6 kbit/s
Transmission speed, max.	-	-	12 Mbit/s	12 Mbit/s
Automatic detection of transmission speed	-	-	-	-
Transfer memory inputs, max.	-	-	244 Byte	244 Byte
Transfer memory outputs, max.	-	-	244 Byte	244 Byte
Address areas, max.	-	-	32	32
User data per address area, max.	-	-	32 Byte	32 Byte
Point-to-point communication				
PtP communication	✓	✓	✓	✓
Interface isolated	✓	✓	✓	✓
RS232 interface	-	-	-	-
RS422 interface	-	-	-	-
RS485 interface	✓	✓	✓	✓
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Transmission speed, min.	150 bit/s	150 bit/s	150 bit/s	150 bit/s
Transmission speed, max.	115.5 kbit/s	115.5 kbit/s	115.5 kbit/s	115.5 kbit/s
Cable length, max.	500 m	500 m	500 m	500 m
Point-to-point protocol				
ASCII protocol	✓	✓	✓	✓
STX/ETX protocol	✓	✓	✓	✓
3964(R) protocol	✓	✓	✓	✓
RK512 protocol	-	-	-	-
USS master protocol	✓	✓	✓	✓
Modbus master protocol	✓	✓	✓	✓
Modbus slave protocol	-	-	-	-
Special protocols	-	-	-	-
Functionality RJ45 interfaces				
Type	X5	X5	X5	X5
Type of interface	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit
Connector	RJ45	RJ45	RJ45	RJ45
Electrically isolated	✓	✓	✓	✓
PG/OP channel	✓	✓	✓	✓
Productive connections	-	-	-	-

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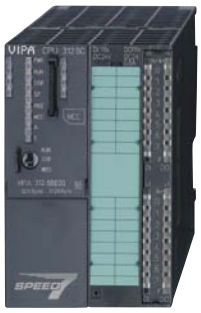
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	312-5BE13	313-5BF13	313-6CF13	314-6CF02
Housing				
Material	PPE	PPE	PPE	PPE
Mounting	Rail System 300	Rail System 300	Rail System 300	Rail System 300
Mechanical data				
Dimensions (WxHxD)	80 mm x 125 mm x 120 mm	120 mm x 125 mm x 120 mm	80 mm x 125 mm x 120 mm	80 mm x 125 mm x 120 mm
Weight	410 g	590 g	420 g	480 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	in preparation	in preparation	in preparation	yes

Connections, Interfaces

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

312-5BE13

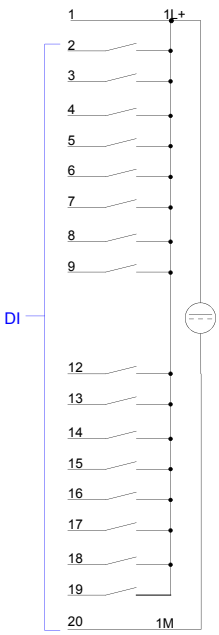


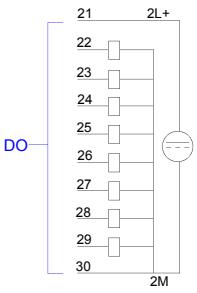
X1
① + DC 24 V
② 0 V

X2 MPI
① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

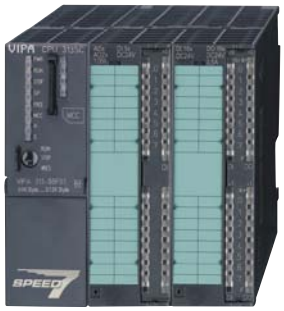
X3 PtP
① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X5
① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -





313-5BF13

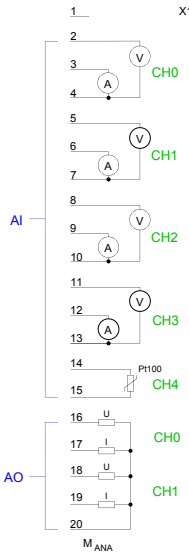


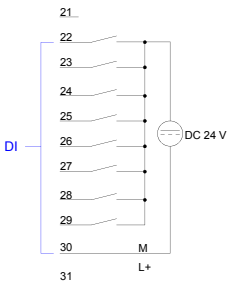
X1
① + DC 24 V
② 0 V

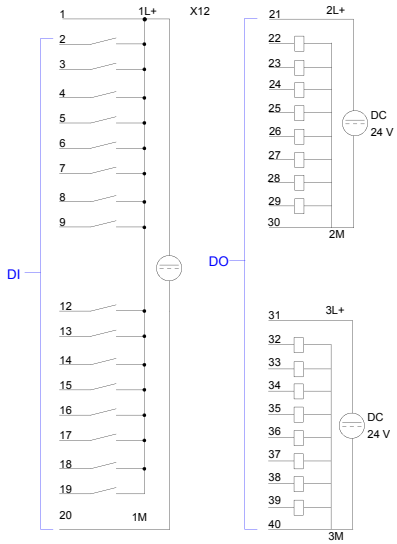
X2 MPI
① n. c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X3 PtP
① shield
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

X5
① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

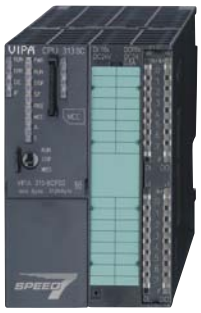


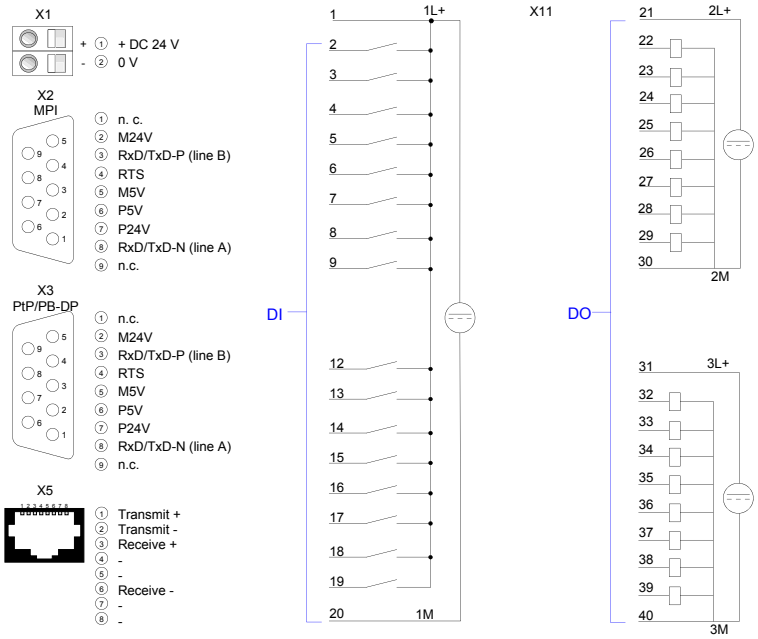




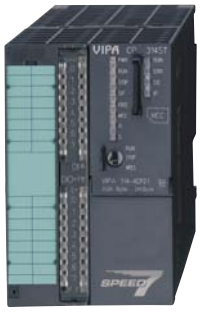
CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

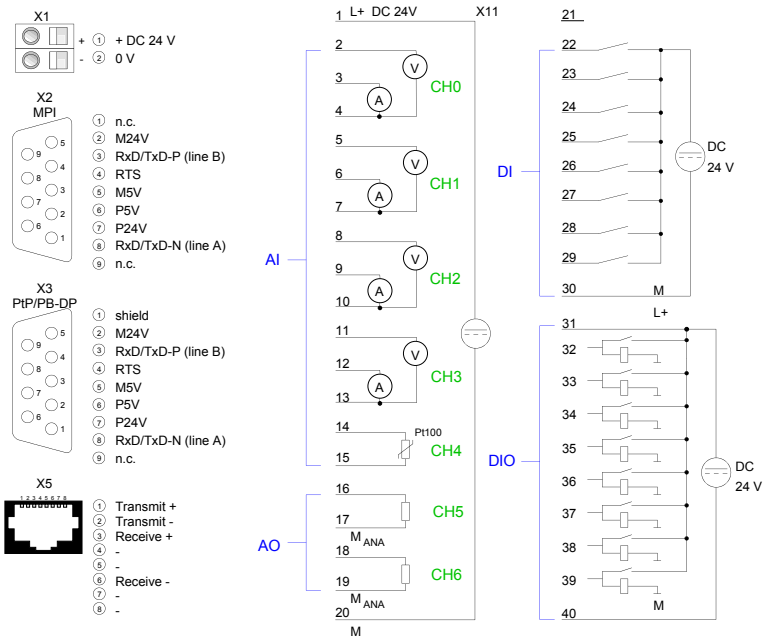
313-6CF13





314-6CF02





CPUs STEP7 programmable, class C

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	314-6CF03	314-6CG13		
Figure				
Type	CPU 314ST/DPM	CPU 314SC/DPM		
General information				
Note	-	-		
Features	› SPEED7 technology, SPEED-Bus › 8 x DI, 8 x DO, 4 x AI, 2 x AO, 1xAI Pt100 › 512 kB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal	› SPEED7 technology › 24 x DI, 16 x DO, 8 x DIO, 4 x AI, 1 x AI Pt100, 2xAO › 256 kB work memory › Memory extension (max. 1 MB) › PROFIBUS-DP master / PtP (switchable) › Configurable via TIA-Portal		
SPEED-Bus	✓	-		
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V		
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V		
Reverse polarity protection	✓	✓		
Current consumption (no-load operation)	300 mA	350 mA		
Current consumption (rated value)	1 A	1 A		
Inrush current	5 A	11 A		
I^2t	0.5 A^2s	0.7 A^2s		
Max. current drain at backplane bus	2.5 A	3 A		
Power loss	14 W	14 W		
Technical data digital inputs				
Number of inputs	8	24		
Cable length, shielded	1000 m	1000 m		
Cable length, unshielded	600 m	600 m		
Rated load voltage	DC 24 V	DC 24 V		
Reverse polarity protection of rated load voltage	✓	✓		
Current consumption from load voltage L+ (without load)	70 mA	70 mA		
Rated value	DC 24 V	DC 24 V		
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V		
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V		
Input voltage hysteresis	-	-		
Frequency range	-	-		
Input resistance	-	-		
Input current for signal "1"	6 mA	6 mA		
Connection of Two-Wire-BEROs possible	✓	✓		
Max. permissible BERO quiescent current	1.5 mA	1.5 mA		

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	314-6CF03	314-6CG13		
Input delay of "0" to "1"	parameterizable 2.56µs - 40ms	0.1 / 0.35 ms		
Input delay of "1" to "0"	parameterizable 2.56µs - 40ms	0.1 / 0.35 ms		
Number of simultaneously utilizable inputs horizontal configuration	8	24		
Number of simultaneously utilizable inputs vertical configuration	8	24		
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1		
Initial data size	34 Byte	3 Byte		
Technical data digital outputs				
Number of outputs	8	16		
Cable length, shielded	1000 m	1000 m		
Cable length, unshielded	600 m	600 m		
Rated load voltage	DC 24 V	DC 24 V		
Reverse polarity protection of rated load voltage	-	-		
Current consumption from load voltage L+ (without load)	30 mA	100 mA		
Total current per group, horizontal configuration, 40°C	4 A	3 A		
Total current per group, horizontal configuration, 60°C	3 A	2 A		
Total current per group, vertical configuration	3 A	2 A		
Output voltage signal "1" at min. current	L+ (-0.8 V)	L+ (-0.8 V)		
Output voltage signal "1" at max. current	L+ (-0.8 V)	L+ (-0.8 V)		
Output current at signal "1", rated value	0.5 A	0.5 A		
Output current, permitted range to 40°C	5 mA to 0.6 A	5 mA to 0.6 A		
Output current, permitted range to 60°C	5 mA to 0.6 A	5 mA to 0.6 A		
Output current at signal "0" max. (residual current)	100 µA	0.5 mA		
Output delay of "0" to "1"	100 µs	100 µs		
Output delay of "1" to "0"	100 µs	100 µs		
Minimum load current	-	-		
Lamp load	5 W	5 W		
Parallel switching of outputs for redundant control of a load	possible	possible		
Parallel switching of outputs for increased power	not possible	not possible		
Actuation of digital input	✓	✓		
Switching frequency with resistive load	max. 2.5 kHz	max. 2.5 kHz		
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz		
Switching frequency on lamp load	max. 2.5 kHz	max. 2.5 kHz		
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)		
Short-circuit protection of output	yes, electronic	yes, electronic		
Trigger level	1 A	1 A		
Number of operating cycle of relay outputs	-	-		

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	314-6CF03	314-6CG13		
Switching capacity of contacts	-	-		
Output data size	18 Byte	2 Byte		
Technical data analog inputs				
Number of inputs	5	5		
Cable length, shielded	200 m	200 m		
Rated load voltage	DC 24 V	DC 24 V		
Reverse polarity protection of rated load voltage	✓	✓		
Current consumption from load voltage L+ (without load)	85 mA	-		
Voltage inputs	✓	✓		
Min. input resistance (voltage range)	120 kΩ	-		
Input voltage ranges	-10 V ... +10 V 0 V ... +10 V	-10 V ... +10 V 0 V ... +10 V		
Operational limit of voltage ranges	+/-0.3%	+/-0.3%		
Basic error limit voltage ranges with SFU	+/-0.3%	+/-0.2%		
Current inputs	✓	✓		
Min. input resistance (current range)	85 Ω	100 Ω		
Input current ranges	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA		
Operational limit of current ranges	+/-0.3%	+/-0.3%		
Basic error limit current ranges with SFU	+/-0.2%	+/-0.2%		
Resistance inputs	✓	✓		
Resistance ranges	0 ... 600 Ohm	0 ... 600 Ohm		
Operational limit of resistor ranges	+/-0.4%	+/-0.4%		
Basic error limit	+/-0.2%	+/-0.2%		
Resistance thermometer inputs	✓	-		
Resistance thermometer ranges	Pt100 Pt1000 Ni100 Ni1000	Pt100		
Operational limit of resistance thermometer ranges	+/-0.6%	+/-0.6%		
Basic error limit thermoresistor ranges	+/-0.4%	+/-0.4%		
Thermocouple inputs	-	-		
Thermocouple ranges	-	-		
Operational limit of thermocouple ranges	-	-		
Basic error limit thermoelement ranges	-	-		
Programmable temperature compensation	-	-		
External temperature compensation	-	-		
Internal temperature compensation	-	-		
Resolution in bit	12	12		
Measurement principle	Sigma-Delta	successive approximation		
Basic conversion time	6 ms	0.5 ms		
Noise suppression for frequency	80 dB	80 dB		
Initial data size	10 Byte	10 Byte		

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	314-6CF03	314-6CG13		
Technical data analog outputs				
Number of outputs	2	2		
Cable length, shielded	200 m	200 m		
Rated load voltage	DC 24 V	-		
Reverse polarity protection of rated load voltage	✓	-		
Current consumption from load voltage L+ (without load)	-	-		
Voltage output short-circuit protection	-	✓		
Voltage outputs	✓	✓		
Min. load resistance (voltage range)	1 kΩ	1 kΩ		
Max. capacitive load (current range)	1 µF	1 µF		
Output voltage ranges	-10 V ... +10 V 0 V ... +10 V	-10 V ... +10 V 0 V ... +10 V		
Operational limit of voltage ranges	+/-0.4%	+/-0.2%		
Basic error limit voltage ranges with SFU	+/-0.3%	+/-0.1%		
Current outputs	✓	✓		
Max. in load resistance (current range)	500 Ω	500 Ω		
Max. inductive load (current range)	10 mH	10 mH		
Output current ranges	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA		
Operational limit of current ranges	+/-0.4%	+/-0.3%		
Basic error limit current ranges with SFU	+/-0.3%	+/-0.2%		
Settling time for ohmic load	0.2 ms	0.5 ms		
Settling time for capacitive load	0.5 ms	0.5 ms		
Settling time for inductive load	0.2 ms	0.5 ms		
Resolution in bit	12	12		
Conversion time	1 ms	1 ms		
Substitute value can be applied	yes	no		
Output data size	4 Byte	4 Byte		
Technical data counters				
Number of counters	4	4		
Counter width	32 Bit	32 Bit		
Maximum input frequency	100 kHz	60 kHz		
Maximum count frequency	100 kHz	60 kHz		
Mode incremental encoder	✓	✓		
Mode pulse / direction	✓	✓		
Mode pulse	✓	✓		
Mode frequency counter	-	-		
Mode period measurement	-	-		
Gate input available	✓	✓		
Latch input available	✓	✓		
Reset input available	✓	-		
Counter output available	✓	✓		

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	314-6CF03	314-6CG13		
Load and working memory				
Load memory, integrated	2 MB	1 MB		
Load memory, maximum	2 MB	1 MB		
Work memory, integrated	512 KB	256 KB		
Work memory, maximal	2 MB	1 MB		
Memory divided in 50% program / 50% data	✓	✓		
Memory card slot	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB		
Hardware configuration				
Racks, max.	4	4		
Modules per rack, max.	8 in multiple-, 32 in a single-rack configuration	8		
Number of integrated DP master	1	1		
Number of DP master via CP	4	4		
Operable function modules	8	8		
Operable communication modules PtP	8	8		
Operable communication modules LAN	8	8		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	yes	yes		
Process alarm	no	yes		
Diagnostic interrupt	yes, parameterizable	yes		
Diagnostic functions	yes	no		
Diagnostics information read-out	possible	possible		
Supply voltage display	green LED	green LED		
Group error display	red SF LED	red SF LED		
Channel error display	red LED per group	red LED per group		
Command processing times				
Bit instructions, min.	0.01 µs	0.01 µs		
Word instruction, min.	0.01 µs	0.01 µs		
Double integer arithmetic, min.	0.01 µs	0.01 µs		
Floating-point arithmetic, min.	0.06 µs	0.06 µs		
Timers/Counters and their retentive characteristics				
Number of S7 counters	512	512		
Number of S7 times	512	512		
Data range and retentive characteristic				
Number of flags	8192 Byte	8192 Byte		
Number of data blocks	4095	4095		
Max. data blocks size	64 KB	64 KB		
Max. local data size per execution level	1024 Byte	510 Byte		
Blocks				
Number of OBs	24	15		
Number of FBs	2048	2048		
Number of FCs	2048	2048		
Maximum nesting depth per priority class	8	8		

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	314-6CF03	314-6CG13		
Maximum nesting depth additional within an error OB	4	4		
Time				
Real-time clock buffered	✓	✓		
Clock buffered period (min.)	6 W	6 W		
Accuracy (max. deviation per day)	10 s	10 s		
Number of operating hours counter	8	8		
Clock synchronization	✓	✓		
Synchronization via MPI	Master/Slave	Master/Slave		
Synchronization via Ethernet (NTP)	no	no		
Address areas (I/O)				
Input I/O address area	8192 Byte	1024 Byte		
Output I/O address area	8192 Byte	1024 Byte		
Input process image maximal	2048 Byte	128 Byte		
Output process image maximal	2048 Byte	128 Byte		
Digital inputs	65536	7856		
Digital outputs	65536	7904		
Digital inputs central	1032	979		
Digital outputs central	1032	986		
Integrated digital inputs	8	24 32		
Integrated digital outputs	8	16 24		
Analog inputs	1024	494		
Analog outputs	1024	495		
Analog inputs, central	261	253		
Analog outputs, central	258	250		
Integrated analog inputs	5	5		
Integrated analog outputs	2	2		
Communication functions				
PG/OP channel	✓	✓		
Global data communication	✓	✓		
Number of GD circuits, max.	4	4		
Size of GD packets, max.	22 Byte	22 Byte		
S7 basic communication	✓	✓		
S7 basic communication, user data per job	76 Byte	76 Byte		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
S7 communication, user data per job	160 Byte	160 Byte		
Number of connections, max.	32	32		
Functionality Sub-D interfaces				
Type	X2	X2		
Type of interface	RS485	RS485		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Electrically isolated	✓	-		

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	314-6CF03	314-6CG13		
MPI	✓	✓		
MP²I (MPI/RS232)	-	-		
DP master	-	✓		
DP slave	-	✓		
Point-to-point interface	-	✓		
Type	X3	X3		
Type of interface	RS485	RS485		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Electrically isolated	✓	✓		
MPI	-	-		
MP²I (MPI/RS232)	-	-		
DP master	✓	✓		
DP slave	✓	✓		
Point-to-point interface	✓	✓		
CAN	-	-		
Functionality MPI				
Number of connections, max.	32	32		
PG/OP channel	✓	✓		
Routing	✓	✓		
Global data communication	✓	✓		
S7 basic communication	✓	✓		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s		
Transmission speed, max.	12 Mbit/s	187.5 kbit/s		
Functionality PROFIBUS master				
PG/OP channel	✓	✓		
Routing	✓	✓		
S7 basic communication	✓	✓		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
Equidistance support	-	-		
Isochronous mode	-	-		
SYNC/FREEZE	✓	✓		
Activation/deactivation of DP slaves	✓	✓		
Direct data exchange (slave-to-slave communication)	-	-		
DPV1	✓	✓		
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s		
Transmission speed, max.	12 Mbit/s	12 Mbit/s		
Number of DP slaves, max.	124	32		
Address range inputs, max.	1 KB	1 KB		
Address range outputs, max.	1 KB	1 KB		

CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

Order number	314-6CF03	314-6CG13		
User data inputs per slave, max.	244 Byte	244 Byte		
User data outputs per slave, max.	244 Byte	244 Byte		
Functionality PROFIBUS slave				
PG/OP channel	✓	✓		
Routing	✓	✓		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
Direct data exchange (slave-to-slave communication)	-	-		
DPV1	✓	✓		
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s		
Transmission speed, max.	12 Mbit/s	12 Mbit/s		
Automatic detection of transmission speed	-	-		
Transfer memory inputs, max.	244 Byte	244 Byte		
Transfer memory outputs, max.	244 Byte	244 Byte		
Address areas, max.	32	32		
User data per address area, max.	32 Byte	32 Byte		
Point-to-point communication				
PtP communication	✓	✓		
Interface isolated	✓	✓		
RS232 interface	-	-		
RS422 interface	-	-		
RS485 interface	✓	✓		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Transmission speed, min.	150 bit/s	150 bit/s		
Transmission speed, max.	115.5 kbit/s	115.5 kbit/s		
Cable length, max.	500 m	500 m		
Point-to-point protocol				
ASCII protocol	✓	✓		
STX/ETX protocol	✓	✓		
3964(R) protocol	✓	✓		
RK512 protocol	-	-		
USS master protocol	✓	✓		
Modbus master protocol	✓	✓		
Modbus slave protocol	-	-		
Special protocols	-	-		
Functionality RJ45 interfaces				
Type	X5	X5		
Type of interface	Ethernet 10/100 MBit	Ethernet 10/100 MBit		
Connector	RJ45	RJ45		
Electrically isolated	✓	✓		
PG/OP channel	✓	✓		
Productive connections	-	-		

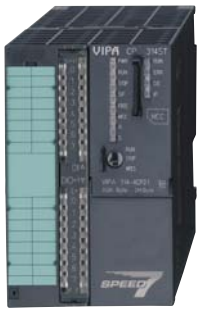
CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

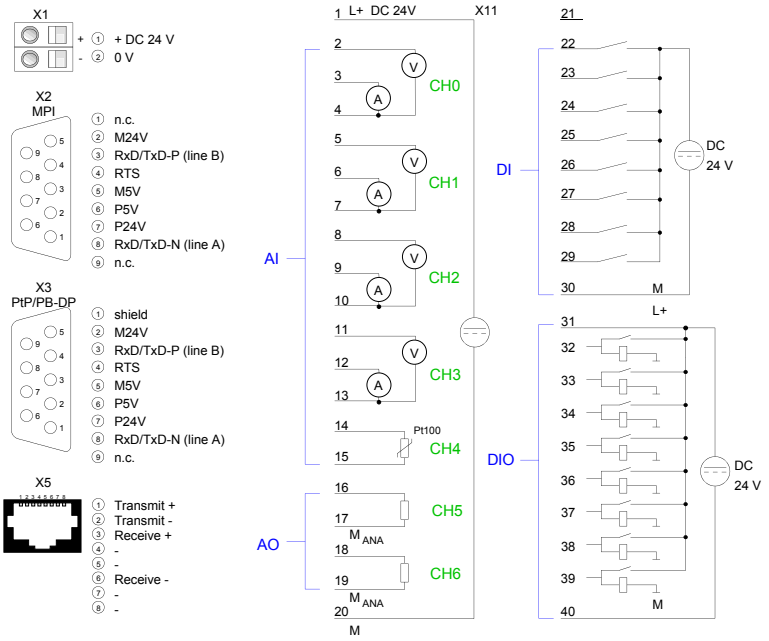
Order number	314-6CF03	314-6CG13		
Housing				
Material	PPE	PPE		
Mounting	Rail System 300	Rail System 300		
Mechanical data				
Dimensions (WxHxD)	80 mm x 125 mm x 120 mm	120 mm x 125 mm x 120 mm		
Weight	480 g	610 g		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	in preparation	in preparation		

Connections, Interfaces

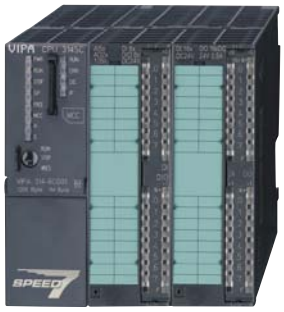
CPUs | CPUs STEP7 programmable, class C						
312-5BE13 313-5BF13 313-6CF13 314-6CF02	314-6CF03 314-6CG13					

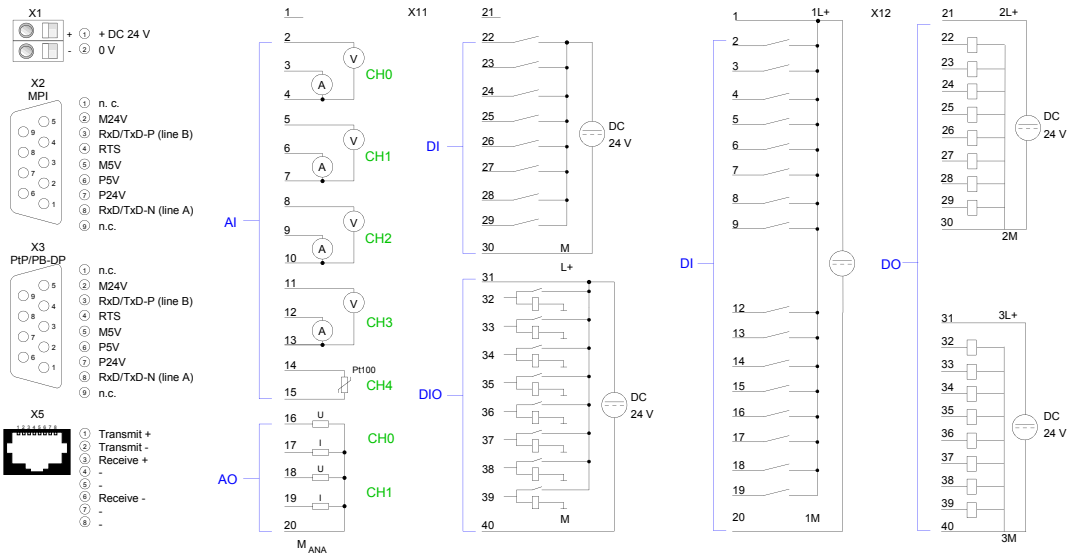
314-6CF03





314-6CG13





Power supply

Structure and Function

Power supply modules are used to supply the system as well as the sensors and actuators with direct current. They convert the mains AC voltage into a DC voltage of 24 V.

Power supply modules can be mounted on the mounting surface, together with 300S components using a profile rail.

The power supplies have no connection to the backplane bus.

Characteristics

- Depending on the model Automatic Wide Range Input detection (AC 100 V - 240 V) or manual switching AC 120/230 V
- Connection to a single phase AC voltage network
- Nominal input voltage AC 120/230 V, 50/60 Hz
- Nominal output voltage DC 24 V
- Safe electrical isolation according to EN 60 950
- Can be used as load power supply
- Front integrated status LEDs for fault diagnosis
- Protection against short circuit, overload and open circuit
- IP 20 protection
- Compact design
- 24 month warranty

Characteristics SPEED-Bus power supply

- Power supply for the CPU 317S
- Automatic start-up with the power of the CPU 317S
- Output current 5.5 A, total output current max. 10 A
- Defined power-down in the case of a power supply failure
- Protection against short circuit and overload
- Overheat protection
- 24 month warranty

Overview

Order no.	Name/Description	Page
Power supply		
307-1BA00	**PS 307 - Power supply** › Output current 2.5 A › Output voltage DC 24 V › AC 100...240 V without manual switch	**424**
307-1EA00	**PS 307 - Power supply** › Output current 5 A › Output voltage DC 24 V › AC 120/230 V, 60/50 Hz switchable	**424**
307-1FB70	**PS 307S - Power supply - SPEED-Bus** › Only for CPU 317S › Output current 5.5 A extends the maximum total value at the back plane bus to 10 A	**424**
307-1KA00	**PS 307 - Power supply** › Output current 10 A › Output voltage DC 24 V › AC 120/230 V, 60/50 Hz switchable	**424**

Power supply

Power supply | Power supply						
307-1BA00 307-1EA00 307-1FB70 307-1KA00						

Order number	307-1BA00	307-1EA00	307-1FB70	307-1KA00
Figure				
Type	PS 307	PS 307	PS 307S - SPEED-Bus	PS 307
General information				
Note	-	-	-	-
Features	› Output current 2.5 A › Output voltage DC 24 V › AC 100...240 V without manual switch	› Output current 5 A › Output voltage DC 24 V › AC 120/230 V, 60/50 Hz switchable	› Only for CPU 317S › Output current 5.5 A extends the maximum total value at the back plane bus to 10 A	› Output current 10 A › Output voltage DC 24 V › AC 120/230 V, 60/50 Hz switchable
SPEED-Bus	-	-	-	-
Technical data power supply				
Input voltage (rated value)	AC 100...240 V	AC 120/230 V	DC 24 V	AC 120/230 V
Input voltage (permitted range)	AC 100...240 V	AC 90...132/180...264 V	DC 20.4...28.8 V	AC 90...132/180...264 V
Mains frequency (rated value)	50...60 Hz	50...60 Hz	-	50...60 Hz
Mains frequency (permitted range)	47...63 Hz	47...63 Hz	-	47...63 Hz
Input voltage (at 120 V)	0.58 A	2.2 A	-	4.1 A
Input voltage (at 230 V)	0.29 A	1.3 A	-	2.1 A
Inrush current (at 25 °C)	30 A	45 A	5 A	55 A
I^2t	1 A^2s	1.2 A^2s	0.5 A^2s	9 A^2s
Power consumption typ.	67 W	138 W	36 W	275 W
Output voltage (rated value)	24 V	24 V	5.2 V	24 V
Output current (rated value)	2.5 A	5 A	5.5 A	10 A
Power supply parallel switchable	-	-	-	-
Protect type	short circuits, overload, vacancy, over temperature (IP20)	short circuits (electr.) non-latching, overload, vacancy	short circuit (electr.), overload, over temperature (IP20)	short circuits (electr.) non-latching, overload, vacancy
Ripple of output voltage (max.), BW=20 MHz	150 mV	150 mV	150 mV	150 mV
Efficiency typ.	90 %	87 %	90 %	87 %
Power loss typ.	6 W	18 W	6 W	35 W
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	none
Supply voltage display	none	none	green LED	none
Group error display	none	none	red LED	none
Channel error display	none	none	none	none

Power supply | Power supply						
307-1BA00 307-1EA00 307-1FB70 307-1KA00						

Order number	307-1BA00	307-1EA00	307-1FB70	307-1KA00
Housing				
Material	PPE	PPE	PPE / PA 6.6	PPE
Mounting	Rail System 300	Rail System 300	-	Rail System 300
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	80 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	120 mm x 125 mm x 120 mm
Weight	310 g	610 g	210 g	1110 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	-	-	-	-

Connections, Interfaces

Power supply | Power supply						
307-1BA00 307-1EA00 307-1FB70 307-1KA00						

307-1BA00

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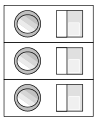

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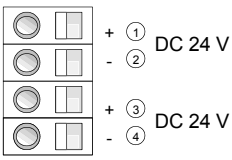

307-1EA00

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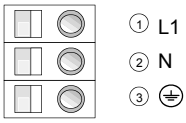

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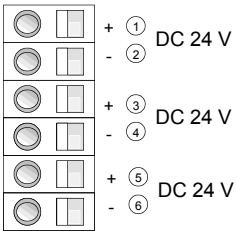

Power supply | Power supply						
307-1BA00 307-1EA00 307-1FB70 307-1KA00						

307-1FB70

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307-1KA00

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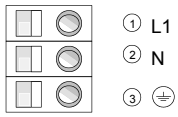

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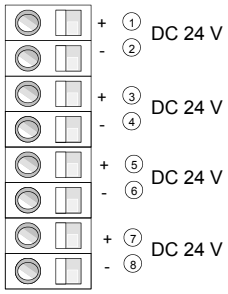


Signal modules digital

Structure and Function

Digital modules for the connection of sensors and actuators are the interface of the PLC to the process. Digital input modules acquire the binary control signals from the process level and transform them into interpretable signals for the control. Digital output modules convert the internal binary control signals into signals suitable for the process level.

Characteristics

- Large selection. Modules are available for all popular applications
- High-Speed DI-module for the SPEED-Bus (parameters 2.56 µs ... 40 ms)
- High-Speed DO-module for the SPEED-Bus (100 kHz)
- Compact design
- LED-status indicator
- Electrically isolated to the backplane bus
- Selectable connection method - screw terminals or cage clamps
- Label strips included and easily visible on the front
- 24 month warranty

Overview

Order no.	Name/Description	Page
Digital input modules		
321-1BH01	**SM 321 - Digital input** › 16 inputs	**430**
321-1BH70	**SM 321S - FAST Digital input - SPEED-Bus** › SPEED-Bus › 16 fast inputs › Parameterizable as alarm/ETS	**430**
321-1BL00	**SM 321 - Digital input** › 32 inputs	**430**
321-1FH00	**SM 321 - Digital input** › 16 inputs, in groups of 4 › AC 120/230 V	**430**
Digital output modules		
322-1BF01	**SM 322 - Digital output** › 8 outputs, in groups of 4 › Output current 2 A	**434**
322-1BH01	**SM 322 - Digital output** › 16 outputs, in groups of 8 › Output current 1 A	**434**
322-1BH41	**SM 322 - Digital output** › 16 outputs, in groups of 8 › DC 24 V › Output current 2 A	**434**
322-1BH60	**SM 322 - Digital output** › 16 outputs › 1 input (activation for outputs) › 16 switches (automatic, manual 0/1) › Output current 0.5 A	**434**
322-1BH70	**SM 322S - FAST Digital output - SPEED-Bus** › SPEED-Bus › 16 fast outputs › Output current 0.5 A	**438**
322-1BL00	**SM 322 - Digital output** › 32 outputs, in groups of 8 › DC 24 V › Output current 1 A	**438**
322-1HH00	**SM 322 - Digital output** › 16 relay outputs, in groups of 8 › AC 230 V/ DC 30 V › Contact rating per channel 5 A	**438**
322-5FF00	**SM 322 - Digital output** › 8 outputs, in groups of 1 › AC 120/230 V › Output current 2 A › Substitute value output (programmable)	**438**
Digital in/output modules		
323-1BH00	**SM 323 - Digital in-/output** › 16 channels (as inputs or outputs) › Diagnostic function › Output current 1 A	**442**
323-1BH01	**SM 323 - Digital in-/output** › 8 inputs/ 8 outputs › Output current 1 A	**442**
323-1BH70	**SM 323S - FAST Digital in-/output - SPEED-Bus** › SPEED-Bus › 16 fast inputs/outputs › Output current 0.5 A	**442**
323-1BL00	**SM 323 - Digital in-/output** › 16 inputs/ 16 outputs › Output current 1 A	**442**

Digital input modules

Signal modules digital | Digital input modules						
321-1BH01 321-1BH70 321-1BL00 321-1FH00						

Order number	321-1BH01	321-1BH70	321-1BL00	321-1FH00
Figure				
Type	SM 321	SM 321S - SPEED-Bus	SM 321	SM 321
General information				
Note	-	-	-	-
Features	› 16 inputs	› SPEED-Bus › 16 fast inputs › Parameterizable as alarm/ETS	› 32 inputs	› 16 inputs, in groups of 4 › AC 120/230 V
SPEED-Bus	-	✓	-	-
Current consumption/power loss				
Current consumption from backplane bus	25 mA	390 mA	35 mA	35 mA
Power loss	3.5 W	5 W	6.5 W	5 W
Technical data digital inputs				
Number of inputs	16	16	32	16
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	-	DC 20.4...28.8 V	-	AC 120/230 V
Current consumption from load voltage L+ (without load)	-	15 mA	-	-
Rated value	DC 20.4...28.8 V	DC 24 V	DC 20.4...28.8 V	AC 120/230 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	AC 0...40 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	AC 79...264 V
Input voltage hysteresis	-	-	-	-
Frequency range	-	-	-	47...63 Hz
Input resistance	-	-	-	-
Input current for signal "1"	7 mA	7 mA	7 mA	7 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	✓
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Input delay of "0" to "1"	3 ms	parameterizable 2.56µs - 40ms	3 ms	25 ms
Input delay of "1" to "0"	3 ms	parameterizable 2.56µs - 40ms	3 ms	25 ms
Number of simultaneously utilizable inputs horizontal configuration	16	16	32	16
Number of simultaneously utilizable inputs vertical configuration	16	16	32	16
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1	-
Initial data size	2 Byte	2 Byte	4 Byte	2 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	yes	no	no
Process alarm	no	yes, parameterizable	no	no
Diagnostic interrupt	no	yes, parameterizable	no	no

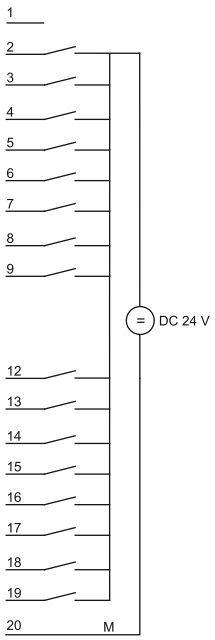
Signal modules digital | Digital input modules						
321-1BH01 321-1BH70 321-1BL00 321-1FH00						

Order number	321-1BH01	321-1BH70	321-1BL00	321-1FH00
Diagnostic functions	no	yes	no	no
Diagnostics information read-out	none	possible	none	none
Supply voltage display	none	green LED	none	none
Group error display	none	none	none	none
Channel error display	none	none	none	none
Isolation				
Between channels	-	-	-	✓
Between channels of groups to	16	16	16	4
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 4000 V
Datasizes				
Input bytes	2	2 / 48	4	2
Output bytes	0	0	0	0
Parameter bytes	0	0 / 66	0	0
Diagnostic bytes	0	16	0	0
Housing				
Material	PPE	PPE	PPE	PPE
Mounting	Rail System 300	-	Rail System 300	Rail System 300
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm
Weight	220 g	220 g	240 g	240 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

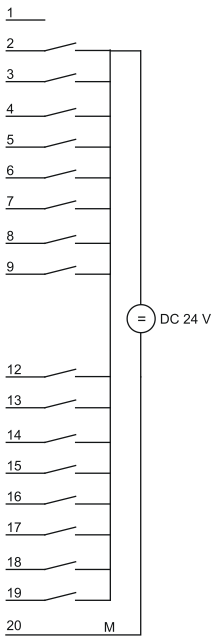
Connections, Interfaces

Signal modules digital | Digital input modules						
321-1BH01 321-1BH70 321-1BL00 321-1FH00						

321-1BH01

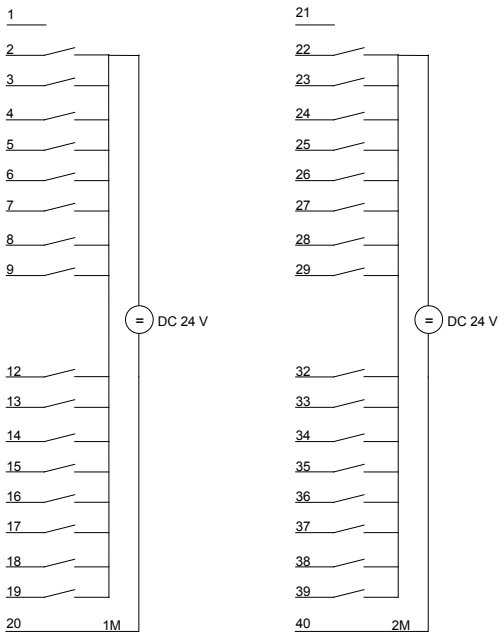


321-1BH70

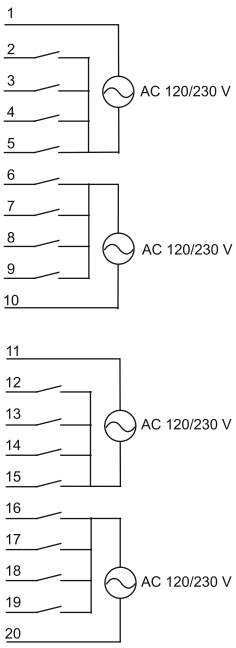


Signal modules digital | Digital input modules						
321-1BH01 321-1BH70 321-1BL00 321-1FH00						

321-1BL00



321-1FH00



Digital output modules

Signal modules digital | Digital output modules						
322-1BF01 322-1BH01 322-1BH41 322-1BH60	322-1BH70 322-1BL00 322-1HH00 322-5FF00					

Order number	322-1BF01	322-1BH01	322-1BH41	322-1BH60
Figure				
Type	SM 322	SM 322	SM 322	SM 322
General information				
Note	-	-	-	-
Features	› 8 outputs, in groups of 4 › Output current 2 A	› 16 outputs, in groups of 8 › Output current 1 A	› 16 outputs, in groups of 8 › DC 24 V › Output current 2 A	› 16 outputs › 1 input (activation for outputs) › 16 switches (automatic, manual 0/1) › Output current 0.5 A
SPEED-Bus	-	-	-	-
Current consumption/power loss				
Current consumption from backplane bus	65 mA	110 mA	110 mA	100 mA
Power loss	7.5 W	4 W	4 W	6 W
Technical data digital outputs				
Number of outputs	8	16	16	16
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Current consumption from load voltage L+ (without load)	68 mA	30 mA	30 mA	140 mA
Total current per group, horizontal configuration, 40°C	8 A	4 A	8 A	8 A
Total current per group, horizontal configuration, 60°C	8 A	4 A	8 A	8 A
Total current per group, vertical configuration	8 A	4 A	8 A	8 A
Output current at signal "1", rated value	2 A	1 A	2 A	0.5 A
Output delay of "0" to "1"	150 µs	150 µs	150 µs	max. 100 µs
Output delay of "1" to "0"	100 µs	100 µs	100 µs	max. 500 µs
Minimum load current	-	-	-	-
Lamp load	10 W	5 W	10 W	5 W
Parallel switching of outputs for redundant control of a load	possible (only outputs group)	possible (only outputs group)	possible (only outputs group)	not possible
Parallel switching of outputs for increased power	possible (only outputs group)	possible (only outputs group)	possible (only outputs group)	not possible
Actuation of digital input	✓	✓	✓	✓
Switching frequency with resistive load	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz	max. 10 Hz	max. 10 Hz
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)
Short-circuit protection of output	yes, electronic	yes, electronic	yes, electronic	yes, electronic
Trigger level	3 A	1.5 A	3 A	1 A

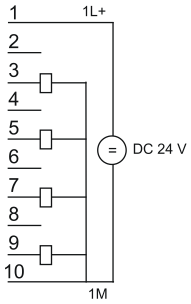
Signal modules digital | Digital output modules						
322-1BF01 322-1BH01 322-1BH41 322-1BH60	322-1BH70 322-1BL00 322-1HH00 322-5FF00					

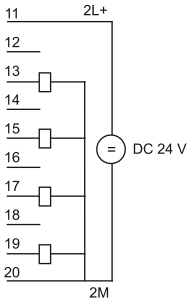
Order number	322-1BF01	322-1BH01	322-1BH41	322-1BH60
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-
Output data size	1 Byte	2 Byte	2 Byte	2 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	none
Supply voltage display	green LED per group	green LED per group	green LED per group	green LED per group
Group error display	red SF LED	red SF LED	red SF LED	red SF LED
Channel error display	none	none	none	none
Isolation				
Between channels	✓	✓	✓	-
Between channels of groups to	4	8	8	16
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	0	0	0	0
Output bytes	1	2	2	2
Parameter bytes	0	0	0	0
Diagnostic bytes	0	0	0	0
Housing				
Material	PPE	PPE	PPE	PPE
Mounting	Rail System 300	Rail System 300	Rail System 300	Rail System 300
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm
Weight	240 g	230 g	230 g	230 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

Connections, Interfaces

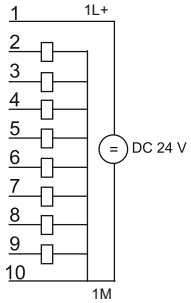
Signal modules digital | Digital output modules						
322-1BF01 322-1BH01 322-1BH41 322-1BH60	322-1BH70 322-1BL00 322-1HH00 322-5FF00					

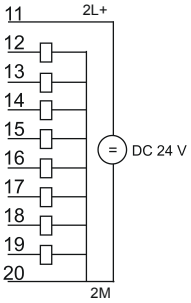
322-1BF01





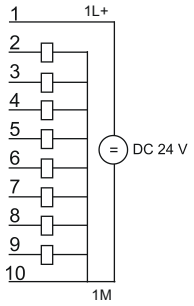
322-1BH01

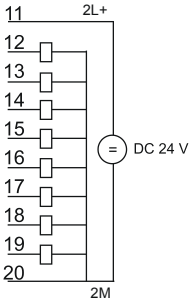




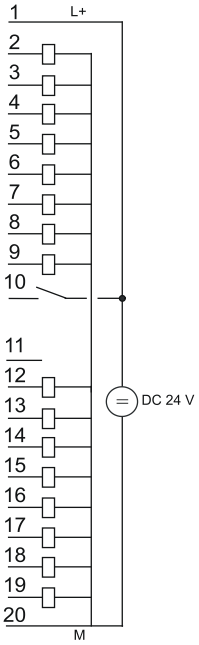
Signal modules digital | Digital output modules						
322-1BF01 322-1BH01 322-1BH41 322-1BH60	322-1BH70 322-1BL00 322-1HH00 322-5FF00					

322-1BH41





322-1BH60



Digital output modules

Signal modules digital | Digital output modules						
322-1BF01 322-1BH01 322-1BH41 322-1BH60	322-1BH70 322-1BL00 322-1HH00 322-5FF00					

Order number	322-1BH70	322-1BL00	322-1HH00	322-5FF00
Figure				
Type	SM 322S - SPEED-Bus	SM 322	SM 322	SM 322
General information				
Note	-	-	-	-
Features	› SPEED-Bus › 16 fast outputs › Output current 0.5 A	› 32 outputs, in groups of 8 › DC 24 V › Output current 1 A	› 16 relay outputs, in groups of 8 › AC 230 V/ DC 30 V › Contact rating per channel 5 A	› 8 outputs, in groups of 1 › AC 120/230 V › Output current 2 A › Substitute value output (programmable)
SPEED-Bus	✓	-	-	-
Current consumption/power loss				
Current consumption from backplane bus	390 mA	200 mA	80 mA	100 mA
Power loss	5 W	6 W	4 W	8.6 W
Technical data digital outputs				
Number of outputs	16	32	16	8
Cable length, shielded	1000 m	1000 m	-	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 30 V/ AC 230 V	AC 120/230 V
Current consumption from load voltage L+ (without load)	30 mA	30 mA	-	2 mA
Total current per group, horizontal configuration, 40°C	4 A	2.5 A	-	8 A
Total current per group, horizontal configuration, 60°C	4 A	2.5 A	-	4 A
Total current per group, vertical configuration	4 A	2.5 A	-	4 A
Output current at signal "1", rated value	0.5 A	1 A	5 A	2 A
Output delay of "0" to "1"	6.12 µs	150 µs	-	-
Output delay of "1" to "0"	6.12 µs	100 µs	-	-
Minimum load current	-	-	-	-
Lamp load	5 W	6 W	6 W	50 W
Parallel switching of outputs for redundant control of a load	not possible	possible (only outputs group)	possible (only outputs group)	possible
Parallel switching of outputs for increased power	not possible	not possible	not possible	not possible
Actuation of digital input	✓	✓	✓	✓
Switching frequency with resistive load	max. 100 kHz	max. 1000 Hz	max. 10 Hz	max. 10 Hz
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz
Switching frequency on lamp load	max. 10 Hz	max. 1 Hz	max. 1 Hz	max. 1 Hz
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)	-	-
Short-circuit protection of output	yes, electronic	yes, electronic	-	Fuse 3.15 A /250 V, quick response

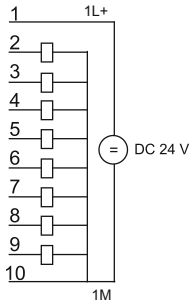
Signal modules digital | Digital output modules						
322-1BF01 322-1BH01 322-1BH41 322-1BH60	322-1BH70 322-1BL00 322-1HH00 322-5FF00					

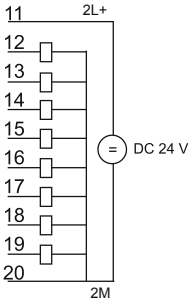
Order number	322-1BH70	322-1BL00	322-1HH00	322-5FF00
Trigger level	1 A	1.5 A	-	3.15 A
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	5 A	-
Output data size	2 Byte	4 Byte	2 Byte	1 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	none
Supply voltage display	green LED per group	green LED per group	none	none
Group error display	red SF LED	red SF LED	none	red SF LED
Channel error display	none	none	none	none
Isolation				
Between channels	✓	✓	✓	✓
Between channels of groups to	8	8	8	1
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	AC 1500 V	AC 1500 V
Datasizes				
Input bytes	0	0	0	0
Output bytes	2	4	2	1
Parameter bytes	0	0	0	21
Diagnostic bytes	0	0	0	0
Housing				
Material	PPE	PPE	PPE	PPE
Mounting	-	Rail System 300	Rail System 300	Rail System 300
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm
Weight	250 g	260 g	290 g	330 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

Connections, Interfaces

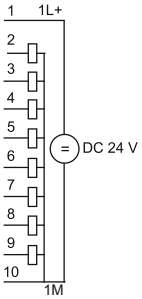
Signal modules digital | Digital output modules						
322-1BF01 322-1BH01 322-1BH41 322-1BH60	322-1BH70 322-1BL00 322-1HH00 322-5FF00					

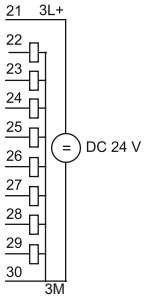
322-1BH70

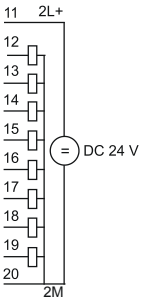


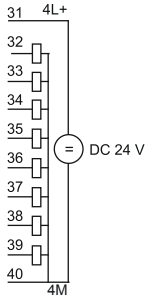


322-1BL00



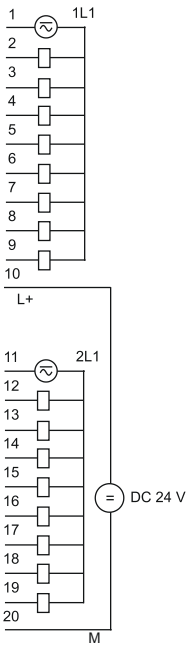




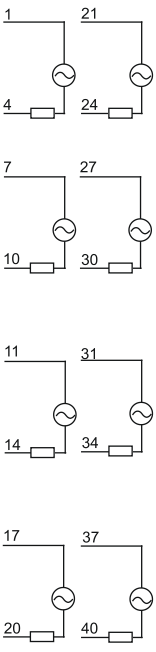


Signal modules digital | Digital output modules						
322-1BF01 322-1BH01 322-1BH41 322-1BH60	322-1BH70 322-1BL00 322-1HH00 322-5FF00					

322-1HH00



322-5FF00



Digital in/output modules

Signal modules digital | Digital in/output modules						
323-1BH00 323-1BH01 323-1BH70 323-1BL00						

Order number	323-1BH00	323-1BH01	323-1BH70	323-1BL00
Figure				
Type	SM 323	SM 323	SM 323S - SPEED-Bus	SM 323
General information				
Note	-	-	-	-
Features	› 16 channels (as inputs or outputs) › Diagnostic function › Output current 1 A	› 8 inputs/ 8 outputs › Output current 1 A	› SPEED-Bus › 16 fast inputs/outputs › Output current 0.5 A	› 16 inputs/ 16 outputs › Output current 1 A
SPEED-Bus	-	-	✓	-
Current consumption/power loss				
Current consumption from backplane bus	130 mA	70 mA	390 mA	130 mA
Power loss	4 W	4 W	5 W	5.8 W
Technical data digital inputs				
Number of inputs	16	8	16	16
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Current consumption from load voltage L+ (without load)	30 mA	15 mA	-	30 mA
Rated value	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V
Input voltage hysteresis	-	-	-	-
Frequency range	-	-	-	-
Input resistance	-	-	-	-
Input current for signal "1"	7 mA	7 mA	7 mA	7 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	✓
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Input delay of "0" to "1"	3 ms	3 ms	parameterizable 2.56µs - 40ms	3 ms
Input delay of "1" to "0"	3 ms	3 ms	parameterizable 2.56µs - 40ms	3 ms
Number of simultaneously utilizable inputs horizontal configuration	16	8	16	16
Number of simultaneously utilizable inputs vertical configuration	16	8	16	16
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1
Initial data size	2 Byte	1 Byte	2 Byte	2 Byte
Technical data digital outputs				
Number of outputs	16	8	16	16
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V

Signal modules digital | Digital in/output modules						
323-1BH00 323-1BH01 323-1BH70 323-1BL00						

Order number	323-1BH00	323-1BH01	323-1BH70	323-1BL00
Reverse polarity protection of rated load voltage	✓	✓	✓	✓
Current consumption from load voltage L+ (without load)	30 mA	15 mA	50 mA	30 mA
Output current at signal "1", rated value	1 A	1 A	0.5 A	1 A
Output delay of "0" to "1"	150 µs	150 µs	6.12 µs	150 µs
Output delay of "1" to "0"	100 µs	100 µs	6.12 µs	100 µs
Minimum load current	-	-	-	-
Lamp load	5 W	5 W	5 W	5 W
Parallel switching of outputs for redundant control of a load	possible (only outputs group)	possible (only outputs group)	not possible	possible (only outputs group)
Parallel switching of outputs for increased power	not possible	not possible	not possible	not possible
Actuation of digital input	✓	✓	✓	✓
Switching frequency with resistive load	max. 1000 Hz	max. 1000 Hz	max. 100 kHz	max. 1000 Hz
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz	max. 10 Hz	max. 10 Hz
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)
Short-circuit protection of output	yes, electronic	yes, electronic	yes, electronic	yes, electronic
Trigger level	1.5 A	1.5 A	1 A	1.5 A
Number of operating cycle of relay outputs	-	-	-	-
Switching capacity of contacts	-	-	-	-
Output data size	2 Byte	1 Byte	2 Byte	2 Byte
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel	green LED per channel	green LED per channel
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	none	none	none	none
Supply voltage display	green LED per group	green LED per group	green LED per group	green LED per group
Group error display	red SF LED	red SF LED	red SF LED	red SF LED
Channel error display	none	none	none	none
Isolation				
Between channels	✓	✓	✓	✓
Between channels of groups to	8	8	8	8
Between channels and backplane bus	✓	✓	✓	✓
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	2	1	2 / 48	2
Output bytes	2	1	2	2
Parameter bytes	0	0	0 / 66	0
Diagnostic bytes	0	0	16	0

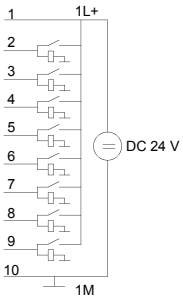
Signal modules digital | Digital in/output modules						
323-1BH00 323-1BH01 323-1BH70 323-1BL00						

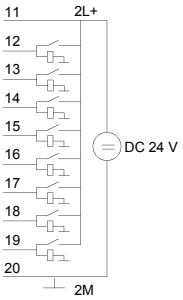
Order number	323-1BH00	323-1BH01	323-1BH70	323-1BL00
Housing				
Material	PPE	PPE	PPE	PPE
Mounting	Rail System 300	Rail System 300	-	Rail System 300
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm
Weight	230 g	240 g	240 g	260 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

Connections, Interfaces

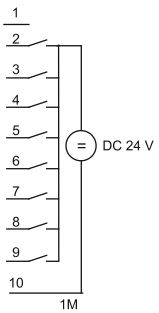
Signal modules digital | Digital in/output modules						
323-1BH00 323-1BH01 323-1BH70 323-1BL00						

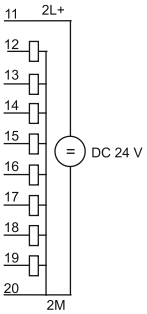
323-1BH00





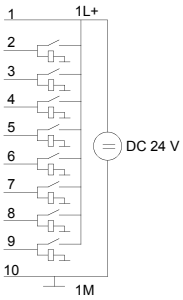
323-1BH01

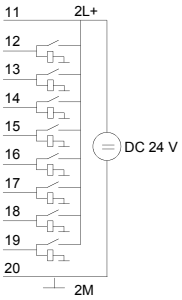




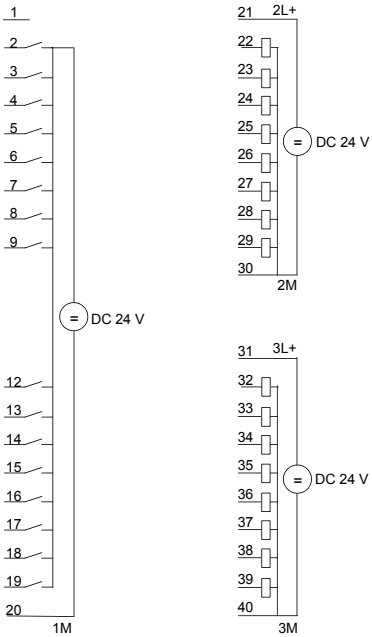
Signal modules digital | Digital in/output modules						
323-1BH00 323-1BH01 323-1BH70 323-1BL00						

323-1BH70





323-1BL00



Signal modules analog

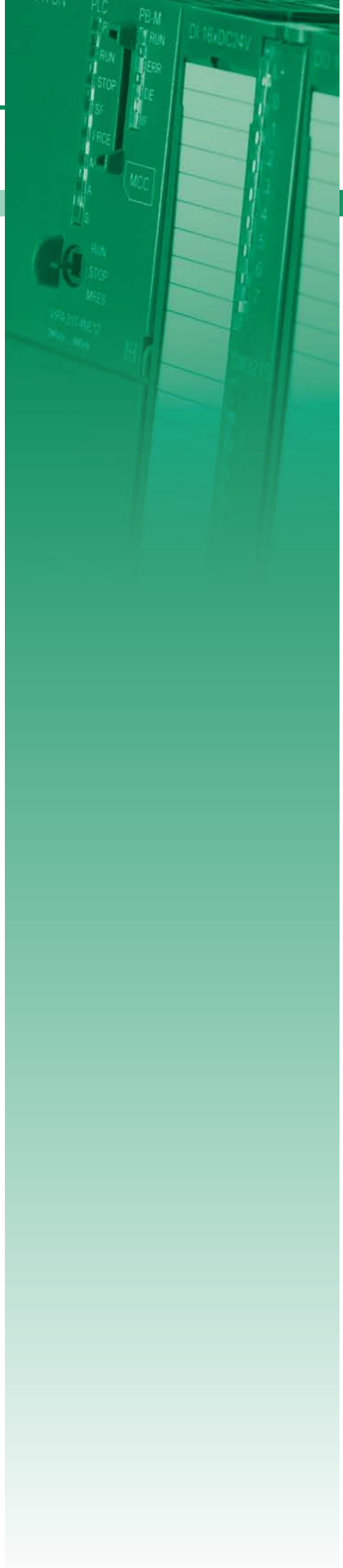


Structure and Function

Analog modules for the connection of sensors and actuators are the interface of the PLC to the process. Analog input modules acquire the analog control signals from the process level and transform them into interpretable signals for the control. Analog output modules convert the internal control signals into signals suitable for the process level.

Characteristics

- Large selection. Modules are available for all popular applications
- High speed AI-module for the SPEED-Bus (parameterization capable with integrated cache memory)
- Compact design
- LED-status indicator
- Electrically isolated to the backplane bus
- Selectable connection method - screw terminals or cage clamps
- Label strips included and easily visible on the front
- 24 month warranty



Overview

Order no.	Name/Description	Page
Analog input modules		
331-1KF01	**SM 331 - Analog input** › 8 inputs 13 bit › Voltage, current › Resistance › Resistance thermometer	**450**
331-7KF01	**SM 331 - Analog input** › 8 inputs, in 4 groups › Voltage, current › Resistance › Resitance thermometer › Thermocouples	**450**
331-7KB01	**SM 331 - Analog input** › 2 inputs, in 1 group › Voltage, current › Resistance › Resistance thermometer › Thermocouples	**450**
331-7AF70	**SM 331S - Analog input FAST - SPEED-Bus** › 8 inputs › Current ±20 mA › Oscilloscope-/FIFO function › Interrupt parameterizable	**450**
331-7BF70	**SM 331S - Analog input FAST - SPEED-Bus** › 8 inputs › Voltage ±10 V › Oscilloscope-/FIFO-Function › Interrupt parameterizable	**455**
Analog output modules		
332-5HB01	**SM 332 - Analog output** › 2 outputs › Configurable › Voltage, current, deactivated	**459**
332-5HD01	**SM 332 - Analog output** › 4 outputs › Configurable › Voltage, current, deactivated	**459**
Analog in/output modules		
334-0KE00	**SM 334 - Analog in-/output** › 4 inputs, 2 outputs › Configurable › Resistance › Voltage 0...10 V, deactivated	**462**

Analog input modules

Signal modules analog | Analog input modules						
331-1KF01 331-7KF01 331-7KB01 331-7AF70	331-7BF70					

Order number	331-1KF01	331-7KF01	331-7KB01	331-7AF70
Figure				
Type	SM 331	SM 331	SM 331	SM 331S - SPEED-Bus
General information				
Note	-	-	-	-
Features	› 8 inputs 13 bit › Voltage, current › Resistance › Resistance thermo-meter	› 8 inputs, in 4 groups › Voltage, current › Resistance › Resitance thermo-meter › Thermocouples	› 2 inputs, in 1 group › Voltage, current › Resistance › Resistance thermo-meter › Thermocouples	› 8 inputs › Current ±20 mA › Oscilloscope-/FIFO function › Interrupt paramete-rizable
SPEED-Bus	-	-	-	✓
Current consumption/power loss				
Current consumption from backplane bus	255 mA	95 mA	95 mA	530 mA
Power loss	1.3 W	3 W	3 W	4 W
Technical data analog inputs				
Number of inputs	8	8	2	8
Cable length, shielded	50 m	50 m	50 m	50 m
Rated load voltage	-	DC 24 V	DC 24 V	DC 24 V
Current consumption from load voltage L+ (without load)	-	100 mA	100 mA	62 mA
Voltage inputs	✓	✓	✓	-
Min. input resistance (voltage range)	100 kΩ	100 kΩ	100 kΩ	-
Input voltage ranges	-50 mV ... +50 mV -500 mV ... +500 mV -1 V ... +1 V -5 V ... +5 V 0 V ... +10 V -10 V ... +10 V +1 V ... +5 V	-80 mV ... +80 mV -250 mV ... +250 mV -500 mV ... +500 mV -1 V ... +1 V -2.5 V ... +2.5 V -5 V ... +5 V +1 V ... +5 V -10 V ... +10 V	-80 mV ... +80 mV -250 mV ... +250 mV -500 mV ... +500 mV -1 V ... +1 V -2.5 V ... +2.5 V -5 V ... +5 V +1 V ... +5 V -10 V ... +10 V	-
Operational limit of voltage ranges	+/-0.5% ... +/-0.6%	+/-0.6% ... +/-1.0%	+/-0.6% ... +/-1.0%	-
Basic error limit voltage ranges with SFU	+/-0.3% ... +/-0.4%	+/-0.4% ... +/-0.7%	+/-0.4% ... +/-0.7%	-
Current inputs	✓	✓	✓	✓
Min. input resistance (current range)	100 Ω	85 Ω	85 Ω	100 Ω
Input current ranges	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA	-3.2 mA ... +3.2 mA -10 mA ... +10 mA -20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA	-3.2 mA ... +3.2 mA -10 mA ... +10 mA -20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA	-20 mA ... +20 mA
Operational limit of current ranges	+/-0.5%	+/-0.7%	+/-0.7%	+/-0.6%
Basic error limit current ranges with SFU	+/-0.3%	+/-0.5%	+/-0.5%	+/-0.4%
Resistance inputs	✓	✓	✓	-
Resistance ranges	0 ... 600 Ohm 0 ... 6000 Ohm	0 ... 150 Ohm 0 ... 300 Ohm 0 ... 600 Ohm	0 ... 150 Ohm 0 ... 300 Ohm 0 ... 600 Ohm	-
Operational limit of resistor ranges	+/-0.5%	+/-0.7%	+/-0.7%	-
Basic error limit	+/-0.3%	+/-0.5%	+/-0.5%	-

Signal modules analog | Analog input modules						
331-1KF01 331-7KF01 331-7KB01 331-7AF70	331-7BF70					

Order number	331-1KF01	331-7KF01	331-7KB01	331-7AF70
Resistance thermometer inputs	✓	✓	✓	-
Resistance thermometer ranges	Pt100 Ni100 Ni1000	Pt100 Ni100	Pt100 Ni100	-
Operational limit of resistance thermometer ranges	+/-1K ... +/-1.2K	+/-0.7% ... +/-0.8%	+/-0.7% ... +/-0.8%	-
Basic error limit thermoresistor ranges	+/-0.8K	+/-0.5% ... +/-0.6%	+/-0.5% ... +/-0.6%	-
Thermocouple inputs	-	✓	✓	-
Thermocouple ranges	-	type J type R type K type N type L type E type T type S type B type C	type J type R type K type N type L type E type T type S type B type C	-
Operational limit of thermocouple ranges	-	+/-1.3% ... +/-2.0%	+/-1.3% ... +/-2.0%	-
Basic error limit thermoelement ranges	-	+/-0.7% ... +/-1.0%	+/-0.7% ... +/-1.0%	-
Programmable temperature compensation	-	✓	✓	-
External temperature compensation	-	✓	✓	-
Internal temperature compensation	-	✓	✓	-
Resolution in bit	13	14	14	16
Measurement principle	Sigma-Delta	Sigma-Delta	Sigma-Delta	successive approximation
Basic conversion time	61 ms/51 ms / channel	4 ms/18 ms/22 ms/68 ms / channel	4 ms/18 ms/22 ms/68 ms / channel	25 µs all channels
Noise suppression for frequency	50 Hz/60 Hz	1300 Hz/190 Hz/150 Hz/50 Hz + 60 Hz	1300 Hz/190 Hz/150 Hz/50 Hz + 60 Hz	-
Initial data size	16 Byte	16 Byte	4 Byte	16 Byte
Status information, alarms, diagnostics				
Status display	none	none	none	none
Interrupts	no	yes	yes	yes
Process alarm	no	yes, parameterizable	yes, parameterizable	yes, parameterizable
Diagnostic interrupt	no	yes, parameterizable	yes, parameterizable	yes, parameterizable
Diagnostic functions	no	yes	yes	yes
Diagnostics information read-out	none	possible	possible	possible
Supply voltage display	none	none	none	none
Group error display	none	red SF LED	red SF LED	red SF LED
Channel error display	none	red LED per channel	red LED per channel	none
Isolation				
Between channels	-	-	-	✓
Between channels of groups to	-	-	-	1
Between channels and backplane bus	✓	✓	✓	✓
Between channels and power supply	-	✓	✓	✓
Max. potential difference between circuits	-	-	-	-
Max. potential difference between inputs (Ucm)	DC 2 V	DC 3 V	DC 3 V	DC 30 V
Max. potential difference between Mana and Mintern (Uiso)	-	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V	-

Signal modules analog | Analog input modules						
331-1KF01 331-7KF01 331-7KB01 331-7AF70	331-7BF70					

Order number	331-1KF01	331-7KF01	331-7KB01	331-7AF70
Max. potential difference between inputs and Mana (Ucm)	-	DC 3 V	DC 3 V	-
Max. potential difference between inputs and Mintern (Uiso)	DC 75 V/ AC 60 V	-	-	DC 75 V/ AC 60 V
Max. potential difference between Mintern and outputs	-	-	-	-
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Datasizes				
Input bytes	16	16	4	16
Output bytes	0	0	0	0
Parameter bytes	21	21	21	41
Diagnostic bytes	0	16	16	16
Housing				
Material	PPE	PPE	PPE	PPE
Mounting	Rail System 300	Rail System 300	Rail System 300	-
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm
Weight	260 g	240 g	220 g	235 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

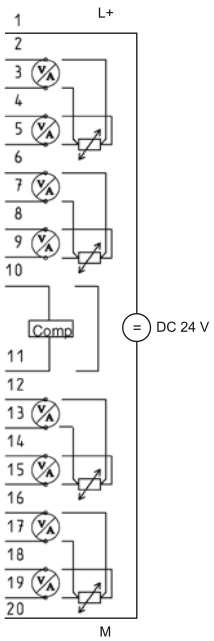
Connections, Interfaces

Signal modules analog | Analog input modules						
331-1KF01 331-7KF01 331-7KB01 331-7AF70	331-7BF70					

331-1KF01

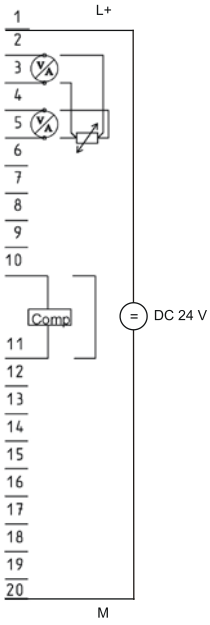
	1	U+		21	U+
	2	I+		22	I+
CH 0	3	S-	CH 4	23	S-
	4	M+		24	M+
	5	M-		25	M-
	6	U+		26	U+
	7	I+		27	I+
CH 1	8	S-	CH 5	28	S-
	9	M+		29	M+
	10	M-		30	M-
	11	U+		31	U+
	12	I+		32	I+
CH 2	13	S-	CH 6	33	S-
	14	M+		34	M+
	15	M-		35	M-
	16	U+		36	U+
	17	I+		37	I+
CH 3	18	S-	CH 7	38	S-
	19	M+		39	M+
	20	M-		40	M-

331-7KF01

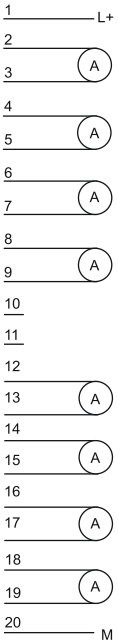


Signal modules analog | Analog input modules						
331-1KF01 331-7KF01 331-7KB01 331-7AF70	331-7BF70					

331-7KB01



331-7AF70



Analog input modules

Signal modules analog | Analog input modules						
331-1KF01 331-7KF01 331-7KB01 331-7AF70	331-7BF70					

Order number	331-7BF70			
Figure				
Type	SM 331S - SPEED-Bus			
General information				
Note	-			
Features	› 8 inputs › Voltage ±10 V › Oscilloscope-/FIFO-Function › Interrupt parameterizable			
SPEED-Bus	✓			
Current consumption/power loss				
Current consumption from backplane bus	530 mA			
Power loss	4 W			
Technical data analog inputs				
Number of inputs	8			
Cable length, shielded	50 m			
Rated load voltage	DC 24 V			
Current consumption from load voltage L+ (without load)	62 mA			
Voltage inputs	✓			
Min. input resistance (voltage range)	120 kΩ			
Input voltage ranges	-10 V ... +10 V			
Operational limit of voltage ranges	+/-0.6%			
Basic error limit voltage ranges with SFU	+/-0.4%			
Current inputs	-			
Min. input resistance (current range)	-			
Input current ranges	-			
Operational limit of current ranges	-			
Basic error limit current ranges with SFU	-			
Resistance inputs	-			
Resistance ranges	-			
Operational limit of resistor ranges	-			
Basic error limit	-			
Resistance thermometer inputs	-			
Resistance thermometer ranges	-			
Operational limit of resistance thermometer ranges	-			
Basic error limit thermoresistor ranges	-			
Thermocouple inputs	-			
Thermocouple ranges	-			
Operational limit of thermocouple ranges	-			
Basic error limit thermoelement ranges	-			

Signal modules analog | Analog input modules						
331-1KF01 331-7KF01 331-7KB01 331-7AF70	331-7BF70					

Order number	331-7BF70			
Programmable temperature compensation	-			
External temperature compensation	-			
Internal temperature compensation	-			
Resolution in bit	16			
Measurement principle	successive approxi-mation			
Basic conversion time	25 µs all channels			
Noise suppression for frequency	-			
Initial data size	16 Byte			
Status information, alarms, diagnostics				
Status display	none			
Interrupts	yes			
Process alarm	yes, parameterizable			
Diagnostic interrupt	yes, parameterizable			
Diagnostic functions	yes			
Diagnostics information read-out	possible			
Supply voltage display	none			
Group error display	red SF LED			
Channel error display	none			
Isolation				
Between channels	✓			
Between channels of groups to	1			
Between channels and backplane bus	✓			
Between channels and power supply	✓			
Max. potential difference between circuits	-			
Max. potential difference between inputs (Ucm)	DC 30 V			
Max. potential difference between Mana and Mintern (Uiso)	-			
Max. potential difference between inputs and Mana (Ucm)	-			
Max. potential difference between inputs and Mintern (Uiso)	DC 75 V/ AC 60 V			
Max. potential difference between Mintern and outputs	-			
Insulation tested with	DC 500 V			
Datasizes				
Input bytes	16			
Output bytes	0			
Parameter bytes	41			
Diagnostic bytes	16			
Housing				
Material	PPE			
Mounting	-			
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm			
Weight	235 g			

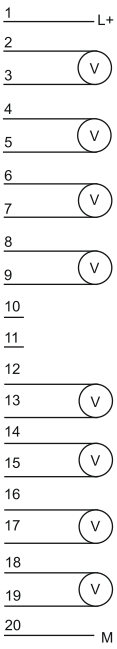
Signal modules analog | Analog input modules						
331-1KF01 331-7KF01 331-7KB01 331-7AF70	331-7BF70					

Order number	331-7BF70			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

Connections, Interfaces

Signal modules analog | Analog input modules						
331-1KF01 331-7KF01 331-7KB01 331-7AF70	331-7BF70					

331-7BF70



Analog output modules

Signal modules analog | Analog output modules						
332-5HB01 332-5HD01						

Order number	332-5HB01	332-5HD01		
Figure				
Type	SM 332	SM 332		
General information				
Note	-	-		
Features	› 2 outputs › Configurable › Voltage, current, deactivated	› 4 outputs › Configurable › Voltage, current, deactivated		
SPEED-Bus	-	-		
Current consumption/power loss				
Current consumption from backplane bus	100 mA	125 mA		
Power loss	2.5 W	3.5 W		
Technical data analog outputs				
Number of outputs	2	4		
Cable length, shielded	-	-		
Rated load voltage	DC 24 V	DC 24 V		
Reverse polarity protection of rated load voltage	-	-		
Current consumption from load voltage L+ (without load)	70 mA	115 mA		
Voltage output short-circuit protection	✓	✓		
Voltage outputs	✓	✓		
Min. load resistance (voltage range)	1 kΩ	1 kΩ		
Max. capacitive load (current range)	1 µF	1 µF		
Output voltage ranges	-10 V ... +10 V 0 V ... +10 V +1 V ... +5 V	-10 V ... +10 V 0 V ... +10 V +1 V ... +5 V		
Operational limit of voltage ranges	+/-0.2% ... +/-0.8%	+/-0.2% ... +/-0.8%		
Basic error limit voltage ranges with SFU	+/-0.1% ... +/-0.5%	+/-0.1% ... +/-0.5%		
Current outputs	✓	✓		
Max. in load resistance (current range)	500 Ω	500 Ω		
Max. inductive load (current range)	10 mH	10 mH		
Output current ranges	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA		
Operational limit of current ranges	+/-0.3% ... +/-0.8%	+/-0.3% ... +/-0.8%		
Basic error limit current ranges with SFU	+/-0.2% ... +/-0.5%	+/-0.2% ... +/-0.5%		
Settling time for ohmic load	0.2 ms	0.2 ms		
Settling time for capacitive load	1 ms	1 ms		
Settling time for inductive load	1 ms	1 ms		
Resolution in bit	13	13		
Conversion time	0.5 ms all channels	1 ms all channels		
Substitute value can be applied	yes	yes		
Output data size	4 Byte	8 Byte		

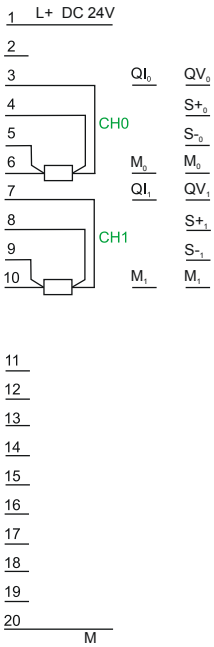
Signal modules analog | Analog output modules						
332-5HB01 332-5HD01						

Order number	332-5HB01	332-5HD01		
Status information, alarms, diagnostics				
Status display	green LED per channel	green LED per channel		
Interrupts	yes	yes		
Process alarm	no	no		
Diagnostic interrupt	yes, parameterizable	yes, parameterizable		
Diagnostic functions	yes	yes		
Diagnostics information read-out	possible	possible		
Supply voltage display	none	none		
Group error display	red SF LED	red SF LED		
Channel error display	red LED per channel	red LED per channel		
Isolation				
Between channels	-	-		
Between channels of groups to	-	-		
Between channels and backplane bus	✓	✓		
Between channels and power supply	✓	✓		
Max. potential difference between circuits	-	-		
Max. potential difference between inputs (Ucm)	-	-		
Max. potential difference between Mana and Mintern (Uiso)	DC 75 V/ AC 60 V	DC 75 V/ AC 60 V		
Max. potential difference between inputs and Mana (Ucm)	-	-		
Max. potential difference between inputs and Mintern (Uiso)	-	-		
Max. potential difference between Mintern and outputs	-	-		
Insulation tested with	DC 500 V	DC 500 V		
Datasizes				
Input bytes	0	0		
Output bytes	4	8		
Parameter bytes	21	21		
Diagnostic bytes	16	16		
Housing				
Material	PPE	PPE		
Mounting	Rail System 300	Rail System 300		
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm		
Weight	230 g	230 g		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	yes	yes		

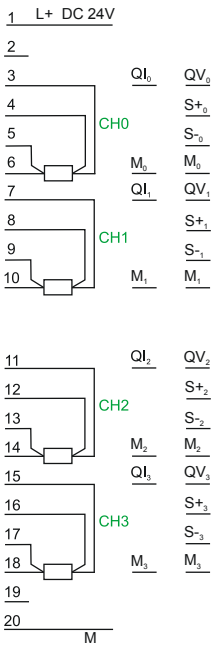
Connections, Interfaces

Signal modules analog | Analog output modules						
332-5HB01 332-5HD01						

332-5HB01



332-5HD01



Analog in/output modules

Signal modules analog | Analog in/output modules						
334-0KE00						

Order number	334-0KE00			
Figure				
Type	SM 334			
General information				
Note	-			
Features	› 4 inputs, 2 outputs › Configurable › Resistance › Voltage 0...10 V, deactivated			
SPEED-Bus	-			
Current consumption/power loss				
Current consumption from backplane bus	95 mA			
Power loss	2 W			
Technical data analog inputs				
Number of inputs	4			
Cable length, shielded	100 m			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	-			
Current consumption from load voltage L+ (without load)	40 mA			
Voltage inputs	✓			
Min. input resistance (voltage range)	100 kΩ			
Input voltage ranges	0 V ... +10 V			
Operational limit of voltage ranges	+/-0.7%			
Basic error limit voltage ranges with SFU	+/-0.5%			
Current inputs	-			
Min. input resistance (current range)	-			
Input current ranges	-			
Operational limit of current ranges	-			
Basic error limit current ranges with SFU	-			
Resistance inputs	✓			
Resistance ranges	10000 Ohm			
Operational limit of resistor ranges	+/-3.5%			
Basic error limit	+/-2.8%			
Resistance thermometer inputs	✓			
Resistance thermometer ranges	Pt100			
Operational limit of resistance thermometer ranges	+/-0.1%			
Basic error limit thermoresistor ranges	+/-0.8%			
Thermocouple inputs	-			
Thermocouple ranges	-			
Operational limit of thermocouple ranges	-			

Signal modules analog | Analog in/output modules						
334-0KE00						

Order number	334-0KE00			
Basic error limit thermoelement ranges	-			
Programmable temperature compensation	-			
External temperature compensation	-			
Internal temperature compensation	-			
Resolution in bit	12			
Measurement principle	Sigma-Delta			
Basic conversion time	350 ms			
Noise suppression for frequency	50 Hz/60 Hz			
Initial data size	8 Byte			
Technical data analog outputs				
Number of outputs	2			
Cable length, shielded	100 m			
Rated load voltage	DC 24 V			
Reverse polarity protection of rated load voltage	✓			
Current consumption from load voltage L+ (without load)	40 mA			
Voltage output short-circuit protection	✓			
Voltage outputs	✓			
Min. load resistance (voltage range)	1 kΩ			
Max. capacitive load (current range)	1 µF			
Output voltage ranges	0 V ... +10 V			
Operational limit of voltage ranges	+/-1%			
Basic error limit voltage ranges with SFU	+/-0.8%			
Current outputs	-			
Max. in load resistance (current range)	-			
Max. inductive load (current range)	-			
Output current ranges	-			
Operational limit of current ranges	-			
Basic error limit current ranges with SFU	-			
Settling time for ohmic load	0.8 ms			
Settling time for capacitive load	0.8 ms			
Settling time for inductive load	0.3 ms			
Resolution in bit	12			
Conversion time	0.5 ms per channel			
Substitute value can be applied	-			
Output data size	4 Byte			
Status information, alarms, diagnostics				
Status display	none			
Interrupts	no			
Process alarm	no			
Diagnostic interrupt	no			
Diagnostic functions	no			
Diagnostics information read-out	none			
Supply voltage display	none			
Group error display	none			

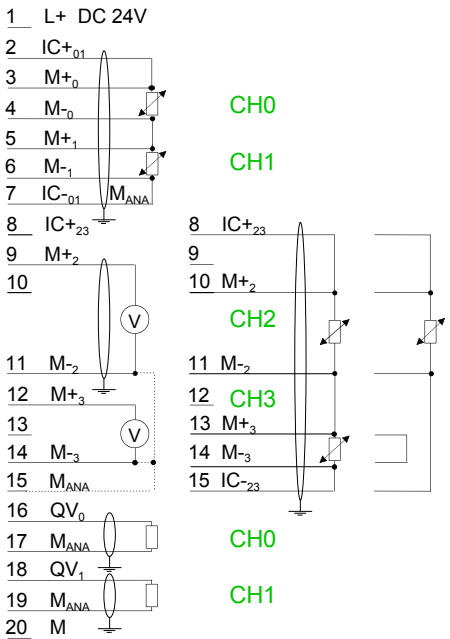
Signal modules analog | Analog in/output modules						
334-0KE00						

Order number	**334-0KE00**			
Channel error display	none			
Isolation				
Between channels	-			
Between channels of groups to	-			
Between channels and backplane bus	✓			
Between channels and power supply	✓			
Max. potential difference between circuits	-			
Max. potential difference between inputs (Ucm)	DC 1 V			
Max. potential difference between Mana and Mintern (Uiso)	DC 75 V/ AC 60 V			
Max. potential difference between inputs and Mana (Ucm)	DC 1 V			
Max. potential difference between inputs and Mintern (Uiso)	-			
Max. potential difference between Mintern and outputs	-			
Insulation tested with	DC 500 V			
Datasizes				
Input bytes	8			
Output bytes	4			
Parameter bytes	21			
Diagnostic bytes	0			
Housing				
Material	PPE			
Mounting	Rail System 300			
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm			
Weight	210 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

Connections, Interfaces

Signal modules analog | Analog in/output modules						
334-0KE00						

334-0KE00



Communication processors

Structure and Function

Communication processors for the connection of different target and source systems, such as via Ethernet to higher-level MES and ERP systems or serially to underlying scanners, printers and other peripherals.

Characteristics

- High performance
- Simple parameterization
- Support for common protocols
- Compact design
- LED-status indicator
- Electrically isolated to the backplane bus
- 24 month warranty

Overview

Order no.	Name/Description	Page
RS232/422/485 and other CPs		
341-1AH01	**CP 341 - Communication processor** › RS232, isolated › Function compatibility to Siemens CP 341 › Parameterization via the Siemens parameterization package › Data transfer rate up to 76.8 kbit/s › Power supply via backplane bus	**468**
341-1CH01	**CP 341 - Communication processor** › RS422/485, isolated › Function compatibility to Siemens CP 341 › Parameterization via the Siemens parameterization package › Data transfer rate up to 76.8 kbit/s › Power supply via backplane bus	**468**
341-2CH71	**CP 341S - Communication processor - SPEED-Bus** › 2x RS422/485, isolated › SPEED-Bus › Data transfer rate up to 115.2 kbit/s › Integrated diagnostics buffer	**468**
Fieldbus master modules		
342-1CA70	**CP 342S CAN - CANopen master - SPEED-Bus** › CANopen master, SPEED-Bus › 125 CAN slaves connectable › 40 Transmit PDOs, 40 Receive PDOs › 1 SDO (Server), 127 SDO (Client) › Project engineering: VIPA WinCoCT	**472**
342-1DA70	**CP 342S DP - PROFIBUS-DP master - SPEED-Bus** › PROFIBUS-DP master (Class 1), SPEED-Bus › RS485 › 124 DP slaves connectable › Project engineering: Siemens SIMATIC Manager › Diagnostic facilities	**472**
342-1IA70	**CP 342S IBS - INTERBUS master - SPEED-Bus** › INTERBUS master, SPEED-Bus › RS422 › Diagnostics via LEDs, RS232, Mini-DIN, Dual Port Master › Up to 512 slaves connectable	**472**
342-2IA71	**CP 342S IBS - INTERBUS master - SPEED-Bus** › Dual INTERBUS master, SPEED-Bus › 2x RS422 › Diagnostics via LEDs, diagnostics device (2x RJ45), Dual Port Master › Up to 512 slaves connectable	**472**
Actor/sensor interfaces		
343-2AH10	**CP 343-2P ASI - AS-i master** › Up to 62 slaves connectable › Corresponding to AS-i specification 3.0 (master profile M3) › Support of analog slaves concerning profile 7.3 resp. 7.4 › Automatic address programming possible (address 0)	**476**
Ethernet-CPs		
343-1EX71	**CP 343S TCP/IP - Ethernet-CP 343 - SPEED-Bus** › Ethernet CP 343S-NET, SPEED-Bus › RJ45 › 16 connections via Siemens NetPro › 64 connections via user program › 32 PG/OP connections	**479**

RS232/422/485 and other CPs

Communication processors | RS232/422/485 and other CPs						
341-1AH01 341-1CH01 341-2CH71						

Order number	341-1AH01	341-1CH01	341-2CH71	
Figure				
Type	CP 341	CP 341	CP 341	
General information				
Note	-	-	-	
Features	› RS232, isolated › Function compatibility to Siemens CP 341 › Parameterization via the Siemens parameterization package › Data transfer rate up to 76.8 kbit/s › Power supply via backplane bus	› RS422/485, isolated › Function compatibility to Siemens CP 341 › Parameterization via the Siemens parameterization package › Data transfer rate up to 76.8 kbit/s › Power supply via backplane bus	› 2x RS422/485, isolated › SPEED-Bus › Data transfer rate up to 115.2 kbit/s › Integrated diagnostics buffer	
SPEED-Bus	-	-	✓	
Current consumption/power loss				
Current consumption from backplane bus	160 mA	160 mA	750 mA	
Power loss	0.8 W	0.8 W	3.75 W	
Status information, alarms, diagnostics				
Status display	yes	yes	yes	
Interrupts	no	no	no	
Process alarm	no	no	no	
Diagnostic interrupt	yes, parameterizable	yes, parameterizable	no	
Diagnostic functions	no	no	yes, parameterizable	
Diagnostics information read-out	possible	possible	possible	
Supply voltage display	yes	yes	none	
Group error display	red SF LED	red SF LED	yes	
Channel error display	none	none	red LED per channel	
Functionality Sub-D interfaces				
Type	X2	X2	X2	
Type of interface	RS232	RS422/485	RS422/485	
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Electrically isolated	✓	✓	✓	
MPI	-	-	-	
MP²I (MPI/RS232)	-	-	-	
DP master	-	-	-	
DP slave	-	-	-	
Point-to-point interface	✓	✓	✓	
Type	-	-	X3	
Type of interface	-	-	RS422/485	
Connector	-	-	Sub-D, 9-pin, female	
Electrically isolated	-	-	✓	
MPI	-	-	-	

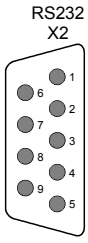
Communication processors | RS232/422/485 and other CPs						
341-1AH01 341-1CH01 341-2CH71						

Order number	341-1AH01	341-1CH01	341-2CH71	
MP²I (MPI/RS232)	-	-	-	
DP master	-	-	-	
DP slave	-	-	-	
Point-to-point interface	-	-	✓	
CAN	-	-	-	
Point-to-point communication				
PtP communication	✓	✓	✓	
Interface isolated	✓	✓	✓	
RS232 interface	✓	-	-	
RS422 interface	-	✓	✓	
RS485 interface	-	✓	✓	
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Transmission speed, min.	-	150 bit/s	150 bit/s	
Transmission speed, max.	76.8 kbit/s	76.8 kbit/s	115.2 kbit/s	
Cable length, max.	15 m	1200 m	1200 m	
Point-to-point protocol				
ASCII protocol	✓	✓	✓	
STX/ETX protocol	✓	✓	✓	
3964(R) protocol	✓	✓	-	
RK512 protocol	-	-	-	
USS master protocol	-	-	-	
Modbus master protocol	✓	✓	-	
Modbus slave protocol	✓	✓	-	
Special protocols	-	-	-	
Datasizes				
Input bytes	16	16	32	
Output bytes	16	16	32	
Parameter bytes	(16 + 106)	(16 + 106)	75	
Diagnostic bytes	4	4	0	
Housing				
Material	PPE	PPE	PPE	
Mounting	Rail System 300	Rail System 300	-	
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	
Weight	170 g	170 g	185 g	
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	
Certifications				
UL508 certification	yes	yes	yes	

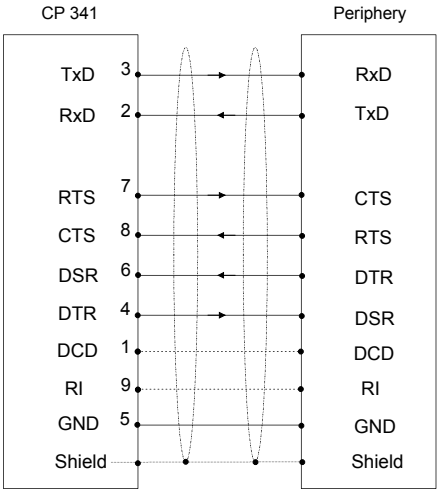
Connections, Interfaces

Communication processors | RS232/422/485 and other CPs						
341-1AH01 341-1CH01 341-2CH71						

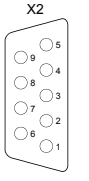
341-1AH01



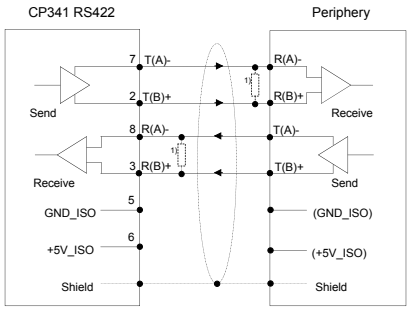
① DCD
② RxD
③ TxD
④ DTR
⑤ GND
⑥ DSR
⑦ RTS
⑧ CTS
⑨ RI

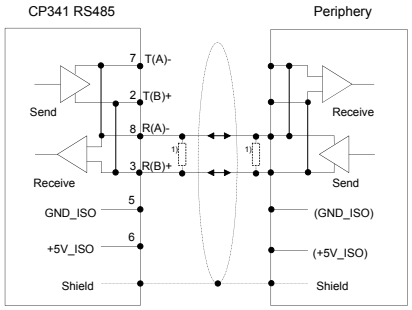


341-1CH01



① n. c.
② T(B)+
③ R(B)+
R(B)+/T(B)+
④ RTS
⑤ M5V (GND_ISO)
⑥ P5V (+5V_ISO)
⑦ T(A)-
⑧ R(A)-
R(A)-/T(A)-
⑨ n.c.

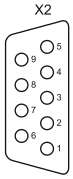




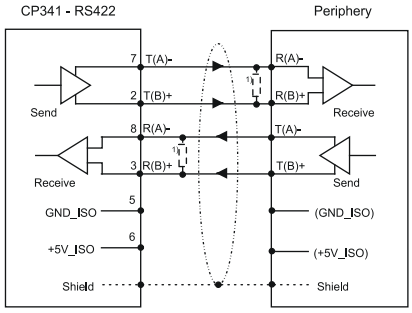
Communication processors | RS232/422/485 and other CPs						
341-1AH01 341-1CH01 341-2CH71						

341-2CH71

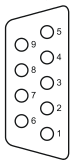
RS422/485
X2



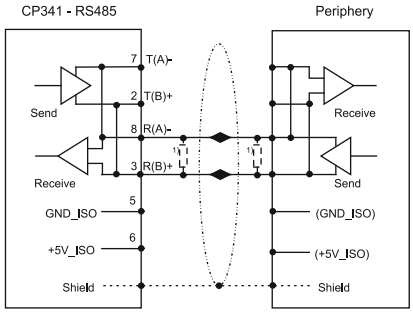
① n. c.
② T(B)+
③ R(B)+
R(B)+/T(B)+
④ RTS
⑤ M5V (GND_ISO)
⑥ P5V (+5V_ISO)
⑦ T(A)-
⑧ R(A)-
R(A)-/T(A)-
⑨ n.c.



RS422/485
X3



① n. c.
② T(B)+
③ R(B)+
R(B)+/T(B)+
④ RTS
⑤ M5V (GND_ISO)
⑥ P5V (+5V_ISO)
⑦ T(A)-
⑧ R(A)-
R(A)-/T(A)-
⑨ n.c.



Fieldbus master modules

Communication processors | Fieldbus master modules						
342-1CA70 342-1DA70 342-1IA70 342-2IA71						

Order number	342-1CA70	342-1DA70	342-1IA70	342-2IA71
Figure				
Type	CP 342S CAN, CANopen master SPEED-Bus	CP 342S DP, PROFIBUS-DP master SPEED-Bus	CP 342S IBS, INTERBUS master SPEED-Bus	CP 342S IBS, dual INTERBUS master SPEED-Bus
General information				
Note	-	-	-	-
Features	› CANopen master, SPEED-Bus › 125 CAN slaves connectable › 40 Transmit PDOs, 40 Receive PDOs › 1 SDO (Server), 127 SDO (Client) › Project engineering: VIPA WinCoCT	› PROFIBUS-DP master (Class 1), SPEED-Bus › RS485 › 124 DP slaves connectable › Project engineering: Siemens SIMATIC Manager › Diagnostic facilities	› INTERBUS master, SPEED-Bus › RS422 › Diagnostics via LEDs, RS232, Mini-DIN, Dual Port Master › Up to 512 slaves connectable	› Dual INTERBUS master, SPEED-Bus › 2x RS422 › Diagnostics via LEDs, diagnostics device (2x RJ45), Dual Port Master › Up to 512 slaves connectable
SPEED-Bus	✓	✓	✓	✓
Current consumption/power loss				
Current consumption from backplane bus	550 mA	560 mA	600 mA	1 A
Power loss	2.75 W	2.8 W	3 W	4.5 W
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	no	no	no	no
Process alarm	no	no	no	no
Diagnostic interrupt	no	no	no	no
Diagnostic functions	no	no	no	no
Diagnostics information read-out	possible	possible	none	none
Supply voltage display	none	none	green LED	yes
Group error display	yes	yes	yes	yes
Channel error display	none	none	none	none
Functionality Sub-D interfaces				
Type	CAN	DP	IBS	X2
Type of interface	CAN	RS485	RS422	RS422
Connector	Sub-D, 9-pin, male	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Electrically isolated	✓	✓	✓	✓
MPI	-	-	-	-
MP²I (MPI/RS232)	-	-	-	-
DP master	-	✓	-	-
DP slave	-	✓	-	-
Point-to-point interface	-	-	-	-
Type	-	-	DIAG 1	X3
Type of interface	-	-	RS232	RS422
Connector	-	-	Sub-D, 9-pin, male	Sub-D, 9-pin, female
Electrically isolated	-	-	✓	✓

Communication processors | Fieldbus master modules						
342-1CA70 342-1DA70 342-1IA70 342-2IA71						

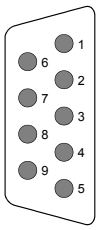
Order number	342-1CA70	342-1DA70	342-1IA70	342-2IA71
MPI	-	-	-	-
MP²I (MPI/RS232)	-	-	-	-
DP master	-	-	-	-
DP slave	-	-	-	-
Point-to-point interface	-	-	✓	-
CAN	-	-	-	-
Functionality RJ45 interfaces				
Type	-	-	-	DIAG 1
Type of interface	-	-	-	-
Connector	-	-	-	RJ45
Electrically isolated	-	-	-	-
PG/OP channel	-	-	-	-
Productive connections	-	-	-	-
Type	-	-	-	DIAG 2
Type of interface	-	-	-	-
Connector	-	-	-	RJ45
Electrically isolated	-	-	-	-
PG/OP channel	-	-	-	-
Productive connections	-	-	-	-
Housing				
Material	PPE	PPE	PPE	PPE
Mounting	-	-	-	-
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm	40 mm x 125 mm x 120 mm
Weight	210 g	210 g	260 g	260 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	-

Connections, Interfaces

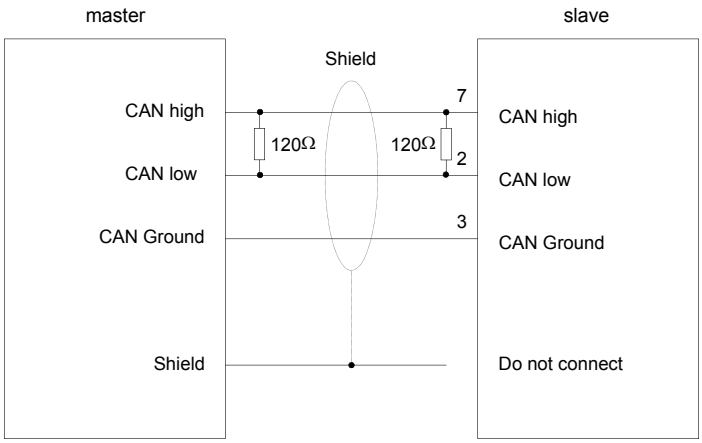
Communication processors | Fieldbus master modules						
342-1CA70 342-1DA70 342-1IA70 342-2IA71						

342-1CA70

CANopen master
X2

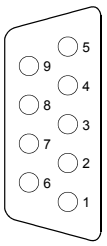


① n. c.
② CAN low
③ CAN Ground
④ n. c.
⑤ shield
⑥ optional Ground
⑦ CAN high
⑧ n. c.
⑨ n. c.

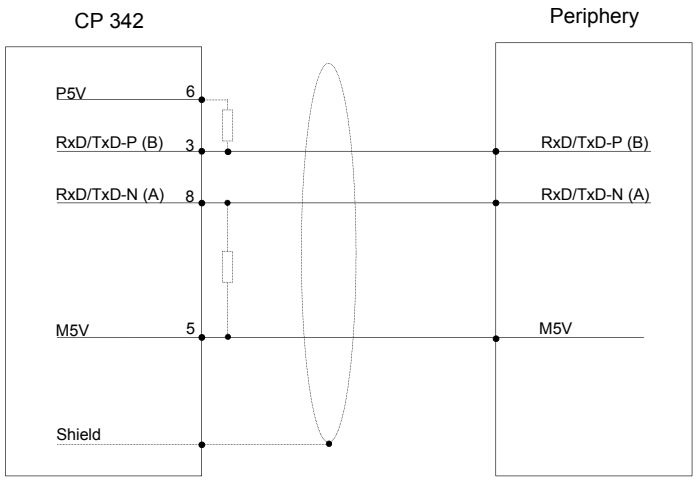


342-1DA70

DP master
X2



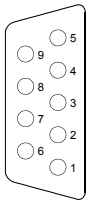
① shield
② n. c.
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ n. c.
⑧ RxD/TxD-N (line A)
⑨ n.c.



Communication processors | Fieldbus master modules						
342-1CA70 342-1DA70 342-1IA70 342-2IA71						

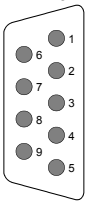
342-1IA70

Interbus
RS422
X2



① DOH
② DIH
③ GND-ISO
④ GND
⑤ +5V
⑥ DOL
⑦ DIL
⑧ +5V
⑨ reserved

RS232
diagnostics
X3

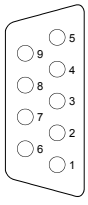


① reserved
② TxD
③ RxD
④ reserved
⑤ GND
⑥ reserved
⑦ RTS
⑧ CTS
⑨ reserved

Mini-DIN slot
diagnostics
X4

342-2IA71

IBS1/IBS2
RS422
X2/X3



① DOH
② DIH
③ GND (ISO)
④ GND
⑤ +5V (ISO)
⑥ DOL
⑦ DIL
⑧ +5V
⑨ reserved

2x RJ45
Diagnostic device
VIPA-342-0IA01

① GND
② PCS3
③ MISO
④ MOSI
⑤ SCK
⑥ PCS2
⑦ VCC
⑧ n. c.

Actor/sensor interfaces

Communication processors | Actor/sensor interfaces						
343-2AH10						

Order number	343-2AH10			
Figure				
Type	CP 343-2P ASI, AS-i master			
General information				
Note	-			
Features	› Up to 62 slaves connectable › Corresponding to AS-i specification 3.0 (master profile M3) › Support of analog slaves concerning profile 7.3 resp. 7.4 › Automatic address programming possible (address 0)			
SPEED-Bus	-			
Current consumption/power loss				
Current consumption from backplane bus	200 mA			
Power loss	2.5 W			
Status information, alarms, diagnostics				
Status display	yes			
Interrupts	yes			
Process alarm	-			
Diagnostic interrupt	yes			
Diagnostic functions	yes			
Diagnostics information read-out	possible			
Supply voltage display	yes			
Group error display	red SF LED			
Channel error display	none			
Functionality interfaces				
Type of interface	AS-Interface			
Connector	20-pin front connector			
Electrically isolated	-			
Housing				
Material	PPE			
Mounting	Rail System 300			
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm			
Weight	250 g			

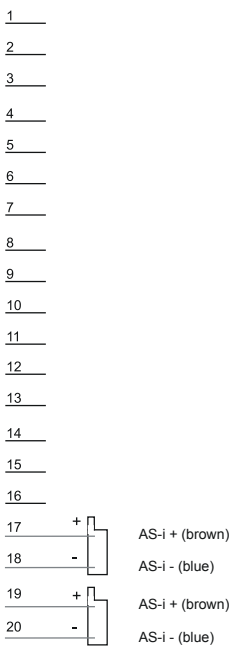
Communication processors | Actor/sensor interfaces						
343-2AH10						

Order number	343-2AH10			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

Connections, Interfaces

Communication processors | Actor/sensor interfaces						
343-2AH10						

343-2AH10



Ethernet-CPs

Communication processors | Ethernet-CPs						
343-1EX71						

Order number	343-1EX71			
Figure				
Type	CP 343S TCP/IP, Ethernet-CP 343 SPEED-Bus			
General information				
Note	-			
Features	› Ethernet CP 343S-NET, SPEED-Bus › RJ45 › 16 connections via Siemens NetPro › 64 connections via user program › 32 PG/OP connections			
SPEED-Bus	✓			
Current consumption/power loss				
Current consumption from backplane bus	550 mA			
Power loss	2.75 W			
Status information, alarms, diagnostics				
Status display	yes			
Interrupts	no			
Process alarm	no			
Diagnostic interrupt	no			
Diagnostic functions	no			
Diagnostics information read-out	possible			
Supply voltage display	green LED			
Group error display	red SF LED			
Channel error display	none			
Ethernet communication CP				
Number of productive connections, max.	64			
Number of productive connections by Siemens NetPro, max.	16			
S7 connections	USEND, URCV, BSEND, BRCV, GET, PUT, Connection of active and passive data handling			
User data per S7 connection, max.	32 KB			
TCP-connections	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling			
User data per TCP connection, max.	64 KB			

Communication processors | Ethernet-CPs						
343-1EX71						

Order number	343-1EX71			
ISO-connections	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling			
User data per ISO connection, max.	8 KB			
ISO on TCP connections (RFC 1006)	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling			
User data per ISO on TCP connection, max.	32 KB			
UDP-connections	-			
User data per UDP connection, max.	2 KB			
UDP-multicast-connections	SEND and RECEIVE (max. 16 Multicast groups)			
UDP-broadcast-connections	SEND			
Functionality RJ45 interfaces				
Type	X1			
Type of interface	Ethernet 10/100 MBit			
Connector	RJ45			
Electrically isolated	✓			
PG/OP channel	✓			
Productive connections	✓			
Housing				
Material	PPE			
Mounting	-			
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm			
Weight	210 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

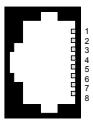
Connections, Interfaces

Communication processors | Ethernet-CPs						
343-1EX71						

343-1EX71

RJ45

X1



① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

Interface modules

Structure and Function

Fieldbus slave modules for the expansion of decentralized control systems with up to 99 fieldbus slave modules, plus I/O modules.

Characteristics

- For the leading PROFIBUS-DP fieldbus system
- Cross manufacturer deployable
- Cross manufacturer mixed operation possible
- Compact design
- LED-status indicator
- Advanced diagnostics
- Electrically isolated to the backplane bus
- Profile rail construction
- 24 month warranty

Overview

Order no.	Name/Description	Page
Fieldbus slave modules w/o I/Os		
353-1DP01	**IM 353DP - PROFIBUS-DP slave** › PROFIBUS-DP slave (DP-V0, DP-V1) › For max. 29 peripheral modules (16 analog) › 244 Byte input and 244 Byte output data › Integrated DC 24 V power supply	**484**

Fieldbus slave modules w/o I/Os

Interface modules | Fieldbus slave modules w/o I/Os						
353-1DP01						

Order number	353-1DP01			
Figure				
Type	IM 353DP			
General information				
Note	-			
Features	› PROFIBUS-DP slave (DP-V0, DP-V1) › For max. 29 peripheral modules (16 analog) › 244 Byte input and 244 Byte output data › Integrated DC 24 V power supply			
SPEED-Bus	-			
Technical data power supply				
Power supply (rated value)	DC 24 V			
Power supply (permitted range)	DC 20.4...28.8 V			
Reverse polarity protection	✓			
Current consumption (no-load operation)	70 mA			
Current consumption (rated value)	1 A			
Inrush current	60 A			
I^2t	0.45 A^2s			
Max. current drain at backplane bus	3.5 A			
Max. current drain load supply	-			
Power loss	2.5 W			
Status information, alarms, diagnostics				
Status display	yes			
Interrupts	yes, parameterizable			
Process alarm	yes, parameterizable			
Diagnostic interrupt	yes, parameterizable			
Diagnostic functions	yes, parameterizable			
Diagnostics information read-out	possible			
Supply voltage display	green LED			
Service Indicator	-			
Group error display	red LED			
Channel error display	none			
Hardware configuration				
Racks, max.	1			
Modules per rack, max.	29			
Number of digital modules, max.	29			
Number of analog modules, max.	16			

Interface modules | Fieldbus slave modules w/o I/Os						
353-1DP01						

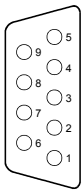
Order number	353-1DP01			
Communication				
Fieldbus	PROFIBUS-DP to EN 50170			
Type of interface	RS485			
Connector	Sub-D, 9-pin, female			
Topology	Linear bus with bus termination at both ends			
Electrically isolated	✓			
Number of participants, max.	125			
Node addresses	1 - 99			
Transmission speed, min.	9.6 kbit/s			
Transmission speed, max.	12 Mbit/s			
Address range inputs, max.	244 Byte			
Address range outputs, max.	244 Byte			
Number of TxPDOs, max.	-			
Number of RxPDOs, max.	-			
Housing				
Material	PPE			
Mounting	Rail System 300			
Mechanical data				
Dimensions (WxHxD)	40 mm x 125 mm x 120 mm			
Weight	170 g			
Environmental conditions				
Operating temperature	0 °C to 60 °C			
Storage temperature	-25 °C to 70 °C			
Certifications				
UL508 certification	yes			

Connections, Interfaces

Interface modules | Fieldbus slave modules w/o I/Os						
353-1DP01						

353-1DP01

PB DP
X2

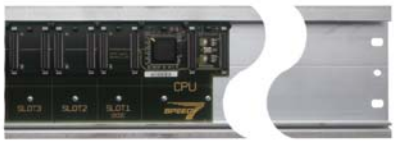


① n. c.
② n. c.
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ n. c.
⑧ RxD/TxD-N (line A)
⑨ n.c.

X1

\+ ① + DC 24 V
\- ② 0 V

300S accessories



Structure and Function

System accessories expand the use of the system and facilitate starting.

Note: Front connectors and label strips are supplied with the modules.

Memory Extension

MMC cards can be used to store program and data. By inserting a VIPA MCC card the work memory can be expanded without exchanging the CPU.

Each CPU has an integrated memory. During the program flow, 50% of the work memory is used for the program code and 50% for data.

Profile Rail with integrated High-SPEED Backplane Bus

Various SPEED7 CPUs are equipped with a parallel SPEED-Bus, which enables the additional connection of up to 10 modules from the SPEED-Bus peripheral. While, the standard I/O modules are plugged right of the CPU and connected via single-bus connector, the connection of the SPEED-Bus I/O modules takes place via the SPEED-Bus connector strip integrated in the profile rail left of the CPU.

Front Connectors

For signal modules and CPUs with integrated peripherals appropriate front connector with spring clamp or screw terminals are available.

Manuals

The technical documentation of the respective modules encompasses various manuals with the necessary hardware and programming information, detailed descriptions of each module, and instructions for structure and assembly.

SPEED7 starterKIT

Order number	Type	Description	Note
800-7DK11	CPU 312SC - SPEED7 technology	Immediately ready for use by enclosed accessories and software. SPEED7 technology for highest performance: DC 24 V, 64 kB work memory expandable up to 512 kB (50% program/50% data each), MPI, MMC slot, real time clock, PtP RS485, isolated, ASCII, STX/ETX, 3964R, Modbus master, USS master, Ethernet interface for PU/OP communication, DI 16xDC 24 V (with interrupt capability), counter 2x32 Bit (AB), up to 10 kHz, DO 8xDC 24 V, 0.5 A. Accessories included: WinPLC7 programming software, user friendly full software version, project simulation tool for testing and diagnostics, practical case, front connector (40pin), Ethernet cable for programming, Manual & More CD, manual.	
800-7DK21	CPU 313SC - SPEED7 technology	Immediately ready for use by enclosed accessories and software. SPEED7 technology for highest performance: DC 24 V, 128 kB work memory expandable up to 512 kB (50% program/50% data each), MPI, MMC slot, real time clock, PtP RS485, isolated, ASCII, STX/ETX, 3964R, Modbus master, USS master, Ethernet interface for PU/OP communication, DI 16xDC 24 V (with interrupt capability), counter 3x32 Bit (AB), up to 30 kHz, DO 16xDC 24 V, 0.5 A, AI 4x12 Bit, U, I, 1x12 Bit, RTD, AO 2x12 Bit, U, I. Accessories included: WinPLC7 programming software, user friendly full software version, project simulation tool for testing and diagnostics, practical case, front connector (40pin), Ethernet cable for programming, Manual & More CD, manual.	
800-7DK31	CPU 313SC/DPM - SPEED7 technology	Immediately ready for use by enclosed accessories and software. SPEED7 technology for highest performance: DC 24 V, 128 kB work memory expandable up to 512 kB (50% program/50% data each), MPI, MMC slot, real time clock, Profibus-DP master, 12 Mbit/s, up to 124 slaves/PtP RS485, isolated, ASCII, STX/ETX, 3964R, Modbus master, USS master, Ethernet interface for PU/OP communication, DI 16xDC 24 V (with interrupt capability), counter 3x32 Bit (AB), up to 30 kHz, DO 16xDC 24 V, 0.5 A. Accessories included: WinPLC7 programming software, user friendly full software version, project simulation tool for testing and diagnostics, practical case, front connector (40pin), Ethernet cable for programming, Manual & More CD, manual.	

Memory extensions

Order number	Type	Description	Note
953-0KX10	MMC - MultiMediaCard	Extension memory for VIPA CPUs 11x, 21x, 24x, 31x, 51x, and 208-1DP01, CC 03 (for load memory not necessary)	
953-1LE00	Memory Configuration Card (MCC) 32kByte	for SPEED7 CPUs, 16kByte program/16kByte data	
953-1LF00	Memory Configuration Card (MCC) 64kByte	for SPEED7 CPUs, 32kByte program/32kByte data	
953-1LG00	Memory Configuration Card (MCC) 128kByte	for SPEED7 CPUs, 64kByte program/64kByte data	
953-1LH00	Memory Configuration Card (MCC) 256kByte	for SPEED7 CPUs, 128kByte program/128kByte data	
953-1LJ00	Memory Configuration Card (MCC) 512kByte	for SPEED7 CPUs, 256kByte program/256kByte data	
953-1LK00	Memory Configuration Card (MCC) 1MByte	for SPEED7 CPUs, 512kByte program/512kByte data	
953-1LL00	Memory Configuration Card (MCC) 2MByte	for SPEED7 CPUs, 1MByte program/1MByte data	
953-1LM00	Memory Configuration Card (MCC) 4MByte	for SPEED7 CPUs, 2MByte program/2MByte data	
953-1LP00	Memory Configuration Card (MCC) 8MByte	for SPEED7 CPUs, 4MByte program/4MByte data	

Configuration and diagnosis modules

Order number	Type	Description	Note
342-0IA01	CP 342 IBS - Configuration/diagnosis module	LC display, 7 buttons, cable 0.5 m, RJ45 plug, for 342-1IA71	

Profile rail

Order number	Type	Description	Note
391-1AF10	BP 391 - SPEED-Bus	Profile rail, 530 mm with integrated High-SPEED rear panel bus for 2 expansion slots	
391-1AF30	BP 391 - SPEED-Bus	Profile rail, 530 mm with integrated High-SPEED rear panel bus for 6 expansion slots	
391-1AF50	BP 391 - SPEED-Bus	Profile rail, 530 mm with integrated High-SPEED rear panel bus for 10 expansion slots	
391-1AJ10	BP 391 - SPEED-Bus	Profile rail, 830 mm with integrated High-SPEED rear panel bus for 2 expansion slots, left justified	
391-1AJ30	BP 391 - SPEED-Bus	Profile rail, 830 mm with integrated High-SPEED rear panel bus for 6 expansion slots, left justified	
391-1AJ50	BP 391 - SPEED-Bus	Profile rail, 830 mm with integrated High-SPEED rear panel bus for 10 expansion slots, left justified	
390-1AB60	Profile rail	Length: 160 mm	
390-1AE80	Profile rail	Length: 482 mm	
390-1AF30	Profile rail	Length: 530 mm	
390-1AJ30	Profile rail	Length: 830 mm	
390-9AB60	Profile rail	Length: 160 mm, ECO pack: 100 pieces	
390-9AE80	Profile rail	Length: 482 mm, ECO pack: 32 pieces	
390-9AF30	Profile rail	Length: 530 mm, ECO pack: 32 pieces	
390-9AJ30	Profile rail	Length: 830 mm, ECO pack: 20 pieces	
390-9BC00	Profile rail	Length: 2000 mm, ECO pack: 10 pieces	

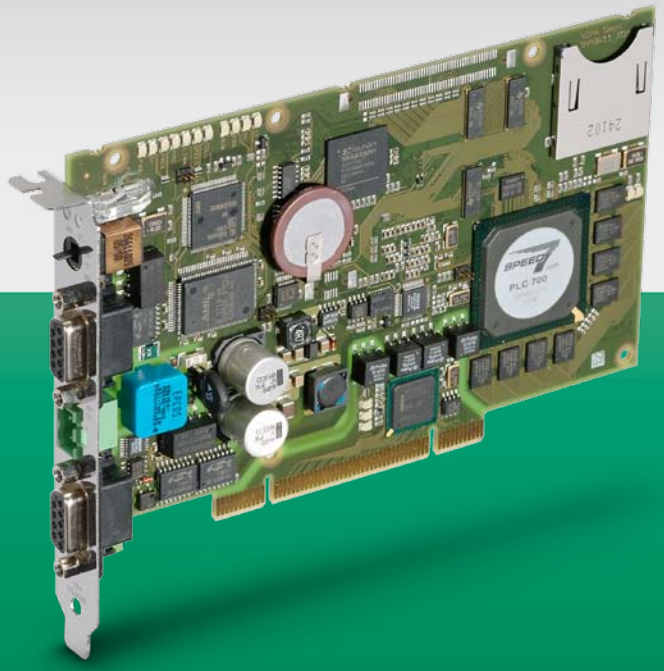
Front connector

Order number	Type	Description	Note
392-1BJ00	Front connector	20pole with cage clamps	
392-1AJ00	Front connector	20pole with screw contact	
392-9AJ00	Front connector	20pole with screw contact, ECO pack: 100 pieces	
392-1BM01	Front connector	40pole with cage clamps	
392-1AM00	Front connector	40pole with screw contact	
392-9AM00	Front connector	40pole with screw contact, ECO pack: 100 pieces	

Manuals and operating instructions

Order number	Title	Contents	Language
HB130D	Manual System 300V, German	HB130D_PS, HB130D_CP, HB130D_FM, HB130D_IM	DE
HB130E	Manual System 300V, English	HB130E_PS, HB130E_CP, HB130E_FM, HB130E_IM	EN
HB130D_CP	Manual System 300V - CP	CP 34x Communication processors	DE
HB130E_CP	Manual System 300V - CP	CP 34x Communication processors	EN
HB130D_IM	Manual System 300V - IM	IM - Interface modules	DE
HB130E_IM	Manual System 300V - IM	IM - Interface modules	EN
HB130D_PS	Manual System 300V - PS	PS - Power supply	DE
HB130E_PS	Manual System 300V - PS	PS - Power supply	EN
HB140D	Manual System 300S, German	HB140D_PS, HB140D_SM-AIO, HB140D_SM-DIO, HB140D_CP	DE
HB140E	Manual System 300S, English	HB140E_PS, HB140E_SM-AIO, HB140E_SM-DIO, HB140E_CP	EN
HB140D_CP	Manual System 300S - CP	CP 34x SPEED bus communication processors	DE
HB140E_CP	Manual System 300S - CP	CP 34x SPEED-Bus communication processors	EN
HB140D_CPU	Manual System 300S - CPU	CPU 31xS, incl. operations list	DE
HB140E_CPU	Manual System 300S - CPU	CPU 31xS, incl. operations list	EN
HB140D_CPU_SC	Manual System 300S - CPU-SC	CPU 31xSC, incl. operations list	DE
HB140E_CPU_SC	Manual System 300S - CPU-SC	CPU 31xSC, incl. operations list	EN
HB140D_PS	Manual System 300S - PS	PS - SPEED-Bus power supply	DE
HB140E_PS	Manual System 300S - PS	PS - SPEED-Bus power supply	EN
HB140D_SM-AIO	Manual System 300S - SM-AIO	SM-AIO - SPEED-Bus analog signal modules	DE
HB140E_SM-AIO	Manual System 300S - SM-AIO	SM-AIO - SPEED-Bus analog signal modules	EN
HB140D_SM-DIO	Manual System 300S - SM-DIO	SM-DIO - SPEED bus digital Signal modules	DE
HB140E_SM-DIO	Manual System 300S - SM-DIO	SM-DIO - SPEED bus digital Signal modules	EN
HB144D_IBS-DIAG	Technical documents IBS Diagnostics Device	Manual CP 342 IBS-DIAG for configuration / diagnosis module 342-0IA00 or 342-0IA01	DE
HB144E_IBS-DIAG	Technical documents IBS Diagnostics Device	Manual CP 342 IBS-DIAG for configuration / diagnosis module 342-0IA00 or 342-0IA01	EN

At a glance



500S

the PC slot PLC system

System description 500S

Structure and Concept

The slot PLC, based on the SPEED7 technology is designed for use within the core of a PC with a PCI interface.

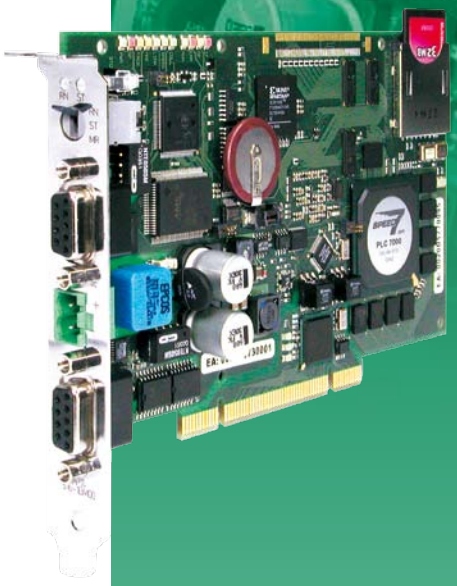
500S can be extended with up to 124 PROFIBUS-DP slave stations. Thereby all systems from VIPA can be used with PROFIBUS-DP slave peripherals.

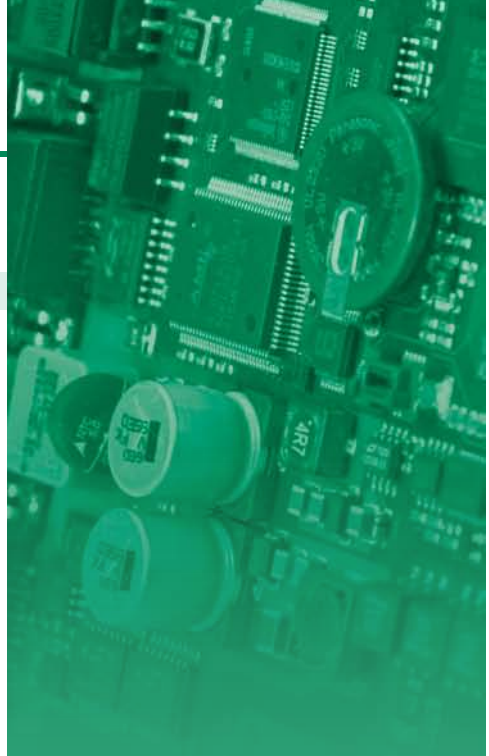
The CPU is supplied with power externally, for example with an interconnected UPS, thereby autarchic operation is possible and the operation of the CPU is also secured during a power outage.

Operation and monitoring of the CPU are supported by the program "PLCTool". The tool provides schematic representation of a CPU from 300S with all status LEDs on the PC monitor.

An OPC server for communication between the CPU and PC is included in the delivery.

Due to the module size, the CPUs fit into any standard desktop PC.





Performance and Application

500S is designed for centralized automation tasks for application within a PC with a PCI interface. It covers all requirements in the manufacturing and process industries up to the highest power range. With 500S CPU integrated SPEED7 ASIC the system is among the fastest automation systems worldwide.

Programming

500S is programmed with VIPA WinPLC7 or with STEP7 from Siemens in LAD, FBD and STL.

Memory

The CPUs in 500S have the work and load memory already integrated. Depending on the CPU-memory variant of the different users are available. The work and load memory can be adapted to the needs of memory card by plugging in an MCC memory expansion card. To back up program and data MMC cards are also supported.

Functions

Signal, communication and function modules, and devices with PROFIBUS-DP slave interfaces are connected via the integrated PROFIBUS-DP master interface.

Communication

An Ethernet programming interface is integrated on all CPUs in 500S. The integrated Ethernet communication processor CP 543 or a network card integrated in the PC link 500S horizontally and vertically into network structures. Therefore, all relevant data is made available to the connected host systems. The CPUs in 500S already have a PROFIBUS-DP master interface integrated, therefore the system can act, manufacturer-independent, as master control.

CPUs

CPUs-Central Modules

System 500S CPU SPEED7 represents a full PLC CPU in the form of a PCI bus card for PC-based applications. Windows operating systems 98, ME, NT4, 2000, XP and W7-32bit are supported.

The scope of performance corresponds to that of a SPEED7 CPU from System 300S. Programming is done using the standard programming tools VIPA WinPLC7 or Siemens STEP7.

For the connection to the process level, an MPI and a PROFIBUS-DP master interface are available. In addition, depending on the CPU type, a CP 543 for communication tasks is integrated. The scope of supply includes the OPC Server.

After the hardware installation, the plug-in card from the PC is connected as "Intel Ethernet integrated interface". To operate the card independent from of the PC, it will be supplied externally with DC 24 V.

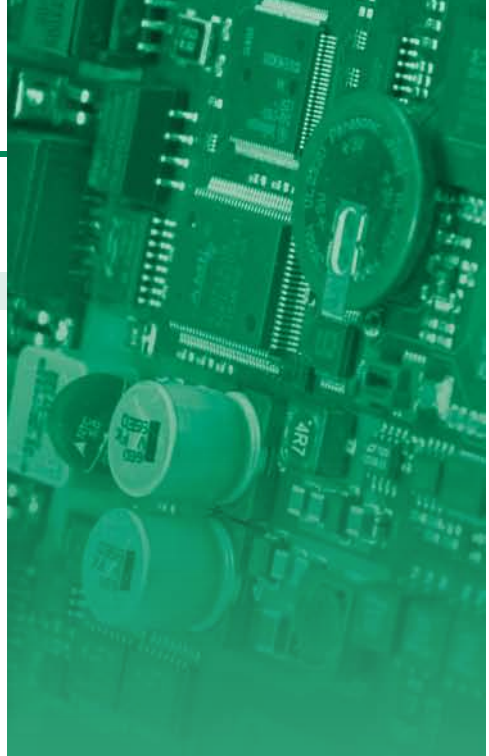
In the CPUs of System 500S memory for code and data is already integrated. It can be expanded by inserting a MCC memory card into the MMC slot. To back up program and data MMC cards are also supported.

Due to the high performance and scalable memory, the CPUs of System 500S are especially suitable for complex control tasks.

Operation Safety

- External power supply for the CPU (autarchic operation)
- ESD / Burst 61000-4-2/IEC in accordance with IEC 61000-4-4 (up to level 3)
- Shock resistance in accordance with IEC 60068-2-6 / IEC 60068-2-27 (1G/12G)

Overview



Order no.	Name/Description	Page
CPUs		
515-2AJ02	**CPU 515S/DPM - SPEED7 technology** › SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master	**500**
517-2AJ02	**CPU 517S/DPM - SPEED7 technology** › SPEED7 technology › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master	**500**
517-4NE02	**CPU 517SN/NET - SPEED7 technology** › SPEED7 technology › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master and CP 543	**500**

CPUs

CPUs | CPUs						
515-2AJ02 517-2AJ02 517-4NE02						

Order number	515-2AJ02	517-2AJ02	517-4NE02	
Figure				
Type	CPU 515S/DPM	CPU 517S/DPM	CPU 517SN/NET	
General information				
Note	-	-	-	
Features	› SPEED7 technology › 1 MB work memory › Memory extension (max. 2 MB) › PROFIBUS-DP master	› SPEED7 technology › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master	› SPEED7 technology › 2 MB work memory › Memory extension (max. 8 MB) › PROFIBUS-DP master and CP 543	
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	
Reverse polarity protection	✓	✓	✓	
Current consumption (no-load operation)	250 mA	250 mA	300 mA	
Current consumption (rated value)	1 A	1 A	1.2 A	
Inrush current	5 A	5 A	5 A	
I^2t	0.5 A^2s	0.5 A^2s	0.5 A^2s	
Max. current drain at backplane bus	-	-	-	
Power loss	5 W	5 W	6.5 W	
Load and working memory				
Load memory, integrated	2 MB	8 MB	8 MB	
Load memory, maximum	2 MB	8 MB	8 MB	
Work memory, integrated	1 MB	2 MB	2 MB	
Work memory, maximal	2 MB	8 MB	8 MB	
Memory divided in 50% program / 50% data	✓	✓	✓	
Memory card slot	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	MMC-Card with max. 1 GB	
Hardware configuration				
Racks, max.	-	-	-	
Modules per rack, max.	-	-	-	
Number of integrated DP master	1	1	1	
Number of DP master via CP	-	-	-	
Operable function modules	-	-	-	
Operable communication modules PtP	-	-	-	
Operable communication modules LAN	-	-	-	
Status information, alarms, diagnostics				
Status display	yes	yes	yes	
Interrupts	no	no	no	
Process alarm	no	no	no	
Diagnostic interrupt	no	no	no	

CPUs | CPUs						
515-2AJ02 517-2AJ02 517-4NE02						

Order number	515-2AJ02	517-2AJ02	517-4NE02	
Command processing times				
Bit instructions, min.	0.01 µs	0.01 µs	0.01 µs	
Word instruction, min.	0.01 µs	0.01 µs	0.01 µs	
Double integer arithmetic, min.	0.01 µs	0.01 µs	0.01 µs	
Floating-point arithmetic, min.	0.06 µs	0.06 µs	0.06 µs	
Timers/Counters and their retentive characteristics				
Number of S7 counters	512	2048	2048	
Number of S7 times	512	2048	2048	
Data range and retentive characteristic				
Number of flags	8192 Byte	16384 Byte	16384 Byte	
Number of data blocks	4095	8190	8190	
Max. data blocks size	64 KB	64 KB	64 KB	
Max. local data size per execution level	510 Byte	510 Byte	510 Byte	
Blocks				
Number of OBs	24	24	24	
Number of FBs	2048	8191	8191	
Number of FCs	2048	8191	8191	
Maximum nesting depth per priority class	8	8	8	
Maximum nesting depth additional within an error OB	4	4	4	
Time				
Real-time clock buffered	✓	✓	✓	
Clock buffered period (min.)	6 W	6 W	6 W	
Accuracy (max. deviation per day)	10 s	10 s	10 s	
Number of operating hours counter	8	8	8	
Clock synchronization	✓	✓	✓	
Synchronization via MPI	Master/Slave	Master/Slave	Master/Slave	
Synchronization via Ethernet (NTP)	no	no	Slave	
Address areas (I/O)				
Input I/O address area	8192 Byte	8192 Byte	8192 Byte	
Output I/O address area	8192 Byte	8192 Byte	8192 Byte	
Input process image maximal	2048 Byte	8192 Byte	8192 Byte	
Output process image maximal	2048 Byte	8192 Byte	8192 Byte	
Digital inputs	65536	65536	65536	
Digital outputs	65536	65536	65536	
Digital inputs central	-	-	-	
Digital outputs central	-	-	-	
Integrated digital inputs	-	-	-	
Integrated digital outputs	-	-	-	
Analog inputs	4096	4096	4096	
Analog outputs	4096	4096	4096	
Analog inputs, central	-	-	-	
Analog outputs, central	-	-	-	
Integrated analog inputs	-	-	-	
Integrated analog outputs	-	-	-	

CPUs | CPUs						
515-2AJ02 517-2AJ02 517-4NE02						

Order number	515-2AJ02	517-2AJ02	517-4NE02	
Communication functions				
PG/OP channel	✓	✓	✓	
Global data communication	✓	✓	✓	
Number of GD circuits, max.	16	16	16	
Size of GD packets, max.	54 Byte	54 Byte	54 Byte	
S7 basic communication	✓	✓	✓	
S7 basic communication, user data per job	76 Byte	76 Byte	76 Byte	
S7 communication	✓	✓	✓	
S7 communication as server	✓	✓	✓	
S7 communication as client	-	-	-	
S7 communication, user data per job	160 Byte	160 Byte	160 Byte	
Number of connections, max.	32	32	32	
Functionality Sub-D interfaces				
Type	X2	X2	X2	
Type of interface	RS485	RS485	RS485	
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Electrically isolated	✓	✓	✓	
MPI	✓	✓	✓	
MP²I (MPI/RS232)	-	-	-	
DP master	-	-	-	
DP slave	-	-	-	
Point-to-point interface	-	-	-	
Type	X3	X3	X3	
Type of interface	RS485	RS485	RS485	
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Electrically isolated	✓	✓	✓	
MPI	-	-	-	
MP²I (MPI/RS232)	-	-	-	
DP master	✓	✓	✓	
DP slave	✓	✓	✓	
Point-to-point interface	-	-	-	
CAN	-	-	-	
Functionality MPI				
Number of connections, max.	32	32	32	
PG/OP channel	✓	✓	✓	
Routing	✓	✓	✓	
Global data communication	✓	✓	✓	
S7 basic communication	✓	✓	✓	
S7 communication	✓	✓	✓	
S7 communication as server	✓	✓	✓	
S7 communication as client	-	-	-	
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	

CPUs | CPUs						
515-2AJ02 517-2AJ02 517-4NE02						

Order number	515-2AJ02	517-2AJ02	517-4NE02	
Functionality PROFIBUS master				
PG/OP channel	✓	✓	✓	
Routing	✓	✓	✓	
S7 basic communication	✓	✓	✓	
S7 communication	✓	✓	✓	
S7 communication as server	✓	✓	✓	
S7 communication as client	-	-	-	
Equidistance support	-	-	-	
Isochronous mode	-	-	-	
SYNC/FREEZE	✓	✓	✓	
Activation/deactivation of DP slaves	✓	✓	✓	
Direct data exchange (slave-to-slave communication)	-	-	-	
DPV1	✓	✓	✓	
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s	
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	
Number of DP slaves, max.	32	32	32	
Address range inputs, max.	1 KB	1 KB	1 KB	
Address range outputs, max.	1 KB	1 KB	1 KB	
User data inputs per slave, max.	244 Byte	244 Byte	244 Byte	
User data outputs per slave, max.	244 Byte	244 Byte	244 Byte	
Functionality PROFIBUS slave				
PG/OP channel	✓	✓	✓	
Routing	✓	✓	✓	
S7 communication	✓	✓	✓	
S7 communication as server	✓	✓	✓	
S7 communication as client	-	-	-	
Direct data exchange (slave-to-slave communication)	-	-	-	
DPV1	✓	✓	✓	
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s	
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	
Automatic detection of transmission speed	-	-	-	
Transfer memory inputs, max.	244 Byte	244 Byte	244 Byte	
Transfer memory outputs, max.	244 Byte	244 Byte	244 Byte	
Address areas, max.	32	32	32	
User data per address area, max.	32 Byte	32 Byte	32 Byte	
Functionality RJ45 interfaces				
Type	n/d	n/d	n/d	
Type of interface	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit	
Connector	PCI bus	PCI bus	PCI bus	
Electrically isolated	✓	✓	-	
PG/OP channel	✓	✓	✓	
Productive connections	-	-	-	

CPUs | CPUs						
515-2AJ02 517-2AJ02 517-4NE02						

Order number	515-2AJ02	517-2AJ02	517-4NE02	
Type	-	-	X4	
Type of interface	-	-	Ethernet 10/100 MBit	
Connector	-	-	RJ45	
Electrically isolated	-	-	✓	
PG/OP channel	-	-	✓	
Productive connections	-	-	-	
Ethernet communication CP				
Number of productive connections, max.	-	-	64	
Number of productive connections by Siemens NetPro, max.	-	-	16	
S7 connections	-	-	USEND, URCV, BSEND, BRCV, GET, PUT, Connection of active and passive data handling	
User data per S7 connection, max.	-	-	32 KB	
TCP-connections	-	-	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	
User data per TCP connection, max.	-	-	64 KB	
ISO-connections	-	-	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	
User data per ISO connection, max.	-	-	8 KB	
ISO on TCP connections (RFC 1006)	-	-	SEND, RECEIVE, FETCH PASSIV, WRITE PASSIV, Connection of active and passive data handling	
User data per ISO on TCP connection, max.	-	-	32 KB	
UDP-connections	-	-	TUSEND, TURCV	
User data per UDP connection, max.	-	-	2 KB	
UDP-multicast-connections	-	-	SEND and RECEIVE (max. 16 Multicast groups)	
UDP-broadcast-connections	-	-	SEND	
Ethernet open communication				
Number of connections, max.	-	-	8	
User data per ISO on TCP connection, max.	-	-	8 KB	
User data per native TCP connection, max.	-	-	8 KB	
User data per ad hoc TCP connection, max.	-	-	1460 Byte	
User data per UDP connection, max.	-	-	1472 Byte	

CPUs | CPUs						
515-2AJ02 517-2AJ02 517-4NE02						

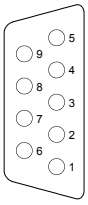
Order number	515-2AJ02	517-2AJ02	517-4NE02	
Housing				
Material	-	-	-	
Mounting	-	-	-	
Mechanical data				
Dimensions (WxHxD)	20 mm x 106 mm x 174 mm	20 mm x 106 mm x 174 mm	40 mm x 106 mm x 174 mm	
Weight	280 g	290 g	390 g	
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	
Certifications				
UL508 certification	in preparation	in preparation	in preparation	

Connections, Interfaces

CPUs | CPUs						
515-2AJ02 517-2AJ02 517-4NE02						

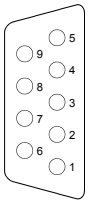
515-2AJ02

DP master



① shield
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

MPI

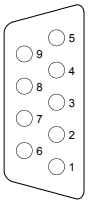


① reserved
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

① DC 24 V
② DC 24 V

517-2AJ02

DP master



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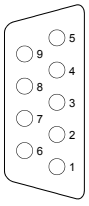
MPI



① reserved
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④ RTS
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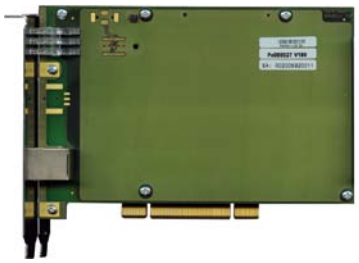
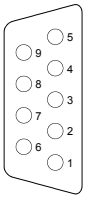
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

① DC 24 V
② DC 24 V

517-4NE02



DP master



① shield
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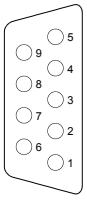
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

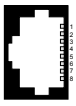
MPI



① reserved
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

① DC 24 V
② DC 24 V

CP 543 RJ45



① Transmit +
② Transmit -
③ Receive +
④ -
⑤ -
⑥ Receive -
⑦ -
⑧ -

500S accessories

Structure and Function

System accessories enable and expand the use of the system and facilitate starting.

Memory Expansion

MMC cards can be used for storing programs and data. By inserting a VIPA-MCC card the work memory is expanded without exchanging the CPU.

Each CPU has an integrated work memory. During the program flow, 50% of the work memory is used for the program code and 50% for data.

Manuals

The technical documentation of the respective modules encompasses various manuals with the necessary hardware and programming information, detailed descriptions of each module, and instructions for structure and assembly.

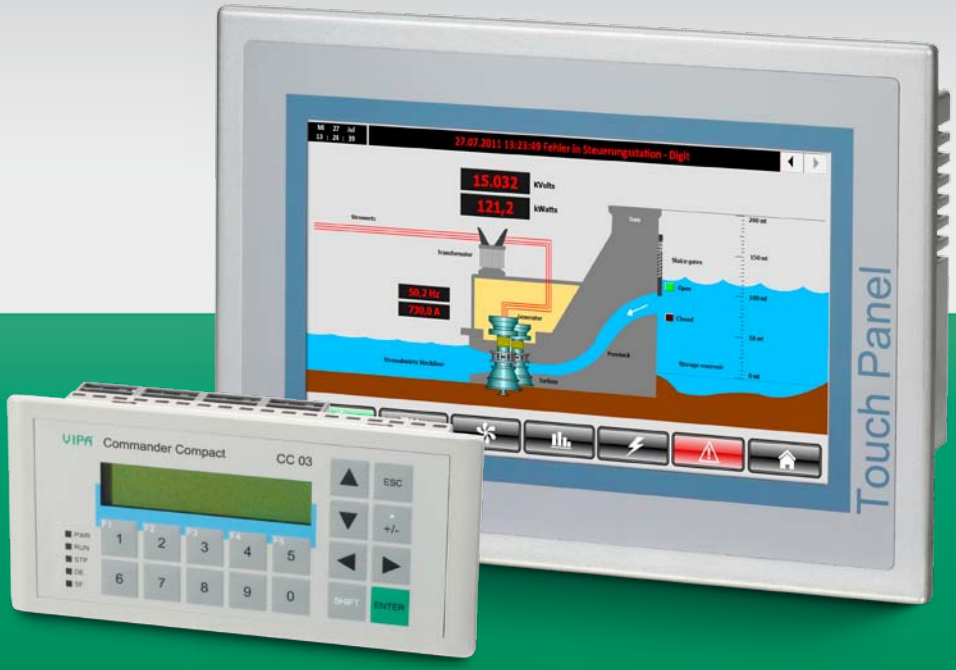
Memory extensions

Order number	Type	Description	Note
953-0KX10	MMC - MultiMediaCard	Extension memory for VIPA CPUs 11x, 21x, 24x, 31x, 51x, and 208-1DP01, CC 03 (for load memory not necessary)	
953-1LE00	Memory Configuration Card (MCC) 32kByte	for SPEED7 CPUs, 16kByte program/16kByte data	
953-1LF00	Memory Configuration Card (MCC) 64kByte	for SPEED7 CPUs, 32kByte program/32kByte data	
953-1LG00	Memory Configuration Card (MCC) 128kByte	for SPEED7 CPUs, 64kByte program/64kByte data	
953-1LH00	Memory Configuration Card (MCC) 256kByte	for SPEED7 CPUs, 128kByte program/128kByte data	
953-1LJ00	Memory Configuration Card (MCC) 512kByte	for SPEED7 CPUs, 256kByte program/256kByte data	
953-1LK00	Memory Configuration Card (MCC) 1MByte	for SPEED7 CPUs, 512kByte program/512kByte data	
953-1LL00	Memory Configuration Card (MCC) 2MByte	for SPEED7 CPUs, 1MByte program/1MByte data	
953-1LM00	Memory Configuration Card (MCC) 4MByte	for SPEED7 CPUs, 2MByte program/2MByte data	
953-1LP00	Memory Configuration Card (MCC) 8MByte	for SPEED7 CPUs, 4MByte program/4MByte data	

Manuals

Order number	Title	Contents	Language
HB145D_CPU	Manual System 500S - CPU	PCI CPU 51xS, incl. operations list	DE
HB145E_CPU	Manual System 500S - CPU	PCI CPU 51xS, incl. operations list	EN

At a glance



HMI

Operating and Monitoring Systems

System description HMI

Structure and Concept

The VIPA Touch Panel with 4.3" to 12.1" TFT-display, Windows embedded CE 6.0 and visualization system can be used universally. The touch panels are equipped with Windows embedded CE 6.0 and the visualization software Movicon. The VIPA Commander Compact CC 03 with two-line display and integrated PLC-CPU is the ideal device for small control and operating tasks. The VIPA Operator Panel OP 03 and the Text Display TD 03 are universal operating units for use with VIPA systems and other control systems with MPI interface.

Performance and Application

The operating and monitoring devices from VIPA are universal in the manufacturing and process industries, but can also be used in building automation. The line displays and touch panels are designed both for watching and for the active use of machinery, plant and buildings.

Parameterization and Programming

The Text Display TD 03 is configured with the free tool, TD-Wizard *). The operator panels OP 03 and Commander Compact CC 03 devices are configured with OP-Manager *) or alternatively with Siemens ProTool. The PLC CPUs integrated in Commander Compact CC 03 are programmed in addition via WinPLC7 from VIPA or with Siemens STEP7.

The basis for the touch panels are Windows Embedded CE operating systems from Microsoft. Then the applications and visualizations offered by VIPA (also partially their own) are ported. VIPA Touch Panels are shipped with pre-installed operating system and Movicon. The project, created with the appropriate editor on the PC, is transferred via data cable or memory card from the PC to the Touch Panel.

Memory

The Text Display TD 03 has no built-in memory. The messages, generated with TD-Wizard, are stored in the CPU. The Operator Panel OP 03 make 256 kByte and the Commander Compact CC 03 devices 128 kByte work memory available for projects. Incorporated in the Commander Compact CC 03 devices is an additional 16/24/32 kByte work memory for the PLC program. The touch panels offer up to 2048 MB of user memory (depending on the model). External expansion of the memory can easily be achieved by inserting a CF or MMC-/SD-Card.

Functions

Depending on the device type different and very versatile functions are realizable. The Text Display TD 03 is provided primarily for the simple presentation and the acknowledgement of messages. With the Operator Panels OP 03 advanced operating and monitoring tasks are already being realized with their own projects deposited in OP 03. Touch panels have multi-functional use. Depending on the application projects with up to several thousand variables will be realized on the PC. Thereby CPUs, higher-level systems and other devices are connected for the purpose of data collection, data sharing, visualization and operation.

Communication

The exchange of data with the CPUs occurs at TD 03 and OP 03 via MPI. The Commander Compact CC 03 devices combine display and operating elements as well as PLC CPU with I/O peripherals in one casing. They can thus be used completely self-contained.

*) Downloadable on the tool Demo-CD SW900T0LA or under http://www.vipa.com/en/service-support/downloads/software/.

Lines displays

Structure and Function

Line displays are used for the operation and monitoring of process parameters in machinery, plant and buildings.

TD 03 – Text Display

The compact VIPA Text Display TD 03 shows via a backlit LCD display defined message texts. Inputs and outputs, and process parameters can be set through the membrane keys and changed. The configuration of the messages and the parameter block is performed using the TD-Wizard from VIPA. The menu can be selected in English and German. The text display is designed for use in combination with VIPA CPUs 11x, 21x, 31x, 51x and the S7-300/400 CPUs designed by Siemens.

OP 03 – Operator Panel

The VIPA Operator Panel OP 03 is particularly suitable for operating and monitoring of small applications in conjunction with VIPA CPUs 11x, 21x, 31x, 51x and Siemens S7-300/400 CPUs. Up to seven OPs can be connected to a CPU and up 2 CPUs to an OP 03 via the MPI interface. For managing and processing operating notifications and data, 256 kByte user memory is available. Project planning is carried out with VIPA OP-Manager or Siemens ProTool.

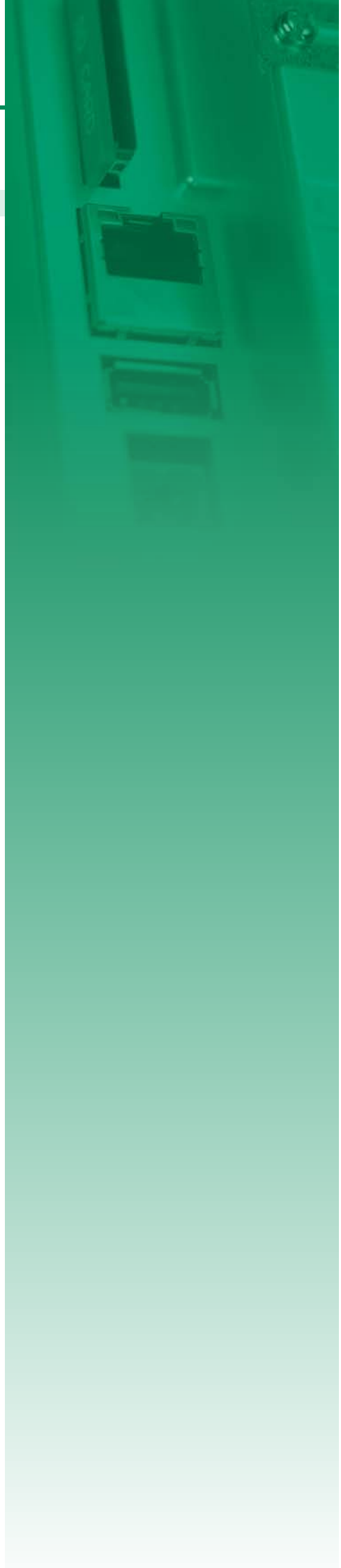
CC 03 – Commander Compact

In the VIPA Commander Compact CC 03 a PLC CPU, programmable with Siemens STEP7, is integrated. Besides the 128 kByte user memory, the CPU has 16/24/32 kByte program and 24/32/40 kByte load memory (depending on version) . In addition, 16 digital inputs and outputs each are integrated. The CC 03 is expandable with up to four 100V or 200V modules (160 digital inputs/outputs, or up to 32 analog inputs/outputs respectively are supported).

Characteristics

- Backlit LC-Display
- Parameterization capable function keys
- MPI-interface
- Multilingual Language Support
- Operation and project planning friendly
- LED-status indicator (CC 03)
- Compact design

Overview



Order no.	Name/Description	Page
Text displays and operator panels		
603-1TD00	**TD 03 - Text Display** › 2 x 20 characters › Interface: MP²I › Languages: DE, EN, FR, ES, IT, SV, NO, DA › Visualization of the connected CPU via MPI	**516**
603-1OP00	**OP 03 - Operator Panel** › 2 x 20 characters › Interface: MP²I › 256 kB user memory › 4096 variables › Sprachen: DE, EN, FR, ES, IT, SV, NO, DA › Project engineering via VIPA OP-Manager or Siemens ProTool	**516**
603-1OP10	**OP 03 - Operator Panel** › 2 x 20 characters › Interface: MP²I › 256 kB user memory › 4096 variables › Languages: DE (without Umlaut), EN, RU › Project engineering only via VIPA OP-Manager	**516**
Commander compact		
603-1CC21	**CC 03 - Commander Compact** › 2 x 20 characters › Integrated PLC-CPU, MP²I › 16 x DI, 16 x DO › Up to 4 I/O expansion modules › 128 kB user memory, 4096 variables, 16/24kByte work/load memory › Languages: DE, EN, FR, ES, IT, SV, NO, DA › Project engineering via VIPA OP-Manager or Siemens ProTool	**519**
603-1CC22	**CC 03 - Commander Compact** › 2 x 20 characters › Integrated PLC-CPU, MP²I › 16 x DI, 16 x DO › Up to 4 I/O expansion modules › 128 kB user memory, 4096 variables, 24/32kByte work/load memory › Languages: DE, EN, FR, ES, IT, SV, NO, DA › Project engineering via VIPA OP-Manager or Siemens ProTool	**519**
603-1CC23	**CC 03 - Commander Compact** › 2 x 20 characters › Integrated PLC-CPU, MP²I › 16 x DI, 16 x DO › Up to 4 I/O expansion modules › 128 kB user memory, 4096 variables, 32/40kByte work/load memory › Languages: DE, EN, FR, ES, IT, SV, NO, DA › Project engineering via VIPA OP-Manager or Siemens ProTool	**519**
603-2CC21	**CC 03 - Commander Compact** › 2 x 20 characters › Integrated PLC-CPU, MP²I, PROFIBUS-DP slave › 16 x DI, 16 x DO › Up to 4 I/O expansion modules › 128 kB user memory, 4096 variables, 16/24kByte work/load memory › Languages: DE, EN, FR, ES, IT, SV, NO, DA › Project engineering via VIPA OP-Manager or Siemens ProTool	**519**
603-2CC22	**CC 03 - Commander Compact** › 2 x 20 characters › Integrated PLC-CPU, MP²I, PROFIBUS-DP slave › 16 x DI, 16 x DO › Up to 4 I/O expansion modules › 128 kB user memory, 4096 variables, 24/32kByte work/load memory › Languages: DE, EN, FR, ES, IT, SV, NO, DA › Project engineering via VIPA OP-Manager or Siemens ProTool	**525**
603-2CC23	**CC 03 - Commander Compact** › 2 x 20 characters › Integrated PLC-CPU, MP²I, PROFIBUS-DP slave › 16 x DI, 16 x DO › Up to 4 I/O expansion modules › 128 kB user memory, 4096 variables, 32/40kByte work/load memory › Languages: DE, EN, FR, ES, IT, SV, NO, DA › Project engineering via VIPA OP-Manager or Siemens ProTool	**525**

Text displays and operator panels

Lines displays | Text displays and operator panels						
603-1TD00 603-1OP00 603-1OP10						

Order number	603-1TD00	603-1OP00	603-1OP10	
Figure				
Type	TD 03, Text Display	OP 03, Operator Panel	OP 03, Operator Panel, en, ru	
General information				
Note	-	-	-	
Features	› 2 x 20 characters › Interface: MP²I › Languages: DE, EN, FR, ES, IT, SV, NO, DA › Visualization of the connected CPU via MPI	› 2 x 20 characters › Interface: MP²I › 256 kB user memory › 4096 variables › Sprachen: DE, EN, FR, ES, IT, SV, NO, DA › Project engineering via VIPA OP-Manager or Siemens ProTool	› 2 x 20 characters › Interface: MP²I › 256 kB user memory › 4096 variables › Languages: DE (without Umlaut), EN, RU › Project engineering only via VIPA OP-Manager	
Display				
Number of rows	2	2	2	
Characters per row	20	20	20	
Character height	5 mm	5 mm	5 mm	
Type of display	STN with LED back-lighting	STN with LED back-lighting	STN with LED back-lighting	
OP functionality				
User memory	-	256	256	
Number of variables	-	4096	4096	
Language	DE/EN/FR/ES/IT/SV/NO/DA	DE/EN/FR/ES/IT/SV/NO/DA	DE (w/o umlauts)/EN/RU	
Operating controls				
Touchscreen	-	-	-	
Keyboard	Membran keyboard	Membran keyboard	Membran keyboard	
Mouse	-	-	-	
Number of system keys	5	8	8	
Number of soft keys	4	5	5	
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	
Reverse polarity protection	✓	✓	✓	
Current consumption (no-load operation)	-	-	-	
Current consumption (rated value)	80 mA	80 mA	80 mA	
Inrush current	16 A	55 A	55 A	
I^2t	0.11 A^2s	0.34 A^2s	0.34 A^2s	
Time				
Real-time clock	-	✓	✓	
Clock buffered period (min.)	-	-	-	
Accuracy (max. deviation per day)	-	-	-	

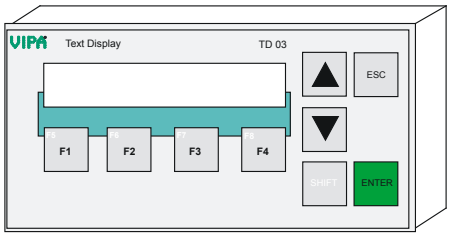
Lines displays | Text displays and operator panels						
603-1TD00 603-1OP00 603-1OP10						

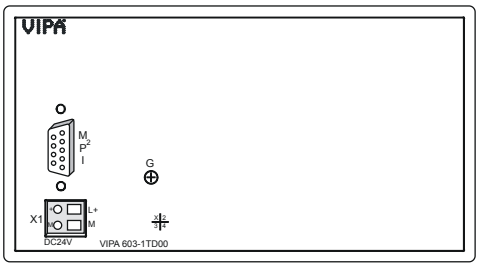
Order number	603-1TD00	603-1OP00	603-1OP10	
Functionality Sub-D interfaces				
Type	MP²I	MP²I	MP²I	
Type of interface	RS485	RS485	RS485	
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Electrically isolated	-	-	-	
MPI	✓	✓	✓	
MP²I (MPI/RS232)	✓	✓	✓	
DP master	-	-	-	
DP slave	-	-	-	
Point-to-point interface	-	-	-	
Mechanical data				
Housing / Protection type				
Material	die-cast aluminum	die-cast aluminum	die-cast aluminum	
Mounting	via integrated pivoted lever	via integrated pivoted lever	via integrated pivoted lever	
Protect type front side	IP 65	IP 65	IP 65	
Protect type back side	IP 20	IP 20	IP 20	
Dimensions				
Front panel	187 mm x 90 mm x 6 mm	187 mm x 90 mm x 6 mm	187 mm x 90 mm x 6 mm	
Rear panel	154 mm x 77 mm x 44 mm	154 mm x 77 mm x 55 mm	154 mm x 77 mm x 55 mm	
Installation cut-out				
Width	156 mm	156 mm	156 mm	
Height	78 mm	78 mm	78 mm	
Minimum	2.5 mm	2.5 mm	2.5 mm	
Maximum front panel thickness	6 mm	6 mm	6 mm	
Weight	610 g	600 g	600 g	
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	
Storage temperature	-20 °C to 70 °C	-20 °C to 70 °C	-20 °C to 70 °C	
Certifications				
UL508 certification	yes	yes	-	

Connections, Interfaces

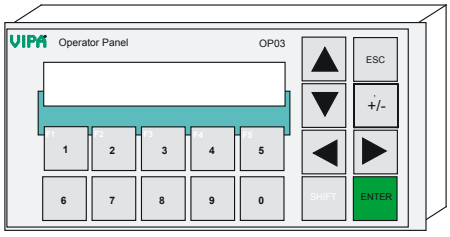
Lines displays | Text displays and operator panels						
603-1TD00 603-1OP00 603-1OP10						

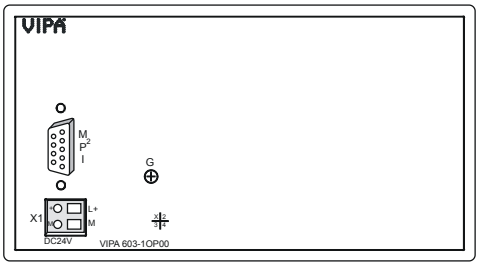
603-1TD00



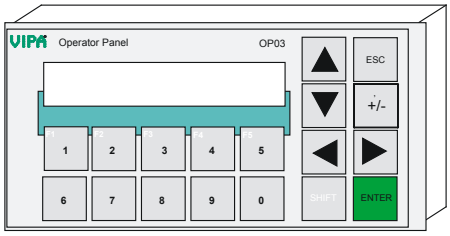


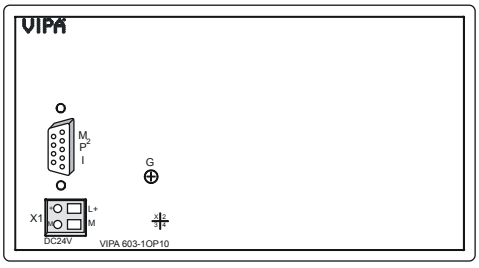
603-1OP00





603-1OP10





Commander compact

Lines displays | Commander compact						
603-1CC21 603-1CC22 603-1CC23 603-2CC21	603-2CC22 603-2CC23					

Order number	603-1CC21	603-1CC22	603-1CC23	603-2CC21
Figure				
Type	CC 03, Commander Compact	CC 03, Commander Compact	CC 03, Commander Compact	CC 03DP, Commander Compact, PROFIBUS-DP slave
General information				
Note	-	-	-	-
Features	‣ 2 x 20 characters ‣ Integrated PLC-CPU, MP²I ‣ 16 x DI, 16 x DO ‣ Up to 4 I/O expansion modules ‣ 128 kB user memory, 4096 variables, 16/24kByte work/load memory ‣ Languages: DE, EN, FR, ES, IT, SV, NO, DA ‣ Project engineering via VIPA OP-Manager or Siemens ProTool	‣ 2 x 20 characters ‣ Integrated PLC-CPU, MP²I ‣ 16 x DI, 16 x DO ‣ Up to 4 I/O expansion modules ‣ 128 kB user memory, 4096 variables, 24/32kByte work/load memory ‣ Languages: DE, EN, FR, ES, IT, SV, NO, DA ‣ Project engineering via VIPA OP-Manager or Siemens ProTool	‣ 2 x 20 characters ‣ Integrated PLC-CPU, MP²I ‣ 16 x DI, 16 x DO ‣ Up to 4 I/O expansion modules ‣ 128 kB user memory, 4096 variables, 32/40kByte work/load memory ‣ Languages: DE, EN, FR, ES, IT, SV, NO, DA ‣ Project engineering via VIPA OP-Manager or Siemens ProTool	‣ 2 x 20 characters ‣ Integrated PLC-CPU, MP²I, PROFIBUS-DP slave ‣ 16 x DI, 16 x DO ‣ Up to 4 I/O expansion modules ‣ 128 kB user memory, 4096 variables, 16/24kByte work/load memory ‣ Languages: DE, EN, FR, ES, IT, SV, NO, DA ‣ Project engineering via VIPA OP-Manager or Siemens ProTool
Display				
Number of rows	2	2	2	2
Characters per row	20	20	20	20
Character height	5 mm	5 mm	5 mm	5 mm
Type of display	STN with LED back-lighting	STN with LED back-lighting	STN with LED back-lighting	STN with LED back-lighting
OP functionality				
User memory	128 KB	128 KB	128 KB	128 KB
Number of variables	4096	4096	4096	4096
Language	DE/EN/FR/ES/IT/SV/NO/DA	DE/EN/FR/ES/IT/SV/NO/DA	DE/EN/FR/ES/IT/SV/NO/DA	DE/EN/FR/ES/IT/SV/NO/DA
Operating controls				
Touchscreen	-	-	-	-
Mouse	-	-	-	-
Number of system keys	8	8	8	8
Number of soft keys	5	5	5	5
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Reverse polarity protection	✓	✓	✓	✓
Current consumption (no-load operation)	-	-	-	-
Current consumption (rated value)	400 mA	400 mA	400 mA	400 mA
Inrush current	60 A	60 A	60 A	60 A
I^2t	0.35 A^2s	0.35 A^2s	0.35 A^2s	0.35 A^2s

Lines displays | Commander compact						
603-1CC21 603-1CC22 603-1CC23 603-2CC21	603-2CC22 603-2CC23					

Order number	603-1CC21	603-1CC22	603-1CC23	603-2CC21
Status information, alarms, diagnostics				
Status display	yes	yes	yes	yes
Interrupts	no	no	no	no
Process alarm	yes	yes	yes	yes
Diagnostic interrupt	yes	yes	yes	yes
Diagnostic functions	no	no	no	no
Diagnostics information read-out	possible	possible	possible	possible
Supply voltage display	green LED	green LED	green LED	green LED
Group error display	red SF LED	red SF LED	red SF LED	red SF LED
Channel error display	red LED per group	red LED per group	red LED per group	red LED per group
Technical data digital inputs				
Number of inputs	16	16	16	16
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	✓	✓	✓	✓
Rated value	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V	DC 0...5 V	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V	DC 15...28.8 V
Input current for signal "1"	7 mA	7 mA	7 mA	7 mA
Connection of Two-Wire-BEROs possible	✓	✓	✓	✓
Max. permissible BERO quiescent current	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Input delay of "0" to "1"	3 ms	3 ms	3 ms	3 ms
Input delay of "1" to "0"	3 ms	3 ms	3 ms	3 ms
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1	IEC 61131, type 1
Initial data size	2 Byte	2 Byte	2 Byte	2 Byte
Technical data digital outputs				
Number of outputs	16	16	16	16
Cable length, shielded	1000 m	1000 m	1000 m	1000 m
Cable length, unshielded	600 m	600 m	600 m	600 m
Rated load voltage	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Reverse polarity protection of rated load voltage	-	-	-	-
Current consumption from load voltage L+ (without load)	50 mA	50 mA	50 mA	50 mA
Output voltage signal "1" at min. current	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)
Output voltage signal "1" at max. current	-	-	-	-
Output current at signal "1", rated value	0.5 A	0.5 A	0.5 A	0.5 A
Output delay of "0" to "1"	max. 100 µs	max. 100 µs	max. 100 µs	max. 100 µs
Output delay of "1" to "0"	max. 350 µs	max. 350 µs	max. 350 µs	max. 350 µs
Minimum load current	-	-	-	-
Lamp load	5 W	5 W	5 W	5 W
Switching frequency with resistive load	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz	max. 1000 Hz
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz	max. 0.5 Hz
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz	max. 10 Hz	max. 10 Hz

Lines displays | Commander compact						
603-1CC21 603-1CC22 603-1CC23 603-2CC21	603-2CC22 603-2CC23					

Order number	603-1CC21	603-1CC22	603-1CC23	603-2CC21
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)	L+ (-52 V)
Short-circuit protection of output	yes, electronic	yes, electronic	yes, electronic	yes, electronic
Trigger level	1 A	1 A	1 A	1 A
Output data size	2 Byte	2 Byte	2 Byte	2 Byte
Isolation				
Insulation tested with	DC 500 V	DC 500 V	DC 500 V	DC 500 V
Load and working memory				
Load memory, integrated	24 KB	32 KB	40 KB	24 KB
Work memory, integrated	16 KB	24 KB	32 KB	16 KB
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB
Command processing times				
Bit instructions, min.	0.25 µs	0.25 µs	0.25 µs	0.25 µs
Word instruction, min.	1.2 µs	1.2 µs	1.2 µs	1.2 µs
Double integer arithmetic, min.	-	-	-	-
Floating-point arithmetic, min.	-	-	-	-
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256	256	256
Number of S7 times	256	256	256	256
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit	8192 Bit	8192 Bit
Number of data blocks	2047	2047	2047	2047
Max. data blocks size	16 KB	16 KB	16 KB	16 KB
Max. local data size per execution level	1024 Byte	1024 Byte	1024 Byte	1024 Byte
Blocks				
Number of OBs	14	14	14	14
Number of FBs	1024	1024	1024	1024
Number of FCs	1024	1024	1024	1024
Maximum nesting depth per priority class	8	8	8	8
Maximum nesting depth additional within an error OB	4	4	4	4
Time				
Real-time clock buffered	✓	✓	✓	✓
Clock buffered period (min.)	30 d	30 d	30 d	30 d
Number of operating hours counter	8	8	8	8
Synchronization in the PLC	no	no	no	no
Synchronization via MPI	no	no	no	no
Synchronization via DP master	no	no	no	no
Synchronization via DP slave	no	no	no	no
Synchronization via Ethernet (NTP)	no	no	no	no
Address areas (I/O)				
Input I/O address area	1024 Bit	1024 Bit	1024 Bit	1024 Bit
Output I/O address area	1024 Bit	1024 Bit	1024 Bit	1024 Bit
Digital inputs	128	128	128	128
Digital outputs	128	128	128	128

Lines displays | Commander compact						
603-1CC21 603-1CC22 603-1CC23 603-2CC21	603-2CC22 603-2CC23					

Order number	603-1CC21	603-1CC22	603-1CC23	603-2CC21
Integrated digital inputs	16	16	16	16
Integrated digital outputs	16	16	16	16
Communication functions				
PG/OP channel	✓	✓	✓	✓
Global data communication	✓	✓	✓	✓
Number of GD circuits, max.	4	4	4	4
Size of GD packets, max.	22 Byte	22 Byte	22 Byte	22 Byte
S7 basic communication	✓	✓	✓	✓
S7 basic communication, user data per job	76 Byte	76 Byte	76 Byte	76 Byte
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
S7 communication, user data per job	160 Byte	160 Byte	160 Byte	160 Byte
Number of connections, max.	16	16	16	16
Functionality Sub-D interfaces				
Type	MP²I	MP²I	MP²I	MP²I
Type of interface	RS485	RS485	RS485	RS485
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Electrically isolated	-	-	-	-
MPI	✓	✓	✓	✓
MP²I (MPI/RS232)	✓	✓	✓	✓
DP master	-	-	-	-
DP slave	-	-	-	-
Point-to-point interface	-	-	-	-
Type	-	-	-	DP
Type of interface	-	-	-	RS485
Connector	-	-	-	Sub-D, 9-pin, female
Electrically isolated	-	-	-	✓
MPI	-	-	-	-
MP²I (MPI/RS232)	-	-	-	-
DP master	-	-	-	-
DP slave	-	-	-	✓
Point-to-point interface	-	-	-	-
CAN	-	-	-	-
Functionality MPI				
Number of connections, max.	16	16	16	16
PG/OP channel	✓	✓	✓	✓
Routing	-	-	-	-
Global data communication	✓	✓	✓	✓
S7 basic communication	✓	✓	✓	✓
S7 communication	✓	✓	✓	✓
S7 communication as server	✓	✓	✓	✓
S7 communication as client	-	-	-	-
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s

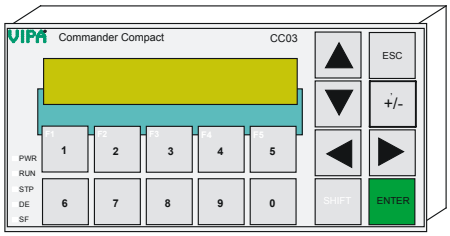
Lines displays | Commander compact						
603-1CC21 603-1CC22 603-1CC23 603-2CC21	603-2CC22 603-2CC23					

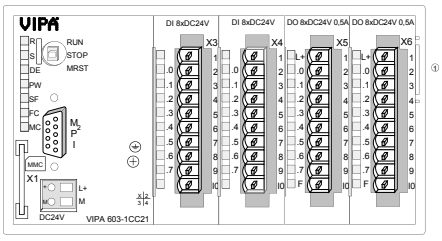
Order number	603-1CC21	603-1CC22	603-1CC23	603-2CC21
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s	187.5 kbit/s
Functionality PROFIBUS slave				
PG/OP channel	-	-	-	-
Routing	-	-	-	-
S7 communication	-	-	-	-
S7 communication as server	-	-	-	-
S7 communication as client	-	-	-	-
Direct data exchange (slave-to-slave communication)	-	-	-	-
DPV1	-	-	-	-
Transmission speed, min.	-	-	-	9.6 kbit/s
Transmission speed, max.	-	-	-	12 Mbit/s
Automatic detection of transmission speed	-	-	-	✓
Transfer memory inputs, max.	-	-	-	64 Byte
Transfer memory outputs, max.	-	-	-	64 Byte
Address areas, max.	-	-	-	-
User data per address area, max.	-	-	-	-
Mechanical data				
Housing / Protection type				
Material	die-cast aluminum	die-cast aluminum	die-cast aluminum	die-cast aluminum
Mounting	via integrated pivoted lever	via integrated pivoted lever	via integrated pivoted lever	via integrated pivoted lever
Protect type front side	IP 65	IP 65	IP 65	IP 65
Protect type back side	IP 20	IP 20	IP 20	IP 20
Dimensions				
Front panel	187 mm x 90 mm x 6 mm	187 mm x 90 mm x 6 mm	187 mm x 90 mm x 6 mm	187 mm x 90 mm x 6 mm
Rear panel	154 mm x 77 mm x 55 mm	154 mm x 77 mm x 55 mm	154 mm x 77 mm x 55 mm	154 mm x 77 mm x 55 mm
Installation cut-out				
Width	156 mm	156 mm	156 mm	156 mm
Height	78 mm	78 mm	78 mm	78 mm
Minimum	2.5 mm	2.5 mm	2.5 mm	2.5 mm
Maximum front panel thickness	6 mm	6 mm	6 mm	6 mm
Weight	580 g	580 g	580 g	600 g
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
Storage temperature	-20 °C to 70 °C	-20 °C to 70 °C	-20 °C to 70 °C	-20 °C to 70 °C
Certifications				
UL508 certification	yes	yes	yes	yes

Connections, Interfaces

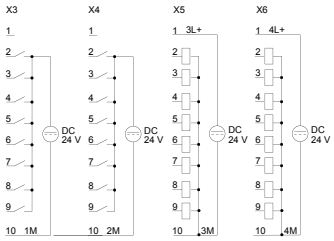
Lines displays | Commander compact						
603-1CC21 603-1CC22 603-1CC23 603-2CC21	603-2CC22 603-2CC23					

603-1CC21

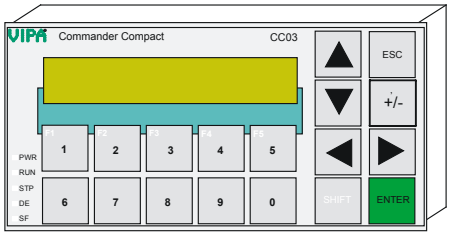


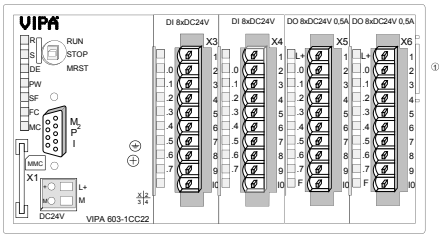


① 9-pin SubD connector, female (System bus extension)

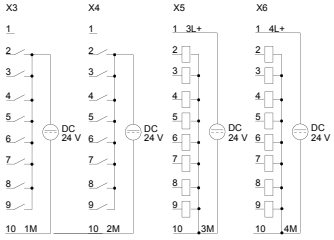


603-1CC22

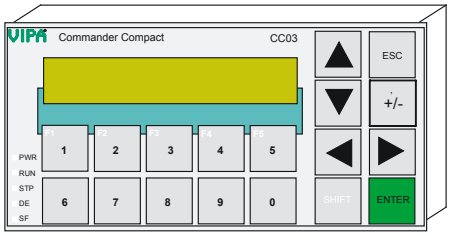


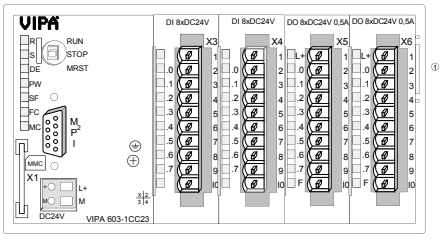


① 9-pin SubD connector, female (System bus extension)

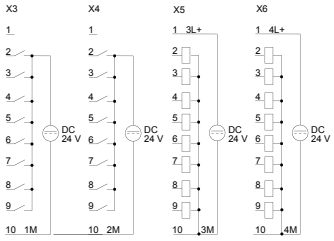


603-1CC23

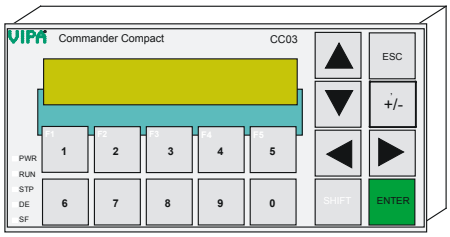


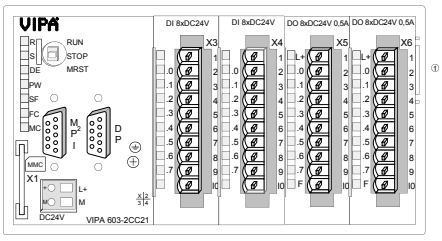


① 9-pin SubD connector, female (System bus extension)

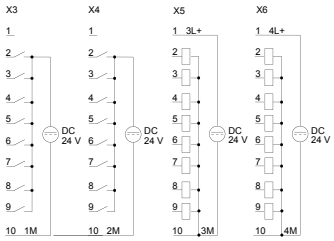


603-2CC21





① 9-pin SubD connector, female (System bus extension)



Commander compact

Lines displays | Commander compact						
603-1CC21 603-1CC22 603-1CC23 603-2CC21	603-2CC22 603-2CC23					

Order number	603-2CC22	603-2CC23		
Figure				
Type	CC 03DP, Commander Compact, PROFIBUS-DP slave	CC 03DP, Commander Compact, PROFIBUS-DP slave		
General information				
Note	-	-		
Features	› 2 x 20 characters › Integrated PLC-CPU, MP²I, PROFIBUS-DP slave › 16 x DI, 16 x DO › Up to 4 I/O expansion modules › 128 kB user memory, 4096 variables, 24/32kByte work/load memory › Languages: DE, EN, FR, ES, IT, SV, NO, DA › Project engineering via VIPA OP-Manager or Siemens ProTool	› 2 x 20 characters › Integrated PLC-CPU, MP²I, PROFIBUS-DP slave › 16 x DI, 16 x DO › Up to 4 I/O expansion modules › 128 kB user memory, 4096 variables, 32/40kByte work/load memory › Languages: DE, EN, FR, ES, IT, SV, NO, DA › Project engineering via VIPA OP-Manager or Siemens ProTool		
Display				
Number of rows	2	2		
Characters per row	20	20		
Character height	5 mm	5 mm		
Type of display	STN with LED backlighting	STN with LED backlighting		
OP functionality				
User memory	128 KB	128 KB		
Number of variables	4096	4096		
Language	DE/EN/FR/ES/IT/SV/NO/DA	DE/EN/FR/ES/IT/SV/NO/DA		
Operating controls				
Touchscreen	-	-		
Mouse	-	-		
Number of system keys	8	8		
Number of soft keys	5	5		
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V		
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V		
Reverse polarity protection	✓	✓		
Current consumption (no-load operation)	-	-		
Current consumption (rated value)	400 mA	400 mA		
Inrush current	60 A	60 A		
I^2t	0.35 A^2s	0.35 A^2s		

Lines displays | Commander compact						
603-1CC21 603-1CC22 603-1CC23 603-2CC21	603-2CC22 603-2CC23					

Order number	603-2CC22	603-2CC23		
Status information, alarms, diagnostics				
Status display	yes	yes		
Interrupts	no	no		
Process alarm	yes	yes		
Diagnostic interrupt	yes	yes		
Diagnostic functions	no	no		
Diagnostics information read-out	possible	possible		
Supply voltage display	green LED	green LED		
Group error display	red SF LED	red SF LED		
Channel error display	red LED per group	red LED per group		
Technical data digital inputs				
Number of inputs	16	16		
Cable length, shielded	1000 m	1000 m		
Cable length, unshielded	600 m	600 m		
Rated load voltage	DC 24 V	DC 24 V		
Reverse polarity protection of rated load voltage	✓	✓		
Rated value	DC 24 V	DC 24 V		
Input voltage for signal "0"	DC 0...5 V	DC 0...5 V		
Input voltage for signal "1"	DC 15...28.8 V	DC 15...28.8 V		
Input current for signal "1"	7 mA	7 mA		
Connection of Two-Wire-BEROs possible	✓	✓		
Max. permissible BERO quiescent current	1.5 mA	1.5 mA		
Input delay of "0" to "1"	3 ms	3 ms		
Input delay of "1" to "0"	3 ms	3 ms		
Input characteristic curve	IEC 61131, type 1	IEC 61131, type 1		
Initial data size	2 Byte	2 Byte		
Technical data digital outputs				
Number of outputs	16	16		
Cable length, shielded	1000 m	1000 m		
Cable length, unshielded	600 m	600 m		
Rated load voltage	DC 24 V	DC 24 V		
Reverse polarity protection of rated load voltage	-	-		
Current consumption from load voltage L+ (without load)	50 mA	50 mA		
Output voltage signal "1" at min. current	L+ (-0.8 V)	L+ (-0.8 V)		
Output voltage signal "1" at max. current	-	-		
Output current at signal "1", rated value	0.5 A	0.5 A		
Output delay of "0" to "1"	max. 100 µs	max. 100 µs		
Output delay of "1" to "0"	max. 350 µs	max. 350 µs		
Minimum load current	-	-		
Lamp load	5 W	5 W		
Switching frequency with resistive load	max. 1000 Hz	max. 1000 Hz		
Switching frequency with inductive load	max. 0.5 Hz	max. 0.5 Hz		
Switching frequency on lamp load	max. 10 Hz	max. 10 Hz		

Lines displays | Commander compact						
603-1CC21 603-1CC22 603-1CC23 603-2CC21	603-2CC22 603-2CC23					

Order number	603-2CC22	603-2CC23		
Internal limitation of inductive shut-off voltage	L+ (-52 V)	L+ (-52 V)		
Short-circuit protection of output	yes, electronic	yes, electronic		
Trigger level	1 A	1 A		
Output data size	2 Byte	2 Byte		
Isolation				
Insulation tested with	DC 500 V	DC 500 V		
Load and working memory				
Load memory, integrated	32 KB	40 KB		
Work memory, integrated	24 KB	32 KB		
Memory card slot	MMC-Card with max. 512 MB	MMC-Card with max. 512 MB		
Command processing times				
Bit instructions, min.	0.25 µs	0.25 µs		
Word instruction, min.	1.2 µs	1.2 µs		
Double integer arithmetic, min.	-	-		
Floating-point arithmetic, min.	-	-		
Timers/Counters and their retentive characteristics				
Number of S7 counters	256	256		
Number of S7 times	256	256		
Data range and retentive characteristic				
Number of flags	8192 Bit	8192 Bit		
Number of data blocks	2047	2047		
Max. data blocks size	16 KB	16 KB		
Max. local data size per execution level	1024 Byte	1024 Byte		
Blocks				
Number of OBs	14	14		
Number of FBs	1024	1024		
Number of FCs	1024	1024		
Maximum nesting depth per priority class	8	8		
Maximum nesting depth additional within an error OB	4	4		
Time				
Real-time clock buffered	✓	✓		
Clock buffered period (min.)	30 d	30 d		
Number of operating hours counter	8	8		
Synchronization in the PLC	no	no		
Synchronization via MPI	no	no		
Synchronization via DP master	no	no		
Synchronization via DP slave	no	no		
Synchronization via Ethernet (NTP)	no	no		
Address areas (I/O)				
Input I/O address area	1024 Bit	1024 Bit		
Output I/O address area	1024 Bit	1024 Bit		
Digital inputs	128	128		
Digital outputs	128	128		

Lines displays | Commander compact						
603-1CC21 603-1CC22 603-1CC23 603-2CC21	603-2CC22 603-2CC23					

Order number	603-2CC22	603-2CC23		
Integrated digital inputs	16	16		
Integrated digital outputs	16	16		
Communication functions				
PG/OP channel	✓	✓		
Global data communication	✓	✓		
Number of GD circuits, max.	4	4		
Size of GD packets, max.	22 Byte	22 Byte		
S7 basic communication	✓	✓		
S7 basic communication, user data per job	76 Byte	76 Byte		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
S7 communication, user data per job	160 Byte	160 Byte		
Number of connections, max.	16	16		
Functionality Sub-D interfaces				
Type	MP²I	MP²I		
Type of interface	RS485	RS485		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Electrically isolated	-	-		
MPI	✓	✓		
MP²I (MPI/RS232)	✓	✓		
DP master	-	-		
DP slave	-	-		
Point-to-point interface	-	-		
Type	DP	DP		
Type of interface	RS485	RS485		
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female		
Electrically isolated	✓	✓		
MPI	-	-		
MP²I (MPI/RS232)	-	-		
DP master	-	-		
DP slave	✓	✓		
Point-to-point interface	-	-		
CAN	-	-		
Functionality MPI				
Number of connections, max.	16	16		
PG/OP channel	✓	✓		
Routing	-	-		
Global data communication	✓	✓		
S7 basic communication	✓	✓		
S7 communication	✓	✓		
S7 communication as server	✓	✓		
S7 communication as client	-	-		
Transmission speed, min.	19.2 kbit/s	19.2 kbit/s		

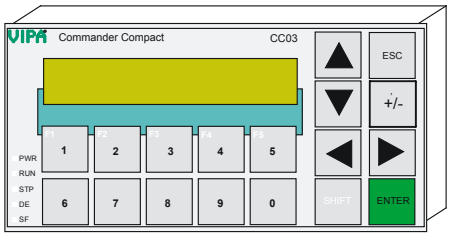
Lines displays | Commander compact						
603-1CC21 603-1CC22 603-1CC23 603-2CC21	603-2CC22 603-2CC23					

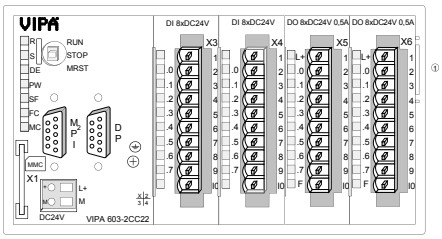
Order number	603-2CC22	603-2CC23		
Transmission speed, max.	187.5 kbit/s	187.5 kbit/s		
Functionality PROFIBUS slave				
PG/OP channel	-	-		
Routing	-	-		
S7 communication	-	-		
S7 communication as server	-	-		
S7 communication as client	-	-		
Direct data exchange (slave-to-slave communication)	-	-		
DPV1	-	-		
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s		
Transmission speed, max.	12 Mbit/s	12 Mbit/s		
Automatic detection of transmission speed	✓	✓		
Transfer memory inputs, max.	64 Byte	64 Byte		
Transfer memory outputs, max.	64 Byte	64 Byte		
Address areas, max.	-	-		
User data per address area, max.	-	-		
Mechanical data				
Housing / Protection type				
Material	die-cast aluminum	die-cast aluminum		
Mounting	via integrated pivoted lever	via integrated pivoted lever		
Protect type front side	IP 65	IP 65		
Protect type back side	IP 20	IP 20		
Dimensions				
Front panel	187 mm x 90 mm x 6 mm	187 mm x 90 mm x 6 mm		
Rear panel	154 mm x 77 mm x 55 mm	154 mm x 77 mm x 55 mm		
Installation cut-out				
Width	156 mm	156 mm		
Height	78 mm	78 mm		
Minimum	2.5 mm	2.5 mm		
Maximum front panel thickness	6 mm	6 mm		
Weight	600 g	600 g		
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C		
Storage temperature	-20 °C to 70 °C	-20 °C to 70 °C		
Certifications				
UL508 certification	yes	yes		

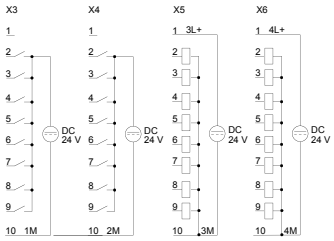
Connections, Interfaces

Lines displays | Commander compact						
603-1CC21 603-1CC22 603-1CC23 603-2CC21	603-2CC22 603-2CC23					

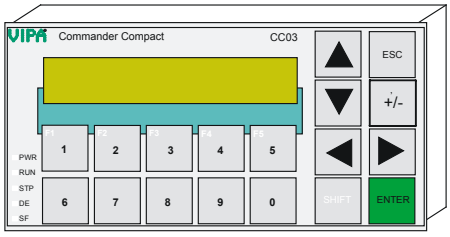
603-2CC22

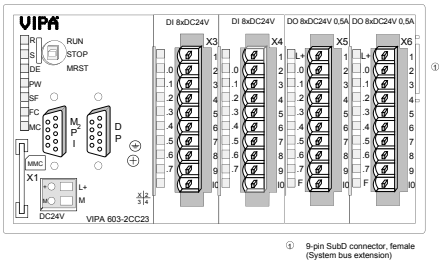


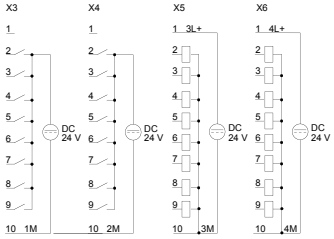




603-2CC23







professional Panels

Structure and Function

The VIPA Touch Panel family is suited for all applications in the factory, process and building automation. Due to the aluminum die-cast housing the VIPA Touch Panels are mechanically particularly robust. With the front-side IP65 protection, these devices also survive in harsh industrial environments.

The portfolio ranges from 5.7" TFT up to 12.1" TFT color display. The compact design allows the use of VIPA Touch Panels also in confined spaces. The panels can be operated either horizontally or vertically.

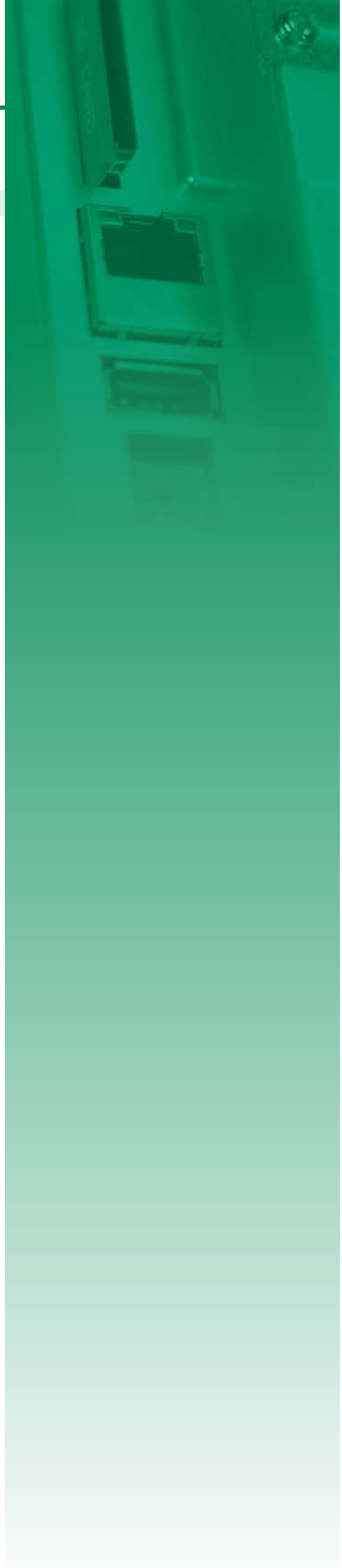
Features:

- Display size: 5,7” up to 12,1”
- Type of display: TFT color
- Processor: XScale 800 MHz
- Interfaces: RS232, RS485, RS422, MPI, PROFIBUS-DP slave, Ethernet RJ45, USB-A, USB-B (depending on type of panel)
- Memory: already integrated, also with SD, MMC and0 CF card expandable
- Including VIPA PLCTOOL: (allows upload/download of programms from VIPA- and STEP7 based controls, reading of the diagnosis buffer, as well as start and stop of the connected CPUs without using a programming unit)
- Including the operating system Windows Embedded CE 6.0 Professional and the visualization system Movicon

Visualization system Movicon:

- Editor for vector graphics with powerful and attractive library of charactars
- Extensive I/O driver library (import of variables from the PLC possible)
- Powerful alarm management
- Multilingual support
- Interference and operation data acquisition including evaluation possibility
- Archiving of process data with trend curves
- Extensive driver library
- Scalability of the project of basic systems to Movicon Scada platform
- Multilingual support
- Save and extensive user management
- Remote management for projecting and remote maintenance
- Remote access via standard VNC client possible
- Integrated Ethernet TCP/IP networking
- Integrated AWL logic (STEP5/STEP7)
- Also deployable in combination with many controllers of different manufacturers

Overview



Order no.	Name/Description	Page
professional Panels		
62F-FEE0	**Touch Panel TP 605CQ** › 5,7", TFT, 320x240 pixel › XScale processor, 800MHz › 128 MB work memory, 2.048 MB user memory › MPI/PROFIBUS-DP, RS232, RS422/485, USB-A, USB-B, Ethernet RJ45 › Windows Embedded CE 6.0 Professional, Movicon Runtime (62F-FEE0-CB) › Windows Embedded CE 6.0 Professional, without Movicon Runtime (62F-FEE0-CX)	**534**
62G-FEE0	**Touch Panel TP 606C** › 6,5", TFT, 640x480 pixel › XScale processor, 800MHz › 128 MB work memory, 2.048 MB user memory › MPI/PROFIBUS-DP, RS232, RS422/485, USB-A, USB-B, Ethernet RJ45 › Windows Embedded CE 6.0 Professional, Movicon Runtime (62G-FEE0-CB) › Windows Embedded CE 6.0 Professional, without Movicon Runtime (62G-FEE0-CX)	**534**
62I-IEE0	**Touch Panel TP 608C** › 8,4", TFT, 800x600 pixel › XScale processor, 800MHz › 128 MB work memory, 2.048 MB user memory › MPI/PROFIBUS-DP, RS232, RS422/485, USB-A, USB-B, 2x Ethernet RJ45 › Windows Embedded CE 6.0 Professional, Movicon Runtime (62I-IEE0-CB) › Windows Embedded CE 6.0 Professional, without Movicon Runtime (62I-IEE0-CX)	**534**
62K-JEE0	**Touch Panel TP 610C** › 10,4", TFT, 800x600 pixel › XScale processor, 800MHz › 128 MB work memory, 2.048 MB user memory › MPI/PROFIBUS-DP, RS232, RS422/485, USB-A, USB-B, 2x Ethernet RJ45 › Windows Embedded CE 6.0 Professional, Movicon Runtime (62K-JEE0-CB) › Windows Embedded CE 6.0 Professional, without Movicon Runtime (62K-JEE0-CX)	**534**
62M-JEE0	**Touch Panel TP 612C** › 12,1", TFT, 800x600 pixel › XScale processor, 800MHz › 128 MB work memory, 2.048 MB user memory › MPI/PROFIBUS-DP, RS232, RS422/485, USB-A, USB-B, 2x Ethernet RJ45 › Windows Embedded CE 6.0 Professional, Movicon Runtime (62M-JEE0-CB) › Windows Embedded CE 6.0 Professional, without Movicon Runtime (62M-JEE0-CX)	**538**

professional Panels

professional Panels | professional Panels						
62F-FEE0 62G-FEE0 62I-IEE0 62K-JEE0	62M-JEE0					

Order number	62F-FEE0	62G-FEE0	62I-IEE0	62K-JEE0
Figure				
Type	Touch Panel TP 605CQ	Touch Panel TP 606C	Touch Panel TP 608C	Touch Panel TP 610C
General information				
Note	-	-	-	-
Features	› 5,7", TFT, 320x240 pixel › XScale processor, 800MHz › 128 MB work memory, 2.048 MB user memory › MPI/PROFIBUS-DP, RS232, RS422/485, USB-A, USB-B, Ethernet RJ45 › Windows Embedded CE 6.0 Professional, Movicon Runtime (62F-FEE0-CB) › Windows Embedded CE 6.0 Profes-sional, without Movicon Runtime (62F-FEE0-CX)	› 6,5", TFT, 640x480 pixel › XScale processor, 800MHz › 128 MB work memory, 2.048 MB user memory › MPI/PROFIBUS-DP, RS232, RS422/485, USB-A, USB-B, Ethernet RJ45 › Windows Embedded CE 6.0 Professional, Movicon Runtime (62G-FEE0-CB) › Windows Embedded CE 6.0 Profes-sional, without Movicon Runtime (62G-FEE0-CX)	› 8,4", TFT, 800x600 pixel › XScale processor, 800MHz › 128 MB work memory, 2.048 MB user memory › MPI/PROFIBUS-DP, RS232, RS422/485, USB-A, USB-B, 2x Ethernet RJ45 › Windows Embedded CE 6.0 Professional, Movicon Runtime (62I-IEE0-CB) › Windows Embedded CE 6.0 Professional, without Movicon Runtime (62I-IEE0-CX)	› 10,4", TFT, 800x600 pixel › XScale processor, 800MHz › 128 MB work memory, 2.048 MB user memory › MPI/PROFIBUS-DP, RS232, RS422/485, USB-A, USB-B, 2x Ethernet RJ45 › Windows Embedded CE 6.0 Professional, Movicon Runtime (62K-JEE0-CB) › Windows Embedded CE 6.0 Profes-sional, without Movicon Runtime (62K-JEE0-CX)
Display				
Display size (diagonal)	5.7 "	6.5 "	8.4 "	10.4 "
Display size (width)	115.2 mm	132.5 mm	170.4 mm	211.2 mm
Display size (height)	86.4 mm	99.4 mm	127.8 mm	158.4 mm
Resolution	240 x 320 / 320 x 240	480 x 640 / 640 x 480	600 x 800 / 800 x 600	600 x 800 / 800 x 600
Type of display	TFT color (64K colors)	TFT color (64K colors)	TFT color (64K colors)	TFT color (64K colors)
MTBF Backlights (25°C)	50000 h	50000 h	50000 h	50000 h
System properties				
Processor	Xscale 800 MHz	Xscale 800 MHz	Xscale 800 MHz	Xscale 800 MHz
Operating system	Windows CE 6.0	Windows CE 6.0	Windows CE 6.0	Windows CE 6.0
Work memory	128 MB	128 MB	128 MB	128 MB
User memory	2 GB	2 GB	2 GB	2 GB
Avilable memory (user data)	1800 MB	1800 MB	1800 MB	1800 MB
SD/MMC Slot	✓	✓	✓	✓
CF Card Slot Typ II	✓	✓	✓	✓
Time				
Real-time clock buffered	✓	✓	✓	✓
Clock buffered period (min.)	6 W	6 W	6 W	6 W
Accuracy (max. deviation per day)	10 s	10 s	10 s	10 s
Operating controls				
Touchscreen	resistive	resistive	resistive	resistive
Keyboard	external via USB	external via USB	external via USB	external via USB
Mouse	external via USB	external via USB	external via USB	external via USB

professional Panels | professional Panels						
62F-FEE0 62G-FEE0 62I-IEE0 62K-JEE0	62M-JEE0					

Order number	62F-FEE0	62G-FEE0	62I-IEE0	62K-JEE0
Interfaces				
MPI, PROFIBUS-DP	RS485 isolated	RS485 isolated	RS485 isolated	RS485 isolated
MPI, PROFIBUS-DP connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
CAN	-	-	-	-
CAN connector	-	-	-	-
Serial, COM1	RS232	RS232	RS232	RS232
COM1 connector	Sub-D, 9-pin, male	Sub-D, 9-pin, male	Sub-D, 9-pin, male	Sub-D, 9-pin, male
Serial, COM2	RS422/485 isolated	RS422/485 isolated	RS422/485 isolated	RS422/485 isolated
COM2 connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female
Number of USB-A interfaces	1	1	1	2
USB-A connector	USB-A (host)	USB-A (host)	USB-A (host)	USB-A (host)
Number of USB-B interfaces	1	1	1	1
USB-B connector	USB-B (device)	USB-B (device)	USB-B (device)	USB-B (device)
Number of ethernet interfaces	1	1	2	2
Ethernet	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit	Ethernet 10/100 MBit
Ethernet connector	RJ45	RJ45	RJ45	RJ45
Integrated ethernet switch	-	-	✓	✓
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V	DC 20.4...28.8 V
Reverse polarity protection	✓	✓	✓	✓
Current consumption (no-load operation)	0.26 A	0.34 A	0.4 A	0.51 A
Current consumption (rated value)	0.45 A	0.5 A	0.6 A	0.7 A
Inrush current	6 A	6 A	7 A	7 A
I^2t	0.2 A^2s	0.2 A^2s	0.25 A^2s	0.25 A^2s
Power loss	6.2 W	8.2 W	9.6 W	12.2 W
Status information, alarms, diagnostics				
Supply voltage display	yes	yes	yes	yes
Mechanical data				
Housing / Protection type				
Material	die-cast aluminum	die-cast aluminum	die-cast aluminum	die-cast aluminum
Mounting	via integrated pivoted lever	via integrated pivoted lever	via integrated pivoted lever	via integrated pivoted lever
Protect type front side	IP 65	IP 65	IP 65	IP 65
Protect type back side	IP 20	IP 20	IP 20	IP 20
Dimensions				
Front panel	212 mm x 156 mm x 7.5 mm	212 mm x 156 mm x 7.5 mm	264 mm x 189 mm x 7.5 mm	304 mm x 233 mm x 7.5 mm
Rear panel	198 mm x 142 mm x 37 mm	198 mm x 142 mm x 37 mm	248 mm x 173 mm x 43 mm	285 mm x 215 mm x 45 mm
Installation cut-out				
Width	200 mm	200 mm	250 mm	287 mm
Height	144 mm	144 mm	175 mm	217 mm
Minimum	2.5 mm	2.5 mm	1.5 mm	1.5 mm
Maximum front panel thickness	6 mm	6 mm	6 mm	6 mm
Weight	1382 g	1614 g	2325 g	3251 g

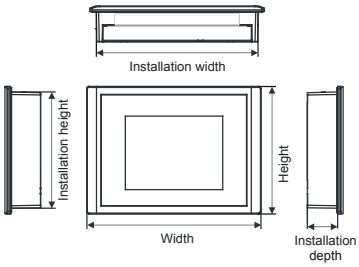
professional Panels | professional Panels						
62F-FEE0 62G-FEE0 62I-IEE0 62K-JEE0	62M-JEE0					

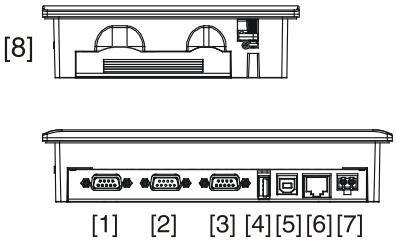
Order number	62F-FEE0	62G-FEE0	62I-IEE0	62K-JEE0
Environmental conditions				
Operating temperature	0 °C to 50 °C	0 °C to 50 °C	0 °C to 50 °C	0 °C to 50 °C
Storage temperature	-20 °C to 60 °C	-20 °C to 60 °C	-20 °C to 60 °C	-20 °C to 60 °C
Certifications				
UL508 certification	in preparation	in preparation	in preparation	in preparation

Connections, Interfaces

professional Panels | professional Panels						
62F-FEE0 62G-FEE0 62I-IEE0 62K-JEE0	62M-JEE0					

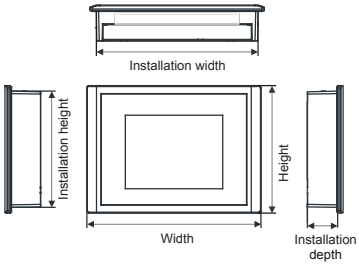
62F-FEE0

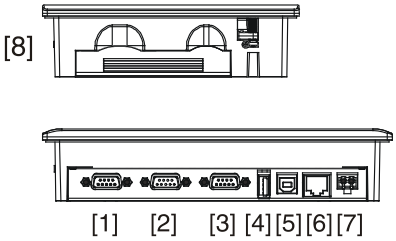




[1] RS422/485 interface COM 2
[2] RS232 interface COM 1
[3] MPI/PROFIBUS DP interface
[4] “Host" USB-A interface
[5] "Slave" USB-B interface
[6] RJ45 jack for Ethernet communication
[7] DC 24V power supply
[8] Slot for CF/SD/MMC storage medium

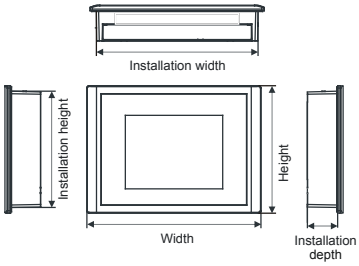
62G-FEE0

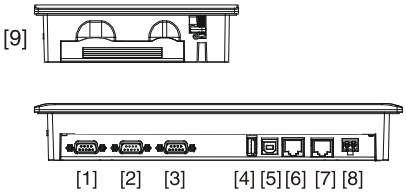




[1] RS422/485 interface COM 2
[2] RS232 interface COM 1
[3] MPI/PROFIBUS DP interface
[4] “Host" USB-A interface
[5] "Slave" USB-B interface
[6] RJ45 jack for Ethernet communication
[7] DC 24V power supply
[8] Slot for CF/SD/MMC storage medium

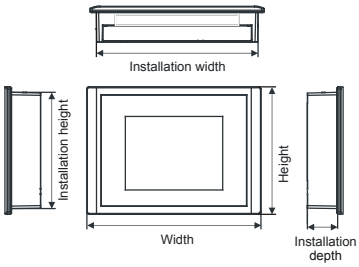
62I-IEE0

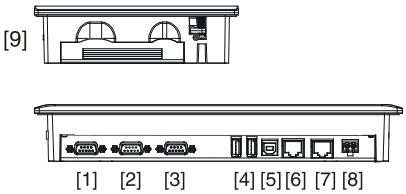




[1] RS422/485 interface COM 2
[2] RS232 interface COM 1
[3] MPI/PROFIBUS DP interface
[4] “Host" USB-A interface
[5] "Slave" USB-B interface
[6], [7] RJ45 jack for Ethernet communication (switch)
[8] DC 24V power supply
[9] Slot for CF/SD/MMC storage medium

62K-JEE0





[1] RS422/485 interface COM 2
[2] RS232 interface COM 1
[3] MPI/PROFIBUS DP interface
[4] 2x “Host" USB-A interfaces
[5] "Slave" USB-B interface
[6], [7] RJ45 jack for Ethernet communication (switch)
[8] DC 24V power supply
[9] Slot for CF/SD/MMC storage medium

professional Panels

professional Panels | professional Panels						
62F-FEE0 62G-FEE0 62I-IEE0 62K-JEE0	62M-JEE0					

Order number	62M-JEE0			
Figure				
Type	Touch Panel TP 612C			
General information				
Note	-			
Features	› 12,1", TFT, 800x600 pixel › XScale processor, 800MHz › 128 MB work memory, 2.048 MB user memory › MPI/PROFIBUS-DP, RS232, RS422/485, USB-A, USB-B, 2x Ethernet RJ45 › Windows Embedded CE 6.0 Professional, Movicon Runtime (62M-JEE0-CB) › Windows Embedded CE 6.0 Profes-sional, without Movicon Runtime (62M-JEE0-CX)			
Display				
Display size (diagonal)	12.1 "			
Display size (width)	246 mm			
Display size (height)	184.5 mm			
Resolution	600 x 800 / 800 x 600			
Type of display	TFT color (64K colors)			
MTBF Backlights (25°C)	50000 h			
System properties				
Processor	Xscale 800 MHz			
Operating system	Windows CE 6.0			
Work memory	128 MB			
User memory	2 GB			
Avilable memory (user data)	1800 MB			
SD/MMC Slot	✓			
CF Card Slot Typ II	✓			
Time				
Real-time clock buffered	✓			
Clock buffered period (min.)	6 W			
Accuracy (max. deviation per day)	10 s			
Operating controls				
Touchscreen	resistive			
Keyboard	external via USB			
Mouse	external via USB			

professional Panels | professional Panels						
62F-FEE0 62G-FEE0 62I-IEE0 62K-JEE0	62M-JEE0					

Order number	62M-JEE0			
Interfaces				
MPI, PROFIBUS-DP	RS485 isolated			
MPI, PROFIBUS-DP connector	Sub-D, 9-pin, female			
CAN	-			
CAN connector	-			
Serial, COM1	RS232			
COM1 connector	Sub-D, 9-pin, male			
Serial, COM2	RS422/485 isolated			
COM2 connector	Sub-D, 9-pin, female			
Number of USB-A interfaces	2			
USB-A connector	USB-A (host)			
Number of USB-B interfaces	1			
USB-B connector	USB-B (device)			
Number of ethernet interfaces	2			
Ethernet	Ethernet 10/100 MBit			
Ethernet connector	RJ45			
Integrated ethernet switch	✓			
Technical data power supply				
Power supply (rated value)	DC 24 V			
Power supply (permitted range)	DC 20.4...28.8 V			
Reverse polarity protection	✓			
Current consumption (no-load operation)	0.66 A			
Current consumption (rated value)	0.8 A			
Inrush current	7 A			
I^2t	0.25 A^2s			
Power loss	15.8 W			
Status information, alarms, diagnostics				
Supply voltage display	yes			
Mechanical data				
Housing / Protection type				
Material	die-cast aluminum			
Mounting	via integrated pivoted lever			
Protect type front side	IP 65			
Protect type back side	IP 20			
Dimensions				
Front panel	325 mm x 263 mm x 7.5 mm			
Rear panel	309 mm x 247 mm x 45 mm			
Installation cut-out				
Width	311 mm			
Height	249 mm			
Minimum	1.5 mm			
Maximum front panel thickness	6 mm			
Weight	3674 g			

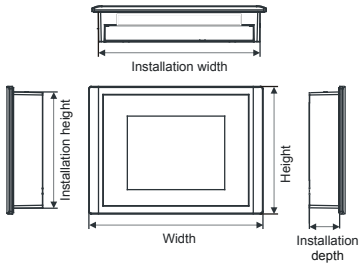
professional Panels | professional Panels						
62F-FEE0 62G-FEE0 62I-IEE0 62K-JEE0	62M-JEE0					

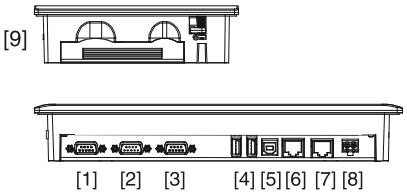
Order number	62M-JEE0			
Environmental conditions				
Operating temperature	0 °C to 50 °C			
Storage temperature	-20 °C to 60 °C			
Certifications				
UL508 certification	in preparation			

Connections, Interfaces

professional Panels | professional Panels						
62F-FEE0 62G-FEE0 62I-IEE0 62K-JEE0	62M-JEE0					

62M-JEE0

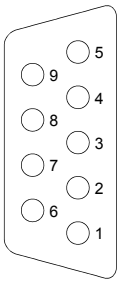




[1] RS422/485 interface COM 2
[2] RS232 interface COM 1
[3] MPI/PROFIBUS DP interface
[4] 2x “Host" USB-A interfaces
[5] "Slave" USB-B interface
[6], [7] RJ45 jack for Ethernet communication (switch)
[8] DC 24V power supply
[9] Slot for CF/SD/MMC storage medium

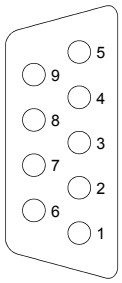
professional Panels

RS422/485



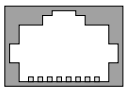
1. n.c.
2. n.c.
3. TxD
4. RxD
5. M5V
6. P5V
7. n.c.
8. TxD-
9. RxD-

MPI PROFIBUS DP



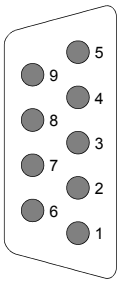
1. n.c.
2. M24V
3. RxD/TxD-P (line B)
4. RTS
5. M5V
6. P5V
7. P24V
8. RxD/TxD-N (line A)
9. n.c.

RJ45



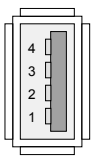
1. Tx+
2. Tx-
3. Rx+
4. -
5. -
6. Rx-
7. -
8. -

RS232



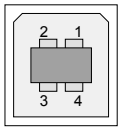
1. CD-
2. RxD
3. TxD
4. DTR
5. GND
6. DSR
7. RTS
8. CTS
9. RI

USB-A



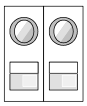
1. VCC
2. DM
3. DP
4. GND

USB-B



1. VCC
2. DM
3. DP
4. GND

DC 24V



- +

eco Panels

Structure and Function

The new ecoPanels enable completely new and attractive possibilities for mechanical and system engineers: efficient visualization at attractive prices: Manifold application possibilities. The ecoPanel series are not only distinguished by uncompromising reliability and performance, but impressive by an unsurpassed price-performance ratio. Of course, we also paid attention to durability and quality of the products. This is achieved amongst others by a special construction, which enables a fanless and disc free operation. This means there are no moving parts inside the unit.
The VIPA ecoPanels in combination with Movicon Basic (full-valued + unlimited Basic license) offers incomparable advantages. The software concentrates the powerful Movicon technology in a simplified form into an extremely user friendly editing environment. This enables a high scalability and a considerable increase in performance for every project.

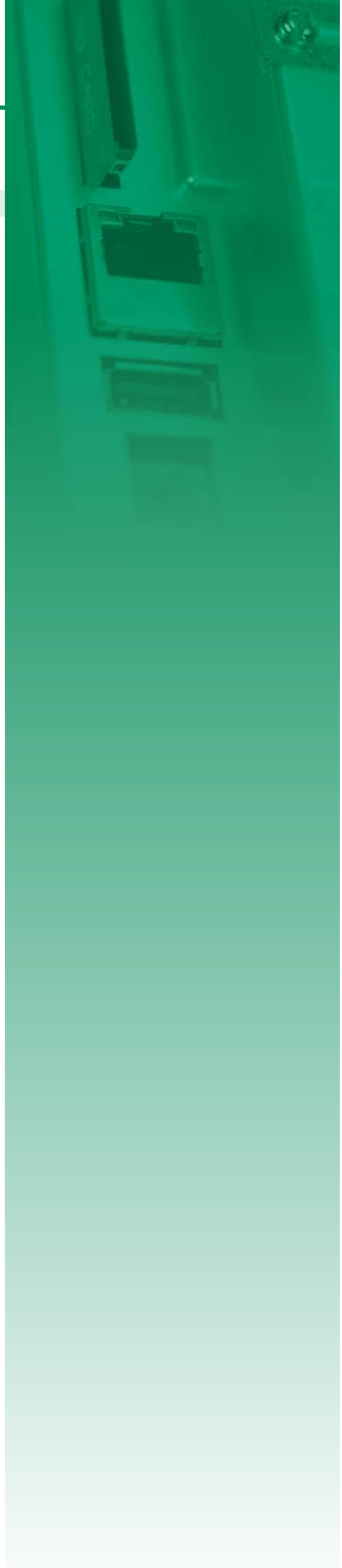
Characteristics

- Display size: 4,3” und 7”
- Type of display: TFT Color
- Processor: ARM11 533MHz+
- Interfaces: RS232, RS485, RS422, MPI, PROFIBUS-DP slave, Ethernet RJ45, USB-A, USB-B (depending on type of panel)
- Memory: already integrated, also with SD, MMC and0 CF card expandable
- Including VIPA PLCTOOL: (allows upload/download of programms from VIPA- and Step7 based controls, reading of the diagnosis buffer, as well as start and stop of the connected CPUs without using a programming unit)
- Including of the operating system Windows Embedded CE 6.0 Core and visualization system Movicon BASIC

Visualization system Movicon:

- Editor for vector graphics with powerful and attractive library of charactars
- Extensive I/O driver library (import of variables from the PLC possible)
- Powerful alarm management
- Multilingual support
- Interference and operation data acquisition including evaluation possibility
- Archiving of process data with trend curves
- Extensive driver library
- Scalability of the project of basic systems to Movicon Scada platform
- Save and extensive user management
- Remote management for projecting and remote maintenance
- Remote access via standard VNC client possible
- Integrated Ethernet TCP/IP networking and AWL logic (STEP5/STEP7)
- Also deployable in combination with many controllers of different manufacturers

Overview



Order no.	Name/Description	Page
eco Panels		
62E-MDC0	**Touch Panel TP 604LC** › 4,3", TFT, 480x272 Pixel › ARM11 processor, 533MHz › 128 MB work memory, 128 MB user memory › RS232, RS422/485, USB-A, Ethernet RJ45 (MPI/DP interface optional available) › Windows Embedded CE 6.0 Core, Movicon Basic Runtime (62E-MDC0-DH)	**544**
62H-MDC0	**Touch Panel TP 607LC** › 7", TFT, 800x480 pixel › ARM11 processor, 533MHz › 128 MB work memory, 128 MB user memory › RS232, RS422/485, USB-A, Ethernet RJ45 (MPI/DP interface optional available) › Windows Embedded CE 6.0 Core, Movicon Basic Runtime (62H-MDC0-DH)	**544**
Optional interfaces		
961-0MP0	**MPI/PROFIBUS-DP-Interface** › For optional retrofitting of the MPI/DP interfaces at eco Panels-series	**547**

eco Panels

eco Panels | eco Panels						
62E-MDC0 62H-MDC0						

Order number	62E-MDC0	62H-MDC0		
Figure				
Type	Touch Panel TP 604LC	Touch Panel TP 607LC		
General information				
Note	-	-		
Features	› 4,3", TFT, 480x272 Pixel › ARM11 processor, 533MHz › 128 MB work memory, 128 MB user memory › RS232, RS422/485, USB-A, Ethernet RJ45 (MPI/DP interface optional available) › Windows Embedded CE 6.0 Core, Movicon Basic Runtime (62E-MDC0-DH)	› 7", TFT, 800x480 pixel › ARM11 processor, 533MHz › 128 MB work memory, 128 MB user memory › RS232, RS422/485, USB-A, Ethernet RJ45 (MPI/DP interface optional available) › Windows Embedded CE 6.0 Core, Movicon Basic Runtime (62H-MDC0-DH)		
Display				
Display size (diagonal)	4.3 "	7 "		
Display size (width)	95 mm	152 mm		
Display size (height)	54 mm	91 mm		
Resolution	272 x 480 / 480 x 272	480 x 800 / 800 x 480		
Type of display	TFT color (64K colors)	TFT color (64K colors)		
MTBF Backlights (25°C)	30000 h	50000 h		
System properties				
Processor	ARM11 533 MHz	ARM11 533 MHz		
Operating system	Windows CE 6.0	Windows CE 6.0		
Work memory	128 MB	128 MB		
User memory	128 MB	128 MB		
Avilable memory (user data)	50 MB	50 MB		
SD/MMC Slot	✓	✓		
CF Card Slot Typ II	-	-		
Time				
Real-time clock buffered	✓	✓		
Clock buffered period (min.)	26 W	26 W		
Accuracy (max. deviation per day)	2 s	2 s		
Operating controls				
Touchscreen	resistive	resistive		
Keyboard	external via USB	external via USB		
Mouse	external via USB	external via USB		
Interfaces				
MPI, PROFIBUS-DP	optional	optional		
MPI, PROFIBUS-DP connector	-	-		
CAN	-	-		

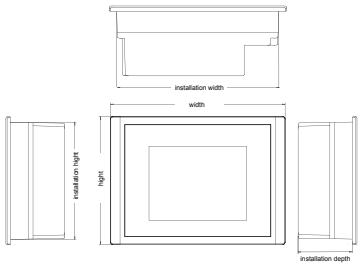
eco Panels | eco Panels						
62E-MDC0 62H-MDC0						

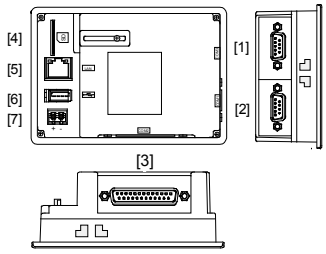
Order number	62E-MDC0	62H-MDC0		
CAN connector	-	-		
Serial, COM1	RS232	RS232		
COM1 connector	Sub-D, 9-pin, male	Sub-D, 9-pin, male		
Serial, COM2	RS232 / RS422 / RS485	RS232 / RS422 / RS485		
COM2 connector	Sub-D, 25-pin, female	Sub-D, 25-pin, female		
Number of USB-A interfaces	1	1		
USB-A connector	USB-A (host)	USB-A (host)		
Number of USB-B interfaces	-	-		
USB-B connector	-	-		
Number of ethernet interfaces	1	1		
Ethernet	Ethernet 10/100 MBit	Ethernet 10/100 MBit		
Ethernet connector	RJ45	RJ45		
Integrated ethernet switch	-	-		
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V		
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V		
Reverse polarity protection	✓	✓		
Current consumption (no-load operation)	0.16 A	0.24 A		
Current consumption (rated value)	0.3 A	0.4 A		
Inrush current	75 A	85 A		
I^2t	0.36 A^2s	0.43 A^2s		
Power loss	6 W	8 W		
Status information, alarms, diagnostics				
Supply voltage display	none	none		
Mechanical data				
Housing / Protection type				
Material	PC	PC		
Mounting	mounting clips	mounting clips		
Protect type front side	IP 65	IP 65		
Protect type back side	IP 20	IP 20		
Dimensions				
Front panel	140 mm x 116 mm x 6 mm	212 mm x 156 mm x 6 mm		
Rear panel	122 mm x 98 mm x 51 mm	196 mm x 140 mm x 51 mm		
Installation cut-out				
Width	123 mm	198 mm		
Height	99 mm	142 mm		
Minimum	2.5 mm	2.5 mm		
Maximum front panel thickness	6 mm	6 mm		
Weight	500 g	1200 g		
Environmental conditions				
Operating temperature	0 °C to 50 °C	0 °C to 50 °C		
Storage temperature	-20 °C to 60 °C	-20 °C to 60 °C		
Certifications				
UL508 certification	yes	yes		

Connections, Interfaces

eco Panels | eco Panels						
62E-MDC0 62H-MDC0						

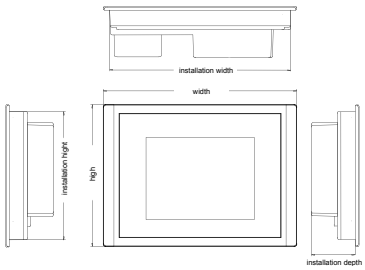
62E-MDC0

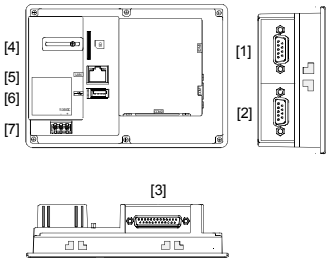




[1] PROFIBUS interface COM 3 (optional)
[2] RS232 interface COM 1
[3] RS232/RS422/RS485 interface COM 2
[4] Slot for SD/MMC storage medium
[5] RJ45 jack for Ethernet communication
[6] "Host"-USB-A interface
[7] Slot for DC 24V voltage supply

62H-MDC0





[1] MPI/PROFIBUS interface COM 3 (optional)
[2] RS232 interface COM 1
[3] RS232/RS422/RS485 interface COM 2
[4] Slot for SD/MMC storage medium
[5] RJ45 jack for Ethernet communication
[6] "Host"-USB-A interface
[7] Slot for DC 24V voltage supply

Optional interfaces

eco Panels | Optional interfaces						
961-0MP0						

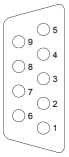
Order number	961-0MP0			
Figure				
Type	-			
General information				
Note	-			
Features	› For optional retro-fitting of the MPI/ DP interfaces at eco Panels-series			

Connections, Interfaces

eco Panels | Optional interfaces						
961-0MP0						

961-0MP0

RS485

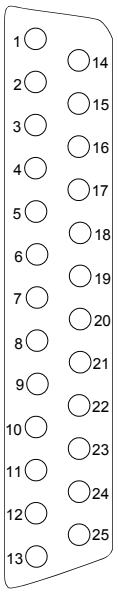


① n.c.
② M24V
③ RxD/TxD-P (line B)
④ RTS
⑤ M5V
⑥ P5V
⑦ P24V
⑧ RxD/TxD-N (line A)
⑨ n.c.

Interface description

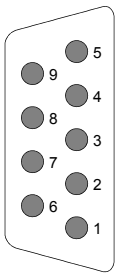
eco Panels

RS232/
RS422/
RS485



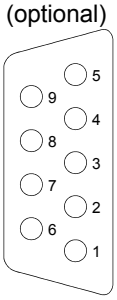
1. shield
2. TxD
3. RxD
4. RTS
5. CTS
6. DSR
7. GND
8. DCD
9. n.c.
10. n.c.
11. n.c.
12. TxD(A)
13. TxD(B)
14. RTS(A)
15. RTS(B)
16. n.c.
17. n.c.
18. CTS(A)
19. CTS(B)
20. DTR
21. 5V+
22. RI
23. n.c.
24. RxD(A)
25. RxD(B)

RS232



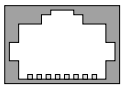
1. CD-
2. RxD
3. TxD
4. DTR
5. GND
6. DSR
7. RTS
8. CTS
9. RI

MPI
PROFIBUS DP
(optional)



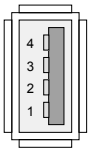
1. n.c.
2. M24V
3. RxD/TxD-P (line B)
4. RTS
5. M5V
6. P5V
7. P24V
8. RxD/TxD-N (line A)
9. n.c.

RJ45



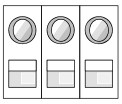
1. Tx+
2. Tx-
3. Rx+
4. n.c.
5. n.c.
6. Rx-
7. n.c.
8. n.c.

USB-A

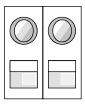


1. VCC
2. DM
3. DP
4. GND

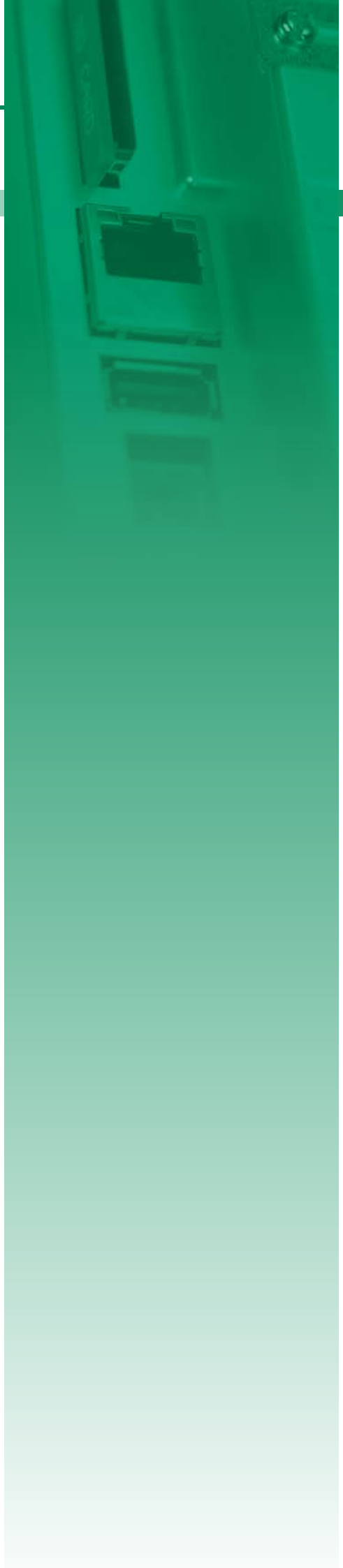
DC 24V



DC 24V



HMI software



Structure and Function

The touch panel software and tools extend the capabilities of both the operating system as well as the visualization of Movicon and thus also the application possibilities of the touch panel.

Operating System

The VIPA Touch Panels are supplied together with the operating system Windows embedded CE 6.0. These worldwide-distributed operating systems guarantee a high degree of availability, flexibility and expandability.

Movicon-Runtime

The runtime version of Movicon provides VBA support, include a graphic interface, an extensive symbol and driver library as well as an automatic reconnect and data synchronization. In addition, various function libraries are available, such as the integration of intelligent peripherals and communication modules.

The use of the preinstalled runtime version of Movicon facilitate the immediate release of visualization projects.

Movicon-Editors

Movicon is a HMI/SCADA platforms with an open and flexible architecture for industrial automation, which allows the user vertical applications for visualization, data acquisition, logging as well as maintenance quickly and easily. Movicon with its graphically-intuitive interface and many integrated tools is easy to use for the operator.

Characteristics

- Java™ support
- Upgrade option to newer runtime versions
- Expansion of the existing run-time functionality
- Web server support
- Enlargement of the trend and archive server function

HMI software - Editors

Movicon®

Order number	Type	Description	Note
SW614E1MB	Movicon11.2 Editor	Movicon11.2 Editor for Windows CE projects, incl. USB dongle	
SW614E1MAUB	MoviconX Editor	Upgrade to Movicon 11.2	

Operating system and tools

Microsoft® Windows CE

Order number	Type	Description	Note
SW410O1EA	PLC-Tool CE	Load-, test-, diagnosis tool for Windows CE, S7 communication via MPI, PROFIBUS-DP and Ethernet	
SW419O3EA	Java (TM) VM	for Windows CE; the software is pre-installed on the Touch Panels	

HMI accessories

Structure and Function

System accessories enable and expand the use of the system and facilitate starting.

Memory Expansion

Standard Memory Type Compact Flash (CF) or Secure Disk (SD) can be used to expand the internal memory.

Cables

Accessories, such as USB and Ethernet programming cables, OP/AG cables with diagnostic connector or peripheral extension cables, as well as an extensive number of different protective films, support the versatile use of the systems.

Manuals

The technical documentation of the respective modules encompasses various manuals with the necessary hardware and programming information, detailed descriptions of each module, and instructions for structure and assembly.

Memory modules for Touch Panels

Order number	Type	Description	Note
574-2AH00	Compact Flash (CF) 1GByte	for VIPA professional Panels	
574-2AI00	Compact Flash (CF) 2GByte	for VIPA professional Panels	
953-1SH00	Secure Disc (SD) 1GByte	for VIPA eco and professional Panels	
953-1SI00	Secure Disc (SD) 2GByte	for VIPA eco and professional Panels	

Protective foil

Order number	Type	Description	Note
574-1AD01	Protective foil TP605	for professional Panels 5.7", 10 pieces	
574-1AE01	Protective foil TP606	for professional Panels 6.5", 10 pieces	
574-1AF01	Protective foil TP608	for professional Panels 8.4", 10 pieces	
574-1AG01	Protective foil TP610	for professional Panels 10.4", 10 pieces	
574-1AH10	Protective foil TP612	for professional Panels 12.1", 10 pieces	

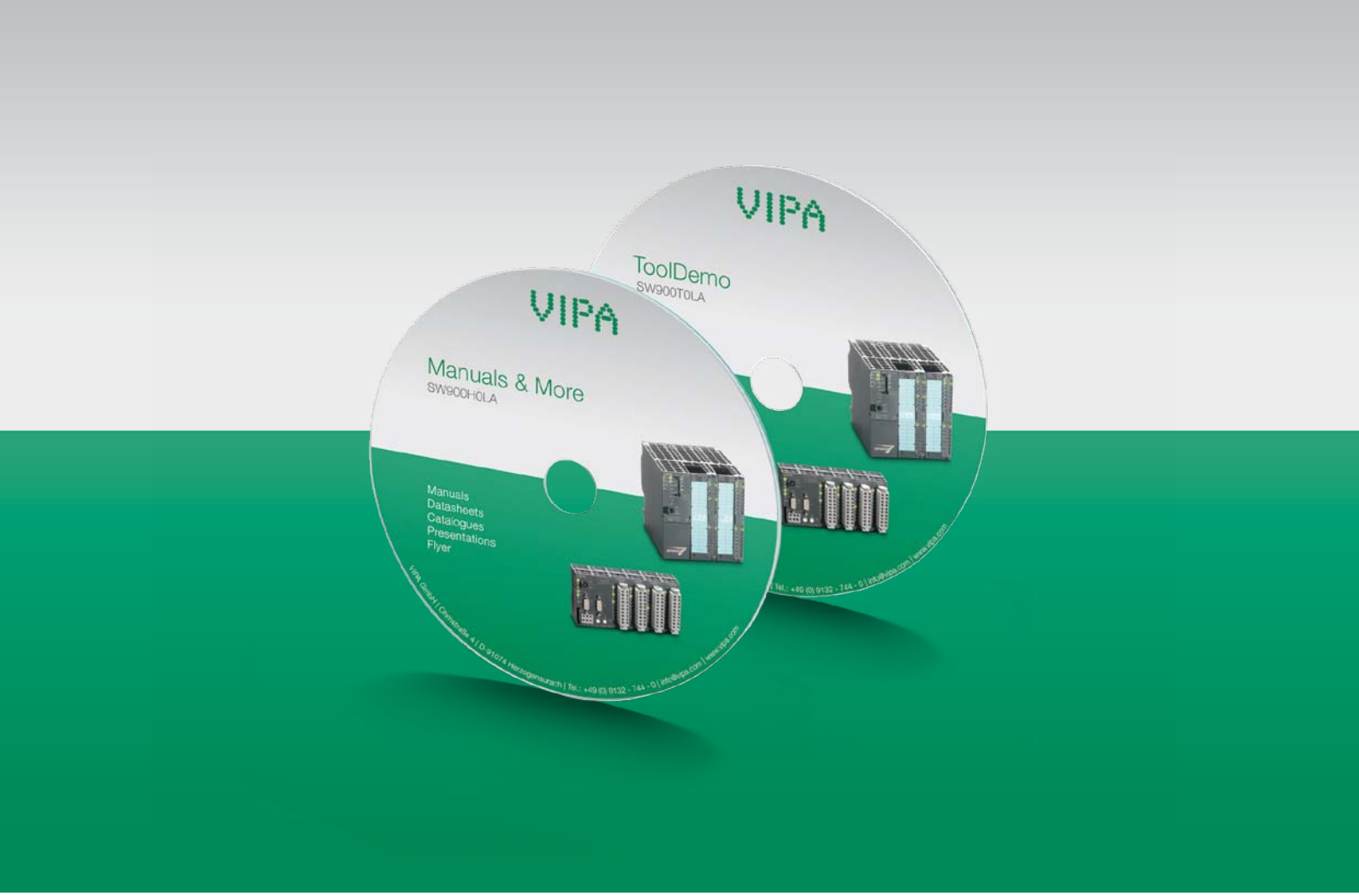
Cables

Order number	Type	Description	Note
670-0KB20	Ethernet programming cable	for Touch Panels with Movicon 3.0 m	
670-0KB00	OP/AG cable 0°/90° with PU/Diagnostic port	for VIPA CC 03, OP 03, TD 03	
670-0KB01	OP/AG cable 90°/90° with PU/Diagnostic port	PU-/Diagnostic port, 2.5 m	
660-0KB00	Periphery expansion cable CC 03	for up to 4 expansion modules EM 123 or Sytem 200V modules, 0.5 m	
670-0KB10	USB programming cable	for Touch Panels with Movicon, 3.0 m	
950-0KB50	PC/AG programming cable	MPI cable with PU-/Diagnostic port, 2.5 m; use as PC/AG or TP/AG	

Manuals and operating instructions

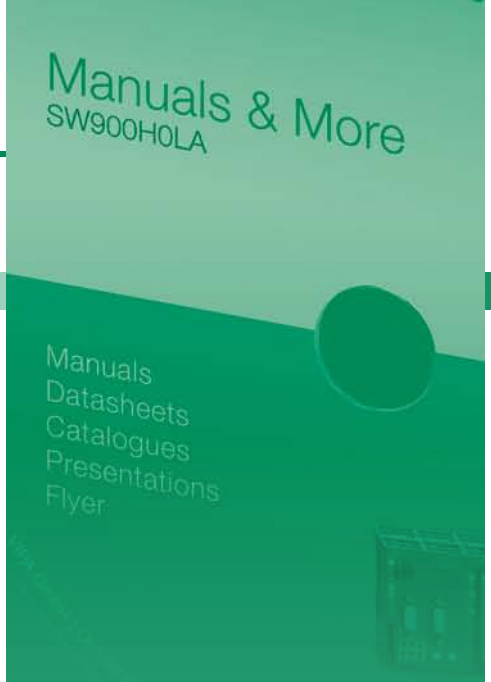
Order number	Title	Contents	Language
HB116D	Manual Lines displays, German	HB116D_CC incl. operations list, HB116D_OP, HB116D_TD	DE
HB116E	Manual Lines displays, English	HB116E_CC incl. operations list, HB116E_OP, HB116E_TD	EN
HB116D_CC03	Manual Lines displays - CC 03	Commander Compact CC 03, incl. operations list	DE
HB116E_CC03	Manual Lines displays - CC 03	Commander Compact CC 03, incl. operations list	EN
HB116D_OP03	Manual Lines displays - OP 03	Operator Panel OP 03	DE
HB116E_OP03	Manual Lines displays - OP 03	Operator Panel OP 03	EN
HB116D_TD03	Manual Lines displays - TD 03	Text Display TD 03	DE
HB116E_TD03	Manual Lines displays - TD 03	Text Display TD 03	EN
HB160D_TP_X8	Manual Touch Panel, German	Manual Touch Panel, xScale 800 MHz - Compendium, German	DE
HB160E_TP_X8	Manual Touch Panel, English	Manual Touch Panel, xScale 800 MHz - Compendium, English	EN
HB160D_TP-ECO	Manual Touch Panel, German	Manual Touch Panel, ARM11 533MHz - Compendium, German	DE
HB160E_TP-ECO	Manual Touch Panel, English	Manual Touch Panel, xScale 520 MHz - Compendium, English	EN

At a glance


VIPA
ToolDemo
SW900T0LA
VIPA
Manuals & More
SW900H0LA
Manuals
Datasheets
Catalogues
Presentations
Flyer

Software

Software



Structure and Function

Software tools allow a comfortable programming and parameterization of VIPA systems and other automation concepts. These software tools are included on the tool demo CD (SW900T0LA) as activatable full versions.

OPC-Server

The OPC-Server provides the standard interface for accessing data from OPC clients to PLC systems from different manufacturers. The OPC-Server supports TCP/IP networks via standard network cards as well as MPI networks that have one or more COM ports, an MPI-serial converter and/or are connected via VIPA MPI-USB adapter.

Programming Software

WinPLC7 is a programming system for Systems 100V up to 500S as well as for the Siemens controllers S7-300 and S7-400.

Parameterization Software

Different parameterization tools are available to users:

TD-Wizard: Parameterization tool for VIPA TD 03

WinNCS: PROFIBUS-DP and Ethernet- parameterization/configuration by VIPA controllers and communication processors

WinCoCT: Configuration of CANopen networks with VIPA System

OP-Manager: Parameterization tool for VIPA OP 03 and CC 03

Other Software and Tools:

- WinPLC Analyzer for PLC user programs
- WinLP - Labeling software for VIPA System 200V
- EPLAN macros - technical information and drawings to the VIPA systems 100V, 200V, 300S and HMI
- Handling blocks - Libraries for VIPA systems and components
- Demo projects - configurations for VIPA System 200V and 300S
- GSD/EDS files - configuration files for PROFIBUS-DP and CANopen
- How-to-do - initial operation information

Communication software

Order number	Type	Description	Note
SW110A1LA	OPC server MPI driver	Single licence, part of the ToolDemo CD SW900T0LA	
SW110A2LA	OPC server RFC1006 driver	Single licence, part of the ToolDemo CD SW900T0LA	
SW110A3LA	OPC server TCP/IP driver (read/write)	Single licence, part of the ToolDemo CD SW900T0LA	

Programming software

Order number	Type	Description	Note
SW211C1DD	WinPLC7 - Single licence, CD, German, Tool for STEP7 from Siemens	Programming-, test-, diagnosis- and simulation software for VIPA Systems and S7-300 from Siemens, STL-, LAD- and FBD programming	
SW211C1ED	WinPLC7 - Single licence, CD, English, Tool for STEP7 from Siemens	Programming-, test-, diagnosis- and simulation software for VIPA Systems and S7-300 from Siemens, STL-, LAD- and FBD programming	
SW211D1DD	WinPLC7 - Single licence, CD + Dongle, German, Tool for STEP7 from Siemens	Programming-, test-, diagnosis- and simulation software for VIPA Systems and S7-300 from Siemens, STL-, LAD- and FBD programming, Download version: http://www.winplc7.com/v5/vipa-download.htm	
SW211D1ED	WinPLC7 - Single licence, CD + Dongle, English, Tool for STEP7 from Siemens	Programming-, test-, diagnosis- and simulation software for VIPA Systems and S7-300 from Siemens, STL-, LAD- and FBD programming, Download version: http://www.winplc7.com/v5/vipa-download.htm	
SW211K1OD	WinPLC7 - Single licence, Key, Tool for STEP7 from Siemens	Programming-, test-, diagnosis- and simulation software for VIPA Systems and S7-300 from Siemens, STL-, LAD- and FBD programming, Download-Version: http://www.winplc7.com/v5/vipa-download.htm	
SW211K2OD	WinPLC7lite - Single licence	Licensable with System 100V CPUs, included on SW900T0LA ToolDemo CD, registration via Internet possible	

Parameterization software

Order number	Type	Description	Note
SW300O1LA	OP-Manager	Single licence, parameterization tool for OP 03	
SW300T1EA	TD-Wizard	Parameterization tool for TD 03 (included on Tool Demo CD SW-900T0LA)	
SW300C1EA	WinCoCT	Single licence, CANopen configurationc tool	
SW300P1LA	WinNCS parameterization software	Universal parameterization and configuration tool, components engineering, Ethernet protocols, TCP/IP, SINEC H1, IPK, RFC1006 - PROFIBUS-DP (2BF), included on Tool Demo CD SW900T0LA	

Analysis tool

Order number	Type	Description	Note
SW711A1LA	WinPLC-Analyzer	Single licence, CD + dongle, German/English, for VIPA Systems and S7-300/400 from Siemens (in combination with WinPLC7), incl. driver	
SW711A2LA	WinPLC-Analyzer	Single licence, CD + dongle, German/English, for VIPA Systems and S7-300/400 from Siemens, incl. driver	
SW900T0LA	ToolDemo-CD, complete VIPA software collection	Demo versions/registration possible, WinPLC7, Movicon11 Editor, OP manager, TD wizard, OPC server, WinCoCT, WinNCS, GSD-/EDS files, handling blocks, drivers, How-to-do's	

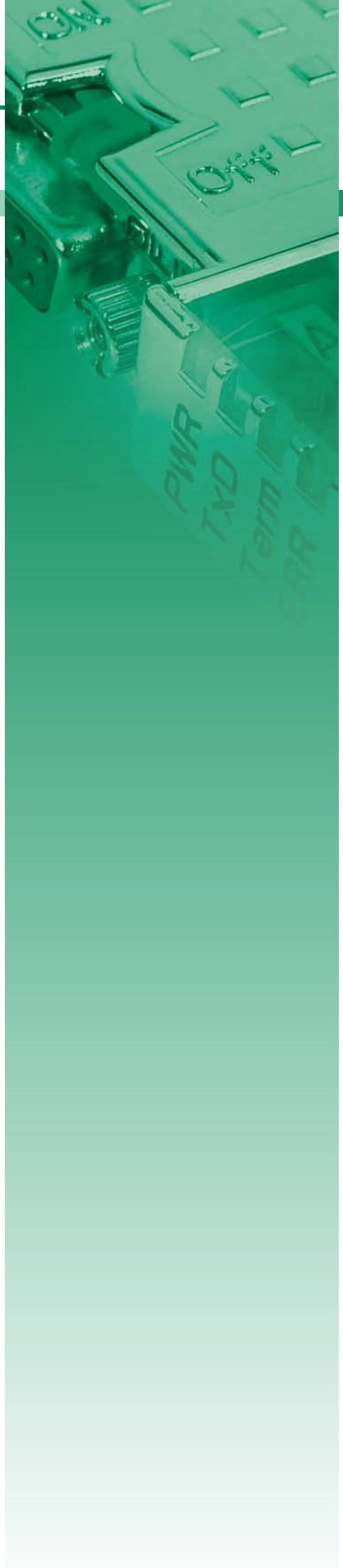
Manuals and operating instructions

Order number	Title	Contents	Language
S7-CRASHKURS-EX	STEP®7-Crashkurs Extended Edition, german/englisch	Practical introduction into PLC programming with simulation software WinPLC. Targeted at users looking for introduction into PLC programming software STEP®7 and practical experience at the same time.	DE/EN
HB45D	Manual OPC-Server, German	Installations and operating manual OPC server	DE
HB45E	Manual OPC-Server, English	Installations and operating manual OPC server	EN
HB91D	Manual WinNCS, German	Installations and operating manual WinNCS	DE
HB91E	Manual WinNCS, English	Installations and operating manual WinNCS	EN
SW900H0LA	Manuals-/Catalog-DVD	Complete documentation on DVD	DE/EN

At a glance

Accessories

Accessories



Structure and Function

The accessories expand the functionality and the application range of the control of VIPA systems of other manufacturers. The accessories are useable across systems and are largely manufacturer independent.

Interface modules

The IM 306 modules, or PROFIBUS-DP slave interface cards for the SIMATIC S5, enable simple, economical and safe upgrading to newer control systems with PROFIBUS-DP master interfaces, while maintaining the Siemens SIMATIC S5 peripherals.

Teleservice modules

The Teleservice modules from VIPA are completely configurable via a web browser. You do not need any additional software.

Teleservice modules allow the collection of data from your machines and plant and send them automatically via e-mail to defined recipients. With these records, the overview of the machine and plant status is fully guaranteed.

The deployed VPN technology allows secure and encrypted connection between a PC and the devices connected to the Teleservice modules.

Cables and DP connectors

Accessories, such as programming and PROFIBUS cables in various lengths, PROFIBUS-DP connectors with integrated intelligence and LED diagnostic display, a comprehensive set of adapters, rails, and connectors support the versatile use of the systems.

The bus connector EasyConn PB is used for connection of PROFIBUS participants in the bus line. The diagnostic LEDs, visible from all sides, facilitate starting considerably. The status of bus activity, the final resistance, the power supply and bus status are directly visible. The integrated controller supports data rates up to 12 Mbit/s.

S5 components


Order number	306-1LE00	306-1UE00	306-1UZ00	
Figure				
Type	IM 306 DP slave 115U	IM 306 DP slave 135U/155U	IM 306 DP slave 135U/155U	
General information				
Note	-	-	-	
Features	› Converting Siemens S5 PLCs to S7 › Exclusively suited for AG-115U central controller and expansion units › Intagrated DC 24V power supply	› Converting Siemens S5 PLCs to S7 › Exclusively suited for AG-135U/155U central controller and expansion units › Integrated DC 24V power supply	› Converting Siemens S5 systems to S7 › Exclusively suited for AG-135U/155U central controller	
Technical data power supply				
Power supply (rated value)	DC 24 V	DC 24 V	DC 5 V	
Power supply (permitted range)	DC 20.4...28.8 V	DC 20.4...28.8 V	-	
Reverse polarity protection	✓	✓	-	
Current consumption (no-load operation)	0.1 A	0.1 A	0.4 A	
Current consumption (rated value)	1 A	1 A	0.4 A	
Inrush current	4 A	4 A	-	
I^2t	0.5 A^2s	0.5 A^2s	-	
Max. current drain at backplane bus	3.5 A	3.5 A	-	
Max. current drain load supply	-	-	-	
Power loss	4 W	4 W	2 W	
Status information, alarms, diagnostics				
Status display	yes	yes	yes	
Interrupts	yes, parameterizable	yes, parameterizable	yes, parameterizable	
Process alarm	no	no	yes, parameterizable	
Diagnostic interrupt	yes, parameterizable	yes, parameterizable	yes, parameterizable	
Diagnostic functions	yes, parameterizable	yes, parameterizable	yes, parameterizable	
Diagnostics information read-out	possible	possible	possible	
Supply voltage display	green LED	green LED	green LED	
Service Indicator	-	-	-	
Group error display	red LED	red LED	red LED	
Channel error display	none	none	none	
Hardware configuration				
Racks, max.	1	1	1	
Modules per rack, max.	9	18	18	
Number of digital modules, max.	9	18	18	

Order number	306-1LE00	306-1UE00	306-1UZ00	
Number of analog modules, max.	9	18	18	
Communication				
Fieldbus	PROFIBUS-DP to EN 50170	PROFIBUS-DP to EN 50170	PROFIBUS-DP to EN 50170	
Type of interface	RS485 isolated	RS485 isolated	RS485 isolated	
Connector	Sub-D, 9-pin, female	Sub-D, 9-pin, female	Sub-D, 9-pin, female	
Topology	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends	Linear bus with bus termination at both ends	
Electrically isolated	✓	✓	✓	
Number of participants, max.	125	125	125	
Node addresses	1 - 125	1 - 125	1 - 125	
Transmission speed, min.	9.6 kbit/s	9.6 kbit/s	9.6 kbit/s	
Transmission speed, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	
Address range inputs, max.	244 Byte	244 Byte	244 Byte	
Address range outputs, max.	244 Byte	244 Byte	244 Byte	
Number of TxPDOs, max.	-	-	-	
Number of RxPDOs, max.	-	-	-	
Housing				
Material	PC GF20	PC GF20	PC GF20	
Mounting	-	-	-	
Mechanical data				
Dimensions (WxHxD)	20 mm x 233.4 mm x 160 mm	20 mm x 233.4 mm x 160 mm	20 mm x 233.4 mm x 160 mm	
Weight	220 g	220 g	190 g	
Environmental conditions				
Operating temperature	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	
Certifications				
UL508 certification	-	-	-	

FIELDBUS connectors




Order number	Type	Description	Note
972-0DP01	EasyConn PB 90° - SubD connector	12 Mbit/s, metal case, PG-jack, insulation piercing connection, switchable termination resistor, 90° outgoing cable	
972-9DP01	EasyConn PB 90° - SubD connector	12 Mbit/s, metal case, PG-jack, insulation piercing connection, switchable termination resistor, 90° outgoing cable, ECO pack: 100 pieces	
972-0DP10	EasyConn PB 90° - SubD connector	12 Mbit/s, metal case, PG-jack, insulation piercing connection, switchable termination resistor, 90° outgoing cable, bus diagnosis via LEDs	
972-9DP10	EasyConn PB 90° - SubD connector	12 Mbit/s, metal case, PG-jack, insulation piercing connection, switchable termination resistor, 90° outgoing cable, bus diagnosis via LEDs, ECO pack: 100 pieces	
972-0DP20	EasyConn PB 45° - SubD connector	12 Mbit/s, metal case, PG-jack, insulation piercing connection, switchable termination resistor, 45° outgoing cable, bus diagnosis via LEDs	

Order number	Type	Description	Note
972-9DP20	EasyConn PB 45° - SubD connector	12 Mbit/s, metal case, PG-jack, insulation piercing connection, switchable termination resistor, 45° outgoing cable, bus diagnosis via LEDs, ECO pack: 100 pieces	
972-0DP30	EasyConn PB 0° - SubD connector	12 Mbit/s, metal case, PG-jack, insulation piercing connection, switchable termination resistor, 0° outgoing cable, bus diagnosis via LEDs	
972-9DP30	EasyConn PB 0° - SubD connector	12 Mbit/s, metal case, PG-jack, insulation piercing connection, switchable termination resistor, 0° outgoing cable, bus diagnosis via LEDs, ECO pack: 100 pieces	
972-0PN00	PN-Stecker 180° Field Plug	Plug: RJ45, Connection: 8 wire, Connection technique: IDC (insulation displacement connection) terminals, Connection area: AWG24/1 - 22/1 and AWG26/7 - 22/7, Cable diameter: 5,5 - 8,5 mm, Allocation: T568A, T568B, Industrial (4/8 wire)	
972-8PN00	PN-Stecker 180° Field Plug	Plug: RJ45, Connection: 8 wire, Connection technique: IDC (insulation displacement connection) terminals, Connection area: AWG24/1 - 22/1 and AWG26/7 - 22/7, Cable diameter: 5,5 - 8,5 mm, Packaging unit: 10 pieces	

DP-Repeater

Order number	Type	Description	Note
973-1BA00	PROFIBUS-DP/MPI-Repeater	insulated channel (2 segments), up to 31 devices per segment connectable up to 1200 m cable length transparent for all PROFIBUS and MPI protocols	
973-5BE00	PROFIBUS-DP/MPI-Repeater	5 dc-insulated channels (repeater segments) up to 31 devices per segment connectable, 1200m tap line length, Transparent for all PROFIBUS and MPI protocols	

Miscellaneous

Order number	Type	Description	Note
905-6AA00	EasyStrip	Stripping tool for PROFIBUS cable	
6ES5491-0LB11	Adaptation capsule for S5-115U/F	Siemens 6ES5 491-0LB11, Siemens SIMATIC S5, adaptation capsule for S5-115U/F (type ES 902) for connecting of up to 2 modules of S5-135U/155U, refreshed, 1 year warranty	

Teleservice modules


Order number	900-2C610	900-2E631	900-2E641	900-2E651
Figure				
Type	TM-C Router	TM-E ISDN Router - VPN	TM-E Analog Router - VPN	TM-E GSM/GPRS Router quad-band - VPN
General information				
Note	-	-	-	-
Features	› For sheer teleservice through broadband connection (ADSL) via Talk2M › 1x RS485 MPI-/ PROFIBUS-DP interface › 4x LAN RJ45 Ethernet interface › 1x WAN RJ45 Ethernet interface	› For direct point to point teleservice via ISDN line or Talk2M & VPN › 1x RS485 MPI-/ PROFIBUS-DP interface › 1x LAN RJ45 Ethernet interface › 1x integrated ISDN modem	› For direct point to point teleservice via analog line or Talk2M & VPN › 1x RS485 MPI-/ PROFIBUS-DP interface › 1x LAN RJ45 Ethernet interface › 1x integrated PSTN modem	› For direct point to point teleservice via cellular network or Talk2M & VPN › 1x RS485 MPI-/ PROFIBUS-DP interface › 1x LAN RJ45 Ethernet interface › 1x integrated GSM/ GPRS (quad-band) modem › Please order antenna separatly!
Inputs and outputs				
Inputs	1 DI: 0/24 V DC, isolated	1 DI: 0/24 V DC, isolated	1 DI: 0/24 V DC, isolated	1 DI: 0/24 V DC, isolated
Outputs	1 DO: open drain, max. 200 mA at DC 30 V	1 DO: open drain, max. 200 mA at DC 30 V	1 DO: open drain, max. 200 mA at DC 30 V	1 DO: open drain, max. 200 mA at DC 30 V
Communication				
serial port	MPI/PROFIBUS, isolated, up to 12 MBit/s	MPI/PROFIBUS, isolated, up to 12 MBit/s	MPI/PROFIBUS, isolated, up to 12 MBit/s	MPI/PROFIBUS, isolated, up to 12 MBit/s
LAN	4 x RJ45, 10/100 MBit/s Switch	1 x RJ45, 10/100 MBit/s	1 x RJ45, 10/100 MBit/s	1 x RJ45, 10/100 MBit/s
WAN	1 x RJ45, 10/100 MBit/s	-	-	-
Modem type	-	ISDN	PSTN / analog	GSM/GPRS Quadband
Router				
Router functions	› Talk2M	› IP-Forwarding › IP-Filter › NAT › Port-Forwarding › Routing Table › DHCP-Client	› IP-Forwarding › IP-Filter › NAT › Port-Forwarding › Routing Table › DHCP-Client	› IP-Forwarding › IP-Filter › NAT › Port-Forwarding › Routing Table › DHCP-Client
RAS	› -	› PPP Dial-In › PPP Dial-Out › Call-Back	› PPP Dial-In › PPP Dial-Out › Call-Back	› PPP Dial-In › PPP Dial-Out › Call-Back

Order number	900-2C610	900-2E631	900-2E641	900-2E651
VPN				
VPN mode	-	Open VPN 2.0, Client/ Server	Open VPN 2.0, Client/ Server	Open VPN 2.0, Client/ Server
Talk2M	✓	✓	✓	✓
Gateway protocols	-	MPI PPI PROFIBUS ISO TCP Modbus TCP	MPI PPI PROFIBUS ISO TCP Modbus TCP	MPI PPI PROFIBUS ISO TCP Modbus TCP
Services				
Server services	FTP HTTP	FTP HTTP	FTP HTTP	FTP HTTP
Client Services	-	FTP SMTP NTP DYNDNS SNMP	FTP SMTP NTP DYNDNS SNMP	FTP SMTP NTP DYNDNS SNMP
Data management				
Custom Website	✓	✓	✓	✓
Project	web interface	web interface	web interface	web interface
Integrated protocols	-	MPI PPI PROFIBUS ISO TCP Modbus TCP	MPI PPI PROFIBUS ISO TCP Modbus TCP	MPI PPI PROFIBUS ISO TCP Modbus TCP
Interrupts				
Alarm message	-	EMail SMS SNMP FTP	EMail SMS SNMP FTP	EMail SMS SNMP FTP
Alarm	-	EMail Hardware I/O SMS PLC-variables SNMP system variables FTP	EMail Hardware I/O SMS PLC-variables SNMP system variables FTP	EMail Hardware I/O SMS PLC-variables SNMP system variables FTP
Housing				
Material	-	-	-	-
Mounting	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm	Profile rail 35 mm
Mechanical data				
Dimensions (WxHxD)	39 mm x 129 mm x 108 mm	39 mm x 129 mm x 108 mm	39 mm x 129 mm x 108 mm	39 mm x 129 mm x 108 mm
Weight	410 g	400 g	400 g	400 g
Environmental conditions				
Operating temperature	-20 °C to 70 °C	0 °C to 50 °C	0 °C to 50 °C	-20 °C to 70 °C
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C	-25 °C to 70 °C
Certifications				
UL508 certification	-	-	-	-

Order number	900-2H611	900-2H681		
Figure				
Type	TM-H Router VPN	TM-H GSM/HSUPA Router VPN		
General information				
Note	-	-		
Features	› For teleservice through a broadband connection (ADSL) via Talk2M & VPN › 1x RS485 MPI-/ PROFIBUS-DP interface › 4x LAN RJ45 Ethernet interface › 1x WAN RJ45 Ethernet interface › TM-H HSUPA router VPN	› For teleservice through a mobile connection (GPRS/EDGE/UMTS/ HSUPA) via Talk2M & VPN › 1x RS485 MPI-/ PROFIBUS-DP interface › 4x LAN RJ45 Ethernet interface › 1x WAN RJ45 Ethernet interface › 1x integrated HSDPA/ HSUPA modem (QB)		
Inputs and outputs				
Inputs	1 DI: 0/24 V DC, isolated	1 DI: 0/24 V DC, isolated		
Outputs	1 DO: open drain, max. 200 mA at DC 30 V	1 DO: open drain, max. 200 mA at DC 30 V		
Communication				
serial port	MPI/PROFIBUS, isolated, up to 12 MBit/s	MPI/PROFIBUS, isolated, up to 12 MBit/s		
LAN	4 x RJ45, 10/100 MBit/s Switch	4 x RJ45, 10/100 MBit/s Switch		
WAN	1 x RJ45, 10/100 MBit/s	1 x RJ45, 10/100 MBit/s		
Modem type	-	HSUPA		
Router				
Router functions	› IP-Forwarding › IP-Filter › NAT › Port-Forwarding › Routing Table › DHCP-Client	› IP-Forwarding › IP-Filter › NAT › Port-Forwarding › Routing Table › DHCP-Client		
RAS	› PPP Dial-In › PPP Dial-Out › Call-Back	› PPP Dial-In › PPP Dial-Out › Call-Back		
VPN				
VPN mode	Open VPN 2.0, Client/ Server	Open VPN 2.0, Client/ Server		
Talk2M	✓	✓		
Gateway protocols	› MPI › PPI › PROFIBUS › ISO TCP › Modbus TCP	› MPI › PPI › PROFIBUS › ISO TCP › Modbus TCP		
Services				
Server services	› FTP › HTTP	› FTP › HTTP		
Client Services	› FTP › SMTP › NTP › DYNDNS › SNMP	› FTP › SMTP › NTP › DYNDNS › SNMP		

Order number	900-2H611	900-2H681		
Data management				
Custom Website	✓	✓		
Project	web interface	web interface		
Integrated protocols	› MPI › PPI › PROFIBUS › ISO TCP › Modbus TCP	› MPI › PPI › PROFIBUS › ISO TCP › Modbus TCP		
Interrupts				
Alarm message	› EMail › SMS › SNMP › FTP	› EMail › SMS › SNMP › FTP		
Alarm	› EMail › Hardware I/O › SMS › PLC-variables › SNMP › system variables › FTP	› EMail › Hardware I/O › SMS › PLC-variables › SNMP › system variables › FTP		
Housing				
Material	-	-		
Mounting	Profile rail 35 mm	Profile rail 35 mm		
Mechanical data				
Dimensions (WxHxD)	39 mm x 129 mm x 108 mm	39 mm x 129 mm x 108 mm		
Weight	410 g	480 g		
Environmental conditions				
Operating temperature	-20 °C to 70 °C	-20 °C to 70 °C		
Storage temperature	-25 °C to 70 °C	-25 °C to 70 °C		
Certifications				
UL508 certification	-	-		

Cables



Order number	Type	Description	Note
830-0LC00	FCC 2xAWG 22 - Standard PROFIBUS cable	Fixed installation according to EN 50170, flame-retardant according to VDE 0472, T804 test type B, cable shell color violet, 100 m ring	
830-0LD00	FCC 2xAWG 22 - Standard PROFIBUS cable	Fixed installation according to EN 50170, flame-retardant according to VDE 0472, T804 test type B, cable shell color violet, 200 m ring	
830-0LE00	FCC 2xAWG 22 - Standard PROFIBUS cable	Fixed installation according to EN 50170, flame-retardant according to VDE 0472, T804 test type B, cable shell color violet, 500 m ring	
830-0LF00	FCC 2xAWG 22 - Standard PROFIBUS cable	Fixed installation according to EN 50170, flame-retardant according to VDE 0472, T804 test type B, cable shell color violet, 1000 m ring	
830-0PC00	PROFINET cable	100m cable reel	
830-0PD00	PROFINET cable	200m cable reel	
830-0PE00	PROFINET cable	500m cable reel	
830-0PF00	PROFINET cable	1000m cable reel	
950-0AD00	USB adapter	For MMC programming (Windows 98SE/ME/2000/XP)	
950-0AD10	PCMCIA adapter	For MMC programming	
950-0KB01	PC/AG programming cable	RS232-MPI/PROFIBUS adapter, 3 m	
950-0KB10	PC/AG programming cable	RS232-MPI/PPI adapter, LCD, 3 m	
950-0KB20	PC/AG programming cable	RS232/MPI adapter, external DC 24 V power supply, 1.3 m	
950-0KB30	PC/AG programming cable	USB-MPI/PROFIBUS adapter, LCD 3 m	
950-0KB31	PC/AG programming cable	USB-MPI/PROFIBUS adapter, 3 m	
950-0KB40	PC/AG programming cable	TCP/IP-MPI/PROFIBUS adapter, 3 m	
950-0KB50	PC/AG programming cable	MPI cable with PU-/Diagnostic port, 2.5 m; use as PC/AG or TP/AG	

Memory modules for S7-300/400

Order number	Type	Description	Note
951-0KD00	Memory Card (MC)	for S7-300/400 from Siemens, Flash Eprom, short	
951-0KE00	Memory Card (MC)	for S7-300/400 from Siemens, Flash Eprom, short	
951-0KF00	Memory Card (MC)	for S7-300/400 from Siemens, Flash Eprom, short	
951-0KG00	Memory Card (MC)	for S7-300/400 from Siemens, Flash Eprom, short	
951-0KJ00	Memory Card (MC)	for S7-300/400 from Siemens, Flash Eprom, short	

Antennas and accessories

Order number	Type	Description	Note
900-0AB50	TM antenna GSM/UMTS	Portable antenna incl. 5m cable, SMA (male) and assembly bracket, resistance: 50 Ohm, power: 10 W, gain: 2.14 dBi, 900/1800 MHz	
900-0AQ51	TM antenna GSM/GPRS	Rod antenna incl. 5m cable and SMA (male) and mounting bracket, resistance: 50 Ohm, power: 20 W, gain: 2.14 dBi, 900/1800 MHz	

Manuals and operating instructions

Order number	Title	Contents	Language
HB37D_IM	IM 306 DP slave, German	IM 306 DP slave	DE
HB37E_IM	IM 306 DP slave, English	IM 306 DP slave	EN
HB39D_TM	TM, German	TM-E 900-2E6x and TM-H 900-2H6x Teleservice modules	DE
HB39E_TM	TM, English	TM-E 900-2E6x and TM-H 900-2H6x Teleservice modules	EN

At a glance

Appendix

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Terms and conditions

General

The general supply and delivery terms are valid in their latest version (see next pages) as well as the addendum on extended retention of title.
The prices are quoted in Euro (€) ex works, without insurance, freight and packaging. They do not include any VAT.
Packaging cannot be returned.
VAT will be indicated separately according to legal regulations and at the respective valid rate.

Minimum Order Value

The minimum value for each order amounts to € 150,- net.
Orders with a value less than € 150,- will be charged with a handling fee of € 20,- to cover costs.

Dispatch and packing costs

Export sales:
Dispatch will be organized on ex works basis with a forwarding agent/courier service named by customer; alternatively freight cost will be calculated and charged according to weight and/or volume on the basis of VIPA Germany‘s freight rates at local partners..

Domestic sales:

Order value to 1.000 €	= 10,00 €
1.001 € - 2.500 €	= 1,00% of net price
2.501 € - 5.000 €	= 0,85% of net price
5.001 € - 7.500 €	= 0,65% of net price
7.501 € and higher	= all inclusive 57,00 €

Freight charges for bulky goods (e.g. 2 m of rails and cable drums) are calculated separately.

# of sale and delivery

Validity

With the date this price list comes into effect all former prices are no longer valid.
The price list may be subject to changes, especially as far as the values, dimensions and weights are concerned, if nothing different is noted explicitly.
The goods will be invoiced at the date of dispatch.

Manuals

When ordering modules, you will receive the corresponding customer documentation free of charge in PDF format on DVD. If you wish to receive hard copies of manuals, please order them separately.

The latest versions of all our manuals can be found on our homepage:
www.vipa.com -> Service -> manuals.
For further information please contact us:
Export sales: +49 (0)9132/744 - 1675 or -1670
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Homepage: http://www.vipa.com

Legend/Trademarks

MP2I = MPI + RS232

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Any liability for misprints or errors is excluded.
Availability and technical specifications are subject to change without notice.

General terms and conditions

1. General provisions

The following General Terms and Conditions of the Gesellschaft für Visualisierung und Prozessautomatisierung, hereinafter referred to as VIPA GmbH, shall apply for all present and future orders, deliveries and services (hereinafter referred to as: deliveries), unless expressly otherwise agreed by contract.

In case of deviations, supplements etc., we hereby expressly object to any conflicting or differing terms and conditions of contractual partners. We exclude all and any terms and conditions of contractual partners unless we expressly agree to them in writing.

2. Subject matter of the contract, scope of delivery, partial deliveries

a) The offer and/or order confirmation of VIPA GmbH shall be decisive for the scope of delivery.

b) Regarding cost estimates, drawings, wiring diagrams, samples, software source codes and other documentation, VIPA GmbH hereby retains its rights of ownership, copyrights and patent rights in their entirety. Such documents may only be made accessible to third parties with the prior written consent of VIPA GmbH. Drawings, wiring diagrams, samples, software source codes and other documentation that are part of the offer must be returned immediately on request in case the order is not awarded to VIPA GmbH. With regard to documents that were handed over to VIPA GmbH, the latter is entitled to make accessible such documents to third parties, as far as the company transfers services and deliveries to such third parties in a permissible way.

c) VIPA GmbH is entitled to make partial deliveries, insofar as this is reasonable for the customer.

3. Prices and terms of payment, exclusion of set-off, cost estimates

a) All the prices of VIPA GmbH are net prices quoted ex works, i.e. not including transport and packaging costs. All costs for delivery ex works, packaging, transport insurance etc. are invoiced separately. The same shall apply for the costs resulting from installation, erection and/or assembly, e.g. travel expenses. VAT will be charged separately. VIPA GmbH is entitled to charge a reminder fee of € 5.00 per reminder upon occurrence of a default.

b) A set-off by the contractual partner is only permitted in case the outstanding claims are uncontested or established by final enforceable judgment. The same shall apply for any right of retention.

c) Cost estimates shall be paid for.

4. Delivery period, deadlines, passing of risk

a) Delivery dates and deadlines are not binding for VIPA GmbH unless it is agreed by contract that they are binding.

b) The delivery time which was agreed upon shall be extended accordingly in the event of any circumstances beyond our control, which occur either in our own business or in that of a preliminary supplier. This applies in particular to strikes and lockouts as well as cases of force majeure which result from unforeseeable events or events over which the company and/or the preliminary suppliers have no control. VIPA GmbH undertakes to inform its contractual partners of any such delays as soon as they are foreseeable. If the performance of services by VIPA GmbH therefore becomes impossible or is seriously impaired, VIPA GmbH may cancel the contract wholly or in part. The customer is entitled to cancel the contract if VIPA GmbH does not perform the delivery after a written reminder until the end of a new appropriate deadline set by the customer. The compliance with expressly agreed delivery deadlines depends on the receipt in due time of all documents, necessary permits, clearances etc. which are to be supplied by the contractual partner, the clearance and approval of all plans in due time, as well as the compliance with the agreed terms of payment and other obligations by the contractual partner of VIPA GmbH. VIPA GmbH shall be entitled to exercise its right of retention despite a contractual delivery date in case due receivables from prior goods and services have not been settled by the contractual partner.

c) The delivery deadline shall be considered met and the risk passes to the customer as soon as VIPA GmbH has handed over the item to the forwarding agent, the carrier or another person or institution responsible for dispatch or to the collector. If installation, erection or assembly is included in the scope of delivery, the risk shall pass and the delivery deadline shall be considered met on the day of taking-over on the business premises of the contractual partner. If a test run was agreed, the latter shall be performed without delay after assembly and/or installation. If the dispatch, the assembly or installation/erection and/or the taking-over or a possible test run is delayed due to reasons for which the contractual partner is responsible or if a default of acceptance occurred, the risk shall pass to the contractual partner upon the start of delay caused by the contractual partner or upon occurrence of default of acceptance. This shall also apply for possible dispatches within the scope of replacement deliveries or after the performance of rectifications of defects by VIPA GmbH. The purchaser shall bear the risk for any reshipments effected by the customer to VIPA GmbH until the items of the reshipment are handed over in the premises of VIPA GmbH. Possible reshipments must always be free of carriage charges for VIPA GmbH.

5. Reservation of title

VIPA GmbH makes deliveries solely on the basis of the following reservation of title. This shall also apply to all future deliveries, even if VIPA GmbH does not make explicit reference to this.

a) All deliveries / services are solely effected under reservation of title. VIPA GmbH shall remain the owner of the delivered goods until all accounts to which the company entitled from the customer as a result of the business relationship have been paid in full. The customer may neither pledge nor provide the goods as security to which we have retained ownership and it is also not allowed to resell such goods. The reseller is granted the revocable authorisation to resell such goods in the normal course of business, provided that its customers effect payment.

b) As long as the ownership title has not been transferred, the customer shall be obliged to handle and stock the object of purchase with due care and to insure it at its own expense at replacement value against losses and damage from theft, fire and water. If any servicing or inspection work is required, the customer shall perform such work in due time at its own expense. As long as the ownership title has not been transferred, the customer shall be obliged to notify VIPA GmbH in writing as soon as possible in case the delivered item is pledged or is about to be pledged, retained or is threatened by execution or insolvency or is exposed to other third party interventions etc. In case of a compulsory execution or insolvency, the competent authorities must be informed about the ownership title of VIPA GmbH. The contractual partner shall be liable for damage resulting from neglect as well as for intervention expenses, if any. The expenses incurred by averting a seizure shall be borne by the customer. Where the third party is unable to reimburse the court and out-of-court expenses of a lawsuit pursuant to § 771 of the German Code of Civil Procedure (ZPO), the customer shall be liable for any loss incurred by VIPA GmbH.

c) The customer shall be entitled to resell the goods subject to reservation of title in the normal course of business. The customer shall assign all purchase price and wage claims etc. arising from the resale of the goods subject to reservation of title to VIPA GmbH in the amount of the invoicing value including VAT. VIPA GmbH accepts this assignment. Such assignment shall be valid irrespective of the fact whether the goods were resold without or after processing. The customer shall be entitled to collect debts even after the assignment. The authority of VIPA GmbH to collect the debts itself shall not be affected by this. However, we undertake to refrain from collecting the claim as long as our contractual partner meets the payment obligations from the collected revenues, is not in delay of payment and, in particular, has not filed an application to open insolvency proceedings, and a cessation of payments does not exists.

d) The processing, treatment or transformation of the purchased item shall always be made by the purchaser in the name and on behalf of VIPA GmbH. In this case, the customer shall continue to be eligible for the purchased item subsequent to processing or transformation. Should the purchased item be processed with other objects not belonging to VIPA GmbH, VIPA GmbH shall then acquire a joint ownership in the new item in the ratio of the value of the purchased item to the other processed objects at the time of processing. The same shall apply in the event of incorporation. If incorporation takes place in such a way that the customer's product is considered to be the main product, it is agreed that the customer shall transfer pro-rata joint ownership title to VIPA GmbH and shall safeguard on our behalf the sole title or joint title thereby arising. In order to secure the claims of VIPA GmbH against the customer, the latter shall assign to VIPA GmbH any claims that it acquires against a third party through the linking of the goods subject to reservation of title with a property. VIPA GmbH hereby accepts such assignment. VIPA GmbH undertakes to release the securities to which it is entitled, provided that their value exceeds the secured outstanding dues by more than 20%.

6. Claims for damages

a) VIPA GmbH shall only assume liability if this is expressly agreed upon in writing or if an exclusion of liability is not permitted by law, e.g. in the event of willful intent or gross negligence or in case of harm to life, health and body or if the company is liable according to the Product Liability Act. Any other liability of VIPA GmbH, in particular claims for damages and reimbursement of expenses by the contractual partners, shall be excluded. Liability is also and particularly excluded in the case of non-performance or defective performance and for consequential losses or indirect damage. Liability of VIPA GmbH due to culpa in contrahendo shall be expressly excluded. VIPA GmbH hereby accepts this exclusion.

b) Contractual penalties are not permissible unless expressly otherwise agreed in writing.

7. Limitation period, suspension of the limitation period

The limitation period for warranty claims and other claims against VIPA GmbH shall be twelve months. In case of shorter statutory limitation periods or shorter limitation periods agreed upon, such shorter limitation period shall apply. A shortening of the limitation period shall not be valid if this is excluded by law, in particular in case of fraudulent concealment of a defect. For deliveries to VIPA GmbH, the statutory limitation periods shall apply. The statutory regulations on suspension of statute of limitation, suspension of and restart of the limitation period shall not be affected by this. Settlement negotiations shall be deemed terminated in case VIPA GmbH does not respond in writing to a letter of the contractual partner after expiration of a period of 8 weeks.

8. Warranty

a) A warranty beyond the statutory warranty regulations shall only be granted if such warranty is expressly stated in writing.

b) The goods supplied by VIPA GmbH must be inspected immediately after handover. VIPA GmbH must be notified in writing immediately after receipt and/or inspection of the delivery of any defects, the lack of guaranteed qualities, transport damage, shortfall quantity, wrong deliveries etc and all processing or treatment works must be stopped immediately. Possible hidden defects must be communicated to us in writing as soon as they have been discovered. If such notification is not made in time, the delivery shall be deemed accepted. VIPA GmbH and the carrier must be notified in writing and without delay of any transport damage after receipt of goods. In case the notification of defects is justified and was made in time, VIPA GmbH shall be entitled to either rectify the defects, to effect a faultless replacement delivery and/or to render a faultless service. The contractual partner‘s right of reduction of the purchase price shall not be affected by unsuccessful rectification or cancellation of the contract.

c) In case of the following, any warranty and/or any guarantee to which the company exceptionally consented in writing shall be excluded, unless the defect was fraudulently concealed:

Damage or losses resulting from faulty installation made by the customer or third parties or caused by improper use or fire, lightning strike, force majeure etc.

Repairs or repair attempts performed incorrectly or other interventions by the customers or other persons not authorised by VIPA GmbH

Damage caused by non-observance of the operating instructions or other instructions given by the staff of VIPA GmbH

Transport damage

Damage caused by the use of unsuitable or inferior replacement parts

Damage resulting from wear, humidity, strong heating of rooms or other effects of weather and temperature

Wear and tear parts

In case of negligible deviation from the agreed characteristics, in case of negligible impairment of serviceability or in case the model presents only minor deviations from the specifications in catalogues, advertising materials, samples etc.

Insufficient maintenance of the goods by the contractual partner

d) No warranty is granted for second-hand goods supplied by VIPA GmbH. Second-hand goods are sold as seen.

e) VIPA GmbH is entitled to claim compensation for the costs and expenses it incurred from the contractual partner in case the notification of defects was not justified. Claims from the purchaser towards VIPA GmbH for compensation of expenses, in particular transport costs and service assignments, due to supplementary performance, are excluded insofar as the expenses increase due to the fact that the object of delivery was subsequently carried to a place other than the agreed delivery address of the contractual partner.

f) For any software, the conditions of the software licence of VIPA GmbH and of the software producer shall apply.

9. Impossibility of performance, adaptation of the contract

If it becomes impossible for VIPA GmbH to effect or provide the agreed delivery or service, the general legal principles shall apply as follows:

If the impossibility is the fault of VIPA GmbH, the contractual partner is entitled to make a claim for damages; however, such claim for damages of the purchaser shall be limited to 10% of the value of such part of the delivery or service that could not be used properly or put into service due to the impossibility of performance.

Any claims for damages exceeding the aforementioned 10% shall be excluded. This shall not apply in the event of willful intent or gross negligence, where liability is mandatory, or in case of harm to life, health and body.

The customer‘s right to withdraw from the contract shall not be affected by this.

In case unforeseeable events considerably modify the economic importance or the content of the delivery or service or affect the business operations of VIPA GmbH, the contract shall be adapted accordingly by VIPA GmbH, provided that this is compliant with the principles of good faith.

As far as this is not economically feasible, VIPA GmbH shall have the right to withdraw from the contract. When the company intends to make use of its right of withdrawal, it shall inform the purchaser of its intention as soon as the significance of the event will have fully come to its knowledge, i.e. also in such cases when an extension of the time of delivery was agreed with the purchaser.

10. Place of jurisdiction, place of performance, applicable law

a) The sole local and international place of jurisdiction (if the contractual partner is a merchant) for all disputes arising directly or indirectly from the contract shall be the registered office of VIPA GmbH.

b) The contractual relationship shall be subject to German substantive law only.

c) The place of performance for deliveries and services of VIPA GmbH shall be the registered office of VIPA GmbH.

11. Authorisations, foreign countries

The contractual partner shall be responsible for and obtain official authorisations that may be required, in particular export licences. VIPA GmbH shall not be responsible or liable for possible official authorisations, in particular export licences, that may be required. The contractual partner is obliged to comply with all export provisions and export restrictions and all other provisions of the foreign trade legislations, in particular those of Germany, the EU and the EU member states, and to ensure that its contractual partners and third parties comply with these provisions as well. The contractual partner shall be obliged to make all required notifications, to provide all required information and to make all other necessary declarations to foreign authorities duly and completely.

The contractual partner shall pay all required customs duties, taxes or levies which may arise from a delivery into or the rendering of a service in a foreign country.

12. Other provisions, validity of the contract, authorisations

Should one or several provisions of the contract, including these General Terms and Conditions, be invalid, the validity of the contract or the General Terms and Conditions as a whole shall not be effected. In this case, the parties undertake to replace the invalid provision by a valid one which comes closest to the economic purpose of the invalid provision. The same shall be done in case of contractual gaps.

Changes and amendments to the contract must be effected in writing in order to be effective.

Notices

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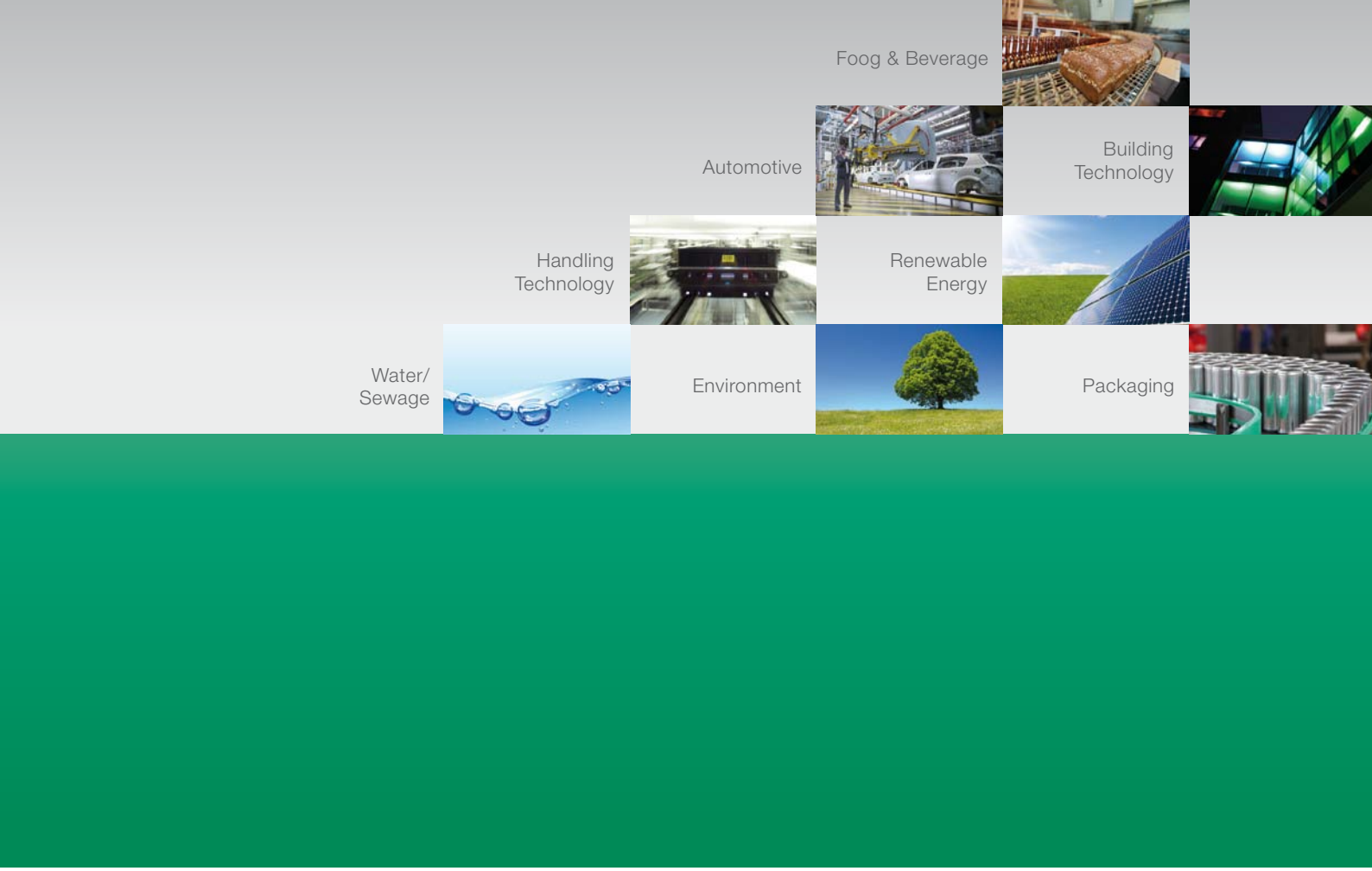

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