data SHEET

Skorpion Managed Ethernet Switch Series

The EISK8M Series offers a compact rugged managed 10/100 Mbps Ethernet switch with a choice of eight copper ports or a mix of six copper and two fibre ports — with fibre optic ring redundancy. Intended for cost-effective SNMP managed applications, the unit is extremely compact and rated over the industrial temperature range. Fibre optic distances up to 15 km are possible with the single-mode option. Besides having the standard plug-and-play features found in unmanaged switches, this unit supports the SNMP protocol and management features usually found only in high-end switches. Each unit can be configured via its web pages — and can be powered either from a low voltage AC or DC source.

EISK8M-100T/FC

Features

- Choose all 10/100 Mbps copper ports or add two fibre ports
- Single-mode fibre distances up to 15 km
- RapidRing® fibre optic ring redundancy for up to 100 rings
- Industrial temperature range: 0°C to +60°C
- 10–36 VDC or 24 VAC powered
- LEDs for link/activity, data rate, power and status
- Web page configuration
- UL and C-UL listed, CE Mark, RoHS compliant

Management Functionality

- Managed via the SNMP protocol
- IGMP snooping & query functionality
- Cable redundancy using RSTP or RapidRing®
- 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 and port security

Product Overview

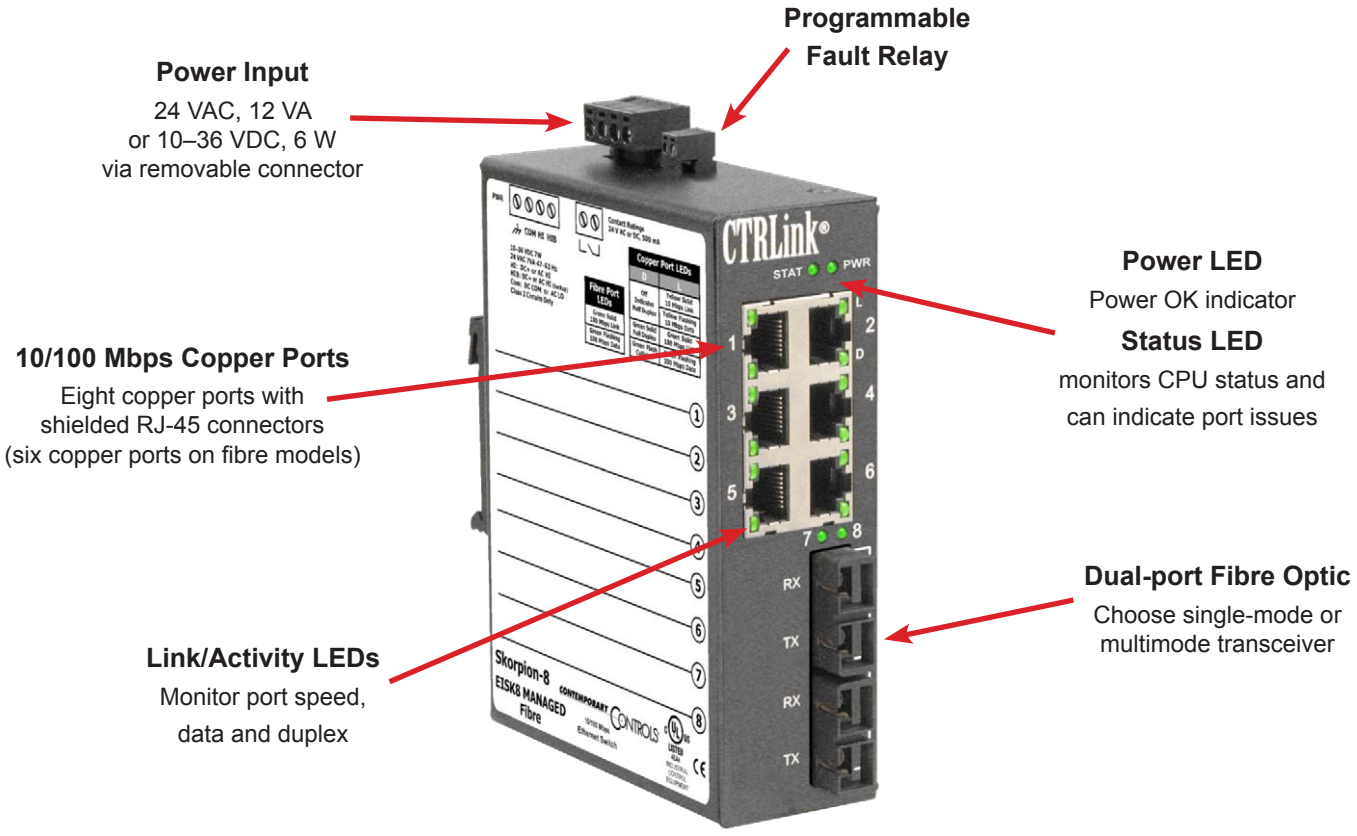
The EISK8M Series provides standard plug-and-play features such as auto-negotiation and Auto-MDIX — allowing for quick and simple installation. However, these features plus full-duplex can be individually set for each copper port.

Three models offer two fibre ports. You can choose single-mode transceivers with SC connectors (providing 15 km cable distance) or multimode transceivers with either SC or ST connectors.

The copper ports can auto-negotiate 10 Mbps, 100 Mbps, half- or full-duplex. With Auto-MDIX, either straight-through or crossover cables may be used to connect any of the copper ports to similar ports on another switch.

In addition to one power LED and one CPU status LED, each port has LEDs showing link/activity/data rate by colour: green for 100 Mbps and yellow for 10 Mbps. Flashing indicates port activity.

The EISK8M Series is designed for DIN-rail mounting. There are several low-voltage AC or DC powering options from 24 VAC or from 10–36 VDC. Provisions exist for redundant power connections.



M-Software — gaining the most from a managed switch

A managed switch is defined as one that supports the Simple Network Management Protocol (SNMP). Sophisticated Ethernet controller technology with numerous features exists in Contemporary Controls' managed switch products such as the EISK8M. The company's resident M-Software brings out these features thereby allowing its customers the ability to take control of their network. Configuring the M-Software is via a web browser.

Authentication

A username and password is required to access the configuration screens.

Port Configuration

By default, all copper ports will auto-negotiate speed, duplex and flow control. However, port settings can be preset to suit specific needs. SNMP Management Information Base (MIB) data can be displayed for each switch port in order to gain a complete understanding of the performance of each port.

IP Address Assignment

A default private IP Address, Subnet Mask and Default Gateway Address are factory installed but they can be changed by the user. Instead of a fixed IP address, a DHCP client in the unit will request dynamic settings from a DHCP server. A recessed switch allows resetting the unit to factory default settings.

Trunking

In order to improve uplink throughput, ports can be aggregated in either of two groups so as to function as one higher performing port. Up to four copper ports can be assigned to each trunk group. Cable redundancy with extremely fast recovery times is inherent in trunk groups.

Port Mirroring

Ethernet switches improve throughput by restricting directed traffic only to those ports party to the intended traffic. Although performance is improved, network troubleshooting is more difficult because a packet sniffer attached to another port may not be able to monitor all traffic. The solution is to create a mirror port to the ports party to the traffic being monitored. A mirror port can monitor any of the other ports with filtering based on source or destination addresses or even a particular MAC address.

Virtual Local Area Network (VLAN)

VLANs allow the same Ethernet infrastructure to accommodate concurrent but separate networks dedicated to different functions — such as accounting and building automation. Each VLAN supports IEEE 802.1Q tagging where each VLAN is assigned a unique VLAN tag (VID). For each VID, ports on the switch become members of the group or they are marked as non-members. Switch ports can be instructed to append a VLAN tag to an ingress (inbound) Ethernet frame or drop VLAN tags on egress (outbound) frames providing the greatest flexibility in establishing VLANs. Overlapping VLANs can be created if strict isolation is not wanted.

Port Forwarding and Filtering Database

Ethernet switches learn the port upon which an Ethernet station can be reached and this information is entered into its filtering database. Subsequent traffic to Ethernet stations recorded in the database is then restricted to these known ports. While this activity is automatically accomplished as a background task, the filtering database can be modified to meet specific needs. The Aging of the filtering database entries is configurable. Static entries based upon MAC addresses can be entered into the database. The same applies to multicast addresses. Four levels of priority can be set based upon MAC addresses.

M-Software — continued

Quality of Service (QoS)

By enabling Quality of Service, Ethernet frames can be given varying degrees of priority when messages are being queued. There are several QoS methods which can be enabled. QoS can be established on strictly a port basis where some ports are given priority over others. IEEE 802.1p priority levels can be honoured or ignored on a port basis. Although there are eight 802.1p priority levels, these levels are mapped to four levels used by the switch. Support also exists for Type of Service (TOS) and Differentiated Services (DiffServ). Although both TOS and DiffServ priorities have been pre-mapped into four levels, these assignments can be modified.

Programmable Fault Relay

A voltage-free contact closure is available for external alarming based upon individual port status. The relay can be programmed to either make or break on a fault condition. Fault conditions could be set for either No Link or Link Present. Fault sensing can be enabled on any of the ports providing the greatest flexibility.

Cable Redundancy

Three forms of cable redundancy are possible – Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP) and Contemporary Controls' proprietary RapidRing®. For mesh networks, either STP or RSTP (recommended) is available and their parameters can be configured accordingly. For ring topologies, RapidRing is the best option yielding the fastest recovery time — typically less than 300 ms with 100 switches.

Rate Limiting

Data throughput can be throttled on a port basis for both ingress and egress ports in order to reduce the number of dropped frames on highly loaded networks. Traffic restrictions can be applied individually to Broadcast, Multicast or Unicast messages or to all types of messages.

Port Security

Increased security settings can be enabled on a port basis. Specific MAC addresses can be assigned to particular ingress or egress ports.

Internet Group Management Protocol (IGMP) Snooping

Both IGMP snooping and IGMP querier are supported in order to reduce multicast traffic to devices which have no interest in this traffic. An IGMP forwarding map can be created on a port basis. The Multicast Filtering Database Aging time is configurable as is the Query Interval time.

Simple Network Management Protocol (SNMP)

As a managed switch, the switch supports SNMP and can be configured for System Name, Location and Contact. Private and Public Community String access can be configured for read-only or read/write access. Up to four IP Trap Receivers can be identified. MIB data is available for each port.

Performance Monitor

A performance monitor exists to assist in troubleshooting. The filtering database can be browsed for entries. When enabling the Spanning Tree Protocol, the forwarding or discarding states of each port can be monitored. Finally, a trap log exists for any SNMP traps that have occurred.

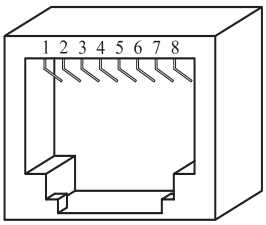
Specifications

Power Requirements (fibre models)	10–36 VDC, 5 W (6 W) or 24 VAC, 10 VA (12 VA), 47–63 Hz
Operating Temperature	0°C to +60°C
Storage Temperature	–40°C to 85°C
Relative Humidity	10–95%, non-condensing
Protection	IP30
Mounting	TS-35 DIN-rail
Shipping Weight	1 lb (0.45 kg)
Ethernet Communications	IEEE 802.3 10/100 Mbps data rate 10BASE-T, 100BASE-TX physical layer, 100 m (max) CAT5 cable length 100BASE-FX physical layer, 15 km (max) single-mode [2 km (max) multi mode] fibre optic cable length
LEDs	Power — Green = power OK Link — Yellow = 10 Mbps; Green = 100 Mbps; Flashing = Activity Status — Green Normal = Solid with a blink every 5 s; Fault = Continuous flashing
Fault Relay	Normally open, dry contact, rated at 24 V (max), 500 mA
Regulatory Compliance	CE Mark; CFR 47, Part 15 Class A; RoHS; UL 508 Industrial Control Equipment

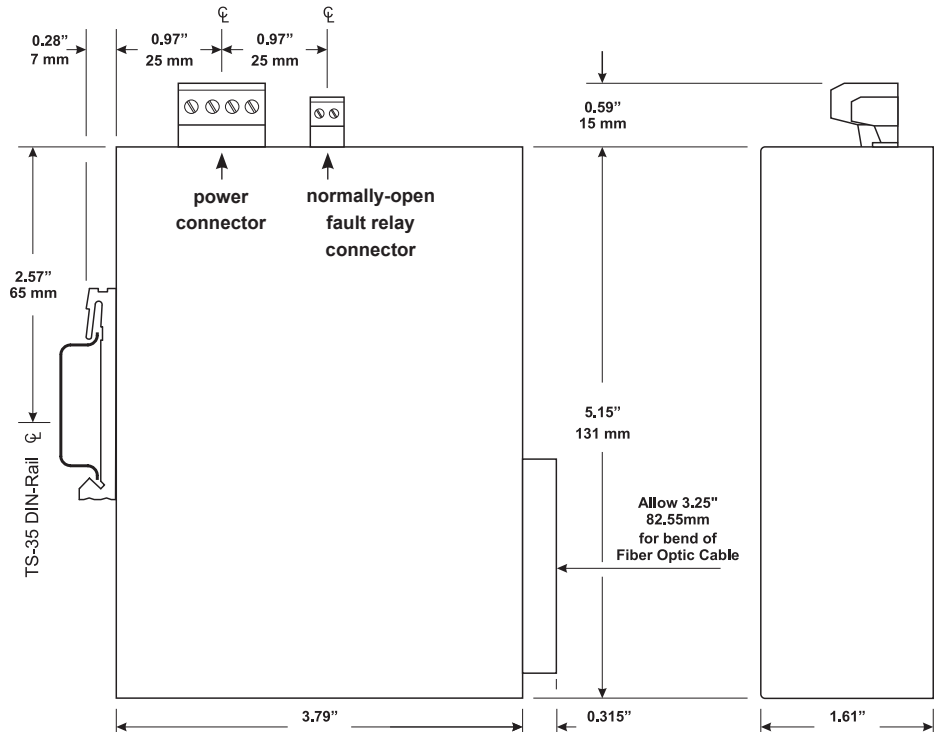
RJ-45 Connector Pin Assignments

Ethernet

Pin	Function
1	+TD
2	–TD
3	+RD
4	N/C
5	N/C
6	–RD
7	N/C
8	N/C



Mechanical Drawing

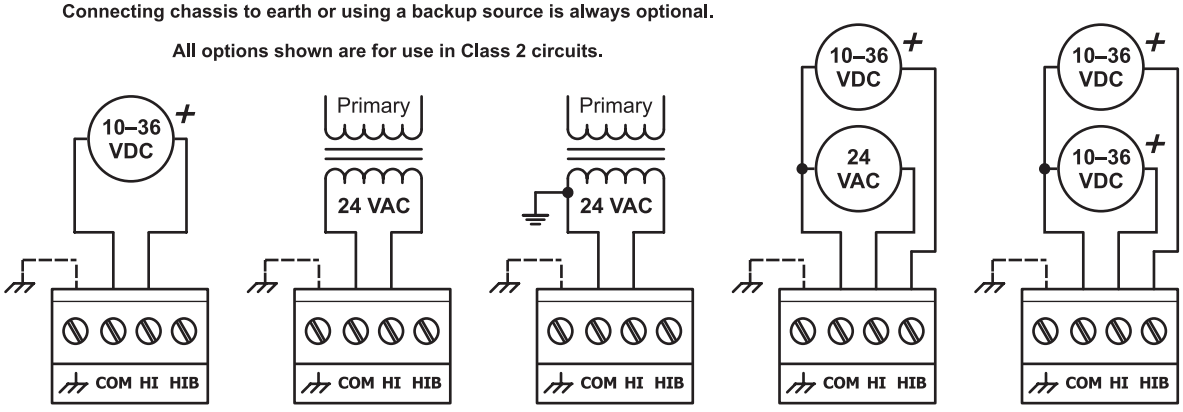


Power Diagrams

Applied voltage must be 10–36 VDC or 24 VAC ±10% and deliver a current commensurate with power consumption. The recommended size for solid power conductors is 16–20 AWG; and for stranded conductors use 16–18 AWG. Zero volts (COM) is isolated from chassis (earth). Input connections are reverse-polarity protected.

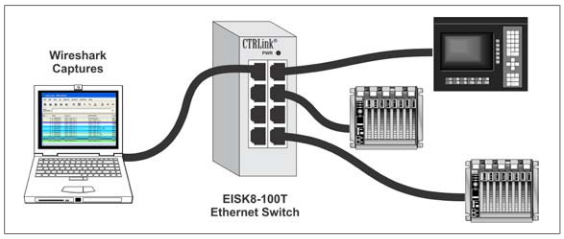
Input power: 10–36 VDC or 24 VAC ± 10%, 47–60 Hz.
Connecting chassis to earth or using a backup source is always optional.

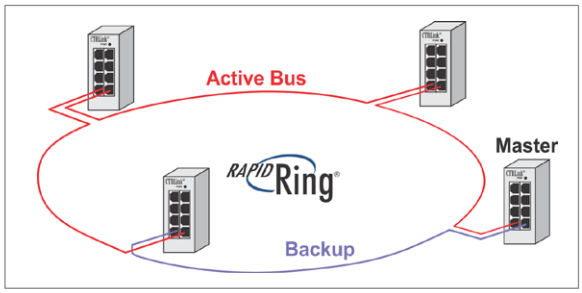
All options shown are for use in Class 2 circuits.



DC Powered | **AC Powered** | **AC Powered with Grounded Secondary** | **Redundant Power** | **Redundant Power**

Typical Switch Installations





Ordering Information

Model	*RoHS*	*Description*
EISK8M-100T	✔	8 ports 10/100 Mbps Skorpion managed switch
EISK8M-100T/FC	✔	6 ports 10/100 Mbps, 2 ports 100 Mbps MM fibre SC connectors
EISK8M-100T/FCS	✔	6 ports 10/100 Mbps, 2 ports 100 Mbps SM fibre SC connectors
EISK8M-100T/FT	✔	6 ports 10/100 Mbps, 2 ports 100 Mbps MM fibre ST connectors

United States
Contemporary Control Systems, Inc.
2431 Curtiss Street
Downers Grove, IL 60515
USA

Tel: +1 630 963 7070
Fax:+1 630 963 0109

info@ccontrols.com
www.ccontrols.com

China
Contemporary Controls (Suzhou) Co. Ltd
11 Huoju Road
Science & Technology Industrial Park
New District, Suzhou
PR China 215009

Tel: +86 512 68095866
Fax: +86 512 68093760

info@ccontrols.com.cn
www.ccontrols.asia

United Kingdom
Contemporary Controls Ltd
14 Bow Court
Fletchworth Gate
Coventry CV5 6SP
United Kingdom

Tel: +44 (0)24 7641 3786
Fax:+44 (0)24 7641 3923

ccl.info@ccontrols.com
www.ccontrols.eu

Germany
Contemporary Controls GmbH
Fuggerstraße 1 B
04158 Leipzig
Germany

Tel: +49 341 520359 0
Fax: +49 341 520359 16

ccg.info@ccontrols.com
www.ccontrols.eu