![GarrettCom logo]

GarrettCom®
A **BELDEN** BRAND

Product Bulletin

GarrettCom® Magnum 12KX Gigabit Managed Switch

Provides 16 Gigabit ports with built-in SFPs – allowing a choice of fixed 10/100/1000 RJ-45 connectivity or fiber SFPs.

Surveillance and Security Applications Leverage the Speed, PoE, Multicast Capabilities, Media Flexibility, Power Supply Flexibility and More.

Features

- Gigabit Ethernet switch, 16 RJ45+SFP fiber "combo" ports
- Substation hardened, with IEEE 1588 Timing
- Layer 2 or Layer 3 software, MNS-12KS
- Four PoE ports (optional)
- Dual or single internal power supplies

Substation-Hardened

The GarrettCom Magnum 12KX Gigabit Managed Switch provides 16 Gigabit ports with built-in SFPs – allowing a choice of fixed 10/100/1000 RJ-45 connectivity or fiber SFPs. The substation-hardened Magnum 12KX has a non-blocking switching fabric to provide wire-speed performance on all ports.

Flexible Design

The Magnum 12KX is synchronized via SNTP or with precision timing using IEEE 1588 v2 PTP on all ports, which assures timing accuracy within 30ns. The unit is well-suited for different needs with environmental certifications including IEC 61850, RoHS compliancy, high and low voltage power supply options, and optional PoE ports. Surveillance and security applications leverage the speed, PoE, multicast capabilities, media flexibility, power supply flexibility and more. Similarly, power utilities can further leverage the timing synchronization as well as dual power supplies and redundancy capabilities available in the software.

Be Certain with Belden®

GarrettCom Magnum 12KX Gigabit Managed Switch

For Use in Harsh Environments

Upholding GarretCom's product line of time-tested robust products, the 12KX switch is designed for heavy-duty industrial applications in harsh environments, with a temperature rating of -40° C to +85° C. Additionally the unit is convection-cooled (no fans), has redundant power supplies, is vibration resistant, ESD-resistant, and is available with optional conformal coating.

Software

Layer 3 software for the Magnum 12KX includes full wire speed RIP based routing, port-based routing interfaces, static routing, VLAN-based router interface definitions, double VLAN tagging, protocol-based VLANs Multicast

Routing (DVMRP), IGMPv1/v2/v3, and much more. Also, environments using OSPF can use OSPF v2 capabilities included in the software.

The GarrettCom Magnum 12KX Gigabit managed switch along with the Magnum 10KT managed switch and Magnum 10ETS managed terminal server allow network architects to create networks encompassing features such as precision time synchronization, high-availability layer 2 as well as layer 3 devices, serial and Ethernet connectivity, routing flexibility such as RIP or OSPF, and more.

For networks that do not need the layer 3 software capability, the Magnum 12KX Gigabit managed switch is available with layer 2-only software offering simplicity and affordability.

Power Supplies and Warranty

Magnum 12KX Gigabit Managed Switches have H and L industrial grade power supplies for worldwide use, and are backed by a five year warranty.

Product Specifications

Type	12KX
Product Description	Magnum 12KX Managed Switch, a Gigabit switch with 16 combo ports for copper and/or fiber ports and optional Layer 3 switching software. Substation hardened with IEEE 1588 timing. Four optional 802.3af PoE ports are available. Single or dual internal power supplies. Front or reverse mount.
Performance	
16 Ports	Auto-negotiating 10/100/1000BASE TX RJ45 OR FE/Gb-SFP slot per port. All ports non-blocking. SFP fiber modules available for GigE or 100Mbps (multi-mode or single mode).
Console	One V.24 RJ-11 interface. Use console cable CONSOLE12-CBL-12KX for connectivity.
USB	USB to connect the Auto Configuration Adapter ACA21-USB-12KX memory for configuration backup and easy swap-out.
Other	Non-blocking fabric, wire speed switching. MAC address table size: 16K addresses.
Network Standards	
Ethernet	IEEE 802.3z, 802.3ab, 802.1p: 100BASE-TX, -FX, 1000BASE-SX, -LX Autonegotiation and auto-crossover on TP, IEEE 802.3u, IEEE 1588v2.
Layer 2	MSTP, RSTP 802.1w, MRP and RSTP, log file, syslog, RMON, port mirroring, address conflict detection, network error detection, SFP diagnostics (temperature, optical power), port security, SNMP V1/V2, authentication (802.1x), QoS 4 queues (8 levels or classes), port priority (IEEE 802.1D/p), VLAN (IEEE 802.1Q), multicast (IGMP snooping/querier), unknown multicast detection, broadcast/unicast/multicast limiter, GMRP IEEE 802.1D, flow control 802.3x.
Layer 3	Full wire speed IPv4 routing with lowest latency Multi-netting (Aliasing), Net directed broadcasts, Port-based router interfaces, Proxy ARP, Static routing with ECMP (Equal Cost Multiple Path), VLAN-based router interfaces, CIDR (Classless Inter Domain Routing), ICMP Router Discovery (IRDP), SSH, SNMP v3, Double VLAN Tagging, Protocol based VLANs Multicast Routing (DVMRP, IGMPv1/v2/v3, Multicast routing and IGMP Unknown Multicast Filtering, PIM Dense & Sparse Mode), Router Redundancy (VRRP, VRRP tracking, Interface Tracking), OSPFv2, Ping Tracking, RIPv1, RIPv2, Tracking of static routes.
IEEE 1588v2	Compliant as master, boundary or transparent clock. Sync accuracy of 30ns or less. Timing capability software configurable.
Diagnostics	LEDs, log-file, syslog, relay contact, RMON, port mirroring 1:1 and n:1, topology discovery 802.1AB, cable tester (TX), address conflict detection, network error detection, SFP diagnostic (temperature, optical input and output power), trap for configuration saving and changing, duplex mismatch detection.
Configuration	Command line interface (CLI), TELNET, BootP, DHCP, DHCP option 82, easy device exchange with auto-configuration adapter ACA21-USB (automatic software and/or configuration upload), integrated DHCP server per port, automatic invalid configuration undo.
Time Synchronization	SNTP server, PTP IEEE 1588-v2 hardware timestamp with accuracy of 30 ns, real-time clock.

Product Specifications (continued)

Operating Environment	
Operating Temperature	IEC 60068 Operating temp. "Type Test" -40° to 185°F (-40° to 85°C).
Temperature Rating (components)	UL 60950 "Component Parts" temperature rating: 158°F (70°C).
Storage Temperature	-40° to 185°F (-40°to 85°C)
Ambient Relative Humidity	5% to 95% (non-condensing)
Altitude	-200 to 6500ft (-60 to 2000m)
Conformal Coating (humidity protection)	Request quote

Power Supply (User choice of dual or single internal)	
Low	24/36/48 VDC
High	110/230V AC/DC

PoE ports available for dual power supply models only. PoE for ports 1-4 only. PoE switch requires one "High" power supply.

Power Consumption
110 mA (26 W) max., if all ports are equipped with SFP (100 W PoE option).

Cooling Method
Convection cooled (no fans)

Power Output
90 Btu(IT)h; 350 Btu(IT)h with PoE.

Mechanical	
Weight	5.6 Kg (12.4 lb)
Dimensions	17.5"x13.6"x1.73" (445mmx44mmx345mm) 1RU.
Mounting	Includes 19" RETMA rack mount brackets

Agency Approval and Standards Compliance	
IEC 61850-3, IEEE 1613	KEMA Certified
UL508, UL1604	Class 1 Div 2, cUL
IEC 60068-2-27 (shock)	15 g, 11 ms duration, 18 shocks
IEC 60068-2-6 (vibration)	1 mm, 2 Hz-13.2 Hz, 90 min.; 0.7g, 13.2 Hz-100 Hz, 90 min.; 3.5 mm, 3 Hz-9 Hz, 10 cycles, 1 octave/min.; 1 g, 9 Hz-150 Hz, 10 cycles, 1 octave/min.
EN 61000-4-2 (electrostatic discharge - ESD)	8 kV contact discharge, 15 kV air discharge.
EN 61000-4-3 EM (field)	35 V/m (80-2700 MHz); 1 kHz, 80% AM.
EN 61000-4-4 (fast transients - burst)	4 kV power, 4 kV data.
EN 61000-4-5 (surge voltage power line)	2 kV (line/earth), 1 kV (line/line), 1 kV data line.
IEEE1613	Power line 5 kV (line/earth).
EN 61000-4-6 (conducted immunity)	30V, 50Hz; 300V, 50Hz 1s.
EN 61000-4-16 (mains frequency voltage)	30V, 50Hz; 300V, 50Hz 1s.
FCC CFR47 Part 15	FCC 47 CFR Part 15 Class A
EN 55022	EN 55022 Class A

Warranty	
Warranty	Five Years

Magnum 12KX Configuration Guide

Magnum 12KX Managed Switch

Gigabit switch with 16 combo ports for copper and/or fiber ports and optional Layer 3 switching software. Substation hardened with IEEE 1588 timing. Four optional 802.3af PoE ports are available. Single or dual internal power supplies. Front or reverse mount.

Step 1. Choose 12KX chassis with dual, single, or PoE power supplies. If dual power supplies, go to Step 1A. If Single power, Go to Step 1B. If PoE is desired, go to Step 1C.

Step 1A. For dual power supply models, choose from below:

Model No.	Base Unit Description
12KX-2H	Front mount, with two AC/DC "high" 110/230 internal power supplies.
12KXR-2H	Reverse mount, with two AC/DC "high" 110/230 internal power supplies.
12KX-2L	Front mount, with two "low" 24-48VDC internal power supplies.
12KXR-2L	Reverse mount, with two "low" 24-48VDC internal power supplies.

Step 1B. For single power supply models, choose from below:

Model No.	Base Unit Description
12KX-1H	Front mount, with one AC/DC "high" 110/230 internal power supply.
12KXR-1H	Reverse mount, with one AC/DC "high" 110/230 internal power supply.
12KX-1L	Front mount, with one "low" 24-48VDC internal power supply.
12KXR-1L	Reverse mount, with one "low" 24-48VDC internal power supply.

Step 1C. For Models with one PoE power supply for four PoE ports and one power supply for the switch, choose from below. (Note, the four 10/100/1000 PoE ports are available for ports 1-4.):

Model No.	Base Unit Description
12KX-1H1POE	Front mount, with one AC/DC "high" power supply for the switch and one "high" power supply for the four PoE ports.
12KXR-1H1POE	Reverse mount, with one AC/DC "high" power supply for the switch and one "high" power supply for the four PoE ports.
12KX-1L1POE	Front mount, with one "low" power supply for the switch and one "high" power supply for the four PoE ports.
12KXR-1L1POE	Reverse mount, with one "low" power supply for the switch and one "high" power supply for the four PoE ports.

Step 2. Choose 12KX Managed Network Switch Software:

Model No.	Software Description
MNS-12KS-L2-LIC	MNS-12KS licensed Layer 2 software for use on one Magnum 12KX Switch. License included with each Magnum 12KX as a default choice. Factory installed.
MNS-12KS-L3-LIC	MNS-12KS licensed Layer 3 software option at extra cost, for use on one Magnum 12KX Switch. Factory installed.

Step 3. Choose auxiliary options & convenience items:

Gigabit Fiber SFPs (small form-factor pluggable) Transceivers

Model No.	Description
SFP12KX-SX	Gb fiber SFP transceiver for 12KX, rated -40 to 85°C, GB SX, 850nm wavelength, 550m distance nominal, 2km per pwr budget.
SFP12KX-LX25	Gb fiber SFP transceiver for 12KX, rated -40 to 85°C, GB LX, 1310nm wavelength, 25km distance nominal.
SFP12KX-ZX40	Gb fiber SFP transceiver for 12KX, rated -40 to 85°C, GB ZX, 1310nm wavelength, 40km distance.
SFP12KX-ZX70	Gb fiber SFP transceiver for 12KX, rated -40 to 85°C, GB ZX, 1550nm wavelength, 70km distance.

100Mb Fiber SFPs (small form-factor pluggable) Transceivers

Model No.	Description
SFP12KX-FXMM2	100FX fiber SFP transceiver for 12KX, rated -40° to 85°C, multi-mode, 2km distance.
SFP12KX-FXSM25	100FX fiber SFP transceiver for 12KX, rated -40° to 85°C, single-mode, 25km distance.
SFP12KX-FXSM100	100FX fiber SFP transceiver for 12KX, rated -40° to 85°C, single-mode, 100km distance.
SFP12KX-BIDI-A-20	100FX Fiber Optic SFP transceiver for Magnum 12KX, 20km with 9u singlemode, LC socket , -40 ºC to +85 ºC. Requires SFP12KX-BIDI-B-20 on opposite end of fiber
SFP12KX-BIDI-A-70	100FX Fiber Optic SFP transceiver for Magnum 12KX, 70km with 9u singlemode long haul, LC socket, -40 ºC to +85 ºC. Requires SFP12KX-BIDI-B-70 on opposite end of fiber
SFP12KX-BIDI-AB-20	100FX Fiber Optic SFP transceiver for Magnum 12KX, 20km with 9u singlemode, LC socket, -40 ºC to +85 ºC. Type A/B kit
SFP12KX-BIDI-AB-70	100FX Fiber Optic SFP transceiver for Magnum 12KX, 70km with 9u singlemode long haul, LC socket, -40 ºC to +85 ºC. Type A/B kit
SFP12KX-BIDI-B-20	100FX Fiber Optic SFP transceiver for Magnum 12KX, 20km with 9u singlemode, LC socket, -40 ºC to +85 ºC. Requires SFP12KX-BIDI-A-20 on opposite end of fiber
SFP12KX-BIDI-B-70	100FX Fiber Optic SFP transceiver for Magnum 12KX, 70km with 9u singlemode long haul, LC socket, -40 ºC to +85 ºC. Requires SFP12KX-BIDI-A-70 on opposite end of fiber

Other Options

Model No.	Description
CONSOLE-CBL-12KX	12KX console attachment cable, serial configuration cable.
ACA21-USB-12KX	12KX USB auto-configuration adapter for local configuration management.
CONFORM05-12KX	Conformal coating, 5 mil, for moisture protection.

GarrettCom, Inc.

47823 Westinghouse Drive
Fremont, CA 94539
PH: (510) 438-9071
FX: (510) 438-9072
Email: GCImktg@garrettcom.com