GarrettCom®

PB 350

GarrettCom® Magnum™ 10KT Configurable Managed Switch with Timing

Next Generation 36 Port industrial switch with dual hot-swappable power supplies in 1U or 1.5U rack-mount package.

The Magnum 10KT Switch Provides Rack-mount Space Efficiency and Advanced Port Configurability for Heavy Duty Industrial Applications where Maximum Fiber Port Count and Diversity are Required.

Features

- Next Generation 36 port industrial switch with configurability and reliability

- Optional dual hot-swappable power supplies in a 1U or 1.5U rack-mount package

- Precision timing, full IEEE 1588v2 implementation

- Energy-efficient thermal design for maximum reliability

- Substation-Hardened, IEEE 1613 and IEC 61850-3 compliant

Configurable and Reliable

The Magnum10KT Switch provides rack-mount space efficiency and advanced port configurability for heavy duty industrial applications where maximum fiber port count and diversity are required. New advanced thermal design techniques (patent pending) enable the 10KT to deliver high reliability and configurability even at extended operating temperatures. Special optional rack-mount cooling features include Thermal Fins for extra heat dissipation and internal heat transfer techniques that use the case as a heat sink. Cooler operation of internal electronic components leads to longer life-time and increased reliability.

Smart Grid Optimization

Next Generation industrial switch features, especially for power utility facilities in the Smart Grid, importantly include high precision IEEE 1588v2 timing synchronization with precision as low as single-digit nanoseconds. The Magnum 10KT provides a new advanced level of 1588v2 timing features and accuracy, using integrated hardware and software. Advanced timing is supported on 100Mb and Gb ports, and is configurable on both fiber and copper port types.

GarrettCom Magnum 10KT - Configurable Managed Switch with Timing

Hot-Swappable Power Supplies

The Magnum 10KT also offers configurable Dual Hot-Swappable power supplies for redundancy and increased reliability. Both high voltage AC/DC and low voltage DC hot-swappable power supplies are configurable in the Magnum 10KT. Different power supply types may be selected for each of the two hot-swappable slots. Software monitors each power supply, and can signal when a power supply module swap is needed. The swap-out can readily be done while the 10KT Switch continues in operation.

Power-Sourcing PoE

The ten port configuration slots in the Magnum 10KT provide the flexibility for network designers to configure up to four fiber or copper Gb ports and up to thirty-two 100 Mb SFF fiber or copper ports. Copper ports can optionally be Power-Sourcing PoE. Modules may be configured for regular port types, IEEE 1588 v2 timing, or combinations.

Secure Management Software

Magnum 10KT Managed Switches come with field-proven MNS-6K and optional MNS-6K-SECURE Management Software. MNS-6K features include LAN software support including SNMP management, IPv6, Secure Web Management, IGMP, graphical user interface (GUI), redundant LANs support, and many network management security and ease-of-use features.

Rugged Design

Magnum 10KT Managed Switches have rugged metal cases for regular or "Reverse" rack-mounting, and auto-ranging power supplies for operation with standard AC power worldwide, or internal DC power supply choices. Moisture and corrosion-protecting Conformal Coating is optional. The Magnum 10KTs are designed and manufactured in the USA and have a five year warranty.

Product Specifications

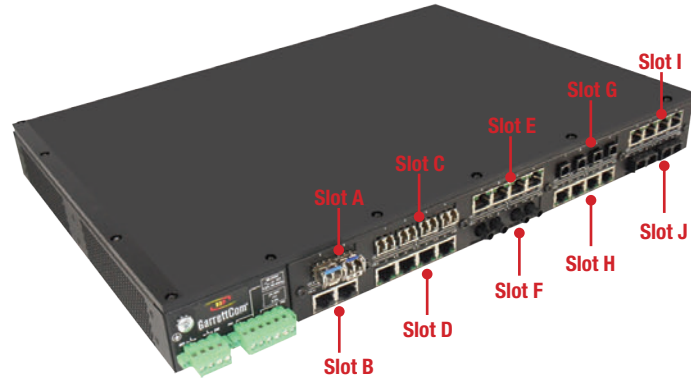| Type	10KT
Product Description	Magnum 10KT Managed Switch, base unit is configurable hardened managed switch. Provides ten modular slots for configuration flexibility of up to four Gb ports and 32 fiber or copper ports with optional dual hot-swap power supplies.
Mechanical	
Enclosure	Rugged high-strength sheet metal. 1U and 1.5U (with thermal fins) rack-mounting or stand alone
Rack-mounting Brackets	19" included
Cooling Method	Free convection, special (patent pending) thermal techniques
Dimensions	2.63in H (with thermal fins) x17.5in W x 12.in D (4.3cm H x 44.5cm W x 30.7cm D)
Weight	14.2 lbs. (6.5 kg)
Network Standards	
Ethernet	IEEE 802.3z, 802.3ab, 802.1p: 100BASE-TX, -FX, 1000BASE-SX, -LX
Auto-negotiation and Auto-crossover	TP, IEEE 802.3u
IEEE 1588v2	Compliant
IPv6	Compliant
Performance	
Fiber Ports, 100 Mb (multi-mode and single-mode)	Configurable in modules. Regular ST or SC at 2/module, or SFF (Small Form Factor) for high fiber port density, four per module. Each FDX or HDX, default is FDX mode
Gigabit Ports, 1000 Mb	Configurable, standard. See configuration guide, below for selection of modules
RJ-45 Ports	100 or 10 Mb speed, full- or half-duplex mode, per port, individually determined.10/100 auto-negotiating & auto-cross, 32 ports maximum
All Ports Non-Blocking	Processing type: Store and Forward with IEEE 802.3x full-duplex flow control System aggregate forward and filter rate: 11.9Mpps. Address table: 8K nodes, self-learning, with address aging Packet buffers: 512KB for 10 and 100Mb, 128KB for Gb Latency: 6µs + packet time max (TX - TX, TX - FX, FX - FX, TX-G, G-G)
AC (IEC-type, Male Recessed)	
Power Input, AC	100 to 240 VAC, 47 to 63 Hz (auto ranging)
Power Consumption	30 watts typical with 32 fully-loaded copper ports, 60 watts typical with 32 fully-loaded fiber ports

Product Specifications (continued)

DC Dual Power Source (optional)	
When non-Hot-Swappable power supplies are ordered, the Magnum 10KT 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 and 24VDC.	
Hot-Swappable Power Supply Options (Up to 2 of the following may be chosen)	
High (H) Nominal	Input 90 to 250V AC/DC
Low (L) Nominal	Input 22 to 60VDC
	(Standard Terminal Block: "-, GND, +", Power Consumption: 55 watts when fully loaded with 4 Gb ports and 16 100Mb fiber and 16 10/100 copper.
LED Indicators, 100 Mb Fiber Ports	
L/A	Steady on when fiber link is operational and blinking for data traffic
F/H	ON = full-duplex mode, OFF = half-duplex mode
LED Indicators, per RJ-45 Port	
L/A	Steady on when fiber link is operational and blinking for data traffic
F/H	ON = full-duplex mode, OFF = half-duplex mode
Relay Contacts for Alarms (except PoE version)	
Two Alarm Contact	HW & SW alarms are normally open until the unit is powered & software started. Under normal operation they are closed. Form C HW alarm will be opened w/ 1) any power supply loss, 2) fan failures Form C SW alarm will be opened when any pre-defined SW event occurs
Operating Environment	
Operating Temperature	IEC 60068 Operating temperature per "Type Test" -40° to 185°F (-40° to 85°C)
Temperature Rating (components)	UL 60950 140°F (60°C)
Storage Temperature	-40° to 185°F (-40°to 85°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 Environmental Operating Conditions Class C for Power Substations
IEEE 1613 Class 2	Environmental Standard for Electric Power Substations
NEMA TS-2	Traffic Control
EN50155	Railways
Warranty	
Warranty	Five Years

Magnum 10KT Configuration Guide

Magnum 10KT Managed Switch

Magnum 10KT Managed Switch, base unit is configurable hardened managed switch. Provides ten modular slots for configuration flexibility of up to four Gb ports and 32 fiber or copper ports with optional dual hot–swap power supplies.

Slot I
Slot G
Slot E
Slot C
Slot A
Slot J
Slot H
Slot F
Slot D
Slot B

Step 1. Choose 10KT chassis and power input type.

Model No.	Description, Base Unit of Magnum 10KT Managed Switch
10KT-AC	Front mount with worldwide AC power (100-240V)
10KT-H	Front mount with AC/DC power (90-250V)
10KT-HH	Front mount with 2 fixed AC/DC power (90-250V)
10KT-HL	Front mount with one "H" (90-250V AC/DC) and one "L" (24/48DC) fixed power supplies.
10KT-HSPHH	Front mount, includes 2 slots for "H" (90-250V AC/DC)Hot-Swap PS
10KT-HSPHL	Front mount, includes 2 slots for one "H" (90-250V AC/DC) and one "L" (24/48DC) Hot-Swap Power Supply
10KT-HSPLL	Front mount, includes 2 slots for "L" (24/48DC) Hot-Swap PS
10KT-L	Front mount with 24/48DC power
10KT-LL	Front mount with two "L" (24/48DC) fixed power supplies.
With Thermal Fins	
10KT-AC-TF	Front mount with worldwide AC power (100-240V); thermal fins
10KT-H-TF	Front mount with AC/DC power (90-250V); thermal fins
10KT-HH-TF	Front mount with 2 fixed AC/DC power (90-250V); thermal fins
10KT-HL-TF	Front mount with one "H" (90-250V AC/DC) and one "L" (24/48DC) fixed power supplies; thermal fins
10KT-HSPHH-TF	Front mount with 2 "H"(90-250V AC/DC)Hot Swap power slots
10KT-HSPHL-TF	Front mount, includes 2 slots for one "H" (90-250V AC/DC) and one "L" (24/48DC) Hot-Swap Power Supply; thermal fins
10KT-HSPLL-TF	Front mount with 2 slots for "L" (24/48DC) Hot-Swap PS; thermal fins
10KT-L-TF	Front mount with 24/48DC power; thermal fins
10KT-LL-TF	Front mount with two "L" (24/48DC) fixed power supplies; thermal fins
Reverse	
10KTR-AC	Reverse mount w/ worldwide AC power (100-240V)

10KTR-H	Reverse mount with AC/DC power (90-250V)
10KTR-HH	Reverse mount with 2 fixed AC/DC power (90-250V)
10KTR-HL	Reverse mount with one "H" (90-250V AC/DC) and one "L" (24/48DC) fixed power supplies.
10KTR-HSPHH	Rev. mount, includes 2 slots for "H" (90-250V AC/DC)Hot-Swap PS
10KTR-HSPHL	Reverse mount, includes 2 slots for one "H" (90-250V AC/DC) and one "L" (24/48DC) Hot-Swap Power Supply
10KTR-HSPLL	Rev. mount, includes 2 slots for "L" (24/48DC) Hot-Swap PS
10KTR-L	Reverse mount with 24/48DC power
10KTR-LL	Reverse mount with two "L" (24/48DC) fixed power supplies.
Reverse with Thermal Fins	
10KTR-AC-TF	Reverse mount with worldwide AC power (100-240V); thermal fins
10KTR-H-TF	Reverse mount with AC/DC power (90-250V); thermal fins
10KTR-HH-TF	Reverse mount with 2 fixed AC/DC power (90-250V); thermal fins
10KTR-HL-TF	Reverse mount with one "H" (90-250V AC/DC) and one "L" (24/48DC) fixed power supplies; thermal fins
10KTR-HSPHH-TF	Reverse mount with 2 "H"(90-250V AC/DC)Hot Swap power slots
10KTR-HSPHL-TF	Reverse mount, includes 2 slots for one "H" (90-250V AC/DC) and one "L" (24/48DC) Hot-Swap Power Supply; thermal fins
10KTR-HSPLL-TF	Rev. mount with 2 slots for "L" (24/48DC) Hot-Swap PS; thermal fins
10KTR-L-TF	Reverse mount with 24/48DC power; thermal fins
10KTR-LL-TF	Reverse mount with two "L" (24/48DC) fixed power supplies; thermal fins
PoE Models	
10KTP-HSPLL	Same as 10KT-HSPLL but supports PoE
10KTP-HSPLL-TF	Same as 10KT-HSPLL-TF but supports PoE
10KTPR-HSPLL	Same as 10KTR-HSPLL but supports PoE
10KTPR-HSPLL-TF	Same as 10KTR-HSPLL-TF but supports PoE
10KTP-L	Same as 10KT-L but supports PoE

10KTP-L-TF	Same as 10KT-L-TF but supports PoE
10KTPR-L	Same as 10KTR-L but supports PoE
10KTPR-L-TF	Same as 10KTR-L-TF but supports PoE
10KTP-LL	Same as 10KT-LL but supports PoE
10KTP-LL-TF	Same as 10KT-LL-TF but supports PoE
10KTPR-LL	Same as 10KTR-LL but supports PoE
10KTPR-LL-TF	Same as 10KTR-LL-TF but supports PoE

Step 2. If "HSP" base unit with hot swappable power supplies is selected, choose up to two power supply modules. For "-HF" or "-LF" models below, ALSO choose KT-RFAN option (see step 5) *Note, for PoE, every power supply chosen must be -48V.

Model No.	Description
HSPM-H	AC or DC power (90-250V)
HSPM-HF	AC or DC power (90-250V) w/internal cooling fan
HSPM-L	24/48 DC power (22-60V) Note: for PoE at -48VDC: Input should be -44 to -57VDC.
HSPM-LF	24/48 DC power (22-60V) w/ internal cooling fan; Note: for PoE at -48VDC: Input should be -44 to -57VDC.
10K-PSBLNK	Blank cover for one hot-swap power supply slot

Step 3. Choose modules for Gigabit Slots A and/or B (may be blank) Configure timing in slots A - B in pairs only. For example, if slot A has a timing module, then slot B must have a timing module or be unpopulated.

Module No.	Gigabit Modules for Slots A-B
10K2T-2GCU	Two Gigabit RJ-45 ports, 1588 timing
10K2T-2GSFP	Two Gigabit SFP slots, 1588 timing
10K2-2GCU	Two Gigabit RJ-45 ports
10K2-2GSFP	Two Gigabit SFP slots
Gigabit SFP Transceivers	
SFP-GTP	Gb Copper
SFP-SX	Gb SX, 850nm wavelength, 550 meters distance

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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

100Mb SFP Transceivers	
SFP100P-FXMM2	100FX Fiber Optic SFP transceiver, multi-mode, 2Km
SFP100P-FXSM20	100FX Fiber Optic SFP transceiver, single-mode, 20Km
SFP100P-FXSM40	100FX Fiber Optic SFP transceiver, single-mode, 40Km
SFP100P-RJ45	100Mb Copper SFP transceiver, 10/100 auto-negotiating

Step 4. Choose one port module for up to eight slots (C – J) (some may be blank) Configure timing in slots C – J in pairs only i.e. C, D or E, F etc. For example, if slot C has a timing module, then slot D must have a timing module or be unpopulated. If slot G has timing, then slot H must have timing or be unpopulated.

Module No.	1588 Timing	10/ 100	100BASE-FX(MM)	100BASE-FX(SM)
10K4-RJ45		4		
10K4T-RJ45	X	4		
10K4P-RJ45 *		4 (PoE)		
10K4PX-RJ45 *		4 (PoE+)		
10K4-MLC			4 (LC)	
10K4T-MLC	X		4 (LC)	
10K4-SLC				4 (20km LC)
10K4T-SLC	X			4 (20km LC)
10K4-SLCL				4 (40km LC)
10K4T-SLCL	X			4 (40km LC)
10K4-MTRJ			4 (MTRJ)	
10K4T-MTRJ	X		4 (MTRJ)	
10K2-MSC			2 (SC)	
10K2T-MSC	X		2 (SC)	
10K2-MST			2 (ST)	
10K2T-MST	X		2 (ST)	
10K2-SST				2 (20km ST)
10K2T-SST	X			2 (20km ST)
10K2-SSC				2 (20km SC)
10K2T-SSC	X			2 (20km SC)
10K2-SSCL				2 (40km SC)
10K2-F10ST	Module with two multi-mode 10Mb ST ports			
10K4-FXSFP	SFP module with 4 100Mb SFP open xcvr slots			

* Configure in PoE-supporting base units only. Choose up to 8 standard PoE modules (10K4P-RJ45) or 1 PoE+ (10K4PX-RJ45) & up to 6 PoE (10K4P-RJ45); or 2 PoE+ & up to 4 PoE; or 3 PoE+ & up to 2 PoE; or 4 PoE+ only (4 PoE+ allows no remaining standard PoE).

Step 5. Choose Options and Extras

Model No.	Description
KT-RFAN	Removeable fan unit for extra cooling of 10-series products. Optional for 0 to 16 fiber ports, required for 18 to 36 fiber ports. May configure 10KT with 18 ports fiber without fans in top slots only: A, C, E, G, I. 10KT with two fixed power supplies does not accept KT-RFAN.
CONSOLE-CBLQD	Console attachment cable serial null Modem cable with one RJ-45 for the 10KT and a DB-9
CONSOLE-CBLQU	Console attachment cable serial null Modem cable with one RJ-45 for the 10KT and a USB
MNS-6K-SECURE-LIC1	Optional, licensed per switch for extra security
S-RING-KEY	Software, optional self-healing redundant ring management
CONFORM05-RMOD	Conformal coating, 5 mil, for moisture protection
CONFORM08-RMOD	Conformal coating, 8 mil, for corrosive environments
DUAL-SRC-L	Provides two separate 24/48VDC power inputs (the unit will operate from either or both) to accommodate redundant 24/48V installations for increased availability and ease of DC power source maintenance. Includes internal diode protection to prevent feedback. Order this option as a line item, for factory configuration as part of the 10-series units (not available for 10C), which will have its model number changed to append "-DSRC". ONLY available on "L", "LL" or "HSPLL" chassis options. Note - not needed for "LL" PoE chassis which are inherently dual-source.