

TRIO
MC464

YOUR CHOICE OF FACTORY COMMUNICATIONS

YOUR CHOICE OF DIGITAL DRIVE INTERFACES

REDUCE MACHINE DELIVERY TIMES

FLEXIBLE MOTION CONTROL

FASTER PERFORMANCE

HIGH AXIS COUNT

EASY TO USE

64 AXES

TRIO
MOTION TECHNOLOGY

MC464



15/04/2009

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Motion Coordinator

panel mount

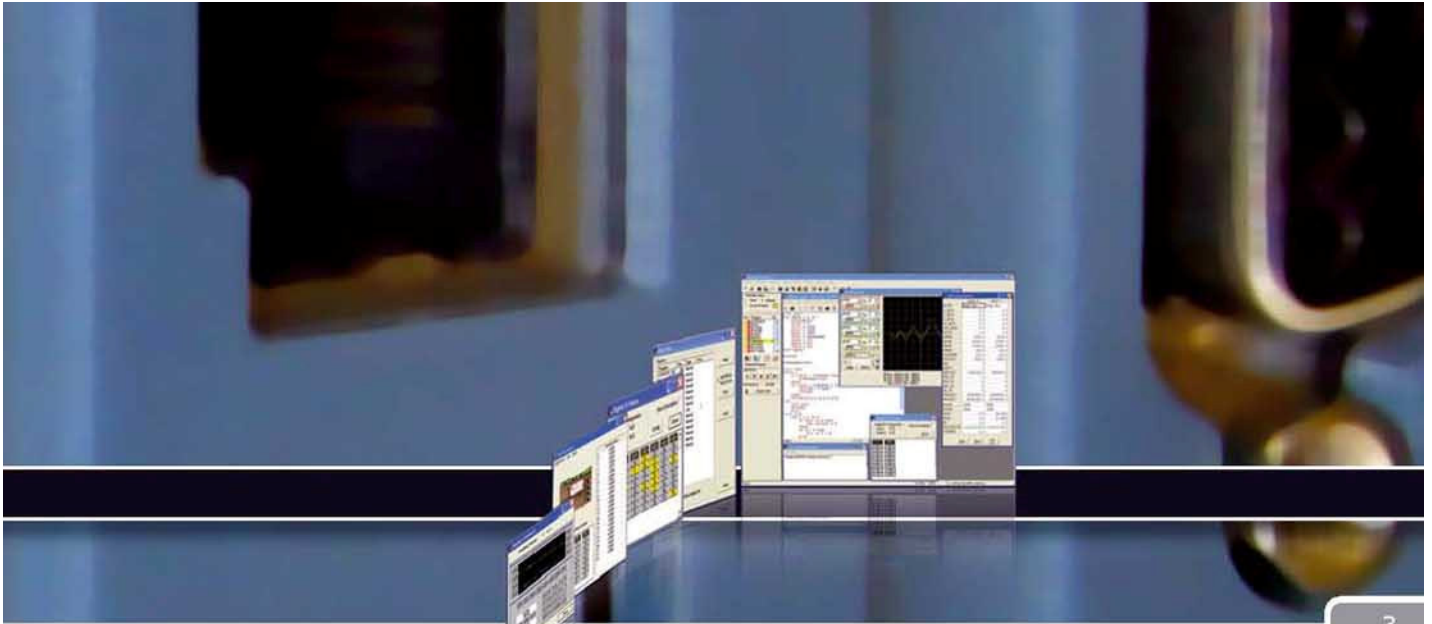
product code: P860

MC464

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- MANUFACTURE GOODS FASTER
- INCREASE QUALITY
- DIFFERENTIATE YOURSELF FROM COMPETITORS
- FREEDOM TO SELECT THE BEST MOTOR AND DRIVE MANUFACTURER
- GROW YOUR BUSINESS
- RELEASE YOUR IDEA TO MARKET FIRST
- INCREASE PRODUCTIVITY
- LOWER TOTAL COSTS





LEARN ONLY ONE PROGRAMMING ENVIRONMENT...



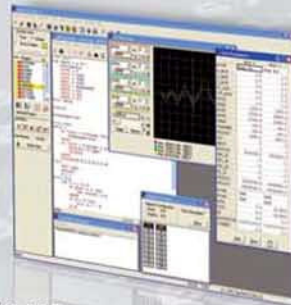
A single programming interface that is scalable from a single axis up to 64 axis coordinated motion.

Motion Perfect is designed to make setup, diagnostics, commissioning

and using our range of **Motion Coordinators** as simple as possible. Running on Microsoft Windows, the tool allows you to setup, program and tune the controller in minutes.

Features include:

- *Project Manager which keeps all the files associated with an application together and up to date*
- *Command Line terminal window to interrogate the controller even when programs are running*
- *Comprehensive system monitoring and diagnostics tools*
- *Supports all Trio **Motion Coordinators***
- *Simulator to develop programs offline*
- *Software Oscilloscope*
- *Many other useful utilities to make using Trio easy and rewarding*



EASY PROGRAMMING OF COMPLEX MOTION...



The TrioBASIC programming language, with a powerful suite of instructions and tools developed over 20 years, makes even the most advanced motion programming easy. Trio's BASIC provides ease of programming for many complex applications. With multitasking and subroutine capabilities, it allows users to create modular programs, ideal for code re-use and better readability thus saving valuable time.

Functions include:

- *Linear, Circular, Helical and spherical interpolation*
- *Variable speed / acceleration profiles*
- *Electronic gearboxes*
- *Electronic cam profiles generate motion based on the position of another axis or based on time*
- *Superimpose multiple moves / cams to generate the final motion*
- *High Speed Registration; ideal for adding motion into continuous processes*
- *Communication functions enabling interface to HMI or SCADA type systems*
- **All of our programming and utility software is FREE with no support charges or licence fees**

MC464

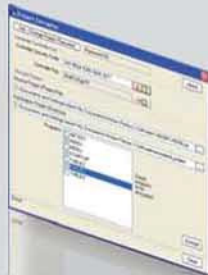
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PROTECT YOUR INVESTMENT WITH PROGRAM ENCRYPTION...



Protect your investment with program encryption. Protect your software inside the controller, allowing you to maintain any in house intellectual property and stay ahead of your competition.

The Project Encryptor is a utility that enables a programmer's intellectual property to be licenced to individual **Motion Coordinators**. A project is developed normally using **Motion Perfect** and then encrypted.



Once encrypted the program is safe to distribute and can only be loaded to a controller with a correct key, which is unique to both the controller serial number and source project.

- Licence your intellectual property
- Greater security for machine exporters
- Allows diagnostic access for maintenance purposes and program upgrades in the field whilst protecting IP

MODULAR ARCHITECTURE SAVES COST...

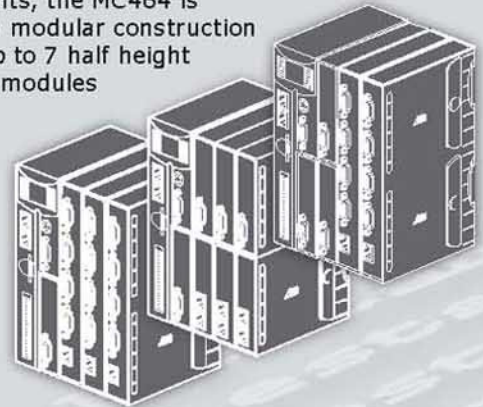


A range of **Motion Coordinators**, with unique modular design to make sure that whatever the drive, motor and feedback type you choose, you can control it simply, with only the hardware needed.

Build a system to suit your exact

requirements, the MC464 is based on a modular construction allowing up to 7 half height expansion modules

or 3 full height expansion modules to be added to the controller. Then only pay for the features that you use on the controller, saving cost and reducing the panel space required.



YOUR CHOICE OF DRIVE INTERFACE...

REDUCE MACHINE DELIVERY TIMES...



Cut the time required to program motion and reduce the cost of integration and programming.



- Using a plug & play digital drive interface reduces number of wire terminations per axis
- Use SD memory to store or transfer recipes, collected data, programs & configuration data



Choose your digital drive network from one of the many standard drive communications protocols supported. Simple to select and integrate, it gives you ultimate flexibility. The future of motion is real-time digital networked technology.

We support these communications networks for drives:

- Panasonic Real Time Express RTEX for MINAS A4N series
- Sercos II
- Control Techniques SLM
- EtherCAT (Under Development)




YOUR CHOICE OF FACTORY COMMUNICATIONS...



The support of many factory communication protocols makes sure that factory automation systems can communicate with our equipment.

Protocols available include:

- Ethernet IP
 - Modbus-TCP/IP
 - CANopen Master
 - Device net Slave
 - Trio I/O
 - CC Link
 - Profibus
 - Profinet I/O
 - Modbus-RTU
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We have built in the AnyBus technology thus enabling support for current and future communication networks.

MAKE YOUR MACHINE PERFORM FASTER...



Better motion control leads to faster cycle time and optimal machine performance.

- 64bit, 400MHz MIPS processor with 200MHz DDR memory allows quicker program execution
- Double floating point maths
- 64 Bit integer position register allows users to select high resolution systems without the current compromise in calculation accuracy
- High servo loop update (125µsec)

With all these features, the MC464 opens the door to higher machine performance; better position control, better accuracy and higher speed.

RUGGED CONSTRUCTION...



- Built for the industrial environment
- Rugged industrial enclosure
- Mounting plate is one piece casting
- CE Marked
- Integrated earth chassis for improved noise rejection

YOUR CHOICE OF PROGRAMMING METHODS...



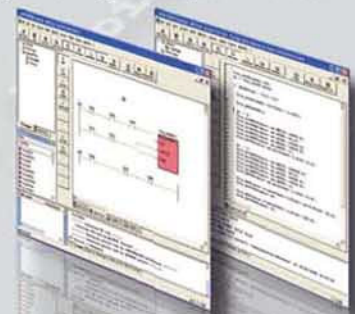
We think that Trio Basic will solve all your programming needs, in addition we support G Code and IEC

61131 programming methods. Your choice! Available as an option, the built in industry standard IEC 61131 runtime is an easy to use full function PLC programming system.

The standard PC based tools include the programming languages Ladder Diagram (LD) and Structured Text (ST). Optional support for Instruction List (IL), Function Block Diagram (FBD), Sequential Function Chart (SFC) and Machine Sequential Function Chart (MSFC) with integrated diagnosis is available. The programming languages and the project structure conforms to the international standard IEC 61131-3, IL and ST are certified by PLCopen.

The system comes together with an integrated PLC simulation capability.

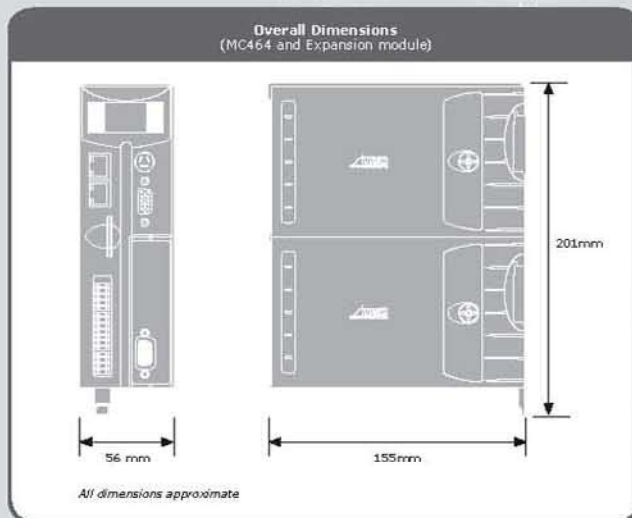
Integrated into 10 tasks on MC464, the runtime kernel allows multiple PLC tasks to be run and has access to all MC464 I/O and distributed I/O. The IEC 61131 program has access to all Trio motion commands, axis parameters and Trio VR/Table memory.



MC464

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BASE MC464 SPECIFICATION



MC464 SPECIFICATION (P860)

Part Number	P860
Size	201mm x 56mm x 155mm
Weight	750g
Temperature Range	0-45 degrees Celsius
Power Consumption	15W max @ 24V DC
Processor	64 bit, 400MHz MIPS
Maximum Number Of Axes	64
Servo Cycle Time	1000µs, 500µs, 250µs or 125µs
Built In Inputs	8 x 24V Opto-Isolated
Built In Bi-directional I/O	8 x 24v Opto-Isolated
Built in Analogue Inputs	2 @ 0-10V 12 Bit Resolution
Inputs Functions	Forward Limit / Reverse Limit / Datum / Feed Hold
Watchdog Relay	1 Solid State Relay - 24V @ 100mA
SD card	Standard SD card compatible to 2Gbyte
User Memory	16 Mbyte max
Multi-tasking	2 Fast Tasks + 18 standard Tasks. 10 additional tasks for IEC 61131 runtime
Position Values	64bit position integers
Maths	Double precision floating point
Encoder Input Freq	6MHz
Stepper Output Freq	2MHz
Real Time Clock	Y
Reference Encoder In	Y
Registration Inputs	1
Registration Input Speed	1µs
Extended Bi-directional I/O	256 (expanded digital I/O)
Extended Analogue Inputs	32 (expanded analogue I/O)

BUILT-IN COMMUNICATIONS / INTERFACES

Communications	Motion Perfect, programming Ethernet IP, Modbus-TCP, Active-X, CANopen, DeviceNet slave, Trio I/O
Ethernet	1; 10/100 Base T multiple sockets
Sync Connections	1; (allows connection of multiple MC464's)
Serial Ports	2; RS232 / RS485
CAN Ports	1; CAN 2.0B 11/29 bit ID 1Mbaud max





EXPANSION MODULES SPECIFICATION

MC4 Panasonic Interface (P871)

Network	Ethernet Based MINAS A4H
Network Speed	100Mbps
Topology	Ring
Max Slaves per Interface / Ring	32
Max Interfaces per MC464	7
Max Axes on MC464	64
Cable	STP Cat 5-e or better
Bus to MC464	32 Bit
Registration Inputs	8 x 24V Inputs
Add Registration Capability	Y
Optically Isolated Inputs	Y
Map any I/O to any Axis	Y



MC4 Flexible Axis Interface (P874)

Max Slaves per Interface / Ring	8
Max Interfaces per MC464	3
Max Axes on MC464	24
Cable	Mixed
Bus to MC464	32 Bit
Registration Inputs	Flexible dual registration on all axes
Add Registration Capability	Y
Optically Isolated Inputs	Y
Map any I/O to any Axis	Y
Servo or Stepper Axis	8
Independent axis Configuration	Y
Encoder Input	Y
Pulse & Direction Encoder Output	Y
No of 16 bit DAC Outputs	8
Support for SSI Absolute Encoder	Y
Support for Endat Absolute Encoder	Y



SOFTWARE OPTIONS

IEC 61131 Runtime	P877
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EVALUATION KITS

- 4 Axis Network Servo Kit
- 4 Axis Servo Kit

If you are new to Trio Motion and would like to test the benefits that the system offers then purchase our evaluation kit. Please call for more details.

TRAINING

Trio runs a series of training courses throughout the year. Contact your local office or visit our website for more details: www.trio-motion.com

MC4 SERCOS Interface (P872)

Network	SERCOS
Network Speed	16Mbps
Topology	Ring
Max Slaves per Interface / Ring	16
Max Interfaces per MC464	7
Max Axes on MC464	64
Cable	Fibre Optic
Bus to MC464	32 Bit
Registration Inputs	Drive Dependant
Add Registration Capability	Y
Optically Isolated Inputs	Y
Map any I/O to any Axis	Y



MC4 ANYBUS Interface (P875)

Factory Communications Options	Profibus CC Link
CompactCom Modules	Profinet I/O
	USB
	Bluetooth



MC4 SLM Interface (P873)

Network	SLM
Network Speed	SLM Standard
Topology	Star
Max Slaves per Interface / Ring	6
Max Interfaces per MC464	7
Max Axes on MC464	42
Cable	R5485
Bus to MC464	32 Bit
Registration Inputs	6 x 24V Inputs
Add Registration Capability	Y
Optically Isolated Inputs	Y
Map any I/O to any Axis	Y



MC4 ETHERCAT Interface (P876)

Network	Ethernet Based MINAS A4H
Network Speed	100Mbps
Topology	Ring
Max Slaves per Interface / Ring	32
Max Interfaces per MC464	7
Max Axes on MC464	64
Cable	STP Cat 5-e or better
Bus to MC464	32 Bit
Registration Inputs	8 x 24V Inputs
Add Registration Capability	Y
Optically Isolated Inputs	Y
Map any I/O to any Axis	Y

