GarrettCom
A BELDEN BRAND

Product Bulletin

PB00098

GarrettCom Magnum ES42 Edge Switches

The Magnum ES42, a versatile family of small Edge Switches, uses the latest networking technology and innovative product packaging features to serve edge-of-the-network applications

The compact ES42 Edge Switch design delivers six Ethernet ports. The base models have either two 100 Mb fiber and 4 10/100 copper ports, or one fiber and five copper ports, or 6 copper ports. Fiber port choices cover all multi-mode and single-mode fiber connector types.

Features

- Provides six switch ports, one or two of which may be 100 Mb fiber, others are 10/100 copper
- Two models for two application environments:
  – Factory Floor
  – Outdoors
- AC power for all models, Factory floor and Outdoor models also have integral DC terminal blocks and Power Alarm Relay
- Includes Link-Loss-Learn (LLL) feature for use in selfhealing LAN structures or Dual-Homing on ports 1 & 2.
- Packaging and mounting options are similar to the popular Magnum 14-Series Converter Switches

Magnum ES42 Edge Switches go out where the action is. In heavy-duty industrial applications, Ethernet LANs increasingly are used where small groups of nodes at the edge need to be connected into larger LAN structures. The Magnum ES42 , a versatile family of small Edge Switches, uses the latest networking technology and innovative product packaging features to serve edge-of-the-network applications.

The compact ES42 Edge Switch design delivers 6 Ethernet ports. The base models have either two 100 Mb fiber and 4 10/100 copper ports, or one fiber and five copper ports, or 6 copper ports. Fiber port choices cover all multi-mode and single-mode fiber connector types. Power input selections include AC or DC (or both) with 12V, 24V and 48V DC terminal block models for all industrial application environments.

Extending the range of the popular Magnum CS14 Converter Switches, the Magnum ES42 Edge Switches are similarly available in Hardened (factory floor), and Premium-rated (outdoor) versions. This selection of models and fiber port types offers the best price-to-value ratio for each installation.

The Magnum Edge Switches include Link-Loss-Learn (LLL), enabling them to be used in self-healing and redundant LAN structures. The LLL feature causes ES42 Switches to sense Link Loss or standard STP / RSTP reconfiguration signals on designated ports, flush internal address buffers to permit a change in LAN packets flow, and pass the reconfiguration signal down the line to other products in the redundant network structure. Magnum Edge Switches, combined with managed switches running STP or RSTP or S-Ring, can often provide high availability redundant LANs at lower total cost than was previously possible.

Be certain.
Belden.

GarrettCom
A BELDEN BRAND

Garrettcom Edge Switches - Magnum ES42 Series

The ES42 Includes Link-Loss-Learn (LLL), Enabling it to be used in Selfhealing LAN Structures.

Ethernet LANs increasingly are used where small groups of high-availability nodes at the network edge need to be connected into larger LAN structures. The Magnum ESD42-Series, a versatile family of small Edge Switches, use new dual-homing unmanaged switch networking technology and innovative product packaging to serve redundant edge-of-the-network applications.

What is Dual-Homing? In Ethernet LANs, dual-homing is a network topology that adds reliability by allowing a device to be connected to the network by way of two independent connection points (points of attachment). One connection point is the operating connection, and the other is a standby or back-up onnection that is activated in the event of a failure of the operating connection.

The Magnum ES42 family are designed and manufactured in the USA and backed by a three-year warranty.

Hardened for Factory Floor

The orange-label Magnum ES42H Hardened units are for factory floor applications.

Premium-rated for Outdoors

The red-label Magnum ES42P Premium-rated units are for temperature un-controlled applications, typically located outdoors. Both models are built with high-grade components and are constructed using special thermal techniques (patent pending) and metal cases for heavy duty industrial and outdoor jobs. The ambient temperature ratings for the "H" and "P" models are for industrial and outdoor uses, respectively. No internal air flow is required for cooling, so they resist dust, dirt, moisture, smoke and insects. Mounting options include stand-alone panel-mounting, DIN-Rail, or rack-mount tray.

Product Specifications

Type	ES42H	ES42P	ESD42H	ESD42P
Product Description	Magnum 6-port hardened Edge Switch, four 10/100 RJ45 ports plus two ports which may be 100Mb fiber, or regular 10/100 copper, or one each type. Compact industrial-grade metal case, rated for factory floor environments. Includes -48V DC terminal block for power input, an alarm contact for status monitoring, and panelmount brackets. DIN-Rail mounting bracket optional.	Same as ES42H-ff-48VDC, but with Premium-rated for temperature un-controlled (outdoor) environments	Same as ES42H-ff-48VDC, but with Dual-Homing redundancy on Ports 1 and 2.	Same as ES42P-ff-48VDC, but with Dual-Homing redundancy on Ports 1 and 2.
Port Type and Quantity	6 x 10/100BASE-TX			
RJ45 Port Connectors				
RJ45 with auto-cross, 100BASE-TX and 10BASE-T	Shielded 8-Pin female. Supports shielded (STP) and unshielded (UTP) Cat. 3, 4, 5.			
Network Standards				
Ethernet	Ethernet IEEE 802.3, IEEE 802.3u; 100BASE-TX, 10BASE-T, 100BASE-FX			
Link-Loss-Learn (LLL)	Non-Dual-Homing Models. Factory default for LLL is Activated on Ports 1 and 2.			
Dual-Homing Models	Port 1 is primary; Port 2 is back-up. On Activated Ports, when a Loss of Link or reconfiguration BPDU for STP or RSTP is detected, the EDS42 will flush internal address buffers and will pass the signal to other LLL Activated ports. This enables the ESD42 to change the direction of packets flow and propagate the self-healing reconfiguration signal down the line.			
Performance				
Fiber Ports	100Mb, all types of connectors for m-m and single-mode. Fiber ports are factory set for FDX. RFQ for internal settings at HDX			
RJ45 Ports Data Rate	10 / 100 Mbps, FDX and HDX modes. Auto-negotiation and auto-cross MDI-MDIX on all RJ45 ports. Occurs at LINK-enable. No cross-over cables required.			
Non-blocking Switching	128KB packet buffer memory			
Address Buffer Storage	2K addresses			
Address Buffer Age-out Time	300 seconds (see also LLL)			

Product Specifications (continued)

Power				
Power Supplies for AC (External)	Power input DC jack (8 to 15V) is 2.5mm, center +ve, with 6ft. DC cord Input: 95-125vac at 60 Hz for "-d" models, 215-240vac at 50 Hz for "-i" models that have IEC power connector in the ext power unit. Input: 100-240vac at 47-63 Hz for "-Hd", "Hi" models, see footnote 1. Input: 100-240vac at 47-63 Hz for "-Pd", "Pi" models, see footnote 2			
DC Input Options	12V DC, internal (range of 8.0 to 15V DC), built-in screw terminal block for +, -, ground. The 12V DC jack is also present. 24V DC internal (range of 10 to 36V DC) built-in screw terminal for +, -, ground. The DC jack is also present, see footnote 3 -48V DC internal (range of 30 to 60V DC), built-in screw terminal block for +, -, ground. The 12V DC jack is also present. Note1: the 12V DC jack can be used for dual source DC power input, Note2: internal DC power floats, user may ground + or – if desired.			
Power Consumption	All models: 7.0 Watts typical. 9 Watts max.			
LED Indicators (dual, top front and in end)				
Power	ON for power applied			
10/100 Per RJ45 Port	Steady ON for 100 Mb, OFF for 10 Mb speed			
LK/ACT Per Port	Steady ON for LINK with no traffic, blinking for Activity			
F/H Per Port	Steady ON for F/D mode, OFF for H/D mode			
Alarm Terminal Block (two screw terminals)				
Internal 60VA Relay Contact	Open for Power Off, Closed for Power On			
Operating Environment	**ES42H**	**ES42P**	**ESD42H**	**ESD42P**
Ambient Temp. Rating	-25°C to 60°C long term per independent agency tests (UL 60950), or –40°C to 85°C short term per Type Tests (IEC 60068)	-40°C to 75°C long term per independent agency tests (UL 60950), or –50°C to 100°C short term per Type Tests (IEC 60068)	-25°C to 60°C long term per independent agency tests (UL 60950), or –40°C to 85°C short term per Type Tests (IEC 60068)	-40°C to 75°C long term per independent agency tests (UL 60950), or –50°C to 100°C short term per Type Tests (IEC 60068)
Cold Start	-20°C	-40°C	-20°C	-40°C
Storage Temperature	-40° to 185°F (-40°to 85°C)			
Ambient Relative Humidity	5% - 95% (non-condensing)			
Altitude	-200 to 50,000 ft. (-60 to 15,000m)			
Conformal Coating	Optional			
NEBS Compliance	Yes - including vibration, shock, and altitude.			
Packaging				
Enclosure	Robust sheet metal (aluminum)			
H&P Models	IEC 529 rated IP40			
Dimensions	3.6 in H x 3.0 in W x 1.7 in D (9.2 cm x 7.6 cm x 4.3 cm)			
Weight	9.5 oz (270g)			
Colling Method	Case used as heat sink			
Mounting				
Metal Panel Mounting Clips	Included			
DIN-Rail Mounting Option	Model # DIN-RAIL-LATCH			
Rack-mount Option	Model MC14-TRAY, Depth: 6.0", Width 17", Height 2.25"(15 cm D x 43cm W x 5.7cm H)			
Agency Standards Approval and Compliance				
UL Listing	UL 60950, cUL, CE, Emissions meet FCC Part 15, Class A (see footnote).			
EN 300 386	EMC and Operating Conditions Class C for Power Substations			
Class 1 Div 2	Environmental Standard for Electric Power Substations)			

Footnote: 1: External 12V1A power supply, wall plug or power cord for North America AC receptacles. Temperature rating same as ES42H, see above. (North America: for spare, order Model PSH-12V1A-Hd. Intl: order Model PSH-12V1A-Hi with IEC plug). 2: External 12V1A power supply, rated for outdoor temperatures same as ES42P, see above. Universal AC input with recessed IEC plug. (North America: for spare, order Model PSP-12V1A-Pd, Intl: order Model PSP-12V1A-Pi with IEC plug). 3: For dual source 24V power input to DC jack, order Model DUAL-SRC-24KIT. 4: These products are tested are approved under IEC61850 for use in Class C sheltered locations where neither temperature nor humidity is controlled. The equipment needs to be protected against solar radiation, rainfall, other precipitations, and wind. UL has not approved these products for Annex-T outdoor use.

Warranty	
Warranty	Three Years

GarrettCom
A BELDEN BRAND

Magnum ES42 Edge Switches Configuration Guide

Step 1. Select number of fiber ports.

All ES42 Edge Switches have six ports—of which 0, 1, or 2 ports can be fiber.

Step 2. Select fiber port(s) type (if any) "ff" selections of the "fiber flavor"

ST	100BASE-FX-ST: fiber optic multi-mode with ST type, 2 km
SC	100BASE-FX-SC: fiber optic multi-mode with SC type, 2 km
SSC	100BASE-FX-SSC: fiber optic single-mode with SC, 20 km
SSCL	100BASE-FX-SSCL: fib. op. single-mode SC, "Long Reach" 40 km
SST	100BASE-FX-SST: fiber optic single-mode with ST type, 20 km
MTRJ	100BASE-FX-MTRJ: fiber optic multi-mode w/ MTRJ, 2 km
MLC	100BASE-FX-MLC: fiber optic multi-mode with LC-type, 2 km
SLC	100BASE-FX-SLC: fiber optic single-mode with LC-type, 20 km

Step 3. Select power type: 12VDC, 24VDC, 48VDC, 115VAC(d), 230VAC(i)

Notes:
a.) When ordering 24VDC hardened or premium models, an HR or PR version is available that includes the DIN-Rail bracket attached.
b.) When ordering hardened or premium AC models, the external power supply has an –Hd or -Hi OR a –Pd or -Pi to designate the level of power supply hardening. These AC models include an external 12vdc terminal block in addition to the external AC power supply jack.

Step 4. Select either Hardened (H) or Premium (P) for your application environment.

H	(-25° to +60°C)
P	(-40° to +75°C)
MLC	100BASE-FX-MLC: fiber optic multi-mode with LC-type, 2 km
SLC	100BASE-FX-SLC: fiber optic single-mode with LC-type, 20 km

Examples:

ES42PR-2SC-24VDC	Premium rated ES42 with two multi-mode SC fiber ports & 24VDC with DIN-Rail bracket
ES42-1MTRJ-48VDC	Office grade, panel-mount ES42 with one multi-mode MTRJ fiber port & 48VDC
Mounting Hardware for Edge Switches (panel mount brackets are standard)	
DIN-RAIL-MC2	DIN-Rail mounting hardware for "14-series" CS or MC or ES42/ESD42 Switches.
DUAL-SRC-24KIT	Cable kit for 24VDC input to the DC power input jack of one ES42/ESD42, any 24VDC model.
MC14-TRAY	Rack-mount tray for "14-series" CS or MC or ES42/ESD42 Switches, 2.25"H, up to 16 units mix-match.
MC14-TR+PS9	Same as MC14-TRAY, but includes the 9vdc PS and ten connectors for CS14, CSN14, 14E, ES42/ESD42 types. The power supply is auto-ranging 110-240vac, 50-60Hz, rated at 40 watts and 50°C.

Model Number	Ambient Temperature		Power Input						Mounting	
	-25° to +60° C	-40° to +75° C	d,i AC external	Hd, Hi external +12V Term. Block	Pd, Pi AC +12V Term. Block	12V DC Term. Block	24V DC Term. Block	-48V DC Term. Block	Dual-Homing	Panel Clips incl. or DIN-Rail Bracket
Hardened for the Factory Floor (ES42H-)										
ES42H-ff-Hd, Hi	•			•		•				•
ES42H-ff-12VDC	•					•				•
ES42H-ff-24VDC	•						•			•
ES42HR-ff-24VDC	•						•			DIN-Rail
ES42H-ff-48VDC	•							•		•
ESD42H-ff-Hd, Hi	•			•		•			•	•
ESD42H-ff-12VDC	•					•			•	•
ESD42H-ff-24VDC	•						•		•	•
ESD42HR-ff-24VDC	•						•		•	DIN-Rail
ESD42H-ff-48VDC	•							•	•	•
Premium Rated for Outdoors (ES42P-)										
ES42P-ff-Pd, Pi		•			•	•				•
ES42P-ff-12VDC		•				•				•
ES42P-ff-24VDC		•					•			•
ES42PR-ff-24VDC		•					•			DIN-Rail
ES42P-ff-48VDC		•						•		•
ESD42P-ff-Pd, Pi		•			•	•			•	•
ESD42P-ff-12VDC		•				•			•	•
ESD42P-ff-24VDC		•					•		•	•
ESD42PR-ff-24VDC		•					•		•	DIN-Rail
ESD42P-ff-48VDC		•						•	•	•

Got questions? Need to talk to an expert? Send us an email:

EMEA: garrettcomsalesinfo@belden.com US: ICS.Security@belden.com