EISB_M B-Line Series

16- or 24-port Managed Switching Hubs

- **Extended temperatures (–40°C to +75°C)**
- **IGMP snooping & query functionality**
- **RapidRing® redundant ring technology (recovery time less than 300 ms)**
- **Rapid Spanning Tree Protocol (RSTP)**
- **Virtual LAN support (Port VLAN and 802.1Q)**
- **Quality of Service (QoS) support (802.1p) DiffServ, TOS, Port-based, MAC-based**
- **Port Mirroring**
- **Rate limiting (broadcast storm control)**
- **Configurable via a web browser or terminal emulation**
- **Trunking for high-speed backbone and redundancy (less than 10 ms recovery)**
- **Port security**
- **Programmable fault relay**
- **Managed via the SNMP protocol**
- **Field-upgradable firmware**
- **Auto-MDIX on twisted-pair ports**
- **10BASE-T/100BASE-TX/100BASE-FX compliant**
- **Choice of auto-negotiated or static data rate, duplex and flow control**
- **Powered from an unregulated DC power source (10–36 V) or from an AC power source (8–24 V, 47–63 Hz). Power is provided through a quick-disconnect terminal strip.**
- **Provision for redundant power connections**
- **LEDs for link/activity/data rate, status, power, and console access**
- **Easy panel or DIN-rail installation**
- **Industrial environment EMC compatible**
- **UL 508 Listed, Industrial Control Equipment**
- **C-UL Listed, CSA 22.2 No. 14-M91, Industrial Control Equipment**
- **CE Mark**
- **RoHS compliant**

PRODUCT OVERVIEW

The EISB_M B-Line of managed switches provide management functionality in situations where an extended temperature range of –40°C to +75°C is expected, enabling them to perform successfully in outdoor applications. Within a constant footprint (panel space consumed) requiring only 1.75" of DIN-rail, these devices can support 16 or 24 ports with copper and fibre/copper combinations in a rugged metal enclosure.

Equipped with the conventional features standard in PnP switches, the EISB_M B-Line Series includes such important benefits such as IGMP snooping & query functionality, RapidRing, VLAN, Quality of Service (QoS), port mirroring, rate limiting, trunking, port security, the Simple Network Management Protocol (SNMP), and the Rapid Spanning Tree Protocol (RSTP).

IGMP snooping automatically limits IP multicast traffic to ports that require this traffic. This inhibits multicast traffic from overwhelming devices that should not receive this traffic — an important issue in Ethernet/IP™ networks. The switch can also act as the IGMP query device for the network.

For applications requiring redundancy, the EISB_M family of product offers RapidRing. RapidRing allows building a redundant Ethernet network that will self heal in less than 300 ms if any segment of the RapidRing is broken.

Virtual LANs or (VLANs) can be used to isolate traffic between groups of ports. This helps to conserve system bandwidth because broadcasts on one VLAN cannot reach other VLANs. This product also supports overlapped VLANs. This still provides isolation between VLANs, but also allows multiple VLANs to share one device without needing the use of a router.

Rate limiting allows users to set a maximum bandwidth for each port of the switch —preventing certain devices from using too much system bandwidth. Rate limiting can restrict bandwidth for specific types of messages such as broadcast messages or multicast messages. This can be used to stop broadcast storms.

Port security limits traffic on specific ports to only those devices that have been granted access —imparting extra security to communications carried by the switch. This can be used to restrict which devices from an outside network can communicate through the switch.

The SNMP agent is comprised of a collection of managed objects that can be queried by a SNMP manager to indicate the status of the switch or any SNMP-aware switch connected to the network. When the data is displayed at a central location, operators and maintenance personnel can check the entire network by observing selected devices and detect potential problems before they occur.

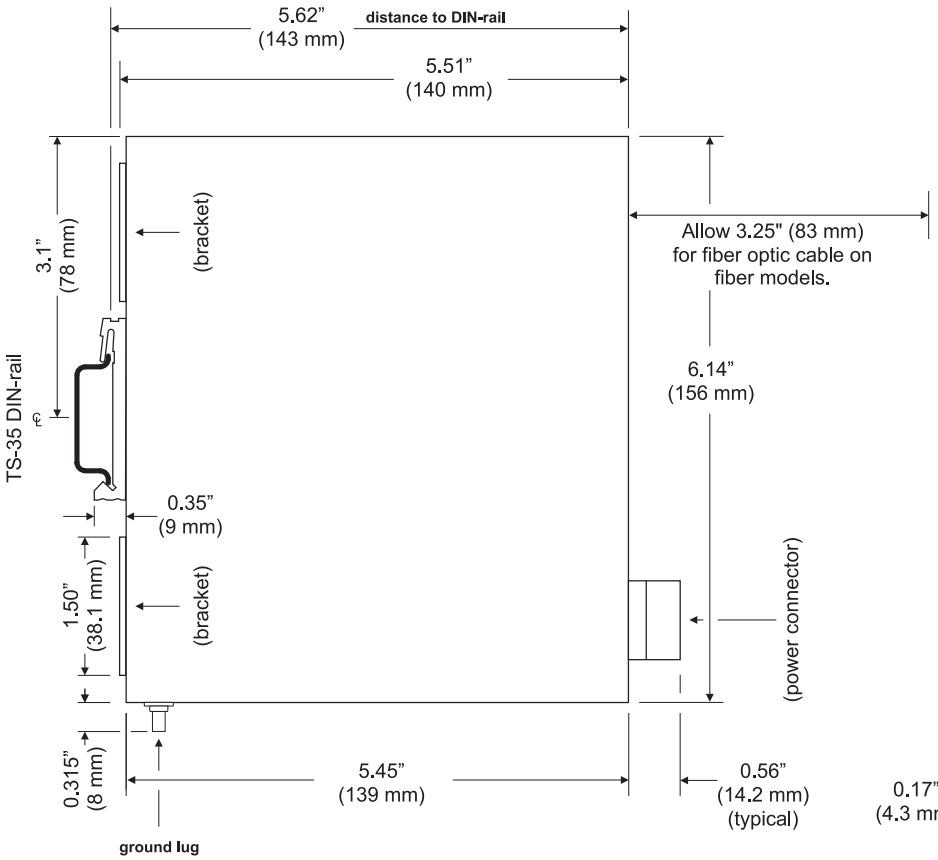
RSTP is a standardised method of creating redundant paths for data transmissions to create a higher level of reliability. RSTP typically allows more redundant paths than proprietary ring networks. Recovery time is typically one second or more.

Configuration is accomplished through a web browser via any Ethernet port or via terminal mode using the local console port. Port parameters, feature configuration, and device status can be modified and monitored by these access methods.

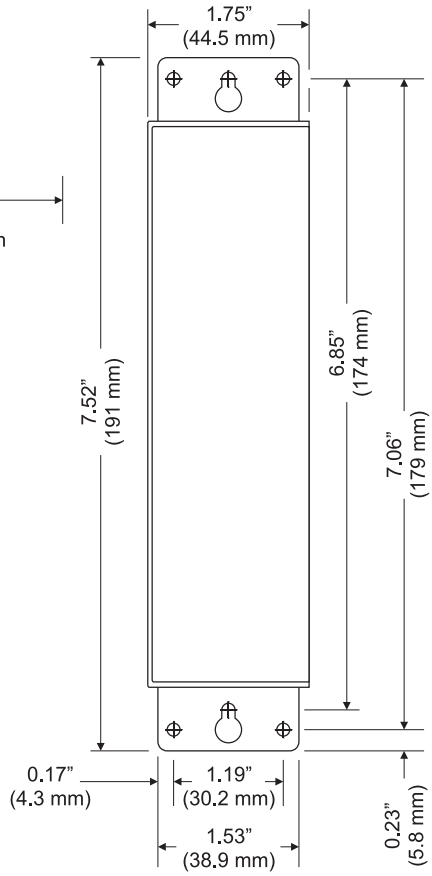
Either straight-through or crossover cables may be used to connect any of the Auto-MDIX ports to stations or another hub. In addition to LEDs for power and status and console access, each port has an LED showing link/activity/data rate by colour: green for 100 Mbps and yellow for 10 Mbps. Flashing indicates port activity.

Each switch is shipped with a DIN-rail clip for installation on a TS-35 DIN-rail. If direct mounting to a sub panel is needed, pre-attached panel mounting brackets, can be used after removing the DIN-rail clip.

Mechanical

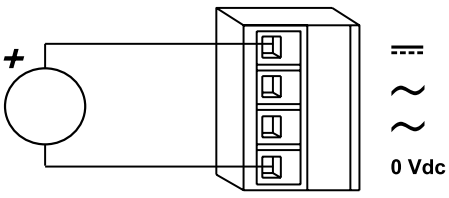


Side View showing DIN-rail Clip
(Mounting Brackets Retracted)

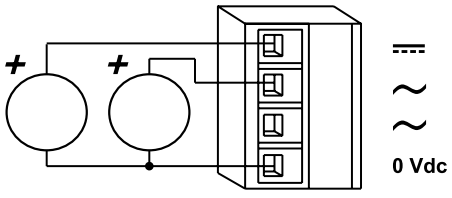


Front View with
Mounting Brackets Extended

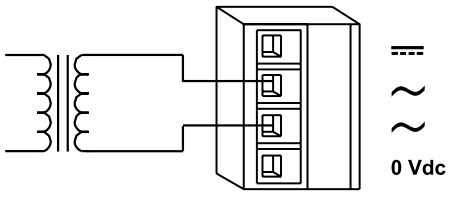
Power Diagrams



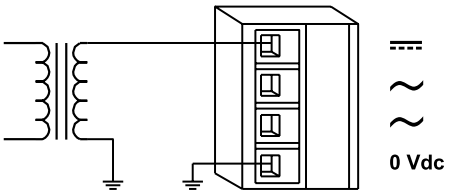
DC Powered



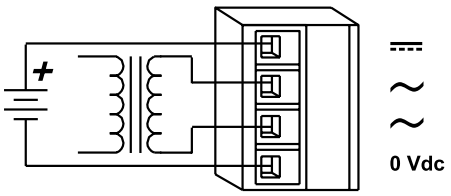
Redundant DC Powered



AC Powered



AC Powered with Grounded Secondary



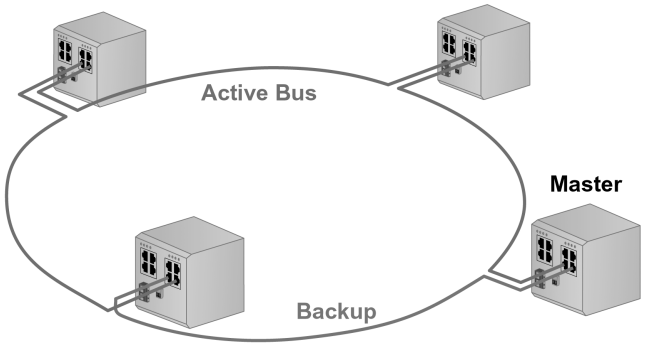
AC Powered with Battery Backup

Industrial Ethernet Redundancy

In applications requiring maximum uptime for an Industrial Ethernet communications network, Contemporary Controls provides three solutions: **RapidRing**, **Trunking** and **RSTP (Rapid Spanning Tree Protocol)**.

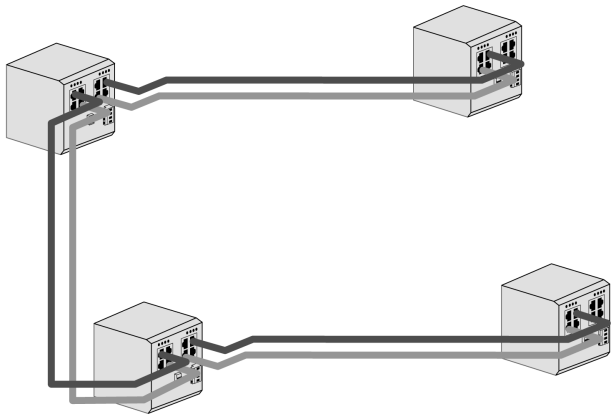
RapidRing Redundancy:

- Allows switched networks to be wired in a ring utilizing fiber or copper
- Any break in the ring will be recovered in less than **300 ms**
- Relay contacts, flashing LEDs and SNMP traps help to quickly identify broken links
- Supports dual-ring structures
- Compatible with EICP and EISB products



Trunking Redundancy:

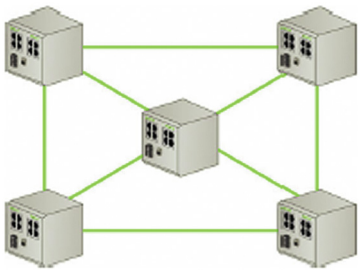
- Any break in the trunk will be recovered in less than **10 ms**
- Relay contacts, flashing LEDs and SNMP traps help to quickly identify the broken links
- Trunking also provides more bandwidth between switches
- Compatible with EICP and EISB products



Both RapidRing and trunking are configured using browser software.

RSTP Redundancy:

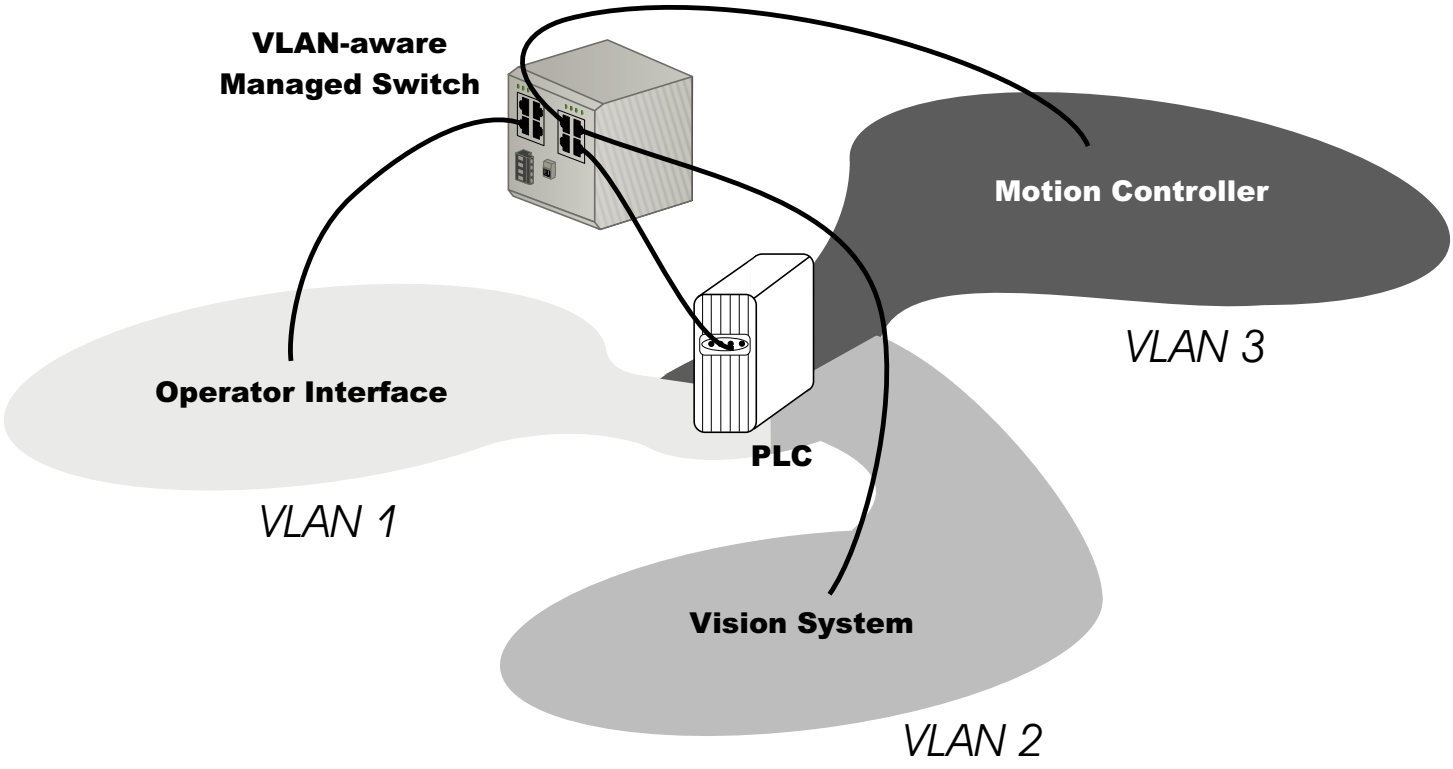
- Updated form of STP and is backward compatible
- RSTP provides faster recovery time, generally in 1 to 2 seconds
- Operate with ring or mesh topologies
- Compatible with EICP and EISB products



Virtual LANs (VLANs) Provide Improved Network Performance

A VLAN allows for the logical separation of network traffic— providing higher performance and higher network security. Ports on the switch may be assigned to individual VLANs, thereby restricting VLAN traffic.

For example, let us build a work cell that contains a programmable logic controller (PLC), operator interface (OI), vision system (VS) and motion controller (MC).

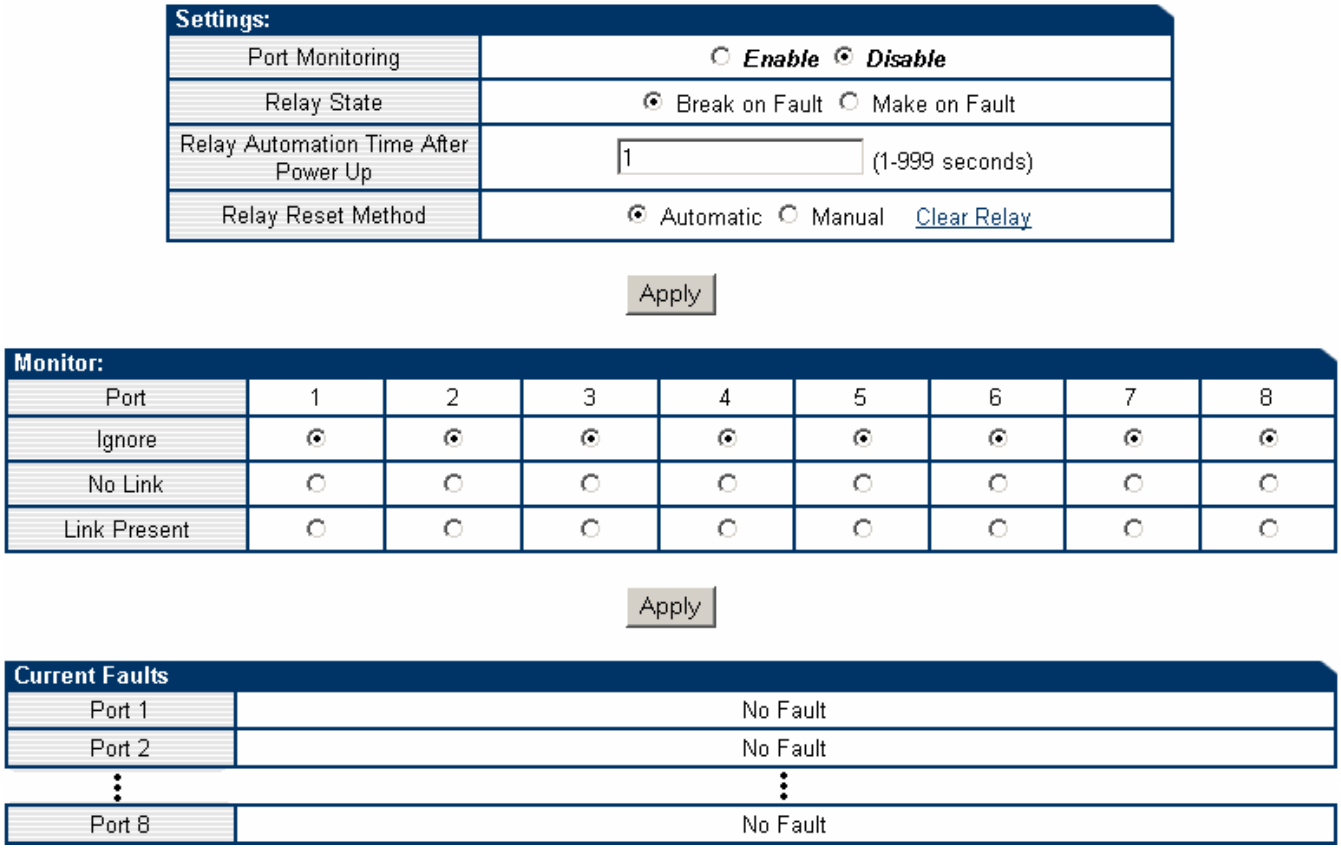


In our work cell example, there is no reason for the OI, vision system or motion system to communicate to each other. They only need to communicate to the PLC. By using the VLAN function, message forwarding can be restricted so that only the PLC will be involved in communications with the OI, vision and motion systems. Because of the selective VLAN message forwarding, there is no communication clutter of useless messages between the OI, vision and motion control systems, thereby improving the overall bandwidth of the network.

Fault Annunciation Using Relay Output

By using the browser software, the status of each port can be monitored. Each port can be configured to annunciate a fault when a data link is present or not present, or the data link status can be ignored.

The relay can be configured to make or break contact when a fault occurs. Fault status can also be ignored during switch startup to help avoid nuisance faults that could occur as ports auto-negotiate. The fault can be set to automatically clear after recovery from the fault or to require a manual reset to allow tracking of faults.



By monitoring port status, operating personnel can quickly solve communications problems.

Specifications

Electrical	**DC**	**AC**
Input voltage	10–36 Volts	8–24 Volts
Input power	10 W (EISB16M-100T)	10 VA (EISB16M-100T)
	20 W (EISB16M-100T/FT, FC, FCS)	20 VA (EISB16M-100T/FT, FC, FCS)
	10 W (EISB24M-100T)	10 VA (EISB24M-100T)
	20 W (EISB24M-100T/FT, FC, FCS)	20 VA (EISB24M-100T/FT, FC, FCS)
Input frequency	N/A	47–63 Hz
Fault relay contact	24 V AC or DC, 500 mA	

Environmental	
Operating temperature	–40°C to +75°C
Storage temperature	–40°C to +85°C
Relative humidity	10–95% non-condensing
Protection	IP30

Functionality	**Copper twisted-pair**	**Fibre 1300 nm**
Standards	IEEE 802.3	
Process type	Store-and-Forward	
Flow control	Half-duplex (backpressure)	Full-duplex (PAUSE)
Aging	300 seconds typical	
LED power	Green — power normal Red — power abnormal	
LED status	Green — no fault indicated Red — fault indicated	
LED console access	Green — console port user is logged in Off — console port user is logged out	
Ports	**Copper twisted-pair**	**Fibre 1300 nm**
Number of Ports	6, 8, 14, 16, 22 or 24	0 or 2
Interface	10BASE-T/100BASE-TX 10/100 Mbps Auto-negotiate or manually set duplex, data rate. and flow control	100BASE-FX 100 Mbps Full-duplex
Connectors	Shielded RJ-45	SC (on multimode or single-mode models) ST (only on multimode models)
Maximum segment length	100 m	2 km (multimode), optical budget: 13 dB 15 km (single-mode), optical budget: 19 dB
LED signal indicators	Link LED: Yellow — 10 Mbps Green — 100 Mbps Flashing — Activity\	Green — 100 Mbps link Flashing — Activity

RJ-45 Pin Assignments

MDI-X[1] 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

[1] This product implements the crossover function internally on twisted-pair ports, allowing straight-through cables to connect to network interface modules.

Console Port Pin Assignments

EIA-232C[2]	
Male D-Sub	**Usage**
1	Not Used
2	RX
3	TX
4	Not Used
5	Gnd
6	Not Used
7	Not Used
8	Not Used
9	Not Used

[2] The console port is wired as a DTE, requiring a null-modem cable for attaching to a terminal emulation workstation.

Electromagnetic Compatibility

Standard	Test Method	Description	Test Levels
EN 55024	EN 61000-4-2	Electrostatic Discharge	4 kV Contact, 8 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 Line Cycle , 1 to 5 s @ 100% dip
EN 55022	CISPR 22	Radiated Emissions	Class A
EN 55022	CISPR 22	Conducted Emissions	Class B
CFR 47, Part 15	ANSI C63.4	Radiated Emissions	Class A

Ordering Information

Copper Only

Model	Description
EISB8M-100T	Eight-port 10BASE-T/100BASE-TX managed switch
EISB16M-100T	Sixteen-port 10BASE-T/100BASE-TX managed switch
EISB24M-100T	Twenty-four port 10BASE-T/100BASE-TX managed switch

Fibre and Copper

EISB8M-100T/FC	Six-port 100BASE-TX/two-port 100BASE-FX (multimode) switch, SC connectors
EISB8M-100T/FT	Six-port 100BASE-TX/two-port 100BASE-FX (multimode) switch, ST connectors
EISB8M-100T/FCS	Six-port 100BASE-TX/two-port 100BASE-FX (multimode) switch, SC connectors
EISB16M-100T/FC	Fourteen-port 100BASE-TX/two-port 100BASE-FX (multimode) switch, SC connectors
EISB16M-100T/FT	Fourteen-port 100BASE-TX/two-port 100BASE-FX (multimode) switch, ST connectors
EISB16M-100T/FCS	Fourteen-port 100BASE-TX/two-port 100BASE-FX (single-mode) switch, SC connectors
EISB24M-100T/FC	Twenty-two port 100BASE-TX/two-port 100BASE-FX (multimode) switch, SC connectors
EISB24M-100T/FT	Twenty-two port 100BASE-TX/two-port 100BASE-FX (multimode) switch, ST connectors
EISB24M-100T/FCS	Twenty-two port 100BASE-TX/two-port 100BASE-FX (single-mode) switch, SC connectors

Accessories

Model	Description
AI-XFMR	Wall-mount plug-in transformer, 120 VAC input/24 VAC output (nominal values)
AI-XFMR-E	Wall-mount plug-in transformer, 230 VAC input/24 VAC output (nominal values)

CONTEMPORARY CONTROLS
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