Introducing CTRLink® Ethernet for Automation

About CTRLink®

CTRLink's connectivity products facilitate the use of Ethernet in your automation project. 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. The CTRLink Ethernet family of products includes simple plug-and-play unmanaged switches, media converters, fully managed switches, wired and wireless IP routers and products that support Power-over-Ethernet (PoE). CTRLink products have been successfully used in diverse industries including:

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

When standard products do not suffice, Contemporary Controls has the expertise to provide the perfect solution for our customers.

CONTEMPORARY CONTROLS®

CTRLink® ETHERNET FOR AUTOMATION

Ethernet has rapidly become 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 outdoor temperatures. Office-grade equipment, with its frequent model changes and inconvenient mounting, will not do.

The CTRLink family of Ethernet infrastructure products addresses the needs of the automation professional. Unlike office-grade products, all CTRLink product enclosures are metal and intended for direct panel or DIN-rail mounting. Metal DIN-rail clips prevent damage during installation.

All 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.

Depending on the application, Ethernet performance needs can vary greatly. For simple systems, Skorpion 5- to 16-port plug-and-play (unmanaged) Ethernet switches meet the need. These products will operate “right out of the box” and can be put into service without adjustments. 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) fibre optic ports to accommodate long distances through hostile environments.If no fibre optic ports are available on equipment to be connected, a Skorpion media converter solves the problem. Plug-and-play switches provide a simple, cost-effective method of expanding Ethernet networks.

Our 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®.

More demanding applications require 8 to 24-port managed switches that support the SNMP protocol — providing data on network health and the ability to report methods (including 802.1p) to prioritise traffic, port security to guard against intrusions, port mirroring for troubleshooting, and a programmable fault-relay that can signal abnormal operation. CTRLink managed switches provide a host of features such as VLANs to segment traffic within a single physical network, several Quality of Service (QoS) methods (including 802.1p) to prioritise 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®. Configuration can be accomplished using a simple web browser or with some models — a console port. Managed Ethernet switches provide the ultimate in network performance.

While Ethernet switches can 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. By installing the appropriate USB adapter, a Wi-Fi LAN connection can be made, or in the case of a cellular adapter, a WAN connection to a cellular provider can be made. CTRLink’s routers provide either NAT or PAT and a host of features, including a stateful firewall that can make a WAN connection as secure as possible. One model has a resident OpenVPN client for accessing a virtual private network server — thereby creating a VPN tunnel for higher security.

IEEE 802.3af Power-over-Ethernet (PoE) is supported on some switch models (requiring a 48 VDC power source). For simple applications, a single-point mid-span power injector is available that only requires a 24 VAC/VDC power source. The power splitter does the opposite — it delivers 24 VDC from a PoE source.

With automation systems, applications vary — possibly requiring a special product or need. Contemporary Controls has worked with OEMs in obtaining UL 864 Control Units and Accessories for Fire Alarm Systems compliance with our EIS series switches, and can help in other areas such as private labelling, unique packaging or extreme environmental design.

Whatever the Ethernet infrastructure need, a solution is available with CTRLink.

UNMANAGED SWITCHES FOR SIMPLE SYSTEMS

- 10BASE-T/100BASE-TX/1000BASE-T/100BASE-FX
- Auto-negotiation
- Auto-MDIX
- Rugged metal enclosure
- DIN-rail mounting
- Diagnostic LEDs
- Enhanced EMC compliance
- UL 508 listed, c-UL listed, CE mark
- 24 VAC/VDC powered (non-PoE models)

SKORPION SWITCH SERIES - for cost-effective general-purpose applications

0 to 60º C

EISK

Model	Description
EISK5-100T	5 ports 10/100 Mbps
GigE EISK5-GT	5 ports 10/100/1000 Mbps
EISK8-100T	8 ports 10/100 Mbps
GigE EISK8-GT	8 ports 10/100/1000 Mbps
GigE EISK8P-GT	8 ports 10/100/1000 Mbps w/4 ports PoE
EISK16-100T	16 ports 10/100 Mbps
EISK5-100T/FT	4 ports 10/100 Mbps, 1 port 100 Mbps MM fibre ST connector
EISK5-100T/FC	4 ports 10/100 Mbps, 1 port 100 Mbps MM fibre SC connector
EISK5-100T/FCS	4 ports 10/100 Mbps, 1 port 100 Mbps SM fibre SC connector
EISK8-100T/FT	6 ports 10/100 Mbps, 2 ports 100 Mbps MM fibre ST connector
EISK8-100T/FC	6 ports 10/100 Mbps, 2 ports 100 Mbps MM fibre SC connector
EISK8-100T/FCS	6 ports 10/100 Mbps, 2 ports 100 Mbps SM fibre SC connector

SKORPION DIAGNOSTIC SWITCH SERIES - ideal for network troubleshooting

0 to 60º C

- DIN-rail mounting

EISK

Model	Description
EISK5-100T/H	5 ports 10/100 Mbps diagnostic switch
GigE EISK5-GT/H	5 ports 10/100/1000 Mbps diagnostic switch

BAS SWITCH SERIES - for shallow-depth cabinets and wiring closets

0 to 60º C

- Panel or DIN-rail mounting

EIBA

Model	Description
EIBA5-100T	5 ports 10/100 Mbps low-profile panel mount
EIBA5-100T/R	5 ports 10/100 Mbps low-profile DIN-rail mount

COMPACT SWITCH SERIES - for harsh environments

- 40 to 75º C

- Panel or DIN-rail mounting

EISX

Model	Description
EISX9-100T	9 ports 10/100 Mbps
EISX9-100T/FT	8 ports 10/100 Mbps, 1 port 100 Mbps MM fibre ST connector
EISX9-100T/FC	8 ports 10/100 Mbps, 1 port 100 Mbps MM fibre SC connector
EISX9-100T/FCS	8 ports 10/100 Mbps, 1 port 100 Mbps SM fibre SC connector
EISX8-100T/FT	6 ports 10/100 Mbps, 2 ports 100 Mbps MM fibre ST connector
EISX8-100T/FC	6 ports 10/100 Mbps, 2 ports 100 Mbps MM fibre SC connector
EISX8-100T/FCS	6 ports 10/100 Mbps, 2 ports 100 Mbps SM fibre SC connector

MM = 1310 nm multimode fibre **SM** = 1310 nm single-mode fibre

UNMANAGED SWITCHES FOR LIFE SAFETY

ETHERNET INTERCONNECT SWITCH SERIES - for UL 864 9th edition fire-protective signalling systems

0 to 60º C

- Panel or DIN-rail mounting

Model	Description
EIS8-100T	8 ports 10/100 Mbps
EIS6-100T/FT	4 ports 10/100 Mbps, 2 ports 100 Mbps MM fibre ST connector
EIS6-100T/FC	4 ports 10/100 Mbps, 2 ports 100 Mbps MM fibre SC connector
EIS6-100T/FCS	4 ports 10/100 Mbps, 2 ports 100 Mbps SM fibre SC connector

EIS

MEDIA CONVERTERS, WIRED AND WIRELESS IP ROUTERS, POE INJECTOR AND SPLITTER

SKORPION MEDIA CONVERTERS - making the copper to fibre conversion simple

0 to 60º C

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

Model	Description
EIMK-100T/FT	100BASE-TX/100BASE-FX media converter w/ MM fibre ST connectors
EIMK-100T/FC	100BASE-TX/100BASE-FX media converter w/ MM fibre SC connectors
EIMK-100T/FCS	100BASE-TX/100BASE-FX media converter w/ SM fibre SC connectors

EIMK

SKORPION IP ROUTERS - LAN-to-LAN or LAN-to-WAN routing

0 to 60º C

- Configurable by web browser
- 10/100 Mbps Ethernet WAN port
- 4-port 10/100 Mbps Ethernet LAN switch
- PAT, NAT and port forwarding
- Stateful firewall
- DHCP client (WAN) and server (LAN)
- Supports external wireless adapter, DSL or cable modem
- USB Port for Wi-Fi Routing
- Wi-Fi support
- OpenVPN client
- Virtual Private Network
- DIN-rail mounting
- Rugged metal enclosure
- Diagnostic LEDs
- Enhanced EMC compliance
- UL 508 listed, c-UL, CE mark
- 24 VAC/VDC powered
- Cellular adapters for routing
- Cellular support

EIPR

Model	Description
EIPR-E	Ethernet-to-Ethernet IP router w/ 4-port switch
EIPR-V	Ethernet-to-Ethernet IP router w/ 4-port switch and VPN

SKORPION POE INJECTOR OR SPLITTER - for powering a single PoE end device or for deriving power from PoE

0 to 60º C

- IEEE802.3af compliant
- Mid-span power injector
  - 24 VAC/VDC power input
  - Isolated 15.4 W power output
- Power splitter
  - Isolated 24 VDC 10 W (min) power output
- 10BASE-T/100BASE-TX
- DIN-rail mounting
- Rugged metal enclosure
- Diagnostic LEDs
- Enhanced EMC compliance
- UL 508 listed, c-UL, CE mark

Model	Description
EIPE-1	PoE mid-span power injector
EIPE-2	PoE power splitter

EIPE

MM = 1310 nm multimode fibre **SM** = 1310 nm single-mode fibre

MANAGED SWITCHES FOR TAKING CONTROL OF YOUR NETWORK

- 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® 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 - providing cost-effective management

0 to 60º C

- DIN-rail mounting

EISK8M

Model	Description
EISK8M-100T	8 ports 10/100 Mbps
EISK8M-100T/FT	6 ports 10/100 Mbps, 2 ports 100 Mbps MM fibre ST connector
EISK8M-100T/FC	6 ports 10/100 Mbps, 2 ports 100 Mbps MM fibre SC connector
EISK8M-100T/FCS	6 ports 10/100 Mbps, 2 ports 100 Mbps SM fibre SC connector

COMPACT MANAGED SWITCH SERIES - cost-effective management for harsh environments

-40 to 75º C

- Panel or DIN-rail mounting

EISX8M

Model	Description
EISX8M-100T	8 ports 10/100 Mbps
EISX8M-100T/FT	6 ports 10/100 Mbps, 2 ports 100 Mbps MM fibre ST connector
EISX8M-100T/FC	6 ports 10/100 Mbps, 2 ports 100 Mbps MM fibre SC connector
EISX8M-100T/FCS	6 ports 10/100 Mbps, 2 ports 100 Mbps SM fibre SC connector

AUTOMATION SWITCH SERIES — comprehensive set of features plus high port density

-40 to 75º C

- Panel or DIN-rail mounting

EIDX16M

EIDX24M

Model	Description
EIDX16M-100T	16 ports 10/100 Mbps
EIDX24M-100T	24 ports 10/100 Mbps
EIDX16M-100T/FT	14 ports 10/100 Mbps, 2 ports 100 Mbps MM fibre ST connector
EIDX16M-100T/FC	14 ports 10/100 Mbps, 2 ports 100 Mbps MM fibre SC connector
EIDX16M-100T/FCS	14 ports 10/100 Mbps, 2 ports 100 Mbps SM fibre SC connector
EIDX24M-100T/FT	22 ports 10/100 Mbps, 2 ports 100 Mbps MM fibre ST connector
EIDX24M-100T/FC	22 ports 10/100 Mbps, 2 ports 100 Mbps MM fibre SC connector
EIDX24M-100T/FCS	22 ports 10/100 Mbps, 2 ports 100 Mbps SM fibre SC connector

AUTOMATION SWITCH SERIES — comprehensive set of features plus high port density and PoE

-40 to 75º C

- Panel or DIN-rail mounting
- 8 PoE ports
- 48 VDC powered

EIDX16MP

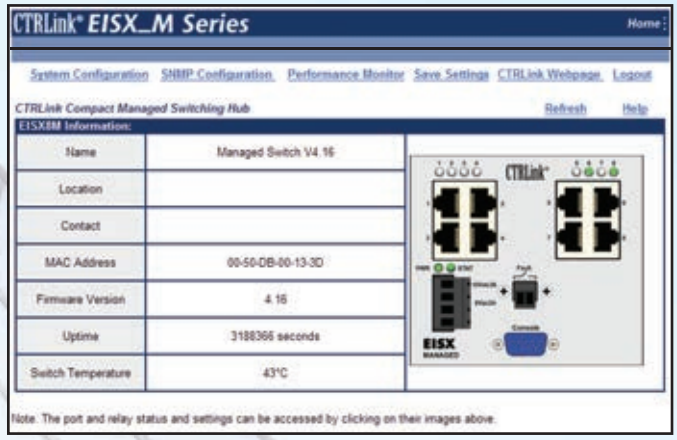
EIDX24MP

Model	Description
EIDX16MP-100T	16 ports 10/100 Mbps
EIDX24MP-100T	24 ports 10/100 Mbps
EIDX16MP-100T/FT	14 ports 10/100 Mbps, 2 ports 100 Mbps MM fibre ST connector
EIDX16MP-100T/FC	14 ports 10/100 Mbps, 2 ports 100 Mbps MM fibre SC connector
EIDX16MP-100T/FCS	14 ports 10/100 Mbps, 2 ports 100 Mbps SM fibre SC connector
EIDX24MP-100T/FT	22 ports 10/100 Mbps, 2 ports 100 Mbps MM fibre ST connector
EIDX24MP-100T/FC	22 ports 10/100 Mbps, 2 ports 100 Mbps MM fibre SC connector
EIDX24MP-100T/FCS	22 ports 10/100 Mbps, 2 ports 100 Mbps SM fibre SC connector

MM = 1310 nm multimode fibre **SM** = 1310 nm single-mode fibre

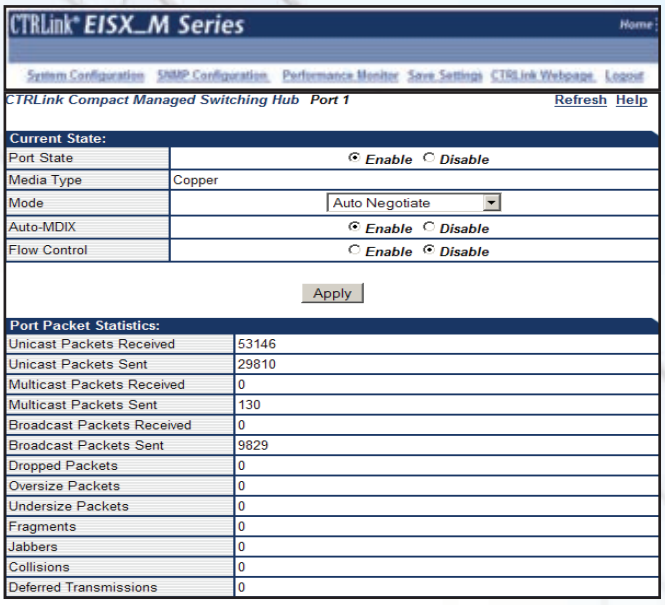
M-SOFTWARE — GAINING THE MOST FROM A MANAGED SWITCH

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. The Company's 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.

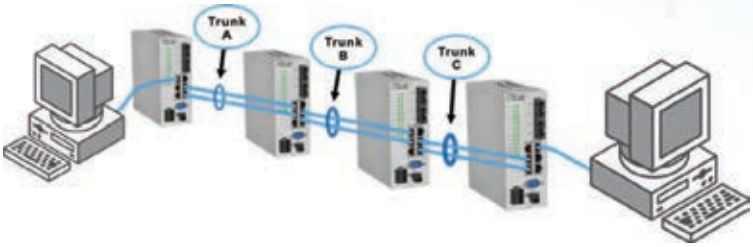


PORT CONFIGURATION

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.

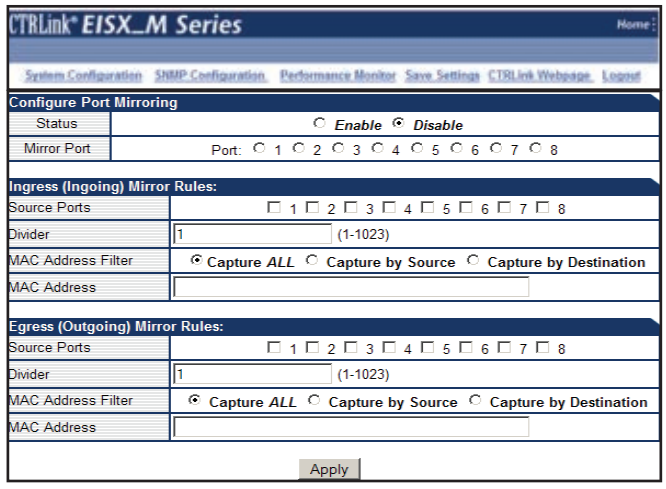


TRUNKING

In order to improve uplink throughput, ports can be aggregated in one of two groups 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 recover times is inherent in trunk groups.

PORT MIRRORING

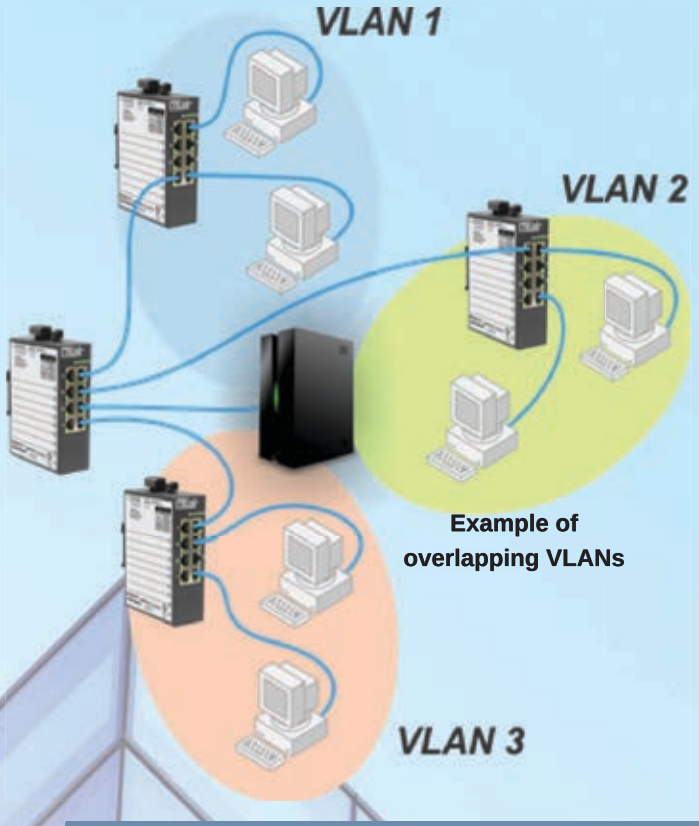
Ethernet switches improve throughput by restricting directed traffic only to those ports party to the intended traffic. Although performance is improved, network troubleshooting is more difficult because a packet sniffer attached to another port may not be able to monitor all traffic. The solution is 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.



M-SOFTWARE

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.



Example of overlapping VLANs

PORT FORWARDING AND FILTERING DATABASE

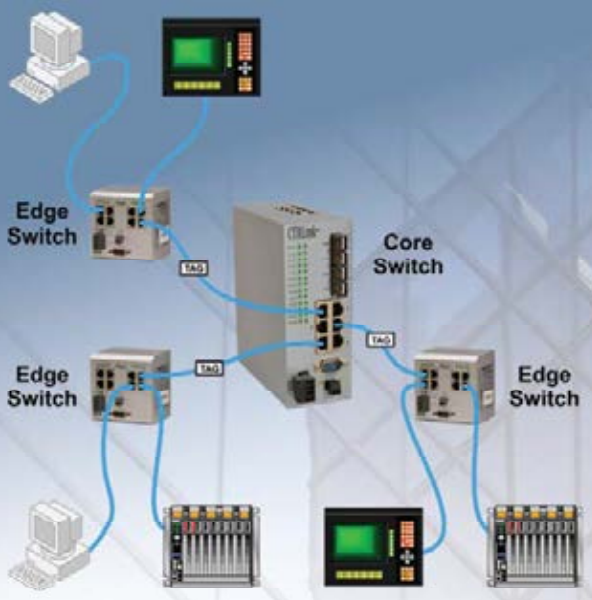
Ethernet switches learn the port upon which an Ethernet station can be reached and this information is entered into its filtering database. Subsequent traffic to Ethernet stations recorded in the database is then restricted to these known ports. While this activity is automatically accomplished as a 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 Quality of Service, 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 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

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.



M-SOFTWARE

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.

STP or RSTP

PERFORMANCE MONITOR

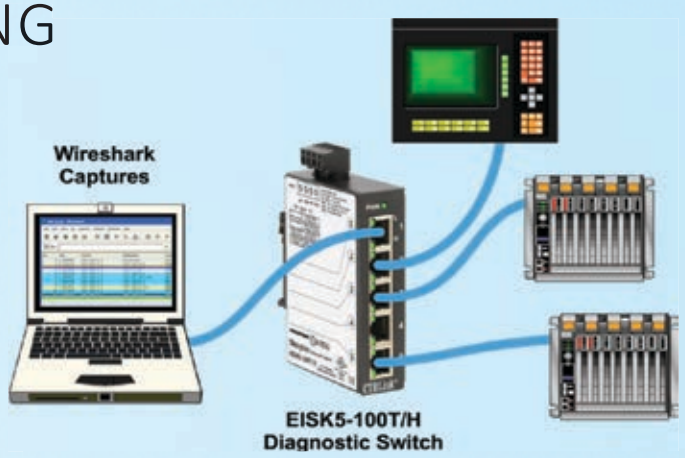
A performance monitor exists to assist in troubleshooting. The filtering database can be browsed for entries. When enabling the Spanning Tree Protocol, the forwarding or discarding states of each port can be monitored. Finally, a trap log exists for any SNMP traps that have occurred.

RESIDENT HELP

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

NETWORK TROUBLESHOOTING

The **Skorpion Diagnostic Switch** retains all the virtues of switched Ethernet technology (including Auto-MDIX and auto-negotiation) but with one exception — no address learning. Thus all messages (directed, multicast, broadcast) — are flooded to all switch ports so that network sniffers such as Wireshark® can be used to observe all network traffic that passes through the switch. The switch can be permanently installed or carried from one site to another as needs arise. It can be used for control panel installations if you need the ability to diagnose problems in the field. It can also be used in a development environment when debugging code.



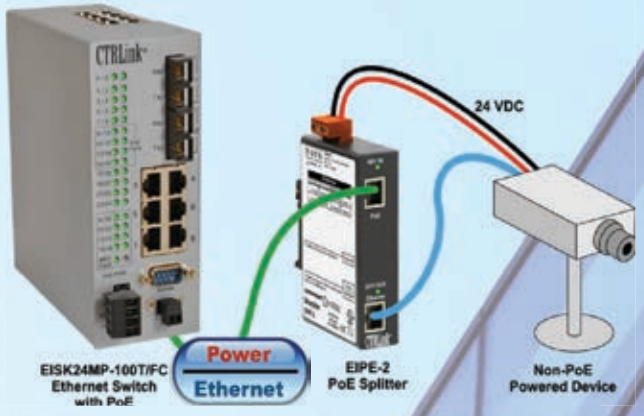
POWER OVER ETHERNET (POE)

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 to power the end device while passing the data signals.



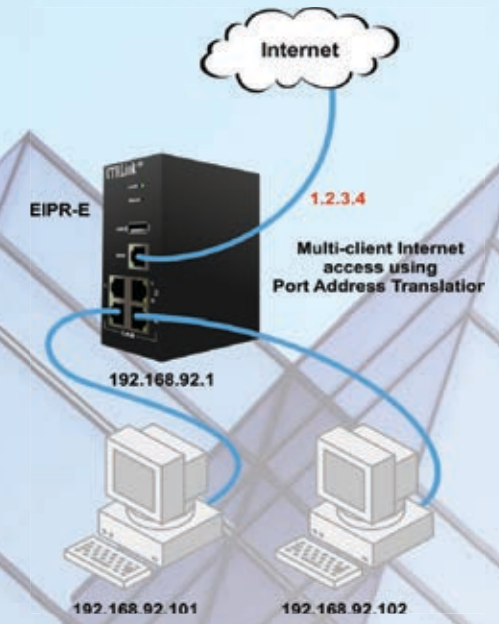
END-POINT POWER SOURCING EQUIPMENT

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

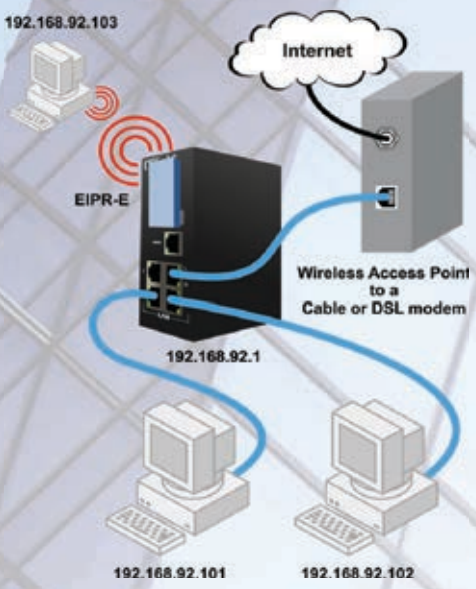
MULTI-ACCESS TO THE INTERNET WITH PORT ADDRESS TRANSLATION

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 passe! 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. 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.



INTERNET ACCESS VIA THE CELLULAR NETWORK

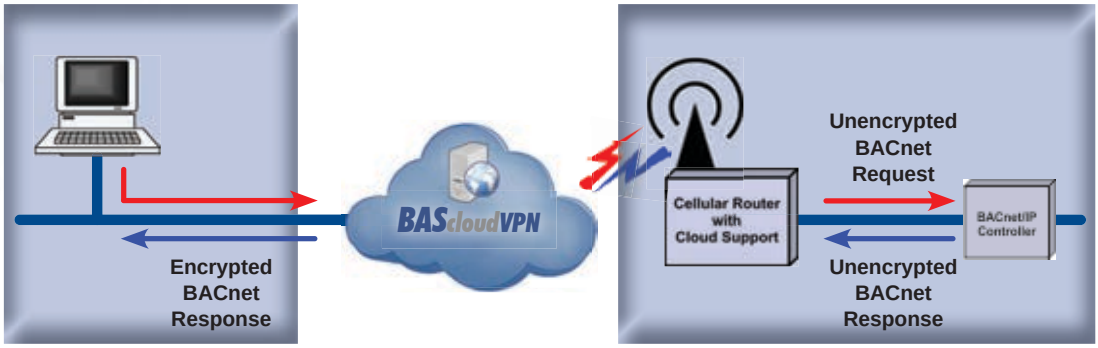
By installing a cellular adapter in the EIPR-V'S USB port, multiple client access to the Internet is possible using one of the popular cellular networks. Data plans intended for M2M communication usually include the cellular adapter as part of the package. Contemporary Controls maintains a list of approved cellular adapters.

SECURE REMOTE COMMUNICATION OVER THE INTERNET

Accessing machines at remote sites over the Internet can be a challenge since 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 reluctant to compromise the security of their network and usually decline this type of request. Without permission from the IT department, the systems integrator is left with few options. However, one solution to this problem is to incorporate a Virtual Private Network (VPN). By hosting a VPN server in the cloud, simplified secure remote communication over the Internet is possible.

The BAScloudVPN 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 our VPN router located at the remote location. Using this approach, two secure VPN tunnels are created with no concern for intervening firewalls. Contemporary Controls provides a remote monitoring solution by supplying cellular routers, hosting the Cloud-based VPN server and by recommending a data plan from a cellular provider.

Contemporary Controls' EIPR-V Skorpion wireless router provides VPN communications. It has a USB port for connecting cellular modems to allow it to communicate to the Internet. It also has an Ethernet WAN port which can also be used to communicate through a wired connection to the Internet. Our **BAScloudVPNServer** is hosted on the Internet which allows the BAScloudVPN devices to communicate together. This server is maintained by Contemporary Controls. You only need an account on the server in order to utilize the BAScloudVPN service. The **OpenVPN client software** runs behind the scenes and allows you to use any program which communicates via TCP/IP to use the **BAScloudVPN**. The OpenVPN client can be downloaded from OpenVPN.net or, for your Android devices, via the Google playstore or, for your iOS devices, via the Apple App Store. This allows many devices to be able to access the **BAScloudVPN**.



ORIGINAL DESIGN MANUFACTURING SERVICE

Let us provide the product you require under your brand. With 35 years of experience in electronics design, development and manufacturing, we have a rich inventory of intellectual property that can be tapped for your next project. Two design and manufacturing locations provide private label, ODM and electronics manufacturing services. Leverage our design and manufacturing resources to reduce your costs and time-to-market.

Design to Worldwide Standards

Two design centres — one in China and the other in the United States — 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 produce 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 9001:2008 registered.

Both plants are under Underwriters Laboratories (UL) surveillance. Your intellectual property (IP) is protected at either plant location.

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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.

CONTEMPORARY CONTROLS

For product tutorials visit Contemporary Controls on YouTube