

EISC-100T

CTRLink®

Ethernet Configurable Switching Hub

INSTALLATION GUIDE

Introduction

The EISC-100T (EISC) configurable switch in the CTRLink® family provides capabilities beyond those of standard Plug and Play (PnP) switches. Besides conventional features — auto-negotiation, 10/100 Mbps data rate, flow control, half- or full-duplex operation — the EISC has advanced features such as VLAN, trunking, Quality of Service (QoS) and a programmable fault relay that can be connected to a supervisory system. Individual port parameters can be configured via a console port attached to a Windows®-based workstation. Port status can also be monitored through the console port using the Modbus protocol, making it easy to interface the EISC with supervisory control equipment. These features make the EISC one of the most versatile of Industrial Ethernet switches available.

Configuration is accomplished via a console port connected to a Windows-based configuration program included with the product. Modbus protocol and register information is also provided so the switch can be configured or monitored by a Modbus master device. Each port parameter (data rate, duplex and flow control) can be pre-set via the console port or set automatically via auto-negotiation. And a unique feature displays the status (integrity) of the cable attached to any each port.

Each port automatically optimizes its data rate to 10 Mbps or 100 Mbps — but data rate and duplex settings can be specified, if desired.

Each port negotiates flow control, but control can be disabled for individual ports. The PAUSE function is supported for full-duplex links. The backpressure scheme is used for half-duplex segments.

The EISC can be powered from wide-range, low-voltage AC or DC sources and has provisions for either DIN-rail or panel mounting.

CONTEMPORARY CONTROLS®



Specifications

Electrical

INPUT	DC	AC
Voltage:	10–36 V	8–24 V
Power (max):	12 W	12 VA
Frequency:	N/A	47-63 Hz
Relay Contacts:	24 V, 500 mA	

LED Indicators

Power:	Green
Link/Data:	Green/Yellow
Status:	Green

Regulatory Compliance

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

Environmental

Operating temperature:	0°C to +60°C
Storage temperature:	–40°C to +85°C
Humidity, non-condensing:	10 % to 95 %

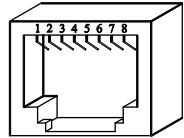
Functional

Aging (typical):	300 seconds
Compliance:	ANSI/IEEE 802.3

RJ-45 Connector Pin Assignments

PIN	MDI-X	Port 16X
1	TD+	RD+
2	TD–	RD–
3	RD+	TD+
6	RD–	TD–

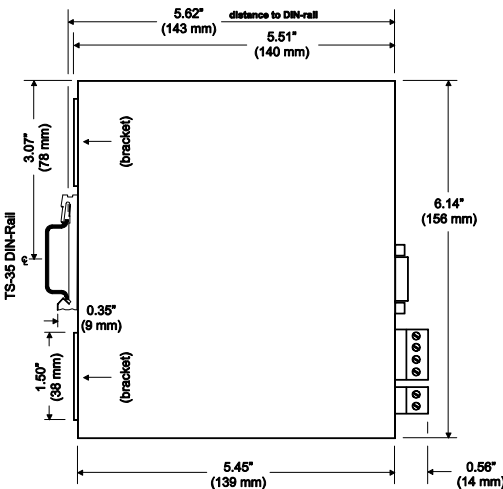
(All other pins are unused.)



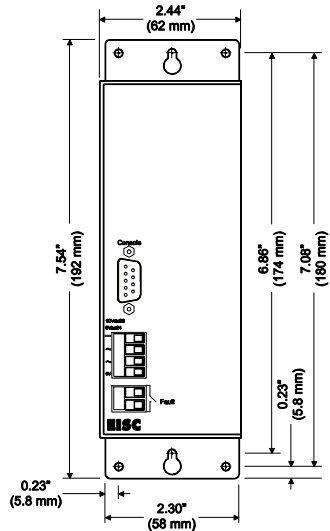
Warning: This is a Class A product. In a domestic environment the product may cause radio interference in which case the user may be required to take adequate measures.

Signalling	10BASE-T/100BASE-TX
Data Rates	10/100 Mbps
Port Count	16
Connectors	RJ-45, shielded
Segment length (max)	100 m

Mechanical



Side View showing DIN-rail Clip
(Mounting Brackets Retracted)



Front View with
Mounting Brackets Extended

TD021000-0IF

Installation

Mounting

The EISC is designed for mounting in an industrial enclosure or wiring closet using either set of the provided mounting hardware listed below:

TS-35 DIN Rail Mounting	Panel Mounting
DIN rail clip	Panel mounting bracket
4-40 screws, pan-head (2)	4-40 screws, flat-head (4)

For quick snap-mounting onto TS-35 mm DIN rail, a DIN rail clip is pre-attached to the back of the enclosure with two #4-40 pan-head screws. If the clip is removed, the unit can be panel-mounted by extending the top and bottom brackets which are shipped in retracted position. The extended brackets can then anchor the unit to a wall or other flat surface with two #8 pan-head screws (not provided). The left illustration of Figure 1 shows a rear view of the unit with brackets in retracted position. The right illustration of Figure 1 shows the brackets extended and secured to the unit enclosure using the same screws that were used in the retracted position.

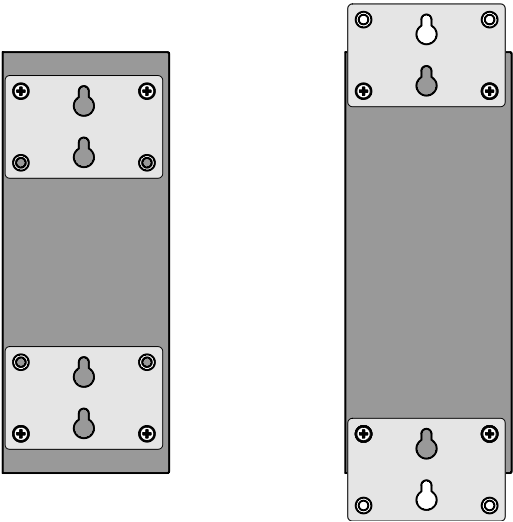


Figure 1 — Using the Panel-Mounting Brackets

Powering

The EISC requires low-voltage power — AC or DC — via a removable keyed four-pin connector which accepts 16–18 AWG conductors. Consult the specifications for power requirements. Power options are explained below.

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

DC Powered

The EISC accepts a voltage range of 10–36 VDC and draws a maximum current value commensurate with 12-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 DC voltage input connections are reverse-polarity protected.

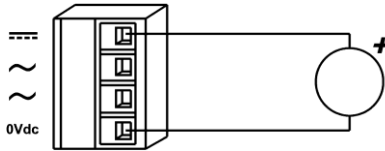


Figure 2 — DC Powered

Redundant DC Powered

Redundant diode-isolated DC power input terminals are provided so that the user can connect redundant power to the unit for operating despite the loss of primary power. Both sources must provide 12 watts of power.

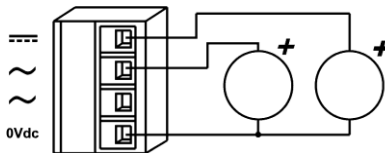


Figure 3 — Redundant DC Powered

AC Powered

The EISC can be powered by an AC voltage in the range of 8–24 V capable of delivering 12 VA of apparent power. Two auxiliary power supplies are available as accessory items: The AI-XFMR is for 120 VAC. The AI-XFMR-E is for use with 230 VAC.

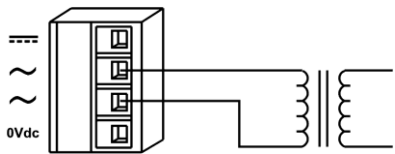


Figure 4 — AC Powered

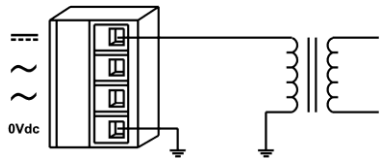


Figure 5 — AC Powered with Grounded Secondary

AC Powered with Battery Backup

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

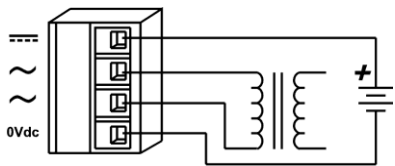


Figure 6 — AC Powered with Battery Backup

Operation

Switching

The EISC uses an 8K-address look-up table augmented with 64 entries of Content Addressable Memory. A hashing algorithm is used to update the table. Addresses are aged in about 300 seconds. Runt packets (less than 64 bytes) and oversize packets (greater than 1536 bytes) are discarded.

Data Storage

Data storage buffer for Ethernet packets consists of 156 k bytes of SSRAM.

Data Forwarding

An entire Ethernet packet must be received before forwarding occurs.

Flow Control

Each port automatically negotiates flow control for either half- or full-duplex operation, if auto-negotiation is enabled. In full-duplex mode, the PAUSE function is supported. In half-duplex mode, the backpressure method is used. When flow control is disabled, the destination port of an incoming packet is checked and, if found to be congested, the packet is discarded to avoid blocking the packet stream.

Broadcast Storm Control

Using a storm-control counter, each port will pass 64 continuous broadcast packets before dropping extra ones. The counter will reset every 800 ms or after receiving a packet whose Device ID is other than ff ff ff ff ff.

LED Indicators

- P** (green) *Power.* Glows when power is supplied to the EISC.
- (Numbered LEDs) *Link/Activity.* Each port has an LED that glows if a link (green/yellow) exists: **green** for 100 Mbps operation or **yellow** for 10 Mbps operation. It flashes as data transfer occurs.
- S** (green) *Fault Relay Status.* This LED functions in accordance with its configuration setting. See the User Manual for details.

Ports

All ports are wired MDIX — allowing DTE equipment to connect via straight-through cables — except that Port 16X is wired MDI to permit the cascading of switches without the need of a crossover cable. Note that Port 16 and Port 16X *cannot be used simultaneously*.

Advanced Operation

Advanced operation (requiring a null-modem cable) is explained in the User Manual located on the provided CD-ROM.

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 this 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 the 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

Return the product to the location where it was purchased by following the instructions at the URL below:

www.ccontrols.com/rma.htm

Declaration of Conformity

Additional compliance documentation can be found on our website.

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