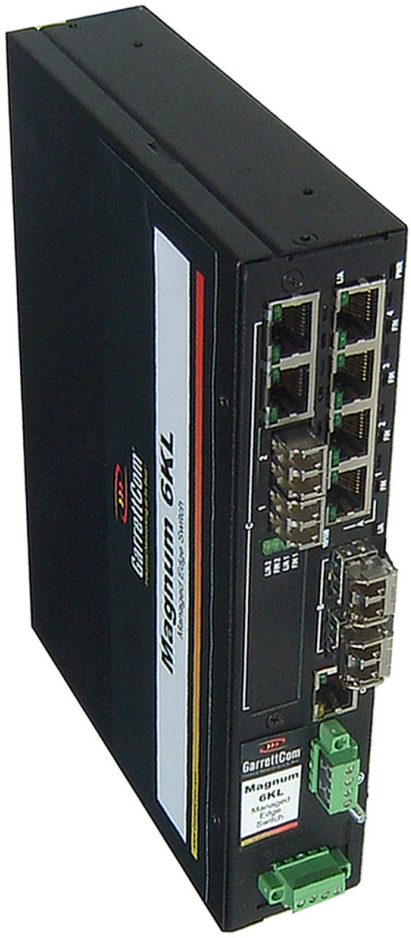
Magnum 6KL

Industrial Ethernet Managed Edge Switch

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 AC, PoE



Magnum™ 6KL Managed Edge Switches incorporate the latest in 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 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.

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 SNTP Server. See the MNS-6K and MNS-6K-SECURE datasheets for more information.

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.

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.

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.

Like all Magnum products, the 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.

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Specifications

6KL Industrial Ethernet Managed Edge Switch

PERFORMANCE:
RJ-45 Ports: 100 or 10 Mb speed, full- or half-duplex mode, per port, individ. determined. 10/100 auto-negotiating & auto-cross, up to 8 ports. Up to 8 PoE Ports, RJ-45 Power Sourcing per IEEE 802.3af, power on data pair.
Fiber Ports, 100 Mb: SFF-FX (LC or MTRJ), multi-mode and single-mode for each type, max of four 100Mb fiber
Gigabit Ports, 1000 Mb: Configurable, standard 10/100/1000Mb copper or SFP transceiver modules for SX, ESX, LX, ZX , up to 2 Gigabit ports.
Processing type: 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: 8K nodes, with address aging time of 300 seconds typical.
Packet buffers: 128 KB total
Latency: 6µs + packet time max (TX - TX, TX - FX, FX - FX, TX-G, G-G)

NETWORK STANDARDS:
IEEE 802.3, 802.3ab, 802.1p:100BASE-TX,FX;1000BASE-SX,LX,ZX
Auto-negotiation and auto-cross on 10/100 TP and PoE, IEEE 802.3u
See MNS-6K & MNS-6K-SECURE datasheets for software network standards.
All 100 Mb ports use Fast Ethernet rules. 1000 Mb ports use Gigabit rules.

OPERATING ENVIRONMENT:
IEC 60068 Operating temp. per "Type Test" -40° to 195°F (-40° to 85°C)
UL 60950 and "Component Parts" rating: -40° to 140°F (-40° to 60°C)
Storage: -60° to 210°F (-50°to 100°C)
Relative humidity: 5% to 95% (non-condensing)
Altitude: -200 to 13,000ft (-60 to 4,000m)
Conformal coating (humidity protection) optional: Request quote

NETWORK CABLE CONNECTORS:
1000Mb fiber ports: all standard Gb SFP Transceiver types supported
1000Mb copper ports:10/100/1000Mb auto-negotiating, Cat5e & 6 UTP/STP
100Mb Copper and PoE: Category 5 UTP/STP; 10 Mb: Cat. 3, 4, 5 UTP/STP
100 Mb Fiber ports options: multi-mode and single-mode FX-MTRJ, LC
For other port types and port connector types, request quote

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 pwr draw
Power Consumption: 15 watts typical for a fully-loaded fiber model with 2Gb, 10 watts typical for 8 port copper and 100 Mb fiber model.
Std. Terminal Block: "-, GND, +". Dual Source is -A, -B, +A, +B, chassis gnd.

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.

AC POWER SUPPLY (Internal):
AC Power Connector: IEC-type, male recessed
Power Input, AC: 100 to 240 VAC, 47 to 63 Hz (auto ranging)

RELAY CONTACTS FOR ALARMS:
Form C, one NC indicating internal power, one NC software controllable.

MECHANICAL:
Enclosure: Steel case. Vertical panel-mounting brackets included. 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 steel 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)

LED INDICATORS PER RJ-45 PORT:
L/A: Steady ON for Link, blinking for activity
100/10 ON = 100Mb speed, OFF = 10Mb
F/H: ON for full-duplex, OFF for half-duplex, blinking for collision
PoE: ON for power to PD device.

LED INDICATORS per 100Mb FIBER PORT:
L/A: Steady ON for Link, blinking for activity
F/H: ON for full-duplex, OFF for half-duplex, blinking for collision

LED INDICATORS PER Gb PORT:
L/A: Steady ON for Link, blinking for activity
1000Mb ON = Gb speed
(copper only) 3 LEDs indicate Gb,100Mb or 10Mb

AGENCY APPROVALS AND STANDARDS COMPLIANCE:
UL Listed (UL60950), cUL, CE, Emissions meet FCC Part 15, Class A.
IEC 61850 EMC and Operating Conditions Class C for Power Substations
IEEE 1613 Class 2 Environmental Standard for Electric Power Substations
NEBS L3 and ETSI compliant
NEMA TS-2 & TEES for DC-powered and PoE-powered traffic ctrl eqpt.
EN50155 Compliant
EN61000-4-1, -4-2, -4-3, -4-4, -4-5 Compliant

WARRANTY: Three years

Made in USA

Ordering Information

Magnum 6KL-24VDC	Magnum 6KL Managed Edge Switch, base unit with four 10/100 copper ports in slot A. Up to 4 100Mb fiber ports or up to four more 10/100 copper ports (or combinations) may also be configured, and up to 2 Gb ports. Heavy duty metal case, IP52 for environmental protection, no fans.
Magnum 6KL-12VDC	Same as Model 6KL-24VDC except the power input is 12VDC.
Magnum 6KL-48VDC	Same as Model 6KL-24VDC except the power input is -48VDC.
Magnum 6KLP-48VDC	PoE, same as Model 6KL-48VDC except the four 10/100 ports are PoE-enabled, data pairs.
Magnum 6KL-125VDC	Same as Model 6KL-24VDC except the power input is 125VDC nominal (range 88-150VDC).
Magnum 6KL-250VDC	Same as Model 6KL-24VDC except the power input is 250VDC nominal (range 160-300VDC).
Magnum 6KL-AC	Same as Model 6KL-24VDC except the power input is AC; 100 to 240 VAC, 47 to 63 Hz.

Configuration Options: Each Magnum 6KL may be configured with a choice of 100Mb ports in the C slot.

6KL4-RJ45	6KL configuration, add four 10/100 copper ports in 6KL slot C
P6KL4-RJ45	6KL configuration, add four 10/100 PoE copper ports in 6KL slot C
6KL4-4MLC	6KL configuration, add four mm 2km 100Mb LC fiber ports in slot C
6KL4-2MLC2RJ	6KL configuration, add two 10/100 copper and two mm 2km 100Mb LC fiber ports in slot C
6KL4-4SLC	6KL configuration, add four sgl-m 20km 100Mb LC fiber ports in slot C
6KL4-2SLC2RJ	6KL configuration, add two 10/100 copper and two sgl-m 20km 100Mb LC fiber ports in slot C
6KL4-4SLCL	6KL configuration, add four sgl-m 40km 100Mb LC fiber ports in slot C
6KL4-2SLCL2RJ	6KL configuration, add two 10/100 copper and two sgl-m 40km 100Mb LC fiber ports in slot C
6KL4-4MT	6KL configuration, add four mm 2km 100Mb MTRJ fiber ports in slot C
6KL4-2MT2RJ	6KL configuration, add two 10/100 copper and two mm 2km 100Mb MTRJ fiber ports in slot C
6KL4-4MSC	6KL configuration, add four mm 2km 100Mb SC fiber ports in slot C
6KL4-2MSC2RJ	6KL configuration, add two 10/100 copper and two mm2 km 100Mb SC fiber ports in slot C
6KL4-4MST	6KL configuration, add four mm 2km 100Mb ST fiber ports in slot C
6KL4-2MST2RJ	6KL configuration, add two 10/100 copper and two mm 2km 100Mb ST fiber ports in slot C

Other models are available for single-mode fiber LC ports at 40KM, 70Km, and longer distances.

Each Magnum 6KL may be configured with a choice of Gb ports in the B slot.

6KL-2GCU	6KL Gig module, two auto-negotiating 10/100/1000 Mb copper ports
6KL-2GSFP	6KL Gig module, two SFP pluggable open transceiver ports for user-selectable SFP Gb transceivers in each, configure in 6KL slot B only. Gb SFP's are available for multi-mode SX (550M) and ESX (2KM); for single-mode LX (10 and 25KM), ZX (40 and 70KM); and specials.

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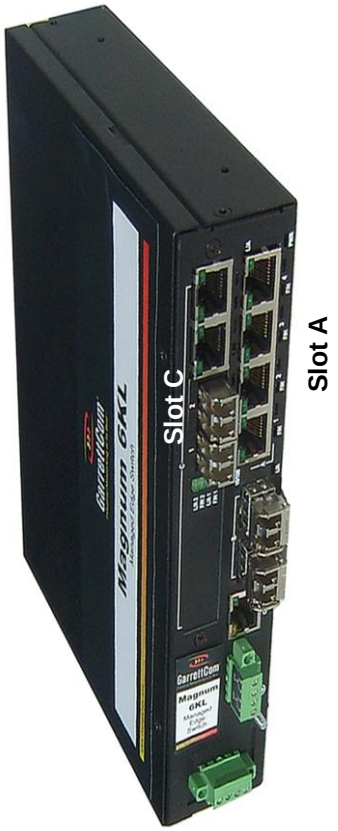
Magnum 6KL Configuration Guide

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.

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

Model #	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 **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 4 ports at 10/100 or fiber at 100Mb is desired, choose one module from below.

Slot C is always *four* ports, of which a maximum of four may be 100Mb

Module Model #	10/100 RJ-45 Copper	100BASE-FX Fiber SFF
6KL4-RJ45	4	0
P6KL4-RJ45 ***(requires 6KLP-48VDC chassis)***	4 (PoE 802.3af)	0
PP6KL4-RJ45 ***(requires either 48VDC chassis)***	4 (PoE 802.3at)	0
6KL4-4MLC	0	4 mm LC 2km
6KL4-2MLC2RJ	2	2 mm LC 2km
6KL4-4SLC	0	4 sgl.m LC 20km
6KL4-2SLC2RJ	2	2 sgl.m LC 20km
6KL4-2SST2RJ	2	2 sgl.m ST 20km
6KL4-4SLCL	0	4 sgl.m LC 40km
6KL4-2SLCL2RJ	2	2 sgl.m LC 40km
6KL4-4MT	0	4 mm MTRJ 2km
6KL4-2MT2RJ	2	2 mm MTRJ 2km
6KL4-4MSC	0	4 mm SC 2km
6KL4-2MSC2RJ	2	2 mm SC 2km
6KL4-4MST	0	4 mm ST 2km
6KL4-2MST2RJ	2	2 mm ST 2km
6KL4-2SLC2MLC	0	2 mmSC, 2smSC

Module Model #	10/100 RJ-45 Copper	100BASE-FX Fiber SFF
6KL4-1MT3RJ	3	1 mm MTRJ 2km
6KL4-1MLC3RJ	3	1 mm LC 2km
6KL4-1SLC3RJ	3	1 sgl.m LC 20km
6KL4-1SLCL3RJ	3	1 sgl.m LC 40km
6KL1-1MT	0	1 mm MTRJ 2km
6KL1-1MLC	0	1 mm LC 2km
6KL1-1SLC	0	1 sgl.m LC 20km
6KL4-1SLCL	0	1 sgl.m LC 40km
6KL4-1SL3MLC	0	1 mm LC 2km 3 sgl.m LC 20km
6KL4-2SL2MLC	0	2 mm LC 2km 2 sgl.m LC 20km
6KL4-1ML1SLC2RJ	2	1 mm LC 2km 1 sgl.m LC 20km
6KL4-2SSC2RJ	2	2 sgl.m SC 20km
6KL4-4SSC	0	4 sgl.m SC 20km
6KL4-4SSCL	0	4 sgl.m SC 40km

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 Model #	Gigabit
Gb Modules, fixed ports--SFP	
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 and extras:

Model #	Description
DIN-Rail-6KL	DIN-Rail mount for 6KL
KL-2TRAY	Rack-mount tray for 2 6KM for 19” mounting
DUAL-SRC	2 separate power inputs (12/24/48/125V)
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	Optional, licensed per switch for extra security