EISB Series

CTRLink®

A Line of Managed and Unmanaged Ethernet Switching Hubs

INSTALLATION GUIDE

INTRODUCTION

The EISB Series of Ethernet switches give the user a choice between a simple, easy-to-install Plug and Play device or a sophisticated instrument with several advanced features for the discriminating network professional. Each of the 24 models in the series operates in extreme temperatures while offering a choice of mounting, port count, media support and method of powering.

To optimize speed and throughput, some functions are *automatically negotiated*:

Each twisted-pair port has Auto-MDIX and automatically optimizes its data rate to 10 Mbps or 100 Mbps. The data rate of fiber ports is fixed at 100 Mbps.

Each port negotiates flow control—supporting the PAUSE function for full-duplex segments and the backpressure scheme for half-duplex segments.

All units offer **non-blocking wire-speed operation** with a maximum data rate of 148,810 frames per second for 100 Mbps Ethernet on all ports at full duplex. Copper ports are wired MDI-X (internal crossover) for attaching NICs via straight-through cables. Non-fiber models also have an uplink port (1X) wired so only a straight-through cable is needed for cascading switches.

All devices operate from wide-range, low-voltage AC or DC sources — and redundant power connections are available for backup considerations. They come with the ability for either DIN-rail or panel mounting. The front panel features bicolor LEDs for power; link status, activity, and data rate of each port. Managed models include bicolor Status LEDs.

For managed switch features, consult the Software Manual.

CONTEMPORARY CONTROLS®

SPECIFICATIONS

Electrical

INPUT	**DC**	**AC**
Voltage:	10–36 V	8–24 V
Power:	20 W	20 VA
Frequency:	N/A	47–63 Hz

Temperature

Operating:	–40°C to +75°C
Storage:	–40°C to +85°C

Regulatory Compliance

CE Mark
CFR 47, Part 15 Class A
UL 508 Listed Device
(intended for use with Class 2 circuits)

Functional

Compliance:	ANSI/IEEE 802.3
Data Rate:	10 Mbps and 100 Mbps
Signaling:	10BASE-T, 100BASE-TX, 100BASE-FX

LED Indicators

Power	red/green
Ports	green/yellow

Managed Switch LEDs:

Status	red/green
Console	green

Shipping Weight

2 lbs. (.9kg)

Warning: This is a Class A product. In a domestic environment the product may cause radio interference in which case the user may be required to take adequate measures.

Mechanical — (EISB8-100T/FC dimensions shown below are valid for all models.)

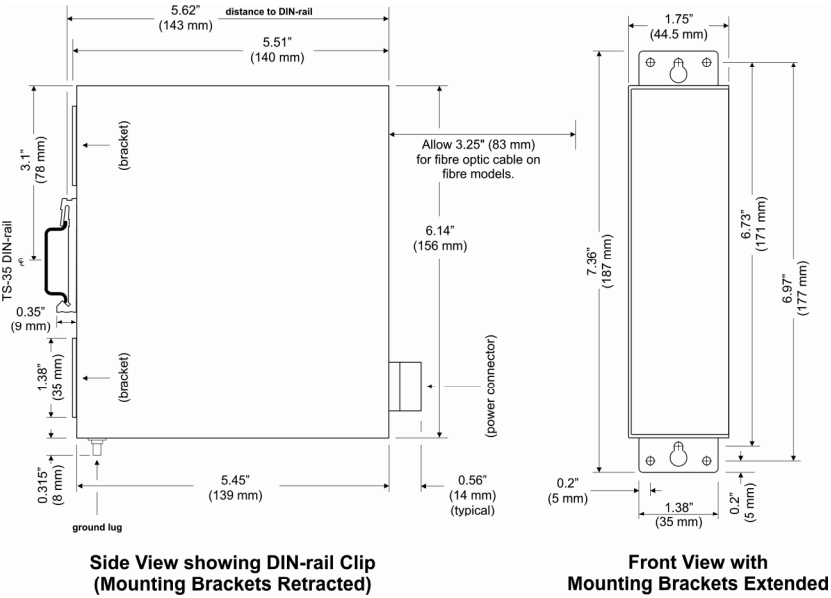

Figure 1 — EISB Dimensions

RJ-45 Connector Pin Assignments

PIN	MDI-X	Port 1X
1	TD+	RD+
2	TD–	RD–
3	RD+	TD+
6	RD–	TD–

(All other pins are unused.)

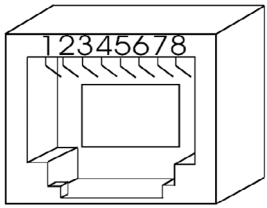

Figure 2 — RJ-45 Connector

Console Port (EIA-232) Pin Assignments

PIN	Signal	Function
2	RXD	Receive Data
3	TXD	Transmit Data
5	GND	Ground

(All other pins are unused.)

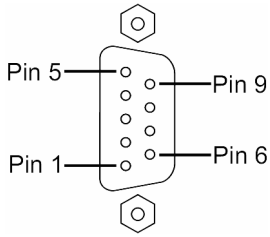

Figure 3 — DB9 Pins

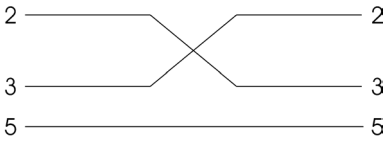

Figure 4 — Null-Modem Cable Wiring

Console Port (EIA-232) Communication Parameters

Baud Rate	9600 bps
Data Bits	8
Parity	No Parity
Stop Bit	1

INSTALLATION

Mounting

The EISB is designed for mounting in an industrial enclosure or wiring closet using either set of the provided mounting hardware listed below. **Important**: Provide at least 25 mm of heat venting space on each side of the unit.

TS-35 DIN-rail Mounting
DIN rail clip
DIN rail clip support bracket
4-40 screws, pan-head (2)

Panel Mounting
Panel mounting bracket
4-40 screws, flat-head (4)

For quick snap-mounting to 35 mm DIN rail, a reinforced DIN-rail clip is pre-attached to the back of the EISB enclosure with two #4-40 pan-head screws. If the clip is removed, the EISB can be panel-mounted by extending the top and bottom brackets which are shipped in retracted position. The extended brackets can then anchor the EISB to a wall or other flat vertical surface with two #8 pan-head screws (not provided). The left illustration of Figure 5 shows a rear view of the EISB with brackets in retracted position. The right illustration of Figure 5 shows the brackets extended and secured to the EISB enclosure with the same screws used in retracted position.

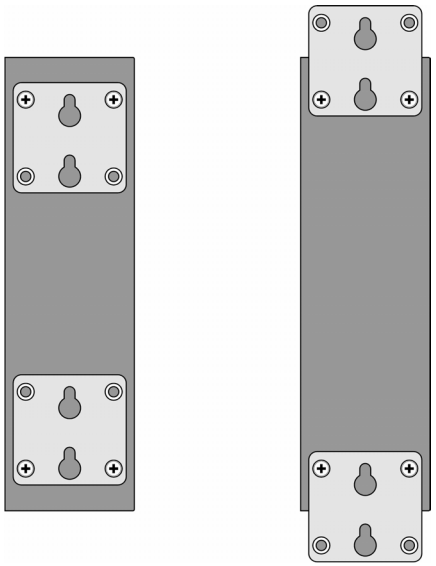

Figure 5 — Using the Panel-Mounting Brackets

Cabling Considerations

When attaching signal cables to the EISB, Table 1 should be considered.

Medium	Signaling and Data Rate	Minimum Required Cable	Maximum Segment Distance
Copper	10BASE-T 10 Mbps	Category 3 UTP	100 m (328 ft)
Copper	100BASE-TX 100 Mbps	Category 5 UTP	100 m (328 ft)
Fiber	100BASE-FX 100 Mbps	1300 nm, multimode 50/125 or 62.5/125 μm	Full-Duplex : 2 km (6562 ft) Half-Duplex : 412 m (1352 ft)
Fiber	100BASE-FX 100 Mbps	1300 nm, single-mode	Full-Duplex : 15 km (49213 ft) Half-Duplex : 412 m (1352 ft)

Table 1 — Cabling Considerations

Observe in Table 1 that segment distance is very limited when using copper media — regardless of data rate. Although 10BASE-T links can use Category 3, 4 or 5 cable, 100BASE-TX segments *must* use Category 5 or higher.

A popular choice for improved distance is multimode fiber — which also gives good electromagnetic noise immunity and optimum protection from lightning strikes. Considerable distance can be achieved in full-duplex mode — and the greatest distance can be realized in full-duplex mode with single-mode fiber. Note that half-duplex operation yields a modest, fixed distance which does not vary with the type of fiber in use. This is because half-duplex mode is limited by the *collision domain* — irrespective of the length and type of fiber.

EISB switches offer three types of field connectors. Copper ports accept RJ-45 modular plugs. Two choices of fiber connectors are available: ST and SC.

Powering

The EISB requires low-voltage power (AC or DC) via a four-pin removable keyed connector. Power conductors can be stranded (16–18 AWG) or solid (16–22 AWG). Consult the Specifications section for power requirements. The various power options are explained below.

NOTE: This device is intended for use with Class 2 circuits.

DC Powered

The EISB accepts a voltage range of 10–36 VDC and draws a current value commensurate with 20-watt power consumption. Power conductors should be sized accordingly. Ground is directly connected to zero volts and the equipment chassis is isolated from zero volts. The input connections are reverse-polarity protected.

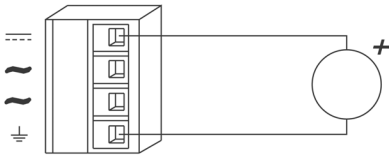

Figure 6 — DC Powered

Redundant DC Powered

Redundant diode-isolated DC power inputs are provided so the EISB can operate despite the loss of primary power. Either source must be capable of providing 20 watts of power.

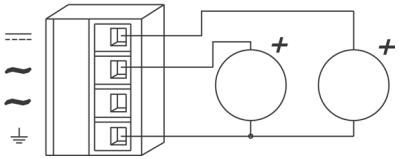

Figure 7 — Redundant DC Powered

AC Powered

The EISB can be powered by an AC voltage in the range of 8–24 V capable of delivering 20 VA of apparent power. Two auxiliary power supplies are available: The AI-XFMR is for use with 120 VAC. The AI-XFMR-E is for use with 230 VAC.

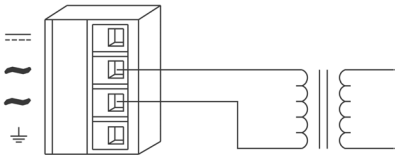

Figure 8 — AC Powered

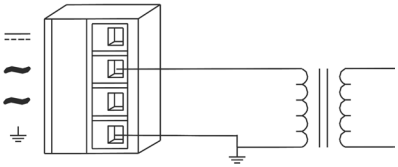

Figure 9 — AC Powered with Grounded Secondary

AC Powered with Battery Backup

The EISB can also operate in the AC mode with a backup battery providing power if the AC source fails. The EISB does NOT charge the battery, so separate provisions are required for charging.

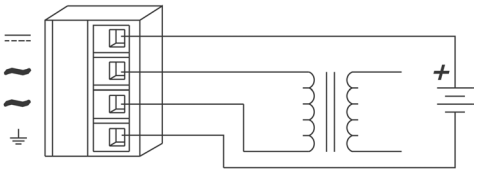

Figure 10 — AC Powered with Battery Backup

LEDs

Power — This bicolor LED monitors the EISB internal power circuitry. When it is red, the EISB is not operational because a voltage is invalid or the reset mode is active. If the internal power circuitry is satisfactory and the unit has been released from reset mode, this LED is green.

Port — Each port has a bicolor LED which glows green when a valid Ethernet link has been established at 100 Mbps and yellow if the data rate is 10 Mbps. The LED flashes when data transfer is occurring.

Ports 1 and 2 are accessed via the front panel. Other ports are located on the top and bottom surfaces of the case.

Figure 11 shows how front panel LEDS are arranged to correspond with the physical locations of the various ports. A line printed on the front panel graphically separates the LEDs for the "top" ports from those for the "bottom" ports. The LEDs *nearest* this line are associated with those ports *nearest* the front of the case. LEDs further from the line correspond to ports closer to the rear of the case. As an example of port arrangement, Figure 11 identifies a few of the ports on the model EISB24M-100T/FC.

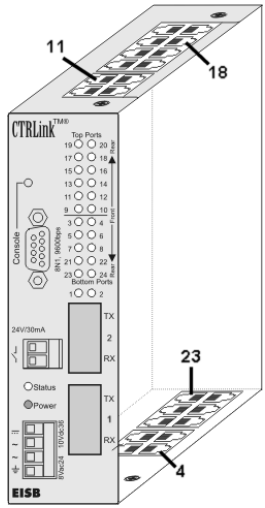

Figure 11 — Port Locations

Managed switches also have the following LEDs.

Status — This bicolor LED monitors both power inputs (AC and DC) to verify each exceeds a 7-volt minimum — and that the switch is not in reset mode. If this LED is green, *both* power inputs are satisfactory; if red a fault exists. If only one power input is satisfactory, the EISB may function and its Power LED glow green — but the Status LED will be red due to abnormal power. Thus, if only one power input is used, *both* inputs must be wired together to maintain the Status LED in its green (no-fault) state.

Console — This LED glows green when a user is accessing the switch via the console port and is off when the switch is not being accessed.

Fault Relay

The operation of this relay is explained in the Software Manual. Its contact is normally closed and rated at 500 mA, 24 V (max).

NEED MORE HELP INSTALLING THIS PRODUCT?

More comprehensive information can be found on our web site at www.ccontrols.com. This includes our on-line technical manuals, downloadable software drivers and utility programs that can test the product. When contacting one of our offices, just ask for Technical Support.

Warranty

Contemporary Controls (CC) warrants its new product to the original purchaser for two years from the product shipping date. Product returned to CC for repair is warranted for one year from the date that the repaired product is shipped back to the purchaser or for the remainder of the original warranty period, whichever is longer.

If a CC product fails to operate in compliance with its specification during the warranty period, CC will, at its option, repair or replace the product at no charge. The customer is, however, responsible for shipping the product; CC assumes no responsibility for the product until it is received.

CC's limited warranty covers products only as delivered and does not cover repair of products that have been damaged by abuse, accident, disaster, misuse, or incorrect installation. User modification may void the warranty if the product is damaged by the modification, in which case this warranty does not cover repair or replacement.

This warranty in no way warrants suitability of the product for any specific application. IN NO EVENT WILL CC BE LIABLE FOR ANY DAMAGES INCLUDING LOST PROFITS, LOST SAVINGS, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PRODUCT EVEN IF CC HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, OR FOR ANY CLAIM BY ANY PARTY OTHER THAN THE PURCHASER.

THE ABOVE WARRANTY IS IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED OR STATUTORY, INCLUDING THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE OR USE, TITLE AND NONINFRINGEMENT.

Returning Products for Repair

Before returning a product for repair, contact Customer Service. A representative will instruct you on our return procedure.

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DECLARATION OF CONFORMITY

Applied Council Directives:

Electromagnetic Compatibility Directive, 2004/108/EEC Council Directive; General Product Safety Directive 92/59/EEC

Standards to which Conformity is Declared

EN 55022:1998/A2:2003 CISPR 22:1997/A2:2002, Class A, Limits and Methods of Measurement of Radio Disturbance — IT Equipment

EN 55024:1998/A2:2003 CISPR 24:1997/A2:2002, IT Equipment — Immunity Characteristics — Limits and Methods of Measurement

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Coventry CV4 7EZ
UNITED KINGDOM

Type of Equipment: Industrial Ethernet switching hubs

	8-port Models	16-port Models	24-port Models
Unmanaged Switching Hubs	EISB8-100T	EISB16-100T	EISB24-100T/F
	EISB8-100T/FC	EISB16-100T/FC	EISB24-100T/FC
	EISB8-100T/FCS	EISB16-100T/FCS	EISB24-100T/FCS
	EISB8-100T/FT	EISB16-100T/FT	EISB24-100T/FT
Managed Switching Hubs	EISB8M-100T	EISB16M-100T	EISB24M-100T/F
	EISB8M-100T/FC	EISB16M-100T/FC	EISB24M-100T/FC
	EISB8M-100T/FCS	EISB16M-100T/FCS	EISB24M-100T/FCS
	EISB8M-100T/FT	EISB16M-100T/FT	EISB24M-100T/FT

Regulatory Compliance Standards			
Standard	Test Method	Description	Test Levels
EN 55024	EN 61000-4-2	Electrostatic Discharge	4 kV Contact & 6 kV Air
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 & Interruptions	1 to 5 Seconds @ 100% Dip 1 Line Cycle @ 100% Dip
EN 55022	CISPR 22	Radiated Emissions	Class A
EN 55022	CISPR 22	Conducted Emissions	Class B
CFR 47,15	ANSI C63.4	Radiated Emissions	Class A

Manufacturer's Declaration: I, the undersigned, hereby declare that the products specified above conform to the listed directives and standards.

George M. Thomas, President July 1, 2006