

Focusing on News & Information  
for Contemporary Controls'  
Valued Customers

# NETWORK

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## TRADE SHOWS

**Bolster your knowledge of the industry  
by attending these trade shows.**

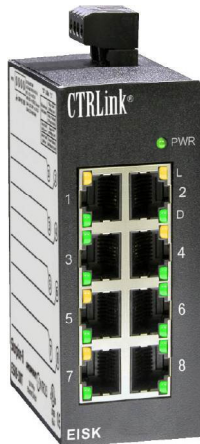
### AHR EXPO 2006

January 23-25, 2006  
McCormick Place  
Stand #3839  
Chicago, Illinois, USA



## Industrial Ethernet Switch Sets New Standard Eliminating Office-Grade Switches

### Eight Ports, 5-Year Warranty & \$149 Price!



As with all the company's products, the EISK8 Skorpion is offered with same-day shipping and knowledgeable technical support.

Engineers shouldn't learn the hard way when an office-grade Ethernet switch brings down production in a plant. The significance of solid reliability comes into play when factors such as heat, vibration or dust are visible in Industrial Automation Systems.

"That's why Contemporary Controls continues to develop Plug and Play (PnP) Industrial Ethernet switches that meet the concerns of our customers requiring low cost and high reliability in these environments," says Joe Stasiak, Sales Manager for Contemporary Controls. "Our company has introduced the Skorpion 8 switch that compliments its five-port brother, but with additional ports at a minimal cost. The EISK8-100T is only \$149 with a five-year warranty."

The EISK8-100T provides eight 10/100 Mbps shielded RJ-45 ports. Each port supports the auto-negotiation protocol in order to select data rate, duplex, and flow control. All ports are Auto-MDIX compliant and therefore any port can operate as an uplink port to another switch, eliminating the need for crossover cables in the field.

Stasiak says the EISK8 Skorpion is compact to accommodate less than roomy control panels and is feature-rich. "This device utilizes 1.61 inches of DIN-rail space and has all the same attributes of the EISK5-100T switch," he explains. Features include a 0° to +60°C operating temperature range, and it is powered from an unregulated DC power source (10–36 V) or from an AC power source (8–24 V, 47–63 Hz). Power is provided through a quick-disconnect terminal strip. This switch also has redundant power connections, troubleshooting LEDs, and it is UL 508 Listed, C-UL Listed, CSA C22.2 No. 14-M9, Industrial Control Equipment as well as being RoHS compliant.

The activity LEDs on this product face the technician to make troubleshooting easier. The label on the unit can be written upon so port connections can be documented as to the location of connected equipment.

The auto-negotiation protocol allows the EISK8-100T to link with any compatible 10BASE-T or 100BASE-TX device. It will function with any application layer that employs Ethernet, including BACnet/IP, EtherNet/IP, and Modbus/TCP. The unit has built-in broadcast storm control to prevent excess broadcasts from degrading network performance.

To aid troubleshooting, each port LED is lit solid if a valid link exists to an attached device, flashes to show activity and indicates data rate by color: green for 100 Mbps and yellow for 10 Mbps. A separate green LED indicates the device is powered.

## 20 Years of ARCNET® and Counting

Those customers who know us well recognize us as ARCNET experts. Our handbook entitled “ARCNET Factory LAN Primer,” written in 1987, told it all by explaining how the technology could be used in industrial automation. The book was well received necessitating a second edition. At the time, very little was written about automation networks.

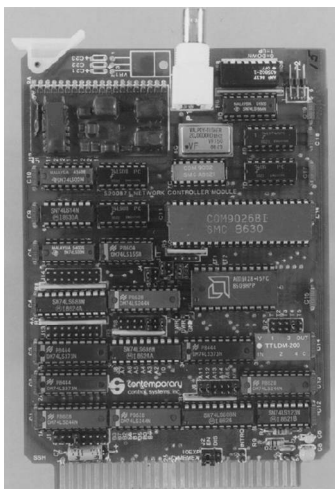
Our company became aware of ARCNET in 1982 when one of our customers wanted to develop a networked microcomputer system for the newspaper industry. The choices at the time were limited. We could use Ethernet, ARCNET or a proprietary technology. We studied the alternatives, but we wanted a chip set that would accommodate our small form factor STD-BUS module. Ethernet had the speed since it ran at 10 Mbps, but we were concerned about its non-deterministic performance and the fact that it required extremely bulky external media attachment units. Ethernet chip sets were also very expensive.

The ARCNET chip set from Standard Microsystems Corporation (SMC) was intriguing. It had good speed at 2.5 Mbps, and its token-passing protocol was going to provide real-time performance. To implement an ARCNET interface required three devices: a controller, clock generator, and hybrid transceiver. However, a significant amount of “glue logic” was required, but we were successful getting all the devices onto our small 4.5” x 6.5” card. Contemporary Controls began marketing this module as part of its S800 series of STD-BUS modules. Soon afterwards, other ARCNET products, such as, active hubs followed.

In 1987, Ben Wolfe, a marketing consultant, assisted our company in establishing the ARCNET Trade Association (ATA) by inviting the technology innovator Datapoint Corporation to join. Their president Robert Potter was presented the 1 millionth ARCNET chip by SMC. Novell was using ARCNET extensively at the time so it was not difficult to find office automation companies to join the association. Although the interests of the factory automation and office automation companies differed, the ATA was able to become an ANSI development body and obtain ANSI/ATA 878.1 certification of the ARCNET technology in 1992.

In 1998, Contemporary Controls decided to acknowledge the 20th anniversary of ARCNET by producing a CD containing all the information a designer would need to develop an ARCNET product. The CD also recognized the contributions of John Murphy of Datapoint as the chief architect of ARCNET.

ARCNET continues to be used today. A chip produced today will still pass a token to a chip from 1982. How many technologies today remain backward compatible?



STD-BUS ARCNET interface



20-year anniversary ARCNET CD

Technology

issues

TECH UPDATE

## Far End Fault

When making a twisted-pair connection between a station and a port on a switch, we plug into RJ-45 connectors. Within the Ethernet cable is one pair that is used to send data from the station to the switch and another pair that receives data from the switch. When we remove the connector we break the two connections. If we have a damaged pair, the communication is compromised and auto-negotiation fails resulting in no link lights at each end of cable.

With Fiber it is a bit different since two individual connectors are used instead of one RJ-45 connector. By removing the receive connector on a station, the link indicator on the station will turn off. However, the link indication at the switch will remain on since its port will see a valid link. Auto-negotiation is not supported with fiber links.

Auto-Negotiation provides a Remote Fault detection for twisted-pair links where failures are detected by the remote station, not the local one, but since Auto-Negotiation does not apply to fiber optic links, Remote Fault is not available to fiber media. However, 100BASE-X offers an optional Far End Fault function that can detect failure to a receive signal over fiber.

The Far End Fault function satisfies two needs: 1) Fiber links are typically so long that troubleshooting is difficult. 2) A fiber backbone failure may need a way to trigger a redundant system.

If the PHY senses that no signal is received, its station transmits a Far End Fault announcement to its link partner. This announcement does not upset stations that do not implement Far End Fault. The link partner now knows that the link is not in tact. Despite the fault condition, IDLES are still transmitted so as to re-establish the link after the fault is eventually cleared.

A Far End Fault will cause a link-monitoring LED to flash at a periodic rate, but to the casual observer this visual indication may be virtually indistinguishable from normal traffic. A suggested troubleshooting procedure for confirming the Far End Fault is for the local end station to be tested by one person while an observer monitors the remote station. First detach then re-attach each fiber—then note the LED results.

Although Far End Fault appears as a convenience when troubleshooting cabling, it is critical to the operation of Contemporary Controls' RapidRing redundancy scheme. Not only must a full break of two fibers be detected, a single break must be noted as well.

## Manufacturing Supervisor Finds Excitement in New Products



“It doesn’t seem like 15 years since I started at Contemporary Controls,” says John Magagnini, Manufacturing Supervisor. I enjoy the challenge of setting up various processes and assembly for new products and designs. It stimulates my thinking.”

Aside from the excitement he derives from working with new products, Magagnini is in complete control of the company’s manufacturing department. He makes certain the manufacturing process operates smoothly, personnel identify and store inventory correctly, work orders are scheduled properly, and finished goods are produced with just the right amount of material purchased.

Magagnini believes in the company and trusts management’s values. Otherwise, he would not remain at Contemporary Controls. Magagnini says the same values are in the back of his mind when making decisions about the manufacturing department. “I only employ individuals who understand the meaning of ‘quality,’ he explains. “I tell my department to not take shortcuts if it means jeopardizing quality.”

Throughout the years, he has witnessed endless changes. “I remember when circuit boards were hand built instead of by surface mount technology,” he says. “Products have become more complicated. I mean they’re more detail-oriented and harder to test than in the years past. Even the manufacturing area has grown in size as the company has relocated several times in Downers Grove.”

Magagnini foresees more challenges next year as the company’s products become RoHS compliant. “We’ll be installing new equipment and even retrofitting our older machines to meet the requirements of our customers.”

He smiles and continues by saying, “In thinking back, 15 years did go by fast.” I think it’s because the people at Contemporary Controls are very special. The company is family to me. And I’m proud of my staff in the manufacturing department. They’re very hard working. People do make the difference in this workplace.”

## Maintaining the Theme of “Doing Ethernet Right” at AHR Expo 2006

Contemporary Controls will continue its focus to do “Ethernet right” on all networking levels as the company exhibits its professional Skorpion and Building Automation System (BAS) switches at AHR Expo January 23–25, 2006. Attendees who visit the company’s booth (#3839) at McCormick Place in Chicago, IL, will learn why these cost-effective switches with a five-year warranty are attractive for building automation applications.

Joe Stasiek, Sales Manager for Contemporary Controls, says these switches are configured with building automation in mind. “We mimic the size and aspect ratio of building automation controllers,” he explains. “The five- and eight-port DIN-rail edge mount Skorpion switches are uniquely suited to occupy less space in control panels. The five-port low-profile panel and DIN-rail mount BAS switches are extremely useful to meet the tight area requirements of wiring closets. And these switches start at the price of only \$99!”

In addition to the product display, stop by the booth to hear the staff explain the importance of Ethernet switch selection. You’ll become educated on the six critical issues that can create system problems and cost money when employing retail or office-grade Ethernet equipment. The risks are based on factors associated with switch power, mounting, redundant power source provisions, regulatory approvals and environmental specifications, product support, and product consistency.

“In order for you to protect your profits and provide good customer satisfaction, we recommend that you use Contemporary Controls’ professional Ethernet switches,” says Stasiek. “An installation with one of the company’s professional switches will please the customer and lend itself to repeat business over time.”



One of the special joys of the Holiday Season is the opportunity to say Thank You.

To wish you Joy and Happiness and every success in the coming year from all of us at Contemporary Controls.



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- ARCNET Tutorial & Product Guide
- BAS Switches

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