Magnum 6KM

Mobile Ethernet Switch

Features

- **Heavy Duty Managed Switches for mobile networking applications**

- **Uses M12 connectors (in lieu of RJ45) to withstand shock & vibration**

- **Configurable ports for 10/100 copper, PoE, fiber, and Gb copper or fiber**

- **Full-featured MNS-6K software in a small rugged package**

- **Power choices: DC at 110V for railways, 12V, 24V, 48V, 125V, 250V, Dual-Source; Universal AC**

Magnum™ 6KM Mobile Ethernet Switches are the first industrial-grade switches purpose built for mobile networking applications. Where mission critical networks are vehicular and subject to continuous motion and vibration while in operation, Magnum 6KMs are the choice. Designed to travel and built with military-style M12 connectors, 6KMs withstand shock and vibration in the harshest of mobile environments, but do not carry the excessive cost of mil-spec waterproof products.

The high performance Magnum 6KM base unit comes with four 10/100 M12 copper ports (either regular or PoE). Up to four 100Mb fiber ports or up to four more 10/100 M12 copper ports, or combinations, may also be configured. Two Gigabit ports may also be configured with 10/100/1000 M12 copper ports or LC-type fiber.

The Magnum 6KM Mobile Ethernet Switches come 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. MNS-6K-SECURE adds more security features such as SSH, RADIUS and TACACS+ support, SFTP, DHCP Server, Syslog events, TFTP and SNTP Server.

Magnum 6KMs are ideal for mobile networks such as on passenger railways, public service and emergency vehicles, shipboard, mining equipment, and military vehicles. Applications include in-carriage networking of IP-enabled infotainment systems, security and surveillance systems, and mobile network devices on trains, light rail and busses, as well as passenger accommodation technology in a variety of mobile scenarios. The 6KM Mobile Ethernet Switch has the appropriate agency approvals, including EN50155 and EN50121-4 Railway Applications Standards, IEC61373 for shock and vibration, NEMA TS-2 for transportation systems outdoors, and DNV certification for shipboard and other marine applications. Additional certifications include third-party UL testing for safety, NEBS L3 compliance, and IEC 61850 & IEEE 1613 for power utilities.

The 6KM's sealed metal case serves as a heat sink, enabling it to operate in the harshest mobile environments and achieves high EMI noise immunity. The 6KM is available with optional Conformal Coating for moisture resistance and is rated IP52 for protection against dust and dirt. The 6KM can be configured with the user's choice of power input, including DC at 12V, 24V, 48V, 110V, 125V, 250V, and Dual-Source for each, as well as universal AC.

Specifications

PERFORMANCE:
M12 Copper 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, Power Sourcing per IEEE 802.3af, power on data pair.
Fiber Ports, 100Mb: Fiber LC-type, m-m and sgl-m, max of four 100Mb fiber
M12 Copper Gb speed, two standard 10/100/1000Mb copper
Fiber Ports, Gb: two fiber LC-type, multi- or single-mode
Processing type: Store and Forward with IEEE 802.3p QOS & IEEE 802.3x. All Ports non-blocking. System aggregate forward and filter rate 4.17M pps. Address table: 8K nodes.
Packet buffers: 128 KB total
Latency: $6\mu s$ + packet time max (TX - TX, TX - FX, FX - FX, TX-G, G-G)
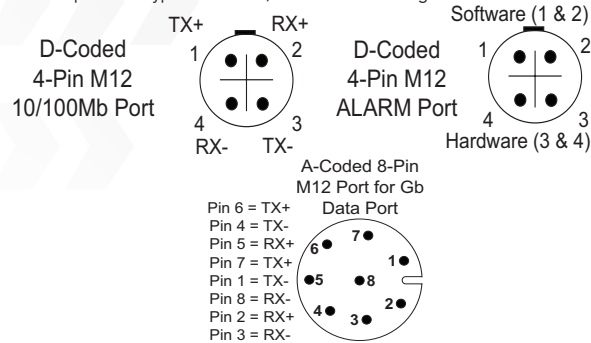
NETWORK STANDARDS:
IEEE 802.3, 802.3ab, 802.1p:100BASE-TX,FX
Auto-negotiation and auto-cross on 10/100 TP and PoE, IEEE 802.3u
See MNS-6K & MNS-6K-SECURE datasheets for software network standards.
All 100 Mb ports use Fast Ethernet rules. 1000 Mb ports use Gigabit rules.

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:
10/100Mb Copper and PoE: 4-pin D-coded M12 connectors, female
100 Mb Fiber ports: LC-type connectors, multi-mode and single-mode
Gb copper ports: 8-pin M12 connectors, female
Gb fiber ports: LC-type connectors, multi-mode and single-mode

D-Coded 4-Pin M12 10/100Mb Port
1 = TX+, 2 = RX+, 4 = RX-, 3 = TX-

D-Coded 4-Pin M12 ALARM Port
Software (1 & 2), Hardware (3 & 4)

A-Coded 8-Pin M12 Port for Gb Data Port
Pin 6 = TX+
Pin 4 = TX-
Pin 5 = RX+
Pin 7 = TX+
Pin 1 = TX-
Pin 8 = RX-
Pin 2 = RX+
Pin 3 = RX-

Ordering Information
(see 6KM Configuration Guide for Complete Details)
Magnum 6KM-110VDC Magnum 6KM Managed Ethernet Switch, base unit with four 10/100 M12 copper ports in slot A. Up to 4 100Mb fiber ports or up to 4 more 10/100 M12 copper ports (or combination) may also be configured, and up to 2 Gb ports. Heavy duty metal case, IP52 for environmental protection, no fans. Power input is 110VDC nominal (range 77-137VDC).

Magnum 6KM-12VDC	Same as 6KM-110VDC except the power input is 12VDC
Magnum 6KM-24VDC	Same as 6KM-110VDC except the power input is 24VDC
Magnum 6KM-48VDC	Same as 6KM-110VDC except the power input is -48VDC
Magnum 6KMP-48VDC	PoE, same as 6KM-110VDC except the four 10/100 ports are PoE-enabled, data pairs.
Magnum 6KM-125VDC	Same as 6KM-110VDC except the power input is 125VDC nominal (range 88-150VDC)
Magnum 6KM-250VDC	Same as 6KM-110VDC except the power input is 250VDC nominal (range 160-300VDC)
Magnum 6KM-AC	Same as 6KM-110VDC except power input is 100 - 240 VAC

Configuration Options: 6KM may be configured w/a choice of 100Mb ports in Slot C.

6KM4-4M12	6KM configuration, add 4 10/100 M12 copper ports in 6KM slot C
P6KM4-4M12	6KM configuration, add 4 10/100 M12 PoE copper ports in 6KM slot C
6KM4-4MLC	6KM configuration, add 4 mm 2km 100Mb LC fiber ports in slot C
6KM4-4SLC	6KM configuration, add 4 sgl-m 20km 100Mb LC fiber ports in slot C
6KM4-4SLCL	6KM configuration, add 4 sgl-m 40km 100Mb LC fiber ports in slot C

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

6KM-2GM12	6KM Gb module, 2 auto-negotiating 10/100/1000 Mb M12 copper ports
6KM-2GMLC	6KM Gb module, 2 Gb LC mm 2km fiber ports
6KM-2GSLC	6KM Gb module, 2 Gb LC sgl-m 20km fiber ports
6KM-2GSLCL	6KM Gb module, 2 Gb LC sgl-m long-reach 40km fiber ports

DUAL-SOURCE 110VDC, 125VDC, 12VDC, 24VDC, or -48VDC input is a configuration option,
CONSOLE-CBLM Console Cable for 6KM, with an M12 for the 6KM unit and a DB-9 connector for a PC. Also includes a conversion/extender cable to go from DB-9 to USB.

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), 110V nominal (77-137V) 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.
DC Power Connector: RD 24 locking, Male

DC DUAL POWER SOURCE (OPTIONAL):
All Magnum 6KM DC models (12, 24, 48, 110, 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):
Power Input, AC: 100 to 240 VAC, 47 to 63 Hz (auto ranging)
AC Power Connector: RD 24 locking, Male

RELAY CONTACTS FOR ALARMS:
M12 port, Form C, one NC indicating internal power, one NC software controllable.

MECHANICAL:
Enclosure: Steel case. Panel-mounting brackets included. Console port:
M12 interface, male, cable available from GCI
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 panel mounting, no internal fans.
Dimensions: 9.0 in H x 2.2 in W x 6.0 in D in vertical panel-mount position. (22.7cm H x 5.5cm W x 15.2cm D) Weight: 2.1 lbs. (.95 kg)

LED INDICATORS PER M12 10/100Mb PORT:
L/A: Steady ON for Link, blinking for activity
PoE: ON for power to PD device.

LED INDICATORS per FIBER PORT:
L/A: Steady ON for Link, blinking for activity; F/H: ON = Full Duplex

LED INDICATORS PER M12 Gb PORT:
1000Mb ON = Gb speed; 10Mb ON = 10Mb speed; Both on = 100Mb

AGENCY APPROVALS AND STANDARDS COMPLIANCE:
UL Listed (UL60950), cUL, CE, Emissions meet FCC Part 15, Class A.
Shock: IEC61373, IEC 60068-2-27
Vibration: IEC61373, IEC 60068-2-6 FC
EN50155 and EN50121-4 Railway Applications Standards,
NEMA TS-2 & TEES for DC-powered and PoE-powered traffic ctrl eqpt.
DNV for shipboard and offshore applications
IEC 61850 EMC and Operating Conditions Class C for Power Substations
IEEE 1613 Class 2 Environmental Standard for Electric Power Substations
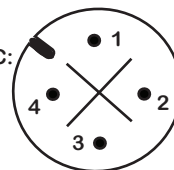NEBS L3 and ETSI compliant

WARRANTY: Three years   Made in USA

Male DC Power Connector

For Dual-Source DC:
Pin 1 = A+
Pin 2 = B+
Pin 3 = B-
Pin 4 = A-

Male AC Power Connector

Pin 1 = AC
Pin 2 = AC
Pin 3 = NC
Pin 4 = Gnd

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