GarrettCom®

PB 353

GarrettCom® Magnum™ 6K16 Series Modular Managed Switch

16-port, Configurable Managed Fiber Switch. Magnum 6K16 is for mounting in 19"or ETSI or 23" Telco racks with front-to-rear fan cooling and Magnum 6K16V model is designed for vertical or DIN-Rail mounting with no fans.

The Magnum 6K16 Managed Ethernet Switches provide configurability for fiber and copper ports, 10 Mb, 100 Mb and Gigabit speed ports, with comprehensive management software in a compact, rack-mount (two units side-by-side) or vertical mount package.

Features

- Magnum 6K16 Industrial Managed Ethernet Switch for mounting in 19"or ETSI or 23" Telco racks with front-to-rear fan cooling and Magnum 6K16V model designed for vertical or DIN-Rail mounting with no fans

- Provides 2 modular slots for user selection of 100Mb, 10 Mb, Gigabit fiber ports, and copper 10/100, Gigabit ports

- Choose from a family of 20 port modules for almost unlimited configuration flexibility

- Options include -48VDC, 24VDC, 125VDC, dual source, or AC power

- Tested for high availability Telco & Industrial applications, NEBS and ETSI compliant and IEEE 1613 and IEC 61850 standards for electric power substations

Configurable and Reliable

Magnum™ 6K16 Series Managed Fiber Switches provide modularity of fiber and copper ports, 10Mb 100Mb and Gigabit speed ports, and comprehensive management software in a compact industrial-grade package.

Setting a new standard for Industrial and Carrier Class applications, heavy duty Ethernet Switch jobs are readily accommodated with an extended temperature rating of -40°C to 60°C by the UL Component Parts method, or -50°C to 95°C by the IEC 60068 Type Test method. With options such as all popular DC power input types, worldwide AC power, and DIN-Rail mounting, the hardened Magnum 6K16 Series Switch is a "go-anywhere do-anything" Industrial Ethernet Switch.

The large family of port modules offer the choice of all fiber media (all connector types, multi- and single-mode) and 10/100 Mb autonegotiating RJ-45 ports. Standard GBIC ports can be configured for a variety of Gigabit cabling types and distances.

High performance features include non-blocking speed on all ports and 802.1p QoS Traffic Prioritization. The Magnum 6K16 series are "plug-and-play" ready for use as backbone switches where a mix of bursty data traffic and priority streaming traffic for VoIP and audio/video applications is present.

Be Certain with Belden®

GarrettCom Magnum 6K16 Series Switch

The Magnum 6K16 series switches are designed for use in telecom equipment systems, industrial process plants, power utilities, transportation and traffic control systems and video surveillance jobs with segments requiring Gigabit backbone interconnections, the Magnum 6K16 series switch is easy to install and operate.

The next generation of industrial applications will need advanced managed network software, operation at extended temperatures, fiber ports modularity, support for self-healing ring structures, and gigabit backbone configurability.

Management Software

Magnum 6K16 series switches are provided with LAN management software including SNMP, Tag- and Port-based VLANs, IGMP Snooping and Port Security, control via command line interface. For high availability LANs using ring topologies, Spanning Tree Protocol, Link-Loss-Learn™ and S-Ring™ are available.

Design

Magnum 6K16 Series Managed Switches have heavy duty metal cases and auto-ranging power supplies for operation with standard AC power worldwide. Internal DC power supplies are optional. The 6K16 series switch is designed and manufactured in the USA and backed by a three year warranty.

Product Specifications

Type	6K16	6K16V
Product Description	Magnum 6K16 Managed Switch, base unit for horizontal mounting. May be configured with a variety of 10/100/1000 Mb fiber and copper port connector types from a family of port modules. 16 ports max. AC and DC power types. Wire speed filtering and forwarding across all ports, 802.3x flow control, 802.1p priority packet processing, 4K node address table, 240KB packet buffers	Magnum 6K16V Managed Fiber Switch, base unit for vertical mounting. May be configured with a variety of 10/100/1000 Mb fiber and copper port connector types from a family of port modules. 16 ports max. 4K node address table, 240KB packet buffers
Mchanical		
Enclosure	High-strength metal. Panel-mount brackets for secure horizontal mounting included	High-strength metal. For vertical panel or DIN-Rail mounting.
Rack-mounting Brackets	Model K16-RMB for one unit in a 1U rack space Model K16-2TRAY for 2 units side-by-side in a 1.5U rack space	DIN-Rail mounting: Model DIN-Rail-VRM, optional
Cooling Method	Fan cooled, 3 fans each rated 3 cfm,rear-mounted w/front-to-rear air flow	Convection, designed for vertical mounting, no fans
Dimensions	1.75 in H x 8.75 in W x 10.0 in D (4.4 cm H x 22.2 cm W x 25.4 cm D)	9.50 in H x 8.75 in W x 1.75 in D (24.1 cm H x 22.2 cm W x 4.4 cm D)
Weight	4.0 lbs. (1.8 kg)	4.2 lbs. (1.9 kg)
Network Standards		
Ethernet	IEEE 802.3z, 802.3ab, 802.1p: 10BASE-FL, 100BASE-TX, -FX, 1000BASE-SX, -LX	
Auto-negotiation and Auto-crossover	TP, IEEE 802.3u	
Performance		
Fiber Ports, 100 Mb (multi-mode and single-mode)	Configurable SC, ST, LC, MTRJ, Small Form Factor (SFF) is featured for high fiber port density	
Gigabit Ports, 1000 Mb	Configurable, standard GBIC transceiver modules, up to 4 Gigabit ports	
RJ-45 Ports	100 or 10 Mb speed, full- or half-duplex mode, per port, individually determined. 10/100 auto-negotiating and auto-cross, up to 16 ports.	
All Ports Non-Blocking	Store and Forward with IEEE 802.3x full-duplex flow control. System aggregate forward and filter rate 6.0 Mpps. Address table: 4K nodes, with address aging time of 155 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)	

Product Specifications (continued)

AC (IEC-type, Male Recessed)	
Power Input, AC	100 to 240 VAC, 47 to 63 Hz (auto ranging)
Power Consumption	50 watts typical for a fully-loaded fiber model, 30 watts typical for 16 port copper-only models.
DC Dual Power Source (optional)	
The Magnum 6K16 Series may be ordered with optional Dual DC power input, for continuity of operation when either one of the DC input sources is interrupted. Available for -48VDC, 24VDC or 125VDC	
DC Power Supply Options	
-48VDC	Input -36 to -70VDC (PoE input range: -44 to -57VDC)
24VDC	Input 20 to 40VDC
125VDC and 110VDC nominal	Input 88 to 300VDC
Std. Terminal Block: "-, GND, +", Power Consumption: Same as AC	
LED Indicators, 100 Mb and 10Mb Fiber Ports	
LK	Steady on when twisted-pair link is operational.
ACT	On with port activity
F/H	ON = full-duplex mode, OFF = half-duplex mode. ON = full-duplex mode, OFF = half-duplex mode. 100/10 ON = 100Mb speed, OFF = 10Mb
LED Indicators, per RJ-45 Port	
LK	Steady on when fiber link is operational.
ACT	On with port activity
F/H	ON = full-duplex mode, OFF = half-duplex mode.
Relay Contacts for Alarms (except PoE version)	
Alarm Contact	Form C, one NC indicating internal power, one NC software controllable
Operating Environment	
Operating Temperature	IEC 60068 Operating temp. per "Type Test" -60° to 205°F (-50° to 95°C)
Temperature Rating (components)	UL 60950 140°F (60°C)
Storage Temperature	-60° to 210°F (-50°to 100°C)
Ambient 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 Ports	Standard SFPs and GBICs supported, see modules description
100 Mb Fiber Ports	Multi-mode FX-MTRJ, LC, ST, SC; single-mode 20km LC, SC and ST, and 50km "long reach" single-mode LC, SC.
100 Mb Copper Ports	Category 5 UTP/STP; 10 Mb: Cat. 3,4, 5 UTP/STP
Agency Standards Approval and Compliance	
UL/cUL 60950, EN55022 FCC Part 15	CE, EMC & ENV
IEC61850-3	EMC and Operating Conditions Class C for Power Substations
IEEE 1613 Class 2	Environmental Standard for Electric Power Substations
NEBS L3 and ETSI	Telecommunications
NEMA TS-2 and TEES	Traffic Control
EN50155	Railways
DNV	Marine
Warranty	
Warranty	Three Years

Magnum 6K16 Series Configuration Guide

Magnum 6K16 Managed Switch

Magnum 6K16 Managed Switch, base unit with front-to-rear fan cooling, for rack mounting or tabletop and Magnum 6K16V Managed Fiber Switch for vertical mounting. May be configured with a variety of 10/100/1000 Mb fiber and copper port connector types via selection from a family of port modules. 16 ports max. Wire speed filtering/ forwarding across all ports, 2 alarm contacts. Two 6K16 units can be mounted side by side in a 19" rack and metal brackets for vertical wall/ panel mounting of 6K16V included. Note: MNS-6K and MNS-6K-SECURE software are licensed for 6K switches.

6K16V Shown Here   **Slot A**   **Slot B**
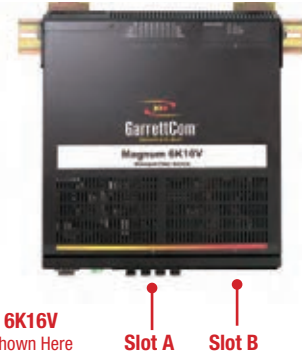
Step 1. Choose 6K16 chassis and power input type.

Model No.	Base Unit, Description
6K16-AC	AC Power
6K16V-AC	AC Power vertical mount
6K16-24V	24V (18-36) DC power
6K16V-24V	24V (18-36) DC power vertical mount
6k16-48V	-48V (36-70) DC power
6K16V-48V	-48V (36-70) DC power vertical mount
6K16-125V	125V (88-300) DC power
6K16V-125V	125V (88-300) DC power vertical mount

Step 2. For 6K16 chassis choose one module for slot A and/or B (may be blank) If PoE module is desired, see Step 3.a.

Module No.	10/100	10BASE-FL	100BASE-FX(MM)	100BASE-FX(SM)	Gigabit
6KP8-RJ45	8				
6KP8-45-2MT	6		2 (MTRJ)		
6KP8-45-2SLC	6			2 (20km LC)	
6KP6-RJ10ST	4	2 (ST)			
6KP6-RJMST	4		2 (ST)		
6KP6-RJMSC	4		2 (SC)		
6KP6-RJSSC	4			2 (20km SC)	
6KP6-RJSSCL	4			2 (40km SC)	
6KP8-45MT	4		4 (MTRJ)		
6KP8-45MLC	4		4 (LC)		
6KP8-45SLC	4			4 (20km LC)	
6KP4-F10ST		4 (ST)			
6KP4-FLSTFX		2 (ST)	2 (ST)		
6KP4-FXST			4 (ST)		
6KP4-FXSC			4 (SC)		
6KP6-MT10ST		2 (ST)	4 (MTRJ)		
6KP8-MTRJ			8 (MTRJ)		
6KP8-MLC			8 (LC)		
6KP8-SLC				8 (20km LC)	
Gigabit Modules using GBICs (see Step 4)					
6KP3-G2SC			2 (SC)		1 GBIC
GBPM-COTX					1 GBIC
GBPM-20TX					2 GBIC

Gigabit Modules, fixed ports

Module No.	10/100	10BASE-FL	100BASE-FX(MM)	100BASE-FX(SM)	Gigabit
6KP2-2GSX					2 SX
6KP2-2GCU					2 CU
6KP3-1CU2FXT			2 (ST)		1 CU
6KP5-1CU4RJ	4				1 CU

Gigabit Modules, fixed ports—Using Small form factor (SFP) transceivers

6KP7-1G2RJ4MLC, 6KP7-1G2RJ4SLC, 6KP7-1G2RJ4SLCL w/ 1 SFP Gb port, 2 10/100 RJ45 & 4 m-mode, sgl-mode or "long haul" sgl-mode fiber

Module No.	10/100	10BASE-FL	100BASE-FX(MM)	100BASE-FX(SM)	Gigabit
6KP7-1GSFP6RJ	6				1 SFP
6KP2-2GSFP					2 SFP
6KP2-1GSFP1CU					1SFP, 1 CU
6KP1-1GSFP					1 SFP
6KP1-1GCU					1 CU

Step 2.b For 6K16V chassis choose one module for slot A and/or B (may be blank) If PoE module is desired, see Step 3.a.

Module No.	10/100	10BASE-FL	100BASE-FX(MM)	100BASE-FX(SM)	Gigabit
6KP8-RJ45	8				
6KP8-45-2MT	6		2 (MTRJ)		
6KP8-45-2SLC	6			2 (20km LC)	
6KP6-RJ10ST	4	2 (ST)			
6KP6-RJMST	4		2 (ST)		
6KP6-RJMSC	4		2 (SC)		
6KP6-RJSSC	4			2 (20km SC)	
6KP6-RJSSCL	4			2 (40km SC)	
6KP8-45MT	4		4 (MTRJ)		
6KP8-45MLC	4		4 (LC)		
6KP8-45SLC	4			4 (20km LC)	
6KP4-F10ST		4 (ST)			
6KP4-FLSTFX		2 (ST)	2 (ST)		
6KP4-FXST			4 (ST)		
6KP4-FXSC			4 (SC)		
6KP6-MT10ST		2 (ST)	4 (MTRJ)		
6KP8-MTRJ			8 (MTRJ)		
6KP8-MLC			8 (LC)		
6KP8-SLC				8 (20km LC)	
Gigabit Modules using GBICs (see Step 4)					
6KP3-G2SC			2 (SC)		1 GBIC

Step 3.a If configuring in 6K Switches having -48VDC, choose a PoE Port Module Below.

Module No.	10/100	10BASE-FL	100BASE-FX(MM)	100BASE-FX(SM)	Gigabit	PoE Ports
P6KP7-1GSFP6RJ	6				1	4
P6KP8-RJ45	8					8
P6KP8-45-2MT	8		2 (MTRJ)			4
P6KP8-45-2SLC	8			2 (20km LC)		4
P6KP6-RJ10ST	4	2 (ST)				4
P6KP6-RJMST	4		2 (ST)			4
P6KP6-RJMSC	4		2 (SC)			4
P6KP6-RJSSC	4			2 (20km SC)		4
P6KP6-RJSSCL	4			2 (40km SC)		4
P6KP8-45RJ	8					4
P6KP8-45MT	4		4 (MTRJ)			4
P6KP8-45MLC	4		4 (LC)			4
P6KP8-45SLC	4			4 (20km LC)		4
OR For 6K16V Select						
P6KP7V-1GSFP6RJ	6				1	4
P6KP8V-RJ45	8					8
P6KP8V-45-2MT	8		2 (MTRJ)			4
P6KP8V-45-2SLC	8			2 (20km LC)		4
P6KP6V-RJ10ST	4	2 (ST)				4
P6KP6V-RJMST	4		2 (ST)			4
P6KP6V-RJMSC	4		2 (SC)			4
P6KP6V-RJSSC	4			2 (20km SC)		4
P6KP6V-RJSSCL	4			2 (40km SC)		4
P6KP8V-45RJ	8					4
P6KP8V-45MT	4		4 (MTRJ)			4
P6KP8V-45MLC	4		4 (LC)			4
P6KP8V-45SLC	4			4 (20km LC)		4

Magnum 6K16 Series Configuration Guide

Step 4 (Opt) Choose GBICs or SFPs for Gig Ports (if configured) in Slot A and/or B:	
Module No.	**Gigabit Modules for Slots A - B**
GBIC-SXSC	One 1000BASE-SX port with multimode SC fiber connector
GBIC-LXSC10	One 1000BASE-LX/LH port 1310nm singlemode SC 10Km
GBIC-LXSC25	One 1000BASE-LX/LH port 1310nm singlemode SC 25Km
GBIC-ZXSC40	One 1000BASE-ZX port 1550nm singlemode SC 40Km
GBIC-ZXSC70	One 1000BASE-ZX port 1550nm singlemode SC 70Km

Step 5. Choose Options and Extras	
Model No.	**Base Unit Description**
6KM-BLNK	Blank cover for 1 unused (A) module slot
DUAL-SRC	Two separate power inputs (24/48 or 125V)
MNS-6K-SECURE-LIC1	Optional, licensed per switch for extra security
S-RING-KEY	Software, self-healing ring management
DIN-RAIL-VRM	DIN-Rail mounting brackets for one 6K16V
DIN-VM16-KIT	Variable-height DIN-Rail mounting kit for 6K16V
CONSOLE-CBL	Console attachment cable serial null Modem (aka X-modem) cable with DB9 connectors
CONSOLE-USB	As above, but with a USB connector
CONFORM05-RMOD	Conformal coating, 5 mil, for moisture protection
CONFORM08-RMOD	Conformal coating, 8 mil, for corrosive environments

GarrettCom, Inc.

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

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