#52 MARCH–APRIL, 2005

control NETWORK

Focusing on News & Information for Contemporary Controls' Valued Customers

INSIDE

TRADE SHOWS

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

Hannover Fair
April 11–15, 2005
Exhibition Center
Hall 9, Stand H04
Hannover, Germany

SPS Electric Automation America
May 24–26, 2005
Donald Stephens Convention Center
Booth #1426
Rosemont, Illinois USA

CONTEMPORARY CONTROLS

Connecting Devices Worldwide

ARCNET® AI-USB Hub Provides Easy Access to ARCNET Networks From USB Port

Contemporary Controls' (CC) ARCNET AI-USB hub will alter the way you hook up to an ARCNET network. "The real beauty of this product is that it gives the user easy access to the network via a PC without removing the cover," says George Karones, Engineering Manager for CC. "It helps to prevent any aggravation for the service technician for it eliminates the installation of an ARCNET card in the PC."

The AI-USB is described as an ARCNET active hub that provides similar hub functionality as an AI series hub, but allows access to the Universal Serial Bus (USB) to a host PC. It is a three-port hub—two external ARCNET ports and one internal. The internal hub port has an embedded connection to a USB ARCNET adapter (network interface module) resident to the AI-USB. The USB connection is brought out so that a laptop or desktop computer can gain Plug and Play (PnP) access to an ARCNET network.

This device conforms to the high-speed USB2.0 standard. It's a very fast and convenient method of accessing an ARCNET network without the need of removing a cover and installing a network interface module into a computer. Today, most computers are sold equipped with a USB port so it is only necessary to make a direct connection between the computer and the AI-USB. The AI-USB will also operate with the earlier lower-speed USB1.1 standard.

You might ask what's an ideal application for the AI-USB. Such an application is sought-after when wanting temporary access to an ARCNET network by simply hooking up to a laptop computer using its USB port. With the AI-USB permanently connected to the ARCNET network, network field wiring is not disturbed when attaching the USB cable. In this way an ARCNET network can be monitored, stations can be configured, and troubleshooting can be accomplished with minimal disruption to the network. With two external hub ports, the AI-USB can be inserted between two bus connections and function as a bus extender. Models are available for coaxial bus, twisted-pair bus, and both AC- and DC-coupled EIA-485.

When the USB cable is first attached to a Windows 2K/XP machine, the user is prompted for a driver on a disk. Our company offers a USB driver and DLL that has an Application Programming Interface (API) that is compatible with CC's Null Stack Driver API. By not using a protocol stack, a null stack driver gives superior performance over a layered protocol stack by directly linking the application to the ARCNET hardware. This approach is beneficial when timely access to a real-time network like ARCNET is required. To better assist the customer, CC provides several utility programs such as TALK that demonstrate how to communicate with the API.

Prices for the models begin at $495. Availability is scheduled for mid-April.

TECH UPDATE

Contemporary Controls' Managed Switches Incorporate IGMP Snooping and Other Features

Contemporary Controls' managed switches now introduce new features to better meet customers' requirements. These features are found on the company's EICP_M series, the EISX_M series, and the EISB_M B-Line series.

R&D Manager for Contemporary Controls, Bennet Levine, says these features greatly enhance the effectiveness of these products in industrial networks. "These features are IGMP snooping, rate limiting, port security, and support for three types of Quality of Service (QoS) which are DiffServ, IEEE 802.1p, and TOS," explains Levine.

IGMP snooping is defined as the ability of a switch to observe Internet Group Management Protocol (IGMP) traffic in order to learn IP Multicast group membership for the purpose of restricting multicast transmissions to only those ports which have requested them. Levine says IGMP snooping is important in large EtherNet/IP networks. "EtherNet/IP devices utilize multicast messages for their real-time data," says Levine. However, on a switch that doesn't support IGMP snooping, these multicast messages will be handled like broadcast messages and potentially overwhelm some EtherNet/IP devices. Some devices may be unable to perform their normal activities when they receive a large amount of unwanted multicast traffic.

Rate limiting can be used to limit certain devices (or groups of devices connected to a port on the switch) from consuming too much network bandwidth. This feature is also useful when you interconnect the office network to the factory network. "The port on the switch which connects to the office network can be given a low bandwidth setting," explains Levine. "This will keep traffic from the office network from upsetting the factory network as the office network cannot exceed the specified bandwidth limit setting. Rate limiting also allows broadcast storm protection to be enabled."

Levine says that when port security is enabled the switch will only pass traffic sent by specific devices. The MAC addresses of the allowed devices can be entered via the console port or via a web page. This feature can be enabled on a port-by-port basis. "This is a useful feature if extra security is required on specific ports of the switch," says Levine. "For example, if you wanted to only allow specific computers on the office network to be able to communicate with the factory network, you could enable port security on the port which connects to the office network."

As for QoS enhancements, Levine says they allow specific ports or specific messages to have a higher priority when communicating through the company's managed switch.

These features will be available on the EICP_M, EISX_M, and EISB_M products the end of April. For current owners of these products a software update will be made available at the same time. For software updates or more information, please contact Bennet Levine at blevine@ccontrols.com.

IGMP Snooping Refines IP Packet Management

What is IGMP Snooping and why should you care? For many industrial networks, it can improve security and bandwidth utilization. Here's how.

Traditional IP packets are either unicast or broadcast, but multicasting can deliver messages to a select group of network devices. IGMP (Internet Group Management Protocol) is a layer-3 protocol for defining membership in a multicast group. The IGMP Group Destination Addresses (GDA) range from 224.0.0.0 to 239.255.255.255.

Using the IGMP Snooping function, a managed switch can recognize packets that are for multicast groups. Such packets then exit the switch only through ports that have received IGMP Join messages from attached devices seeking membership in the specific multicast group. Without this function, multicasts—like broadcasts—are forwarded to all ports.

The IGMP Querier Function allows a switch to discover multicast group membership. A query interval specifies how often querying occurs. Only one Querier may be active on a network at a time; competing queries are decided in favor of the device with the lowest IP address.

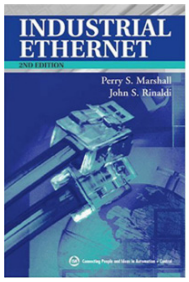
The switch maintains a list of group memberships. This list is aged (like a typical MAC address table) with an interval specifying how long a switch waits before deleting an entry from its multicast group list. If none of the members of a group responds within this time, the group is deemed inactive and dropped from the list.

IGMP Snooping does not add to packet size nor to the number of packets being exchanged, but it does reduce traffic that has multicast content.

For more information, refer to RFC 1112 and RFC 2236 about IGMP versions 1 and 2, respectively.

control NETWORK is published by **Contemporary Control Systems, Inc.**, 2431 Curtiss Street, Downers Grove, IL 60515 USA.

Good Resource Tool for Engineers Planning Ethernet Installations



The virtual Industrial Ethernet University (IEU) offers books that provide a 360° view of Ethernet's value as an option to the many fieldbus protocols employed in the industry.

One recent addition is Industrial Ethernet authored by Perry S. Marshall and John S. Rinaldi. This new edition offers guidance to the engineer in planning his Ethernet installation. It is a good read for anyone wanting to learn the basic "Ethernet Design Rules" and building blocks.

Topics are organized into 11 chapters—taking the reader from an explanation of "What is Industrial Ethernet?" to a summary on the popularity of wireless Ethernet. Other topics of interest examine Ethernet protocols, addressing, web services, security, troubleshooting, and maintenance.

Additional features of this concise 129-page reference includes a total of more than 100 charts, diagrams, and technical tips to support a wealth of information for anyone in the decision-making process of an installation.

You may purchase this paperbook by visiting Industrial Ethernet University (www.IEU.cc) and click on the bookstore.

"Managed Switches and How Can They Help Me"

Keeping your engineers educated in the ever-changing world of Ethernet technology can be costly and time-consuming, but staying informed is necessary to meet today's application challenges.

Contemporary Controls conducted a FREE teleseminar on March 16th as an effective method to reach a wide audience at one time and provided the listeners with an optional presentation over the Internet.

The teleseminar entitled "Managed Switches and How Can They Help Me" reviewed many of the features of managed switches to allow the listener to take control of their network. The company's R&D Manager, BennetLevine, answered questions about the concepts and terminology associated with managed switches such as "How Do I Create a Redundant System?" A portion of the teleseminar enabled the listeners to view the presentation over the Internet—seven diagrams focusing on VLANs, core and edge switches, the difference between a mesh and ring topology, and trunking.

At this time, we are planning future teleseminars, and we would like your input. Please e-mail your ideas for future teleseminars to Bennet Levine: blevine@ccontrols.com.

UK Helping in Tsunami Disaster

Background

Earthquakes happen when plates that make up the earth's surface move suddenly against each other. On December 26, 2004, the biggest earthquake for 40 years occurred between the Australian and Eurasian plates in the Indian Ocean. This earthquake triggered a Tsunami (a series of large waves).

UK is Helping

The body, which distributes lottery cash to good causes, was responding to calls for the £16.3m of unclaimed cash to be used for tsunami relief projects. Aid agencies have said it is money—and not food, clothing, bedding or medicines—that the victims of the Asian tsunami need. They have also been inundated with offers of help from would-be volunteers, many of them qualified trades people who want to work on rebuilding shattered communities. Most have had to be turned down, although Oxfam has said it wants 10,000 people to help in its charity stores.

And Britain has flown out seven telecommunications engineers to help restore phone services on the island of Sumatra, Indonesia. UK is giving $96m in government donations, plus $146m in private donations, which the government has pledged to match. Two RAF planes, a C-17 and a Tristar, are helping to deliver aid to the region. Chancellor Gordon Brown has pushed for a proposal for the debts of the affected nations to be frozen.

CCL

On January 5, 2005, the European Union (EU) observed three minutes of silence as a sign of respect for the grief stricken region. Contemporary Controls Ltd (CCL) also observed the silence as this disaster touched the life of its office manager, Katy Morrison. Morrison's father has a work colleague who is still missing and her friend who lived and worked in Thailand has had his home and work place obliterated.

CONTEMPORARY CONTROLS

PRESORTED
STANDARD
U.S. POSTAGE
PAID
Lisle, IL 60532
Permit No. 512

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

Address service requested.

Product Interest Literature

NEW

- [ ] **ARCNET AI-USB Active Hub**
- [ ] **EISB_M B-Line Managed Switch Wide Temp**

- [ ] **CTRLink Industrial Ethernet Catalog**

US fax back and e-mail:
1-630-963-0109
info@ccontrols.com

UK fax back and e-mail:
+44 (0)24 7641 3923
ccl.info@ccontrols.com

Germany fax back and e-mail:
+49 (0)341 520359-16
ccg.info@ccontrols.com

China fax back and e-mail:
+86 512 68095966
info@ccontrols.com.cn

2005 News News

- Learn how the company's new ARCNET AI-USB hub provides the user easy access to an ARCNET network via a PC.
- This month's Tech Update informs you on how IGMP Snooping improves security and bandwidth utilization for many industrial networks.