

PB 349

GarrettCom® Magnum 6KL Industrial Ethernet Managed Edge Switch

The high performance 6KL base unit comes with four 10/100 copper ports (either regular or PoE). Up to four 100Mb fiber ports or up to four more 10/100 copper ports, or combinations, may also be configured.



The Magnum 6KL is Ideal for Building a Switched, Hardened Ethernet Network Infrastructure and Connecting Edge Devices such as PLCs and LEDs with Upstream Switches or Routers.

Features

- Entry-level Heavy Duty Managed Switch for industrial networking applications
- Full-featured MNS-6K software in a small Edge Switch package, DIN-Rail or panel mounting
- Configurable, all 100Mb fiber port types, 10/100 copper ports, Gb with SFPs
- Metal case used as a heat sink (no fans), rated IP52
- DC power: 12V, 24V, 48V, 125V, 250VDC, Dual-Source; Universal
- PoE+ (802.3at) possible on four ports

High Performance

The Magnum 6KL Managed Edge Switches incorporate reliability and security for harsh environments, especially "edge" applications on the periphery of the network where industrial devices are connected. The high performance 6KL base unit comes with four 10/100 copper ports (either regular or standard 802.3af PoE). Up to 4 100Mb fiber ports or up to four more 10/100 copper ports, or combinations, may also be configured. Two Gb ports may be configured as SFP ports or as 10/100/1000 copper ports.

Network Software

The Magnum 6KL comes with the best-of-breed MNS-6K managed networks software, proven in tens of thousands of hardened applications over 10 years of service. It features GUI ease of use, Secure Web Management, SNMPv2,v3 management, 802.1p QoS Prioritization, Tag-based VLANs, IGMP Snooping and IGMP-L2 multicast management, port security, and a choice of software redundancy options including RSTP-2004 with industry leading fault recovery times in rings and meshes, and GarrettCom's S-Ring product which supports unmanaged switches as part of resilient rings. MNS-6K-SECURE adds more security features such as SSH, RADIUS and TACACS+ support, SFTP, DHCP Server, Syslog events, TFTP and SNMP Server. See the MNS-6K datasheet for more information.

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Applications

Magnum 6KLs are ideal for building a switched, hardened Ethernet network infrastructure, connecting edge devices such as PLCs and IEDs with upstream switches or routers. Designed for use in industrial and heavy duty outdoor applications such as industrial video surveillance systems with PoE, power utility substations, traffic control and transportation facilities, tariffed carrier field facilities, or oil and gas, the hardened Magnum 6KL handles stressful workloads.

Heat Sink Metal Casing

The 6KL's sealed metal case serves as a heat sink, enabling the 6KL to operate in the harshest industrial grade environments and achieves high EMI noise immunity. The 6KL is available with Conformal Coating options and is rated IP52 for dust and water resistance.

Power Supplies

The 6KL can be configured with the user's choice of DC power supplies: 12V and 24V for factory floor, 48V for tariffed carrier field facilities and for PoE-powered applications such as IP video surveillance, and 125V or 250V for substations. An internal AC power supply may also be chosen, universal AC for use worldwide.

Agency Approvals and Compliance

The Magnum 6KL Managed Edge Switch has all appropriate agency approvals and compliance certifications, including third-party UL testing for safety and temperature rating, NEBS L3 compliance, IEC 61850 & IEEE 1613 for power utilities, and NEMA TS-2 for use in transportation systems outdoors.

Warranty

Three years.

Product Specifications

Type	6KL
Product Description	Magnum 6KL Configurable Managed Edge Switch, base unit with DC power supply and four 10/100 copper ports. May be configured with a variety of 10/100/1000 Mb fiber and copper port connector types via selection from a family of 6KL port modules per this 6KL Configuration Guide. 10 ports max. Heavy duty fully enclosed metal case used as a heat sink, rated IP52 for environmental protection, no fans. For licensed network management software information (MNS-6K, MNS-6K-SECURE, and S-Ring), see their respective data sheets.
Mechanical	
Enclosure	Steel case. Vertical panel-mounting brackets included. Console port: RJ-45 serial interface
Console Port	RJ-45 serial interface
DIN-Rail Mounting	Model # DIN-Rail-6KL, optional
Enclosure Ingress Protection Rating	IP52, per IEC 60529, and NEMA-3,3X.
Cooling Method	Convection, fully-enclosed ribbed-surface aluminum case used as a heat sink, designed for vertical mounting, no fans.
Dimensions	8.0 in H x 1.75 in W x 6.0 in D in vertical panel-mount position. (20.3cm H x 4.4cm W x 15.2cm D)
Weight	2.1 lbs (.95 kg)
Network Standards	
Ethernet	IEEE 802.3, 802.3ab, 802.1p;10BASE-FL;100BASE-TX,FX;1000BASE-SX,LX,ZX
Auto-negotiation and Auto-Cross	10/100 TP and PoE, IEEE 802.3u.
All 100 Mb ports use Fast Ethernet rules. 1000 Mb ports use Gigabit rules.	
Performance	
Gigabit Ports, 1000 Mb	Configurable, standard 10/100/1000Mb copper or SFF transceiver modules for SX, ESX, LX, ZX, up to 2 Gigabit ports.
Fiber Ports, 100 Mb	SFF-FX (LC or MTRJ), multi-mode and single-mode for each type, max of three 100Mb fiber
RJ-45 Ports	100 or 10 Mb speed, full- or half-duplex mode, per port, individual determined. 10/100 auto-negotiating & auto-cross, up to eight ports. PoE Ports, RJ-45 Power Sourcing per IEEE 802.3af, power on data pair.
Processing Types	Store and Forward with IEEE 802.3p QOS and IEEE 802.3x.
All Ports Non-Blocking	System aggregate forward and filter rate 4.17M pps. Address table: 4K nodes, with address aging time of 300 seconds typical. Packet buffers: 240 KB for 10/100 and 120KB for 1000 Mb Latency: 6µs + packet time max (TX - TX, TX - FX, FX - FX, TX-G, G-G)
AC Power Supply (Internal)	
AC Power Connector	IEC-type, male recessed.
Power Input AC	100 to 240 VAC, 47 to 63 Hz (auto ranging).

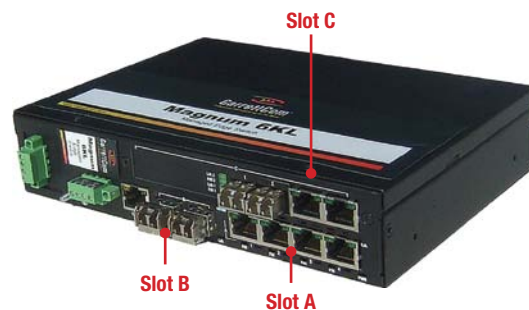
Product Specifications (continued)

DC Power Supply (Internal, floating ground for internal PCBs)	
Power Input	12V nominal (10 to 15V) 24V nominal (18 to 36V), 48V nominal (36 to 60V), 125V nominal (88 to 150V) 250V nominal (160 to 300V).
Power Input for PoE	Add up to 15 watts per PoE port to base unit power draw
Power Consumption	20 watts typical for a fully-loaded fiber model with 2Gb, 15 watts typical for eight port copper and 100 Mb fiber model.
Standard Terminal Block	"-, GND, +"
Dual Source	-A, -B, +A, +B, chassis ground.
DC Dual Power Source (Optional)	
All Magnum 6KL DC models (12, 24, 48, 125, and 250 VDC) may be ordered with optional Dual-Source DC power input, for continuity of operation when either one of the DC input sources is interrupted.	
LED Indicators (two sets) per RJ-45 Port	
LK	Steady ON when twisted-pair link is operational.
ACT	ON with port activity 100/10 ON = 100Mb speed, OFF = 10Mb (Port-side LED set only).
F/H	ON for full-duplex, OFF for half-duplex (PoE only, port-side only)
PoE	ON for power to PD device. Note: LK/ACT port becomes steady ON for Link, blinking for activity.
LED Indicators (two sets) per 100Mb Fiber Ports	
LK	Steady ON when fiber link is operational.
ACT	ON with port activity
LED Indicators per Gb Port	
LK	Steady ON when link is operational.
ACT	ON with port activity 1000Mb ON = Gb speed (Top-side LED set only, copper only)100/10 ON = 100Mb speed,OFF=10Mb (Port-side LED set only, copper only) 3 LEDs indicate Gb,100Mb or 10Mb.
Relay Contacts for Alarms	
Form C, one NC indicating internal power, one NC software controllable.	
Operating Environment	
Operating Temperature	IEC 60068 Operating temp. per "Type Test" -40° to 195°F (-40° to 85°C).
Temperature Rating (components)	UL 60950 -40° to 140°F (-40° to 60°C).
Storage Temperature	-60° to 210°F (-50°to 100°C).
Relative Humidity	5% to 95% (non-condensing).
Altitude	-200 to 13000ft (-60 to 4000m).
Conformal Coating (humidity protection)	Request quote.
Network Cable Connectors	
1000 Mb Fiber Ports	All standard Gb SFP Transceiver types supported.
1000 Mb Copper Ports	10/100/1000Mb auto-negotiating, Cat5e & 6 UTP/STP.
100 Mb Copper and PoE Ports	Category 5 UTP/STP; 10 Mb: Cat. 3, 4, 5 UTP/STP.
100 Mb Fiber Ports	Multi-mode and single-mode FX-MTRJ, LC.
Agency Standards Approval and Compliance	
UL/cUL 60950	cUL, CE, Emissions meet FCC Part 15, Class A.
IEC61850	EMC and Operating Conditions Class C for Power Substations.
IEEE 1613 Class 2	Environmental Standard for Electric Power Substations.
NEBS	Level 3 and ETSI Compliant.
EN50155	Compliant.
NEMA TS-2 & TEES	For DC-powered and PoE-powered traffic control equipment.
EN61000	EN61000-4-1, -4-2, -4-3, -4-4, -4-5 Compliant
Warranty	
Warranty	Three Years.

Magnum 6KL Configuration Guide

Magnum 6KL Industrial Ethernet Managed Edge Switch

Magnum 6KL Configurable Managed Edge Switch, base unit with DC power supply and four 10/100 copper ports. May be configured with a variety of 10/100/1000 Mb fiber and copper port connector types via selection from a family of 6KL port modules. 10 ports max. Heavy duty fully enclosed metal case used as a heat sink, rated IP52 for environmental protection, no fans.



Step 1. Slot A: Choose 6KL chassis and power input type:

Model No.	Base Unit Description
6KL-24VDC	24V (18-36) DC power, slot A has 4 10/100 ports
6KL-12VDC	12V (10-15) DC power, slot A has 4 10/100 ports
6KL-48VDC	-48V (44-57) DC power, slot A has 4 10/100 ports
6KLP-48VDC	-48V (44-57) DC power, slot A has 4 (802.3af) PoE 10/100 ports
6KL-125VDC	125V (88-150) DC power, slot A has 4 10/100 ports
6KL-250VDC	250V (160-300) DC power, slot A has 4 10/100 ports
6KL-AC	100 to 240 VAC, 47 to 63 Hz, slot A has 4 10/100 ports

Step 2. Slot C: If more than four ports at 10/100 or fiber at 100Mb is desired, choose one module from below. Slot C is a maximum of four ports.

Module No.	10/100 RJ-45 Copper	100BASE-FX Fiber SFP
6KL4-RJ45	4	0
P6KL4-RJ45 <small>(requires 6KLP-48V chassis)</small>	4 (PoE 802.3af)	0
PP6KL4-RJ45 <small>(requires any 48V chassis)</small>	4 (PoE+802.3af)	0
6KL4-4MLC	0	4 multi-mode LC 2km
6KL4-2MLC2RJ	2	2 multi-mode LC 2km
6KL4-4SLC	0	4 single-mode LC 20km
6KL4-2SLC2RJ	2	2 single-mode LC 20km
6KL4-2SST2RJ	2	2 single-mode ST 20km
6KL4-4SLCL	0	4 single-mode LC 40km
6KL4-2SLCL2RJ	2	2 single-mode LC 20km
6KL4-4MT	0	4 multi-mode MTRJ 2km
6KL4-2MT2RJ	2	2 multi-mode MTRJ 2km
6KL4-4MSC	0	4 multi-mode SC 2km
6KL4-2MSC2RJ	2	2 multi-mode SC 2km
6KL4-4MST	0	4 multi-mode ST 2km
6KL4-2MST2RJ	2	2 multi-mode ST 2km
6KL4-2SLC2MLC	0	2 multi-mode SC / 2 single-mode SC
6KL4-1MT3RJ	3	1 multi-mode MTRJ 2km
6KL4-1MLC3RJ	3	1 multi-mode LC 2km
6KL4-1SLC3RJ	3	1 single-mode LC 20km
6KL4-1SLCL3RJ	3	1 single-mode LC 40km
6KL1-1MT	0	1 multi-mode MTRJ 2km
6KL1-1MLC	0	1 multi-mode LC 2km
6KL1-1SLC	0	1 single-mode LC 20km
6KL4-1SLCL	0	1 single-mode LC 40km
6KL4-1SL3MLC	0	1 multi-mode LC 2km 3 single-mode LC 20km
6KL4-2SL2MLC	0	2 multi-mode LC 2km 2 single-mode LC 20km
6KL4-1ML1SLC2RJ	2	1 multi-mode LC 2km 1 single-mode LC 20km
6KL4-2SSC2RJ	2	2 single-mode SC 20km
6KL4-4SSC	0	4 single-mode SC 20km
6KL4-4SSCL	0	4 single-mode SC 40km
6KL4-2FX2FLMST	0	2 multi-mode 10Mb SC 2km 2 100Mb ST
6KL4-4FLST	0	4 multi-mode 10Mb ST 2km

Step 3. Slot B: Choose from the following for optional Gb. (Gb is only available in slot B. Slot B may only be Gb).

Module No.	Gigabit
Gb modules, fixed SFP ports	
6KL-2GSFP	2 SFP
6KL-2GCU	2 CU
Gb SFP Fiber optic transceivers	
SFP-GTP	Gb Copper
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

Step 4. Choose options & extras:

Model No.	Description
DIN-Rail-6KL	DIN-Rail mount for 6KL
KL-2TRAY	Rack-mount tray for two 6KM for 19" mounting
DUAL-SRC	Two separate power inputs (12/24/48/125/250V)
S-RING-KEY	Software, self-healing ring management
CONSOLE-CBLQD	Console attachment cable serial null Modem (aka X-modem) cable with DB9 connectors
CONSOLE-CBLQU	As above, but with a USB connector
CONFORM05-CRM	Conformal coating, 5 mil, for moisture protection
CONFORM08-CRM	Conformal coating, 8 mil, for corrosive environ.
MNS-6K-SECURE-LIC1	Optional, licensed per switch for extra security
KQ-CABLE-BKT	Bracket for cable tie-wrap attachment