

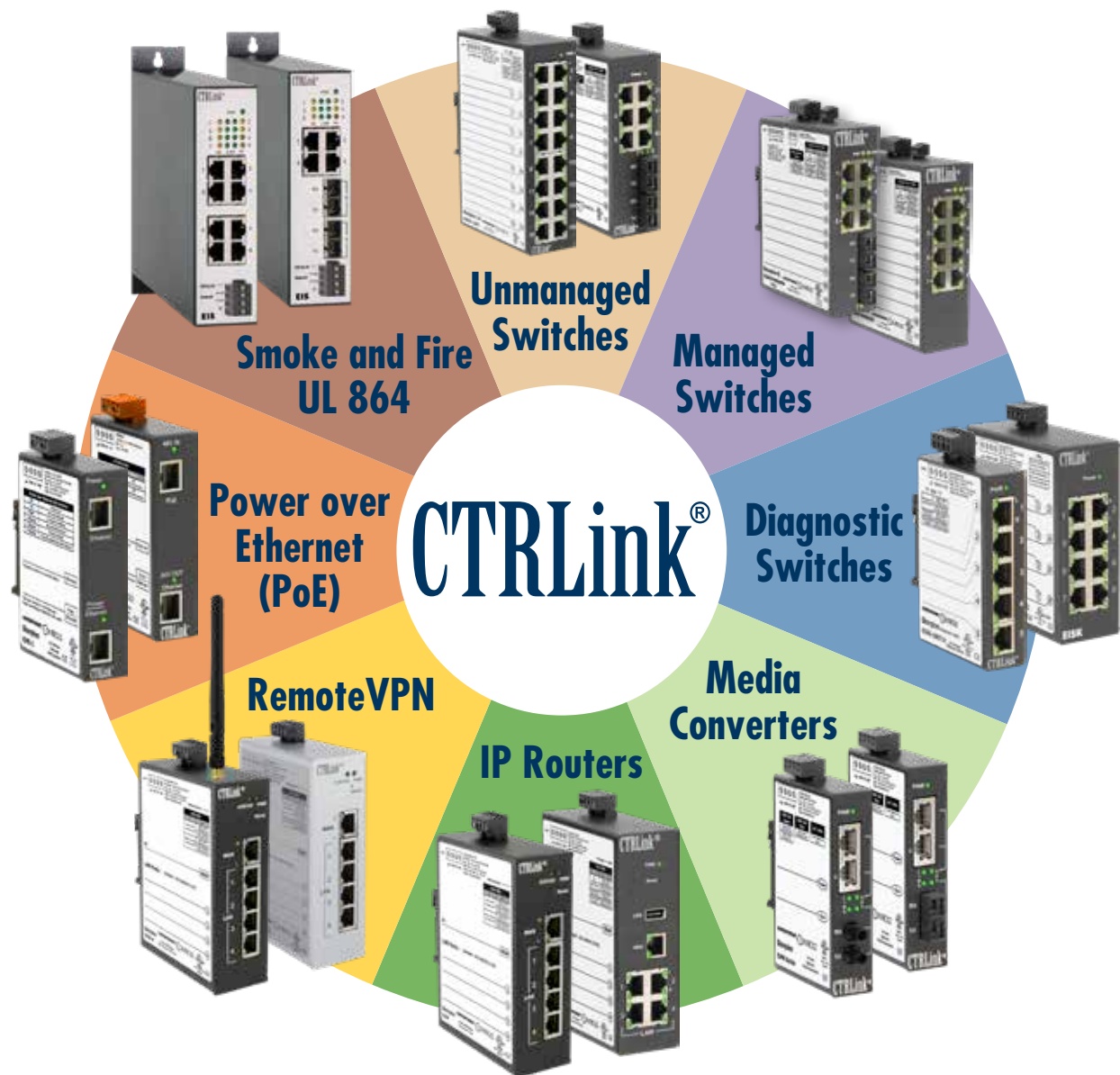


CTRLink[®]

Networking for Automation

Ethernet • Cellular • Wi-Fi

CONTEMPORARY CONTROLS[®]



Whatever the Ethernet infrastructure need, a solution is available from CTRLink. For simple systems, plug-and-play unmanaged switches provide a cost-effective method for expanding Ethernet networks. If no fiber optic ports are available on equipment to be connected, a media converter will do the trick.

For more demanding applications, managed switches provide advanced features such as VLANs, SNMP, Quality of Service, port security, port mirroring, alarming and cable redundancy. Managed switches provide the ultimate solution for network performance.

For troubleshooting, the diagnostic switch allows a network sniffer to attach to an unused port on a switch and observe all traffic on the network.

While Ethernet switches can expand a single Ethernet network, IP routers connect two Internet Protocol (IP) networks together—passing appropriate traffic while blocking all other traffic. CTRLink provides several secure wired and wireless network solutions.

Power over Ethernet (PoE) equipment adds power along with data in Ethernet wiring so devices such as surveillance and card access machines can be powered via standard Ethernet cabling.

With automation systems, applications vary and can require a special product or need. Contemporary Controls has worked with OEMs in obtaining UL 864 compliance with some CTRLink switches, and can help in other areas such as private-labeling, unique packaging or extreme environmental design.

Unmanaged Switches

Plug-and-play unmanaged switches can be put into service without adjustments and provide a simple, cost-effective method for expanding Ethernet networks. Most models include features such as auto-MDIX and auto-negotiation.

Managed Switches

The ultimate in performance and flexibility can be found in a SNMP compliant managed switch. By configuring the switch through either a web page or console screen, features such as virtual LANs, Quality of Service, cable redundancy and port mirroring can be invoked.

Diagnostic Switches

The diagnostic switch retains all the virtues of a switch with one exception—no address learning. All messages—directed, multicast, broadcast—are flooded to all ports on the switch allowing a protocol analyzer tool such as Wireshark® the ability to observe all traffic on the network.

Media Converters

Media converters offer the lowest latency because they are pure media converters and not 2-port switches. Conversion from copper to fiber optic cabling is possible without the loss of auto-negotiation features.

IP Routers

IP routers link two Internet Protocol networks together—passing appropriate traffic while blocking all other traffic. One of the networks is designated the local-area-network and the other the wide-area-network. IP routers are used to isolate traffic and for gaining access to remote equipment.

RemoteVPN

Accessing machines at remote sites over the Internet can be a challenge because firewalls block messages that originate from the Internet. A virtual private network (VPN) makes secure remote communication over the Internet possible.

Power over Ethernet (PoE)

Power over Ethernet provides data and power over one cable, thereby eliminating the need for additional power supplies for Ethernet-enabled devices placed in challenging locations, such as wireless access points or IP cameras on a ceiling or outdoors.

Smoke and Fire UL 864

These products comply with the requirements of Underwriters Laboratories (UL) 864 Control Units and Accessories for Fire Alarm Systems 10th Edition. A UL recognized component has already been evaluated and tested in accordance with UL's component safety standards, streamlining the qualification process for the system supplier.

Unmanaged Switches for Simple Systems

For simple systems, plug-and-play unmanaged switches meet the need. These products operate “right out of the box” and can be put into service without any configuration.

Auto-negotiation, in which data rate (10/100/1000 Mbps) and duplex (half or full) are set between link partners without user intervention, is standard on copper ports. Auto-MDIX eliminates the need for a crossover cable when cascading switches. Models are available with either multimode (MM) or single-mode (SM) fiber optic ports to accommodate long distances through hostile environments. Fiber ports are fixed at 100Mbps data rate and use 100BASE-FX signaling at a wavelength of 1310nm.

Unmanaged switches provide a simple, cost-effective method of expanding Ethernet networks.

Unmanaged Switch Features

- 10BASE-T/100BASE-TX/100BASE-FX compliant
- 1000BASE-T GigE (GT models)
- Auto-MDIX on all copper ports
- Auto-negotiated data rate, duplex and flow control on twisted-pair
- DIN-rail mountable
- Compact size
- Full or half-duplex
- Activity/link and data rate LEDs
- Industrial environment EMC
- UL 508 Listed, c-UL Listed Industrial Control Equipment, CE Mark
- 10-36 VDC or 24 VAC ($\pm 10\%$) 47-63 Hz power is provided through a quick disconnect terminal strip

Skorpion Switch Series — for cost-effective general purpose applications

For control panels where DIN-rail space is at a premium, the Skorpion unmanaged Ethernet switch series offers widths as little as one inch (26 mm). Operating temperature 0 to 60°C.



Copper Models Description

EISK5-100T	Skorpion 5-Port 10/100Mbps Switch
EISK5-GT	Skorpion 5-Port GigE Switch
EISK8-100T	Skorpion 8-Port 10/100Mbps Switch
EISK8-GT	Skorpion 8-Port GigE Switch
EISK16-100T	Skorpion 16-Port 10/100Mbps Switch



EISK Series

Fiber Models Description

EISK5-100T/FT	Skorpion 4-Port 10/100Mbps 1-Port MM ST-fiber Switch
EISK5-100T/FTS	Skorpion 4-Port 10/100Mbps 1-Port SM ST-fiber Switch
EISK5-100T/FC	Skorpion 4-Port 10/100Mbps 1-Port MM SC-fiber Switch
EISK5-100T/FCS	Skorpion 4-Port 10/100Mbps 1-Port SM SC-fiber Switch
EISK8-100T/FT	Skorpion 6-Port 10/100Mbps 2-Port MM ST-fiber Switch
EISK8-100T/FTS	Skorpion 6-Port 10/100Mbps 2-Port SM ST-fiber Switch
EISK8-100T/FC	Skorpion 6-Port 10/100Mbps 2-Port MM SC-fiber Switch
EISK8-100T/FCS	Skorpion 6-Port 10/100Mbps 2-Port SM SC-fiber Switch

Unmanaged Switches

BAS Switch Series — for shallow-depth cabinets and wiring systems



EIBA Series

Utilizing switching technology, the compact and low-cost EIBA switches provide five 10/100Mbps shielded RJ-45 ports. Each port is auto-MDIX compliant and can operate as an uplink port, eliminating the need for crossover cables. All ports automatically negotiate data rate, duplex and flow control. Panel or DIN-rail mount models available with operating temperature 0 to 60°C.

Model	Description
EIBA5-100T	5-Port 10/100Mbps Panel Mount BAS Switch
EIBA5-100T/R	5-Port 10/100Mbps DIN-rail Mount BAS Switch

Compact Switch — for harsh environments



EISX Series

The EISX compact switching hub is designed for industrial and commercial applications that require a small footprint and extended temperature range from -40 to +75°C. This series is ideal for situations where demanding outdoor temperatures are expected and compact size is required. Available panel or DIN-rail mounting.

Model	Description
EISX9-100T	9-Port 10/100Mbps EISX Switch

Managed Switches for Taking Control of Your Network

The ultimate in performance and flexibility can be found in a SNMP compliant managed switch, providing data on network health and performance. By configuring the switch through either a web page or console screen, advanced features can be invoked, including: virtual LANs to segment traffic within a single physical network, several Quality of Service (QoS) methods (including 802.1p) to prioritize traffic, port security to guard against intrusions, port mirroring for troubleshooting, and a programmable fault-relay that can be tied to a host controller for alarming.

Trunking allows for parallel paths for increased throughput and cable redundancy. For other cable redundancy solutions, there is RSTP or Contemporary Controls' proprietary RapidRing®. Models are available with either multimode (MM) or single-mode (SM) fiber optic ports to accommodate long distances through hostile environments. Fiber ports are fixed at 100Mbps data rate and use 100BASE-FX signaling at a wavelength of 1310nm.

Managed Switch Features

- 10BASE-T/100BASE-TX/100BASE-FX
- SNMP protocol
- Configurable by web browser
- IGMP snooping with query
- Virtual LAN (VLAN)
- Quality of Service (QoS)
- RSTP or RapidRing proprietary cable redundancy
- Port mirroring, port security and rate limiting
- Trunking
- Auto-MDIX
- Auto-negotiation or static port settings
- Optional Power over Ethernet (PoE)
- Programmable fault relay
- Rugged metal enclosure
- Diagnostic LEDs
- Enhanced EMC compliance
- UL 508 listed, c-UL listed, CE mark
- 24 VAC/VDC powered (non-PoE models)

Skorpion Managed Switch Series — for cost effective applications



EISK8M Series

The EISK8M Series offers a compact rugged managed 10/100Mbps Ethernet switch with a choice of eight copper ports or a mix of six copper and two fiber ports. The two fiber optic ports can be configured for cable redundancy. Intended for cost-effective SNMP managed applications, the unit is extremely compact and rated over the industrial temperature range. Fiber 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. Available as DIN-rail mounting. Operating Temperature 0 to 60°C.

Model	Description
EISK8M-100T	Skorpion 8-Port 10/100Mbps Managed Switch
EISK8M-100T/FT	Skorpion 6-Pt 10/100Mbps 2-Port MM ST-fiber Managed Switch
EISK8M-100T/FC	Skorpion 6-Pt 10/100Mbps 2-Port MM SC-fiber Managed Switch
EISK8M-100T/FCS	Skorpion 6-Pt 10/100Mbps 2-Port SM SC-fiber Managed Switch

Managed Switches

Compact Managed Switch Series — for harsh environments



EISX8M Series

The EISXM Series of compact managed switching hubs provides management functionality in situations where outdoor temperatures are expected. Network management is significant in an outdoor scenario because in many cases the location of the switch or switches may not be easily accessible, making troubleshooting difficult. The EISXM Series also supports Simple Network Management Protocol (SNMP). Other management features include VLAN, trunking, and Quality of Service (QoS) and can be panel or DIN-rail mounted with operating temperature -40 to $+75^{\circ}\text{C}$.

Model	Description
EISX8M-100T	8-Port 10/100Mbps Managed EISX Switch
EISX8M-100T/FT	6-Port 10/100Mbps 2-Port MM ST-fiber Managed EISX Switch
EISX8M-100T/FC	6-Port 10/100Mbps 2-Port MM SC-fiber Managed EISX Switch
EISX8M-100T/FCS	6-Port 10/100Mbps 2-Port SM SC-fiber Managed EISX Switch

Automation Switch Series — for high port density



EIDX16M



EIDX24M

The EIDX Series of Ethernet switches provide management functionality in situations where extended temperatures of -40 to $+75^{\circ}\text{C}$ are expected. With a fixed width of 62 mm, these units offer 16 or 24 ports with copper and fiber/copper combinations and can be panel or DIN-rail mounted.

Model	Description
EIDX16M-100T	16-Port 10/100Mbps Managed EIDX Switch
EIDX24M-100T	24-Port 10/100Mbps Managed EIDX Switch
EIDX16M-100T/FT	14-Port 10/100Mbps 2-Port MM ST-fiber Managed EIDX Switch
EIDX16M-100T/FC	14-Port 10/100Mbps 2-Port MM SC-fiber Managed EIDX Switch
EIDX16M-100T/FCS	14-Port 10/100Mbps 2-Port SM SC-fiber Managed EIDX Switch
EIDX24M-100T/FT	22-Port 10/100Mbps 2-Port MM ST-fiber Managed EIDX Switch
EIDX24M-100T/FC	22-Port 10/100Mbps 2-Port MM SC-fiber Managed EIDX Switch
EIDX24M-100T/FCS	22-Port 10/100Mbps 2-Port SM SC-fiber Managed EIDX Switch

Industrial Managed Ethernet Switch — for flexible port configuration



EIRD28M

The industrial managed Ethernet switch provides compact 1U rack-mount design, flexible port configuration and high reliability. It provides error-free data transmission and network management functions in harsh environments such as distribution automation. The switch is equipped with four ports for 10/100 Mbps copper links, 20 ports for 100BASE-FX SFP links and 4 ports for 1000BASE-LX SFP links. It offers redundant power supply connections for sources providing 100–240 VAC. It can be installed with the included standard 1U rackmount kit. Operating temperature –40 to +75°C.

Model	Description
EIRD28M-100T/4GT	4-Port Cu, 20-Port 100FX, 4-Port 1000LX SFP Managed Rack Switch
SFP-MM1000LX	1000BASE-LX MM LC-fiber Module 550m
SFP-MM100FX	100BASE-FX MM LC-fiber Module 2km
SFP-SM1000LX	1000BASE-LX SM LC-fiber Module 15km
SFP-SM100FX	100BASE-FX SM LC-fiber Module 15km
SFP-CU100TX	100BASE-TX Copper Module
SFP-CU1000T	1000BASE-T Copper Module

Diagnostic Switches for Network Troubleshooting

One benefit of switched Ethernet technology is that the switch restricts directed messages to only those ports party to the communication. This improves overall network throughput by not burdening end stations with useless traffic. However, this feature makes protocol debugging difficult because a sniffer (protocol analyzer) tool attached to an unused port on the switch cannot observe any directed messages of interest. In the past, the solution was to change out the switching hub with a repeating hub, but with the Skorpion Diagnostic Switch this is unnecessary.

The Skorpion Diagnostic Switch retains all the virtues of switched Ethernet technology such as variable data rates on individual segments, auto-negotiation, auto-MDIX but with one exception—no address learning. All messages—directed, multicast, and broadcast—are flooded to all ports on the switch allowing a sniffer or protocol analyzer tool such as Wireshark the ability to observe all traffic on the network. The Skorpion Diagnostic Switch can be permanently installed on an installation or replaced with a regular Skorpion switch once a system is commissioned. This device can also be useful when developing embedded Ethernet devices because you can connect the Skorpion Diagnostic Switch between two embedded Ethernet devices and view their messages using Wireshark.

- Plug-and-Play operation
- 10BASE-T/100BASE-TX /1000BASE-T
- Shielded RJ-45 connectors
- Auto-negotiation of speed and duplex
- Auto-MDIX supports cable inversion
- DIN-rail mounting
- Floods messages to all ports
- Rugged metal enclosure
- Diagnostic LEDs
- Enhanced EMC compliance
- UL 508 listed, c-UL listed, CE mark
- 24 VAC/VDC powered

Skorpion Diagnostic Switch Series — ideal for network troubleshooting



EISK Series

The Skorpion diagnostic switch is unique because it never learns MAC addresses and therefore floods traffic to all ports. This feature is ideal for network troubleshooting because all network traffic can be observed from any port using sniffer tools such as Wireshark.

The speed of the EISK5-GT/H Gigabit switch minimizes transfer time and greatly improves the ability to stream high-bandwidth files to connected devices without interference. Available as DIN-rail mounting. Operating temperature 0 to 60°C.

Model	Description
EISK5-100T/H	Skorpion 5-Port 10/100Mbps Diagnostic Switch
EISK5-GT/H	Skorpion 5-Port GigE Diagnostic Switch
EISK8-GT/H	Skorpion 8-Port GigE Diagnostic Switch

Media Converters to Simplify the Copper to Fiber Conversion

Ethernet fiber-optic communications provide many advantages over copper based Ethernet communications. These include immunity to noise and further distance capabilities. Systems that require fiber-optic communication can use switches that contain built-in fiber optic ports. However, if your switch does not have built-in fiber optic ports or does not have enough fiber-optic ports, then a media converter is needed to convert copper based communications to fiber-optic communications.

There are two basic types of media converters. A “True Media Converter” converts communications on a bit-by-bit basis. After one bit is received it is transmitted in the other format (copper or fiber-optic). A non-true media converter, or switched media converter, is simply an Ethernet switch that contains one RJ-45 port (copper port) and one fiber-optic port. This media converter will wait for an entire frame to be received before forwarding can begin. Beyond the increase in latency that results, there can be issues when using switched media converters in redundant systems such as IEEE 802.1D RSTP. The EIMK series are true media converters that can be used in RSTP systems, support Far-End Fault and have very low latency. The link loss on either the copper or fiber side is accurately passed to the other side, maintaining true link integrity.

- Plug-and-Play operation
- 100BASE-TX/100BASE-FX conversion
- Full-duplex operation
- MDI and MDIX ports
- Auto-negotiation
- Shielded RJ-45 and SC/ST-style fiber optic connectors
- 24 VAC/VDC powered
- Rugged metal enclosure
- Diagnostic LEDs
- Enhanced EMC compliance
- UL 508 listed, c-UL listed, CE mark

Skorpion Media Converters — for commercial and industrial Ethernet applications



EIMK Series

The EIMK Skorpion Media Converter series makes the conversion of an Ethernet copper segment to fiber simple. By operating full-duplex at 100 Mbps it provides the highest possible performance on 100 Mbps links. Models are available with either multimode (MM) or single-mode (SM) fiber optic ports to accommodate long distances through hostile environments. Fiber ports are fixed at 100Mbps data rate and use 100BASE-FX signaling at a wavelength of 1310nm. Fiber distances of up to 15 km are possible with the single-mode model and up to 2 km with the multimode models. On the copper side, both MDI and MDIX ports are available to complement either an end station port or a switch port. Available as DIN-rail mounting. Operating temperature 0 to 60°C.

Model	Description
EIMK-100T/FT	Skorpion 100BASE-TX/100BASE-FX MM ST-Fiber Media Converter
EIMK-100T/FC	Skorpion 100BASE-TX/100BASE-FX MM SC-Fiber Media Converter
EIMK-100T/FCS	Skorpion 100BASE-TX/100BASE-FX SM SC-Fiber Media Converter

Skorpion IP Routers for LAN-to-LAN or LAN-to-WAN Routing

While Ethernet switches expand a single Ethernet network, Skorpion IP routers connect two Internet Protocol (IP) networks together—passing appropriate traffic while blocking all other traffic using either a wired or wireless connection. Either Ethernet-to-Ethernet (LAN-LAN) or Ethernet-to-modem (LAN-WAN) routing is possible with external DSL or cable modems. CTRLink's routers provide either NAT or PAT and a host of features, including a stateful firewall which makes a WAN connection as secure as possible.

The Skorpion series of IP routers eases the integration of new machines into the existing network. Each machine consisting of multiple IP devices connects to the LAN side while keeping the same IP settings for the devices and the application, lowering installation cost and eliminating trouble shooting. The IP address for the WAN port on the IP router is the only setting that requires modification allowing multiple machines to reuse the same configuration on the LAN side. VPN models of the routers can provide secure remote access with the use of the RemoteVPN service from Contemporary Controls.

- Configurable by web browser
- PAT, NAT, port and port range forwarding
- Stateful firewall
- DHCP client (WAN) and server (LAN)
- Rugged metal enclosure
- Diagnostic LEDs
- Enhanced EMC compliance
- UL 508 listed, c-UL, CE mark
- 24 VAC/VDC powered

Skorpion IP Routers — cost-effective wired routers



EIPR Series

The EIPR routers have a 10/100Mbps Ethernet WAN port and a built-in 4-port LAN switch. By installing the appropriate USB adapter, a Wi-Fi LAN connection can be made with either EIPR model, or in the case of a cellular adapter with EIPR-V, a WAN connection to a cellular provider can be made. The EIPR-V has a resident OpenVPN® client for accessing a virtual private network server—thereby creating a VPN tunnel with higher security. Available as DIN-rail mounting. Operating temperature 0 to 60°C.

Model	Description
EIPR-E	Skorpion 10/100Mbps IP Router
EIPR-V	Skorpion 10/100Mbps IP Router with VPN

Skorpion GigE IP Routers — wired or wireless routers



EIGR Series

The EIGR series of IP routers add Gigabit ports for faster speeds and higher data throughput and additional built-in Wi-Fi and LTE cellular capabilities. The EIGR-E is a wired router while EIGR-V router adds OpenVPN server/client. The EIGR-C has a built-in cellular modem and supports OpenVPN client. -40 to +75°C operating temperature versions are available as EIGR-EX, EIGR-VX and EIGR-CX models. The EIGR-W has a built-in Wi-Fi module that supports Access Point mode for LAN side connections.

Model	Description
EIGR-E	Skorpion GigE IP Router 0 to 60°C
EIGR-EX	Skorpion GigE IP Router -40 to +75°C
EIGR-V	Skorpion GigE IP Router with VPN 0 to 60°C
EIGR-VX	Skorpion GigE IP Router with VPN -40 to +75°C
EIGR-W	Skorpion GigE IP Router with Wi-Fi 0 to 60°C
EIGR-C1	Skorpion GigE IP Router with Cellular (AT&T) 0 to 60°C
EIGR-C1X	Skorpion GigE IP Router with Cellular (AT&T) -40 to +75°C
EIGR-C2	Skorpion GigE IP Router with Cellular (Europe) 0 to 60°C
EIGR-C2X	Skorpion GigE IP Router with Cellular (Europe) -40 to +75°C
EIGR-C3	Skorpion GigE IP Router with Cellular (Verizon) 0 to 60°C
EIGR-C3X	Skorpion GigE IP Router with Cellular (Verizon) -40 to +75°C

Skorpion Cellular IP Router — cost-effective cellular router



EICR Series

The EICR is a high-speed router that links cellular to 10/100 Mbps Internet Protocol (IPv4) networks. The cellular side acts as the WAN interface and the LAN side consists of an Ethernet port. The EICR has a built-in LTE cellular modem and includes OpenVPN client for secure remote access. The EICR operates over -40 to +75°C and supports DIN-rail mounting.

Model	Description
EICR-1	Skorpion Cellular IP Router (AT&T) -40 to +75°C
EICR-2	Skorpion Cellular IP Router (Europe) -40 to +75°C
EICR-3	Skorpion Cellular IP Router (Verizon) -40 to +75°C

RemoteVPN for Simplified Secure Remote Communication

RemoteVPN is a service offered by Contemporary Controls that allows systems integrators remote access to systems from the convenience of the systems integrator's home or office. A cloud-based VPN server hosted by Contemporary Controls provides the critical connection between two VPN clients—one installed on the systems integrator's PC and the other permanently installed on Contemporary Controls' EIPR/EIGR VPN router located at the remote location. Using this approach, two secure VPN tunnels are created with no concern for intervening firewalls. RemoteVPN is based on OpenVPN, a well supported open-source VPN technology. In addition to OpenVPN PC clients for Windows machines, OpenVPN clients are available for iOS and Android mobile devices for greater flexibility in accessing sites remotely.

- Wired or wireless operation over the Internet
- Secure communication tunnels utilizing encryption
- No capital investment in resident VPN servers
- Free download of OpenVPN Windows PC client software
- Support for iOS, Android and Linux OpenVPN clients
- Applicable to both permanent and temporary remote access
- Flexible man-machine and machine-machine applications
- Quick realization of a remote access project

RemoteVPN



The use of RemoteVPN service, along with the EIPR/EIGR VPN routers, eliminates the need for a Static Public IP address providing considerable saving. Multiple port forwarding entry setup is also eliminated and the masquerade feature allows access to devices where it is not possible to change the gateway IP address—either because the setting is used for a separate subnet or is missing on older devices. All the traffic is tunneled through the VPN over a single port and is encrypted.

Model	Description
REMOTEPN-R	RemoteVPN Subscription 1 Router and 2 Clients
REMOTEPN-C	RemoteVPN Subscription 1 Additional Client
REMOTEPN-F	RemoteVPN Subscription Static IP Client

Skorpion PoE for powering a single PoE end device or for deriving power from PoE

Power over Ethernet (PoE) equipment adds power along with data to Ethernet wiring, so devices such as surveillance and card access machines can be powered via standard Ethernet cabling. Power Sourcing Equipment (PSE) such as the Skorpion PoE Injector and Skorpion PoE Gigabit Switch provide the required 48VDC power onto the Ethernet cable while the Skorpion PoE Splitter extracts power from the Ethernet cable to power non-PoE compliant Powered Devices (PD). All PoE models support the IEEE 802.3af standard.

- IEEE 802.3af compliant
- 10BASE-T/100BASE-TX
- DIN-rail mounting
- Rugged metal enclosure
- Diagnostic LEDs
- Enhanced EMC compliance
- UL 508 listed, c-UL, CE mark

Skorpion PoE Mid-Span Injector — powering a single device



EIPE Series

PoE applications require a 48 VDC power source, but most automation systems run from 24 VAC/VDC power. If only one Ethernet Powered Device (PD) needs power, the Skorpion PoE Injector can provide it. The EIPE-1 operates from 24 VAC/VDC and internally generates the 48 VDC PoE power for the Powered Device (PD)—eliminating grounded primary power concerns while providing isolated 15.4 W power output. It injects 48 VDC into the Ethernet cable to provide both power and data to the PD.

Model	Description
EIPE-1	Skorpion PoE Mid-Span Power Injector

Skorpion PoE Mid-Span Splitter — harvest power from your cable



EIPE Series

Under certain circumstances a non-PoE compliant device can work with the use of the EIPE-2 splitter. If the end device is 10/100 Mbps Ethernet-based but requires 24 VDC to operate, the splitter will accept the combined 48 VDC and data from a power sourcing equipment (PSE) and then internally generate 24 VDC to provide the non-PoE end device with separate data and power up to 10 W.

Model	Description
EIPE-2	Skorpion PoE Mid-Span Power Splitter

Skorpion PoE Gigabit Switch — high speed, compact size



EISK Series

The EISK8P-GT gigabit switch within the Skorpion Series is an 8-port unmanaged Ethernet switch with Gigabit Ethernet (GigE) performance on all ports and PoE on four ports, supplying 15.4 W per PoE port. GigE jumbo frames up to 9216 bytes are supported for maximum system performance. 10/100 Mbps legacy devices are supported via auto-negotiation—accommodating any Ethernet automation system. This low-cost compact unit has a rugged metal enclosure and is intended for DIN-rail mounting in control panels. The unit is powered from 48 VDC and operates over 0 to 60°C temperature range.

Model	Description
EISK8P-GT	Skorpion 8-Port GigE Switch w/4-PoE

Automation Switch Series — PoE and high port density



EIDX16MP

The EIDXMP Series of Ethernet switches provide management functionality in situations where extended temperatures of -40 to +75°C are expected. With a fixed width of 62 mm, these units offer 16 or 24 ports with copper and fiber/copper combinations.

Ports 9 through 16 (located on the bottom of the unit) support Power over Ethernet (PoE), providing data and power over one cable. The unit acts as power sourcing equipment (PSE) supplying up to 15.4 W per port for IEEE 802.3af-compliant powered devices (PD). PDs can be located up to 100 meters from the switch. Models are available with either multimode (MM) or single-mode (SM) fiber optic ports to accommodate long distances through hostile environments. Fiber ports are fixed at 100Mbps data rate and use 100BASE-FX signaling at a wavelength of 1310nm. Available with panel or DIN-rail mounting, and 48 VDC powered.



EIDX24MP

Model	Description
EIDX16MP-100T	16-Port 10/100Mbps Managed EIDX Switch/8-PoE
EIDX24MP-100T	24-Port 10/100Mbps Managed EIDX Switch/8-PoE
EIDX16MP-100T/FT	14-Port Cu 2-Port MM ST-fiber Managed EIDX Switch/8-PoE
EIDX16MP-100T/FC	14-Port Cu 2-Port MM SC-fiber Managed EIDX Switch/8-PoE
EIDX16MP-100T/FCS	14-Port Cu 2-Port SM SC-fiber Managed EIDX Switch/8-PoE
EIDX24MP-100T/FT	22-Port Cu 2-Port MM ST-fiber Managed EIDX Switch/8-PoE
EIDX24MP-100T/FC	22-Port Cu 2-Port MM SC-fiber Managed EIDX Switch/8-PoE
EIDX24MP-100T/FCS	22-Port Cu 2-Port SM SC-fiber Managed EIDX Switch/8-PoE

Switches for Life Safety

UL 864 10th edition fire-protective signalling systems

The EIS Ethernet Interconnect Switch and the EIRX Industrial Managed Ethernet Switch from Contemporary Controls comply with the requirements of Underwriters Laboratories (UL) 864 Control Units and Accessories for Fire Alarm Systems 10th Edition.

The UL recognized component mark is rarely seen by the customer, but is often part of a larger system that is UL Listed by the fire alarm supplier. A UL recognized component has already been evaluated and tested in accordance with UL's component safety standards, streamlining the qualification process for the system supplier. By having the fire alarm system supplier specify a Contemporary Controls' EIS or EIRX switch as a component, the supplier is not required to perform additional testing on the component. Several fire alarm and security firms have already specified the EIS and EIRX series as part of their system, thereby improving their time-to-market.

Ethernet Interconnect Unmanaged Switch Series



EIS Series

The EIS line of unmanaged switches within the Ethernet Interconnect Series accommodates up to eight 10/100 Mbps twisted-pair ports. A mix of fiber optic and twisted-pair ports is available in six and eight-port models. The EIS complies with the requirements of Underwriters Laboratories (UL) 864 Control Units and Accessories for Fire Alarm Systems 10th Edition. Available panel or DIN-rail mounting. Operating temperature 0 to 60°C. Models are available with either multimode (MM) or single-mode (SM) fiber optic ports to accommodate long distances through hostile environments. Fiber ports are fixed at 100Mbps data rate and use 100BASE-FX signaling at a wavelength of 1310nm.

Model	Description
EIS8-100T	8-Port 10/100Mbps UL 864 EIS Switch
EIS6-100T/FT	4-Port 10/100Mbps 2-Port MM ST-fiber UL 864 EIS Switch
EIS6-100T/FC	4-Port 10/100Mbps 2-Port MM SC-fiber UL 864 EIS Switch
EIS6-100T/FCS	4-Port 10/100Mbps 2-Port SM SC-fiber UL 864 EIS Switch

UL 864 Managed Ethernet Switch



EIRX28M

The industrial managed Ethernet switch provides compact 1U rack-mount design, flexible port configuration and high reliability. It provides error-free data transmission and network management functions in harsh environments. The switch is equipped with four ports for 10/100 Mbps copper links, 20 ports for 100BASE-FX SFP links and 4 ports for 1000BASE-LX SFP links. It offers redundant power supply connections for sources providing 120 VAC. It can be installed with the included standard 1U rackmount kit. Operating temperature -40 to +75°C.

Model	Description
EIRX28M-100T/4GT	4-Port Cu, 20-Port 100FX, 4-Port 1000LX SFP Managed UL 864 Switch
SFP-MM1000LX	1000BASE-LX MM LC-fiber Module 550m
SFP-MM100FX	100BASE-FX MM LC-fiber Module 2km
SFP-SM1000LX	1000BASE-LX SM LC-fiber Module 15km
SFP-SM100FX	100BASE-FX SM LC-fiber Module 15km

M-Software — Gaining the Most from a Managed Switch

CTRLink® EISX_M Series

System Configuration | SNMP Configuration | Performance Monitor | Save Settings | CTRLink Webpage | Logout

CTRLink Compact Managed Switching Hub

EISX-M Information:

Name	Contemporary Controls EISX-M Managed Switch V5.0.8b
Location	
Contact	
MAC Address	00-0C-DB-80-13-3D
Firmware Version	5.0.8b
Uptime	163895 seconds
Switch Temperature	44°C

Note: The port and relay status and settings can be accessed by clicking on their images above.

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. The resident M-Software brings out these features thereby providing the customer the ability to take control of their network. Configuring the M-Software is via a web browser or console port or both.

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 method exists for resetting the unit to factory default settings.

Trunking

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

CTRLink® EISX_M Series

System Configuration | SNMP Configuration | Performance Monitor | Save Settings | CTRLink Webpage | Logout

CTRLink Compact Managed Switching Hub Port 1

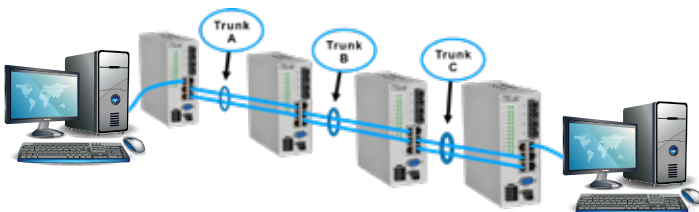
Current State:

Port State	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Media Type	Copper
Mode	Auto Negotiate
Auto-MDIX	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Flow Control	<input type="radio"/> Enable <input checked="" type="radio"/> Disable

Apply

Port Packet Statistics:

Unicast Packets Received	53146
Unicast Packets Sent	29810
Multicast Packets Received	0
Multicast Packets Sent	130
Broadcast Packets Received	0
Broadcast Packets Sent	9829
Dropped Packets	0
Oversize Packets	0
Undersize Packets	0
Fragments	0
Jabbers	0
Collisions	0
Deferred Transmissions	0



CTRLink® EISX_M Series

System Configuration | SNMP Configuration | Performance Monitor | Save Settings | CTRLink Webpage | Logout

Configure Port Mirroring

Status	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Mirror Port	Port: <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8

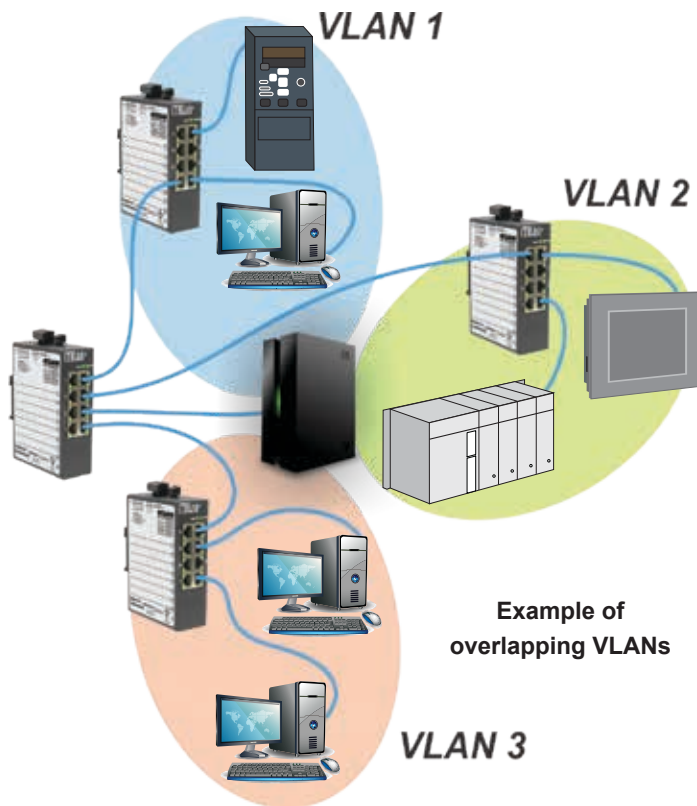
Ingress (Ingoing) Mirror Rules:

Source Ports	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8
Divider	1 (1-1023)
MAC Address Filter	<input checked="" type="radio"/> Capture ALL <input type="radio"/> Capture by Source <input type="radio"/> Capture by Destination
MAC Address	

Egress (Outgoing) Mirror Rules:

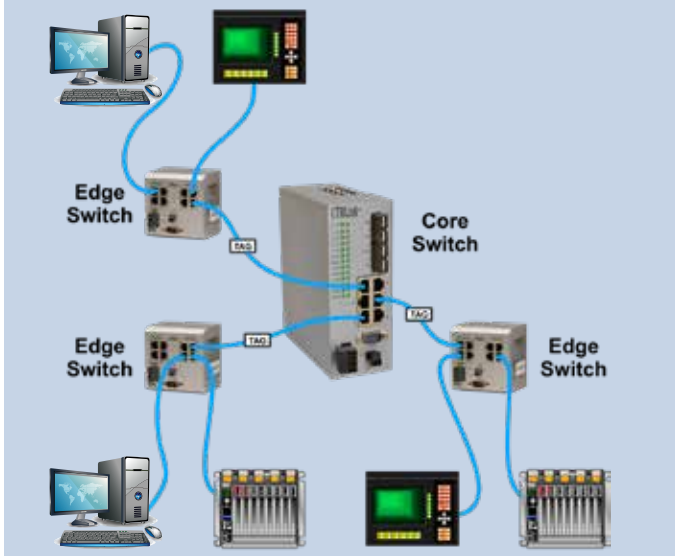
Source Ports	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8
Divider	1 (1-1023)
MAC Address Filter	<input checked="" type="radio"/> Capture ALL <input type="radio"/> Capture by Source <input type="radio"/> Capture by Destination
MAC Address	

Apply



Improving Real-time Communication

For automation systems concerned about real-time communication, VLANs offer a simple solution. Not only can automation systems be isolated from business systems using VLAN tagging, the priority of the messages can be defined within the tag using the 802.1p priority scheme. Edge switches connect to end stations such as workstations and controllers and apply tags when communicating to other edge switches and core switches. Once a tagged message is received by the edge switch the tag is removed before being sent to the end station.



Virtual Local Area Network (VLAN)

VLANs allow the same Ethernet infrastructure to accommodate concurrent but separate networks dedicated to different functions – such as accounting, security and 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.

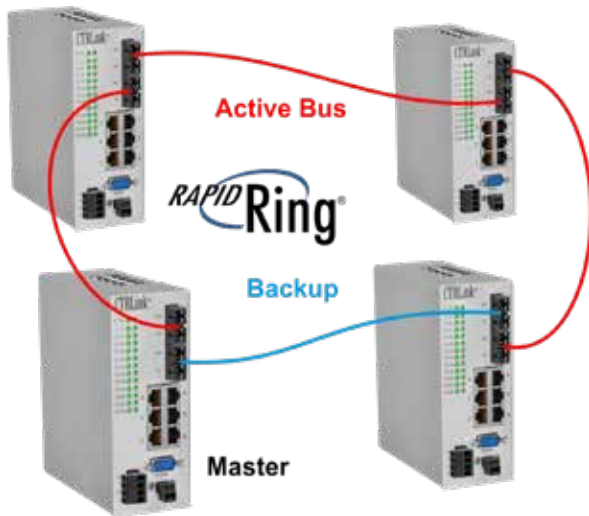
The same applies to multicast addresses. Four levels of priority can be set based upon MAC addresses.

Quality of Service (QoS)

By enabling QoS, Ethernet frames can be given varying degrees of priorities 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 honored 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.



Cable Redundancy

Besides trunking, three other 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)

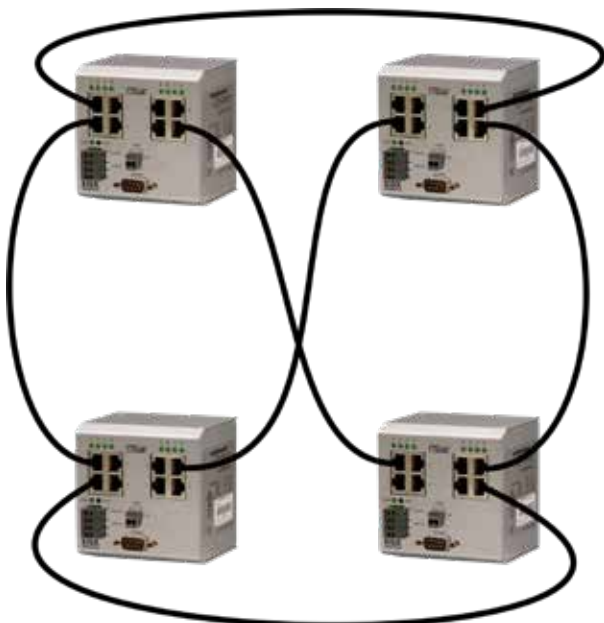
As a managed switch, the switch supports SNMP and can be configured for System Name, Location and Contact. Private and Public Community String access can be configured for read-only or read/write access. Up to four IP Trap Receivers can be identified. MIB data is available for each port.

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.

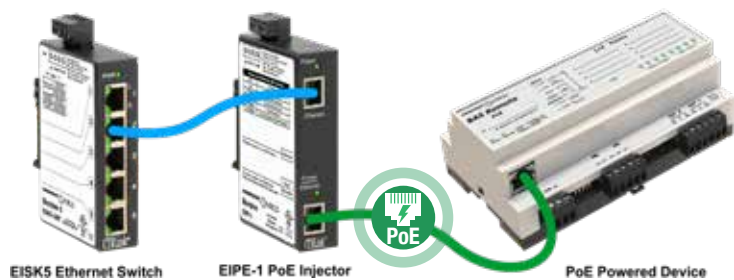
Resident Help

Resident help screens exist on all managed switches as a convenience when configuring the switch.



STP or RSTP

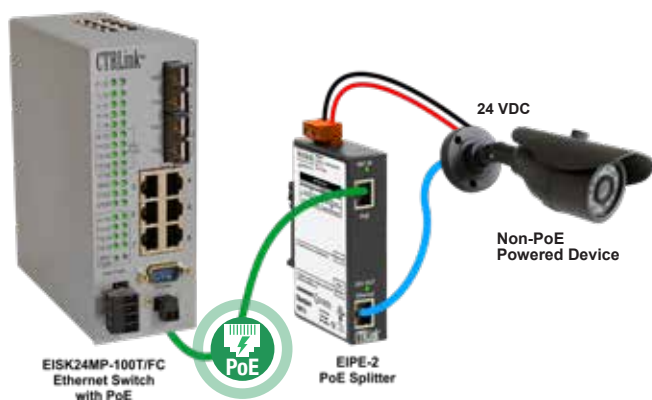
Power over Ethernet (PoE)



PoE Mid-Span Injector

PoE requires a 48 VDC power source but most automation systems operate from 24 VAC/VDC power. If only one PoE device needs to be powered, an injector like the EIPE-1 can be used.

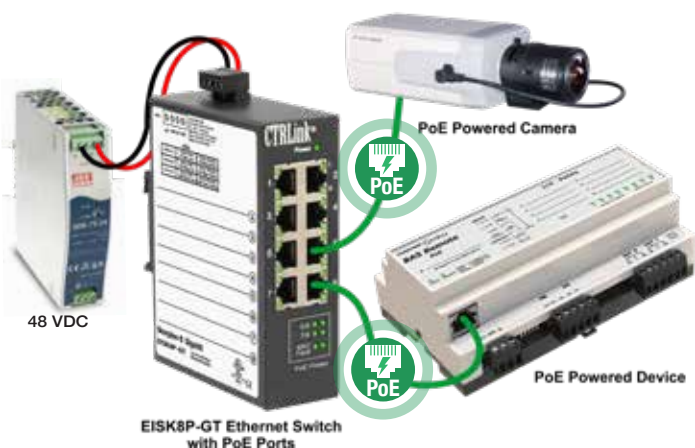
An injector is inserted mid-span between a standard Ethernet switch and Ethernet powered device (PD). Power to the injector can be either 24 VAC or VDC. The injector develops the required 48 VDC and injects the voltage into the Ethernet cable in order to provide power and data to the powered device.



PoE Mid-Span Splitter

Under certain circumstances a non-PoE compliant device can be made compliant with the use of the EIPE-2 splitter.

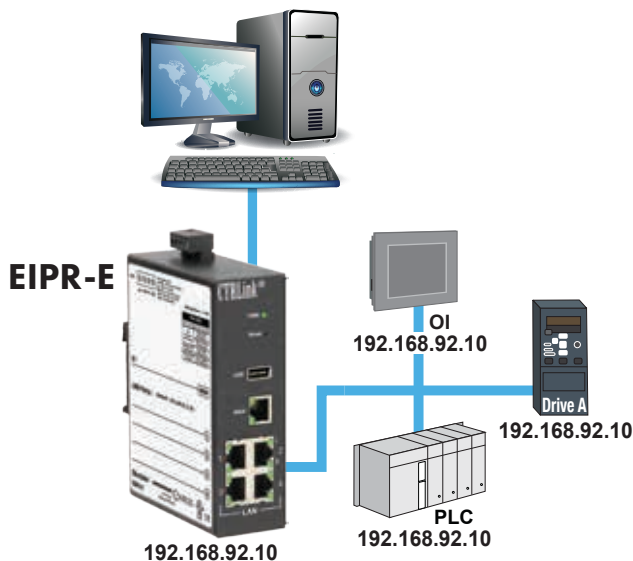
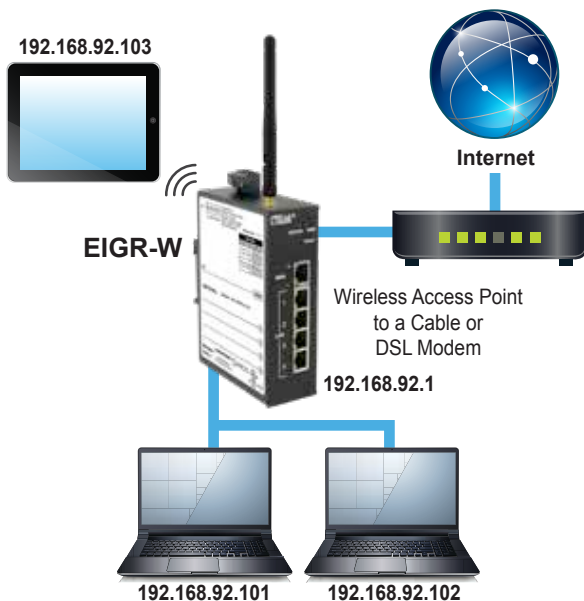
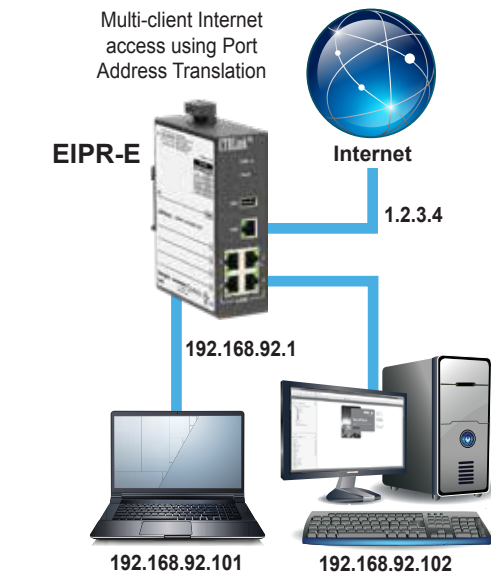
If the end device is 10/100 Mbps Ethernet-based but requires 24 VDC to operate the splitter will accept combined power and data connections from a PoE-compliant power sourcing equipment (PSE) and uses the 48 VDC to generate 24 VDC at 10W to power the end device while passing the data signals.



End-Point Power Sourcing Equipment

For multiple PoE port applications, an Ethernet switch equipped with PoE sourcing ports is required. An end-point PSE such as the EIDX24MP-100T or EISK8P-GT can drive a PoE splitter or a PoE compliant powered device directly. Power for the PoE switch is derived from an isolated 48 VDC power supply. PoE applications typically involve surveillance and card access systems.

Wired and Wireless IP Routing



Multi-Access to the Internet with Port Address Translation

The EIPR links two Internet Protocol (IPv4) networks together—passing appropriate traffic while blocking all other traffic. One of the networks is designated the local-area-network (LAN) and the other the wide-area-network (WAN).

Because of the built-in stateful firewall, communication initiated on the LAN-side passes through the router while WAN-side initiated communication is blocked. With Port Address Translation (PAT), several clients on the LAN-side can gain access to the Internet.

Wireless Access Point

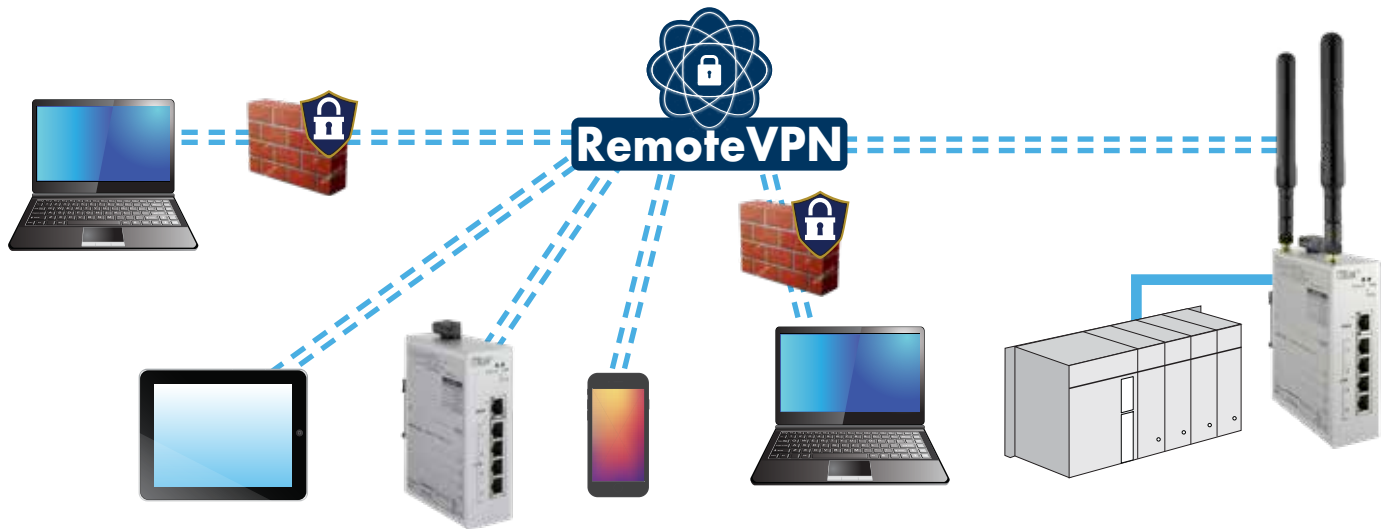
The EIPR incorporates a four-port 10/100 Mbps Ethernet switch and USB port for multiple LAN-side connections. Wi-Fi clients can be accommodated with the installation of a Wi-Fi adapter in the USB port. An external Ethernet-based modem, cable or DSL, attached to the 10/100 Mbps WAN-side port can be used to connect to the Internet. DSL modems connect via the PPPoE protocol. The EIGR-W features 10/100/1000Mbps Ethernet ports and a built-in Wi-Fi module.

A resident DHCP server on the LAN-side will provide IP addresses to LAN-side clients while a DHCP client on the WAN-side will accept IP address assignments from the attached modem.

Easy Machine Integration

By using an EIPR/EIGR router, a machine builder can easily install the machine at his customers' site. The IP addresses used for the devices on the machine do not have to change per the site IP addressing scheme and this eliminates device and application reconfiguration and troubleshooting. The machine is installed with the same configuration that it was built and tested with. The router also separates the normal machine traffic from the site network. Configuration downloads to the machine are easily achieved by assigning the WAN port IP address to match the site network and using NAT and Port Forwarding features of the IP router to access the machine. The use of EIPR/EIGR also cuts down on the need for multiple IP addresses for each machine device by requiring just one IP address for the WAN port of the IP router instead.

RemoteVPN – Secure, Remote Access Solution



Accessing machines at remote sites over the Internet can be difficult because firewalls block messages that originate from the Internet. Although it is possible to open up ports in the firewall using port forwarding, IT professionals are often reluctant to compromise the security of their network and usually decline this type of request. Without support from the IT department, the systems integrator is usually left with very few options. However, one solution is to incorporate a Virtual Private Network (VPN). By hosting a VPN server in the cloud, simplified secure remote communication over the Internet is accomplished.

Contemporary Controls' remote access solution supplies cellular routers, hosts the cloud-based VPN server and recommends a data plan from a cellular provider.

Remote Access Solution

The RemoteVPN service provides systems integrators remote access to systems from a remote location. The cloud-based VPN server provides the connection between two VPN clients—one installed on the systems integrator's PC and the other permanently installed on our VPN router located at the remote location. This approach provides the creation of two secure VPN tunnels with no concern for intervening firewalls.

How it works

The EIPR-V Skorpion wireless router provides the VPN communication. The router has a USB port for connecting cellular modems allowing it to communicate to the Internet. The router also has an Ethernet WAN port which can be used to communicate through a wired connection to the Internet.

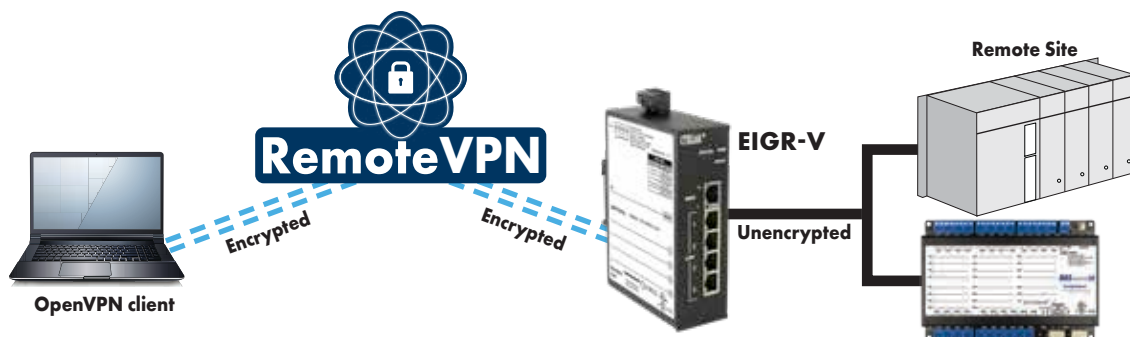
The EIGR-C features 10/100/1000Mbps Ethernet ports and a built-in cellular module.

The RemoteVPN Server, maintained by Contemporary Controls, is hosted on the Internet and allows RemoteVPN devices to communicate together. All that is needed is an account on the server to utilize the RemoteVPN service.

OpenVPN client software runs behind the scenes and allows the use of any program to communicate via TCP/IP with the RemoteVPN.

The OpenVPN client is easy to obtain and can be downloaded from OpenVPN.net, or via the Google Play Store for Android devices, or via the Apple App Store for iOS devices. This arrangement allows numerous devices access to the RemoteVPN.

The RemoteVPN is an easy, cost-effective remote access solution that allows you to proactively review and communicate with your customers' automation systems—resulting in saving valuable time and money.



Original Design Manufacturing

With over 40 years of experience in electronics design, development and manufacturing, Contemporary Controls has a rich inventory of intellectual property that can be tapped for your next project. Leverage our design and manufacturing resources to reduce your costs and time-to-market.



Private Label Product

Apply your brand to one of our standard products—the quickest way to market.



Original Design Manufacturing

Using one of our standard products as a basis for design, hardware and software are modified to meet your requirements. Leverage our intellectual property to reduce design risk and speed time to market.

Design to Worldwide Standards

Two design centers—one in the United States and the other in the China—cooperate on product designs from concept to production. Capabilities include:

- Schematic capture and printed circuit board layout
- Firmware and programmable logic development
- Mechanical design
- Design for Test (DFT)
- Design for Manufacturing (DFM)
- Environmental testing
- Electromagnetic Compatibility (EMC)
- Safety and performance testing

We assist in obtaining regulatory approvals, including UL, CE and CCC markings.

Worldwide Electronics Manufacturing

Contemporary Controls offers lead-free surface-mount-technology (SMT) electronics manufacturing in the United States and China while complying with the requirements for the Restriction of Hazardous Substances (RoHS) European Union directive. Through-hole assembly and wave soldering are also supported. Contemporary Controls adheres to the workmanship standards established by IPC—Association Connecting Electronics Industries.

The Downers Grove, Illinois manufacturing plant focuses on lower-volume, higher-mix products or those products requiring Made-in-America compliance or a North American Free Trade Agreement (NAFTA) certificate.

For higher-volume, lower-mix, cost-sensitive requirements, our Suzhou, PRC plant offers the highest production capacity as well as global logistics support. This plant is ISO 9001:2015 registered. Both plants are under Underwriters Laboratories (UL) surveillance. Your intellectual property is protected at either plant location.



Quality Policy

Contemporary Controls develops, manufactures and markets innovative networking and control products to the benefit of our automation customers worldwide. We are committed to delivering products and services that meet customer requirements and strive to exceed their expectations through our continuous improvement efforts.

Trademarks – Contemporary Controls, CTRLink, and RapidRing are trademarks or registered trademarks of Contemporary Control Systems, Inc. Specifications are subject to change without notice. Wireshark and the “fin” logo are registered trademarks of the Wireshark Foundation. OpenVPN is a registered trademark of OpenVPN Inc. Other product names may be trademarks or registered trademarks of their respective companies.

About CTRLink® Networking for Automation

Ethernet continues to evolve as the network of choice for automation systems due to its high speed, familiarity among users, and ability to easily connect to the Internet. But the environment can be demanding. The equipment must be robust, reliable, and easy to install, maintain and use. It must carry proper regulatory approvals and, in some instances, withstand harsh outdoor temperatures. Office-grade equipment, with its frequent model changes and inconvenient mounting, does not stand up to these demanding needs.

Designed for unattended operation in environments not conducive to office-grade equipment, CTRLink overcomes the challenges that Ethernet presents to the automation professional by providing convenient mounting in control panels, low-voltage power wiring, improved EMC compliance, and reliability. All CTRLink product enclosures are metal and intended for direct panel, rack or DIN-rail mounting. Metal DIN-rail clips prevent damage during installation. Most products can share with other automation equipment a common 24 VAC/VDC power source, eliminating the need for a dedicated mains-powered transformer. Most models have provisions for redundant power sources to accommodate back-up strategies in critical applications.

CTRLink products have been successfully used in diverse industries and hold up to stringent conditions.

- **Industrial Automation**
- **Building Automation**
- **Commercial Automation**
- **Communications and Networking**
- **Energy, Utilities and Transportation**
- **Embedded Networking**

CONTEMPORARY CONTROLS®



Contemporary Control Systems, Inc.

2431 Curtiss Street
Downers Grove, IL. 60515
USA
+1 630 963 7070
info@ccontrols.com



Contemporary Controls Ltd

14 Bow Court
Fletchworth Gate
Coventry CV5 6SP
United Kingdom
+ 44 (0) 24 7641 3786
info@ccontrols.co.uk



Contemporary Controls GmbH

Fuggerstraße 1 B
04158 Leipzig, Germany
+ 49 (0) 341 520359 0
info@ccontrols.de



Contemporary Controls (Suzhou) Co. Ltd

11 Huojia Road
Science & Technology Park
New District, Suzhou
PR China 215009
+ 86 512 68095866
info@ccontrols.com.cn

www.ccontrols.com