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GarrettCom® Magnum 10RX Configurable Router and Security Appliance

The Magnum 10RX Configurable Router and Security Appliance offers advanced layer 3 networking protocols, firewall, and secure virtual private networking for heavy duty industrial applications where high performance and security are required.

Ideal for Large Substation Installations with Multiprotocol and Tight Security Requirements, as well as the Need to Support Mixed TCP/IP and Legacy Interfaces.

Features

- Configurable WAN Router with up to 10 Gigabit Ethernet ports, 16 T1/E1 ports, or 32 serial connections.

- Next generation hardware and software architecture to provide maximum speed and flexibility

- Advance firewall and security features provide high level of network protection

- Protocol support for both current and legacy network technologies

- Substation-hardened, IEC61850-3 compliant, choice of fan-cooled or convection-cooled options

- Dual hot-swappable power supplies in a 1U or 1.5U rack-mount package

Configurable and Reliable

The Magnum 10RX is a configurable router and security appliance offering terminal server functionality and high performance routing of gigabit Ethernet, T1/E1, and advanced serial protocols. The Magnum 10RX complies with IEC 61850 and is ideal for large substation installations or similar applications where hardness, performance, security, quality of service and diverse protocols are required.

The hardware and software versatility of the Magnum 10RX provides flexibility in interworking legacy serial and WAN protocols with next generation high performance Gigabit Ethernet and TCP/IP technology. The Magnum 10RX supports up to 10 Gigabit Ethernet ports and 16 T1/E1 connections, as well as hot-swappable dual power supplies. Each Magnum 10RX router / security appliance includes advanced thermal design techniques that result in cooler operation of internal electronic components, leading to longer lifetime and increased availability.

Next Generation Technology

The Magnum 10RX offers reliability and configurable redundancy with high voltage AC/DC and low voltage DC hot-swappable power supplies. The software monitors each power supply and detects power supply faults and signal when a power supply module swap is needed. The swapping can readily be done without interruption to the system.

Be Certain with Belden®

GarrettCom Magnum10RX Configurable Router

The Magnum 10RX is a next generation router and security appliance designed for mission critical applications such as power utility substations and smart grid deployments. By combining a high function router with firewall and secure virtual private network (VPN) capabilities, the Magnum10RX provides the WAN connectivity and security functions needed to provide highly reliable interworking between substations, or other mission critical network elements.

The ten configuration slots in the Magnum 10RX provide the flexibility for network designers to configure up to ten Gigabit Ethernet ports using modules that support both copper and SFP ports, as well as up to 16 T1/E1 ports.

Software and Secuirty

The Magnum 10RX is highly configurable utilizing the advanced **Industrial Network Operating System** (INOS) and supports a wide range of routing protocols including RIP, OSPF, BGP, and others. The integrated firewall ensures maximum perimeter protection with features such as address/port inspection and filtering as well as secures VPN connections with strong 3DES and AES encryption.

The VPN's comply to various IPsec/VPN standards and have proven interoperability with other industry standard VPN devices. Cyber security capabilities cover both electronic perimeter protection for remote sites and management security for the Magnum 10RX. Advanced statistics and event recording are available with downloadable local logs, SNMP MIBs and traps, and syslog remote logging.

Hardened Design

The Magnum 10RX has a hardened metal case for regular or reverse rack mounting, auto-ranging power supplies for operation with standard AC power (worldwide), or internal DC power supply choices. For moisture and corrosion protection, conformal coating is optional. The Magnum 10RX unit is designed and manufactured in the USA.

Design for Performance

The Magnum10RX Router and Security Appliance has integrated hardware assist for encryption to maximize the number of secure VPN channels available to network designers. In addition, the platform uses next generation hardware and software architecture to deliver maximum performance for critical tasks. Finally, the integration of advanced thermal management and dual hot-swappable power supplies provides for maximum uptime and reliability.

Product Specifications

Type	10RX
Description	The Magnum 10RX is a configurable, hardened managed router with integrated firewall and secure VPN server.
Serial Protocols	
Async to TCP/IP; TCP/IP to serial/reverse terminal server, Serial Multipoint & Multimaster Topologies; PPP with authentication.	

| Performance	
WAN Ports	T1/E1: 1.544 Mbps / 2.048 Mbps G.703
Serial DB9 Ports	RS232/RS485 software selectable DB9 interface. Serial data rate from 300 bps to 230.4 kbps. See the user guide pinout details and supported interfaces.
Serial RJ45 Ports	Same functionality as DB-9 ports (RJ45 pinout conforms to EIA-561 DTE standard) See the user guide pinout details and supported interfaces.
RJ45 Ports	10/100/1000 Mbps RJ45/SFP auto media ports.
Fiber Ports, via SFP (multi-mode and single-mode)	
Network Standards	
IEEE 802.3z, 802.3ab, 802.1p: 100BASE-TX, -FX, 1000BASE-SX, -LX	
IEEE 802.3u: Auto-negotiation on TP	
IEEE 802.3x, 802.1p: flow control and prioritization	
IEEE 802.1Q: VLANs	
IEEE 8021.1d, 802.1w: Spanning Tree, Rapid Spanning Tree including	
RSTP 2004 extensions providing sub-second hop on rings	
IEEE 802.1p: DiffServ, traffic prioritization for routed IP flows/ports	
Software	
Industrial Network Operating System (INOS)	

Product Specifications (continued)

Management & Diagnostics	
Ease of use: Web-based Graphical User Interface (GUI) or CLI access remote SSH or TELNET connection Powerful built-in protocol analyzer to assist with trouble shooting Other: Comprehensive statistics, SNMP MIB II and SNMP Traps, Routing Information, DHCP, ARP and other tables.	
Operating Environment	
IEC 60068 Operating Temperature	per "Type Test" -40° to 185°F (-40° to 85°C)
UL 60950 "Component Parts" Temperature Rating	140°F (60°C)
Storage	-40° to 185°F (-40°to 85°C)
Ambient Relative Humidity	5% to 95% (non-condensing)
Altitude	-200 to 13000ft (-60 to 4000m)
Conformal coating (humidity protection) Option	Request quote
Mechanical	
Enclosure	Rugged high-strength sheet metal. 1U and 1.5U (with thermal fins) rack-mounting or stand alone
Rack-Mounting Brackets	19" included
Cooling Method	Free convection, special thermal techniques
Dimensions	2.63in H (with thermal fins) x17.5in W x 12.in D (4.3cm H x 44.5cm W x 30.7cm D)
Weight	14.2 lbs. (6.5 kg)
Hot Swappable Power Supply Options	
Magnum 10RX may be ordered with hot swappable power supplies. Up to two of the following power supplies may be chosen:	
High (H) Nominal	Input 90 to 250V AC/DC
Low (L) nominal	Input 22 to 60VDC
Terminal Block	"-, GND, +"
Power Consumption	40 watts (for fully populated unit)
Fixed Power Supply Options	
High (H) Nominal	90-250V AC/DC; Terminal Block: "-, GND, +"
Low (L) nominal	Input 22VDC to 60VDC
AC	IEC-type, male recessed, 100 to 240 VAC, 47 to 63 Hz (auto ranging)
Serial LED Indicators Per DB-9 or RJ45 Port	
One LED/port indicating active connection	
Ethernet LED Indicators Per RJ45 or Fiber Port	
L/A	One LED/port indicating Link (solid green) and Activity (blinks to indicate activity)
Relay Contacts for Alarms (except PoE version)	
Two alarm contact: HW & SW alarms are normally open until the unit is powered & software started. Under normal operation they are closed. Form C HW alarm will be opened wtih either 1) any power supply loss, 2) fan failures Form C SW alarm will be opened when any pre-defined SW event occurs	
Agency Standards Approval and Compliance	
UL/cUL 60950, EN55022 FCC Part 15	CE, EMC & ENV
IEC61850-3	EMC and Environmental Operating Conditions Class C for Power Substations
IEEE 1613 Class 2	Environmental Standard for Electric Power Substations
NEMA TS-2	Traffic Control
EN50155	Railways
Warranty	
Five years.	

Magnum 10RX Configuration Guide

Magnum 10RX Configurable Router

The Magnum 10RX has ten module slots for configuration flexibility of up to 10 Gb ports, 16 WAN ports, and 32 serial ports with optional dual hot-swap power supplies.

Slot 1, Slot 3, Slot 5, Slot 7, Slot 9, Slot 2, Slot 4, Slot 6, Slot 8, Slot 10
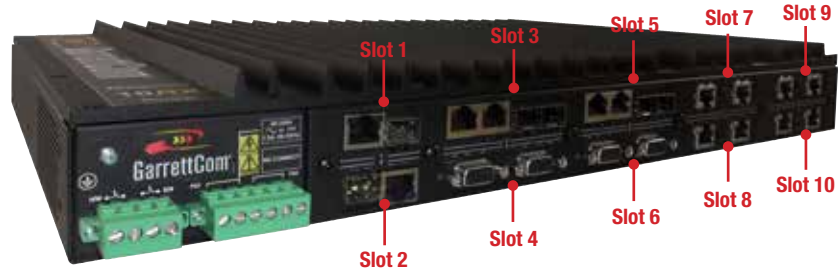
Step 1a. Choose 10RX base unit and power input type

Fan-cooled

Model No.	Description, Base Unit of Magnum 10RX Router
10RX-AC-F	Front mount, AC power (100-240V) with IEC 320 plug
10RX-AC-TF	Front mount, AC power (100-240V) with IEC 320 plug, plus thermal fins on the 10RX unit
10RX-H-F	Front mount with AC/DC power (90-250V)
10RX-HH-F	Front mount with 2 fixed AC/DC power (90-250V)
10RX-HL-F	Front mount with one "H" (90-250V AC/DC) and one "L" (24/48DC) fixed power supplies.
10RX-L-F	Front mount with 24/48VDC power
10RX-LL-F	Front mount with two "L" (24/48DC) fixed power supplies.
10RX-HSPHH-F	Front mount, includes two slots for "H" (90-250V AC/DC) Hot-Swap Power Supply
10RX-HSPHL-F	Front mount, includes two slots for one "H" (90-250V AC/DC) and one "L" (24/48VDC) Hot-Swap Power Supply
10RX-HSPLL-F	Front mount, includes two slots for "L" (24/48VDC) Hot-Swap Power Supply
10RXR-AC-F	Reverse mount, AC power (100-240V) with IEC 320 plug
10RXR-AC-TF	Reverse mount, AC power (100-240V) with IEC 320 plug, plus thermal fins on the 10RX unit
10RXR-H-F	Reverse mount with AC/DC power (90-250V)
10RXR-HH-F	Reverse mount with 2 fixed AC/DC power (90-250V)
10RXR-HL-F	Reverse mount with one "H" (90-250V AC/DC) and one "L" (24/48DC) fixed power supplies.
10RXR-L-F	Reverse mount with 24/48VDC power
10RXR-LL-F	Reverse mount with two "L" (24/48DC) fixed power supplies.
10RXR-HSPHH-F	Reverse mount, includes two slots for "H" (90-250V AC/DC) Hot-Swap Power Supply
10RXR-HSPHL-F	Reverse mount, includes two slots for one "H" (90-250V AC/DC) and one "L" (24/48VDC) Hot-Swap Power Supply
10RXR-HSPLL-F	Reverse mount, includes two slots for "L" (24/48VDC) Hot-Swap Power Supply

Thermal Fin Cooling (shown)

Model No.	Description
10RX-H-TF	Front mount with AC/DC power (90-250V); thermal fins
10RX-HH-TF	Front mount with 2 fixed AC/DC power (90-250V); thermal fins
10RX-HL-TF	Front mount with one "H" (90-250V AC/DC) and one "L" (24/48DC) fixed power supplies; thermal fins
10RX-L-TF	Front mount with 24/48VDC power); thermal fins

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Model No.	Description
10RX-LL-TF	Front mount with two "L" (24/48DC) fixed power supplies; thermal fins
10RX-HSPHH-TF	Front mount, includes two slots for "H" (90-250V AC/DC) Hot-Swap Power Supply); thermal fins
10RX-HSPHL-TF	Front mount, includes two slots for one "H" (90-250V AC/DC) and one "L" (24/48DC) Hot-Swap Power Supply); thermal fins
10RX-HSPLL-TF	Front mount, incl two slots for "L" (24/48DC) Hot-Swap Power Supply); thermal fins
10RXR-H-TF	Reverse mount with AC/DC power (90-250V)); thermal fins
10RXR-HH-TF	Reverse mount with 2 fixed AC/DC power (90-250V); thermal fins
10RXR-HL-TF	Reverse mount with one "H" (90-250V AC/DC) and one "L" (24/48DC) fixed power supplies; thermal fins
10RXR-L-TF	Reverse mount with 24/48VDC power); thermal fins
10RXR-LL-TF	Reverse mount with two "L" (24/48DC) fixed power supplies; thermal fins
10RXR-HSPHH-TF	Reverse mount, includes two slots for "H" (90-250V AC/DC) Hot-Swap Power Supply); thermal fins
10RXR-HSPHL-TF	Reverse mount, includes two slots for one "H" (90-250V AC/DC) and one "L" (24/48DC) Hot-Swap Power Supply); thermal fins
10RXR-HSPLL-TF	Reverse mount, includes two slots for "L" (24/48VDC) Hot-Swap Power Supply); thermal fins

Step 1b. If "HSP" base unit with hot swap power supplies is selected, choose up to two power supply modules. *Fan-cooled bases must use power supplies with internal cooling fans

Model No.	Description
HSPM-H	AC or DC power (90-250V)
HSPM-L	24/48VDC power (22-60V)
HSPM-HF	AC or DC power (90-250V) with internal cooling fan
HSPM-LF	24/48VDC power (22-60V) with internal cooling fan
10K-PSBLNK	Blank cover for one hot-swap power supply

Step 2. Choose modules for Slot 1 or Slot 2 (may be blank).

Model No.	Ports
10-1RJSFP	One auto-media RJ45/SFP 10/100/1000Mb port

Step 3. Choose modules for Slot 3, 5, 7, 9 (may be blank).

Model No.	Ports
10-2RJSFP-RX	Dual auto-media RJ45/SFP 10/100/1000Mb ports
10-2T1E1	Dual T1/E1 WAN adapter
10TS2-DB9-DTE	2 port DB-9 serial (female DTE)
10TS2-DB9-DCE	2 port DB-9 serial (female DCE)
10TS4-RJ45	4 port RJ45 serial

Step 4. Choose modules for Slot 4, 6, 8, 10 (may be blank)

Model No.	Ports
10-2T1E1	Dual T1/E1 WAN adapter
10TS2-DB9-DTE	2 port DB-9 serial (female DTE)
10TS2-DB9-DCE	2 port DB-9 serial (female DCE)
10TS4-RJ45	4 port RJ45 serial

Step 5. Choose options & extras:

Model No.	Description
CONSOLE-CBLQD	Console attachment cable serial null Modem cable with one RJ-45 and a DB-9
CONSOLE-CBLQU	Console attachment cable serial null Modem cable with one RJ-45 and a USB
CONFORM05-RMOD	Conformal coating, 5 mil, for moisture protection
CONFORM08-RMOD	Conformal coating, 8 mil, for corrosive environments
KT-RFAN	Optional cooling fan for thermal-fin (TF) units
DUAL-SRC-L	Provides two separate 24/48VDC power inputs (the unit will operate from either or both) to accommodate redundant 24/48V installations for increased availability and ease of DC power source maintenance. Includes internal diode protection to prevent feedback. Order this option as a line item, for factory configuration as part of the 10-series units (not available for 10C), which will have its model number changed to append "-DSRC". ONLY available on "L", or "HSPLL" chassis options for the 10RX.

Step 6 (Optional). Choose SFP transceivers to be used with the 10-1RJSFP or 10-2RJSFP-RX modules

Model No.	Description
SFP-SX	Gb SX, 850nm wavelength, 550 meters distance
SFP-ESX	Gb SX, 1310nm wavelength, 2km distance
SFP-LX10	Gb LX, 1310nm wavelength, 10km distance
SFP-LX25	Gb LX, 1310nm wavelength, 25km distance
SFP-ZX40	Gb ZX, 1550nm wavelength, 40km distance
SFP-ZX70	Gb ZX, 1550nm wavelength, 70km distance
SFP100P-FXMM2	100FX Fiber Optic SFP transceiver, multi-mode, 2Km
SFP100P-FXSM20	100FX Fiber Optic SFP transceiver, single-mode, 20Km
SFP100P-FXSM40	100FX Fiber Optic SFP transceiver, single-mode, 40Km

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