

## Switching Hubs



### Benefits

- 10BASE-T/100BASE-TX/100BASE-FX physical layer support
- Loop detection algorithm
- IEEE 802.3 compliant
- Auto-negotiated data rate and flow control on twisted-pair ports
- Broadcast storm control
- Full or half duplex
- Low-voltage AC or DC operation
- Multi-mode or single-mode fiber
- Provision for redundant power sources
- DIN-rail mountable
- Link/activity and data rate LEDs
- CE mark
- UL 508 listed
- UL 864 recognized

The EIS series, Ethernet Interconnect Switch in the CTRLink® family, provides a solution for those industrial applications requiring a larger network diameter and greater throughput. The EIS series becomes an essential element of the control strategy. Models exist that support both twisted pair and fiber optics.

All models of the EIS series segment the Ethernet network into separate collision domains. The switch functions as a "bridge" between various data links creating a larger network diameter than can be achieved with repeating hubs. Each twisted-pair port automatically negotiates with its attached device the data rate for that port, be it 10 Mbps or 100 Mbps. The flow control mechanism is also negotiated. For full duplex segments, the PAUSE scheme is used. For half duplex segments, the backpressure approach is used. The switch learns the port locations of Ethernet devices by reading complete Ethernet frames and observing source addresses. The switch then creates and maintains a table of source addresses and corresponding port assignments. From that time on, traffic is restricted to only those ports involved in a transmission. This allows for improved throughput since simultaneous transmissions can now be initiated on those ports without activity. Table values are aged to automatically accommodate changes to the field wiring.

If a broadcast, multicast or unicast transmission to an unknown destination is received on a port, all other ports are flooded with the transmission.

### Applications

- Interconnection of Ethernet PLCs, operator interface, motion control
- Ethernet I/O
- Machine Monitoring
- Environmental Control
- Test and Measurement
- Process Control
- Remote Data Acquisition
- Communications Gateway



### Product Description

As an alternative, cut-through operation can be selected versus store-and-forward operation for reduced data latency. With cut-through operation, frames are forwarded after the first 512 bytes are received. With store-and-forward operation, the complete frame must first be received before forwarding occurs.

The EIS series accommodates industrial applications requiring a fiber backbone with the introduction of its EIS6 models. These combine the benefits of switching technology and fiber optics, making them ideal for applications where longer networking distances, up to 15 km (single-mode) and immunity to EMI/RFI are important. These benefits result in decreased downtime, fewer outages and improved reliability.

The EIS6 models are six-port, 10/100 Mbps auto-negotiating switching hubs with a mix of four 10/100 Mbps twisted-pair copper ports and two 100 Mbps multi-mode or single-mode fiber ports. There are three models. The EIS6-100T/FC supports SC-style connectors while the EIS6-100T/FT supports ST-style connectors. The EIS6-100T/FCS supports SC-style connectors and single-mode fiber. The EIS5 models are similar to the EIS6 except they have one less fiber port.

All units are equipped with key features including low-voltage AC or DC power, broadcast storm protection and loop detection of the network wiring. They can be DIN-rail mounted making it easy to deploy switch technology in any field application. To aid troubleshooting, the EIS series incorporates LED indicators for data rate, activity/link integrity, power and loop detection.

To learn more about CTRLink, visit [www.CTRLink.com](http://www.CTRLink.com).

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## Specifications

Electrical	DC	AC
Input voltage	10–36 Volts	8–24 Volts
Input power (max)	5 Watts	5 VA
Input frequency	N/A	47–63 Hz
<b>Environmental</b>		
Operating temperature	0°C to +60°C	
Storage temperature	–40°C to +85°C	
<b>Functional</b>		
LED indicators	DATA RATE—yellow LINK/ACTIVITY—green LOOP DETECT—red	
Flow control <sup>1</sup>	Half Duplex—backpressure Full Duplex—IEEE 802.3x PAUSE scheme	
Aging	172 to 322 seconds	
Transceiver	Twisted Pair	Fiber Optics
Signaling	10BASE-T/100BASE-TX	100BASE-FX (1300nm)
Number of ports	8 or 4	0, 1 or 2
Data rate	10/100 Mbps <sup>1</sup>	100 Mbps
Port connectors	Shielded RJ-45	SC or ST
Segment length	100 m (max)	2 km (max) multi-mode 15 km (max) single-mode
Regulatory Compliance	CE Mark, FCC Part 15 Class A, UL 508 Listed, Industrial Control Equipment, UL 864 Recognized Component <sup>2</sup>	

<sup>1</sup>Data rates and flow control are auto-negotiated on twisted-pair ports. <sup>2</sup>EIS8-100T and EIS6-100T/FT only.

## Regulatory Compliance Standards

Standard	Test Method	Description	Test Levels
EN 55024	EN 61000-4-2	Electrostatic Discharge	6 kV Contact
EN 55024	EN 61000-4-3	Radiated Immunity	10 V/m 80 MHz to 1 GHz
EN 55024	EN 61000-4-4	Fast Transient Burst	1 kV Clamp & 2 kV Direct
EN 55024	EN 61000-4-5	Voltage Surge	1 kV L to L & 2 kV L to Earth
EN 55024	EN 61000-4-6	Conducted Immunity	10 Volts (rms)
EN 55024	EN 61000-4-11	Voltage Dips	1 to 5 sec. @ 100% Dip
EN 55022	CISPR 22	Radiated Emissions	Class A
EN 55022	CISPR 22	Conducted Emissions	Class B

## Ordering Information

Model	Description
EIS5-100T/FC	Four-port twisted-pair/one-port fiber optic switching hub w/ SC connectors (multi-mode)
EIS5-100T/FCS	Four-port twisted-pair/one port fiber optic switching hub w/SC connectors (single-mode)
EIS5-100T/FT	Four-port twisted-pair/one-port fiber optic switching hub w/ ST connectors (multi-mode)
EIS6-100T/FC	Four-port twisted-pair/two-port fiber optic switching hub w/ SC connectors (multi-mode)
EIS6-100T/FCS	Four-port twisted-pair/two-port fiber optic switching hub w/SC connectors (single-mode)
EIS6-100T/FT	Four-port twisted-pair/two-port fiber optic switching hub w/ ST connectors (multi-mode)
EIS8-100T	Eight-port 10BASE-T/100BASE-TX switching hub

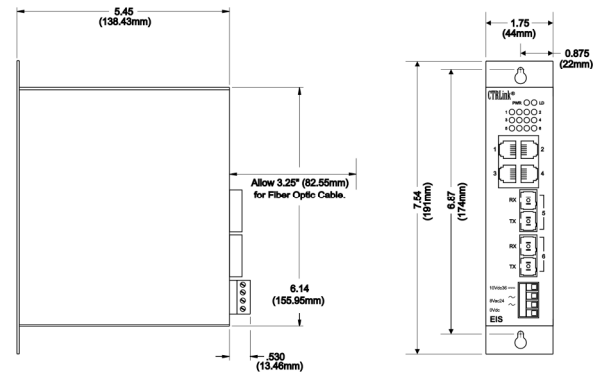
## Accessories

Model	Description
AI-XFMR	Wall-mount transformer 120 VAC (nom)
AI-XFMR-E	Wall-mount transformer 240 VAC (nom)
AI-DIN	DIN-rail mounting kit

## MDI-X<sup>2</sup> 10BASE-T/100BASE-TX

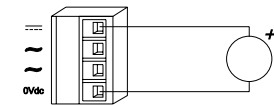
RJ-45	Usage
1	TD+
2	TD–
3	RD+
4	Not Used
5	Not Used
6	RD–
7	Not Used
8	Not Used

<sup>2</sup> This product implements the crossover function

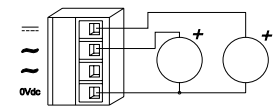


## Power Options

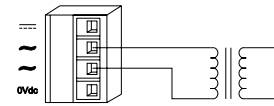
### DC Powered



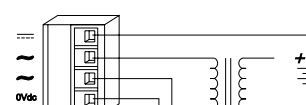
### Redundant DC Powered



### AC Powered



### AC Powered with Battery Backup



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