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CONTEMPORARY CONTROLS

Connecting Devices Worldwide

Contemporary Controls Announces the Only USB ARCNET® Interface in the Industry

"Contemporary Controls has designed the only USB ARCNET interface in the industry, combining all the advantages of this technology," says George Karones, Engineering Manager at Contemporary Controls. "In addition, it incorporates features that will make it popular among users including easy plug-and-play installation, portability, and a higher speed interface when compared to the PC Card adapter."

The USB22 Series of Network Interface Modules (NIMs) links Universal Serial Bus (USB) computers with the ARCNET LAN. USB is a familiar means of attaching either desktop or laptop computers to peripherals because it provides a very high-speed interface (up to 480 Mbps) and does not require inserting a separate NIM into the computer. This NIM is designed with the COM20022 controller employing the latest ARCNET technology supporting data rates up to 10 Mbps. This device is powered from the USB port on the computer or from a USB hub.

It is compatible with the USB 2.0 standard, providing for an extremely fast and convenient manner of accessing an ARCNET network. Since most modern computers are equipped with a USB port, you only need a direct connection between the computer and the USB22. This NIM will also operate with the earlier lower-speed USB 1.1 standard.

When the USB cable is first connected to a Windows 2K/XP machine, the user is prompted for a driver on a disk. Contemporary Controls offers a USB driver and DLL with an Application Programming Interface (API) that is comparable to our Null Stack Driver API. By not using a protocol stack, a null stack driver provides superior performance over a layered protocol stack by directly linking the application to the ARCNET hardware. This method is beneficial when timely access to a real-time network like ARCNET is mandatory. To assist the customer, we provide several utility programs such as Talk that reveal how to communicate with the API.

The USB22 includes a high-speed microcontroller that transfers the data between ARCNET and USB. It has up to 128 Kbytes of ARCNET receiver buffering to handle the reception of broadcast messages or the monitoring of networks with high traffic levels. With a 480 Mbps USB link, the potential of dropping ARCNET packets is remote.

This device receives its power from the USB port on the USB computer and will function with or without a USB hub. It is available in several models that will support either DC or AC-coupled EIA-485, coaxial bus or twisted-pair networks. It is shipped with a CD containing a Windows 2K/XP compatible DLL and driver, along with a USB cable. Models exist for the most popular ARCNET physical layers.

The USB22 NIM is frequently used in applications including data acquisition, machine control, and process control.

The USB22 is RoHS compliant and will be available in May 2006. Models begin at $295.

ODVA's Annual Meeting Views EtherNet/IP as the Most Proven Ethernet Network Today

Contemporary Controls' Bennet Levine, R&D Manager, and Harpartap Parmar, Software Engineer, were among more than 150 attendees at ODVA's 2006 CIP Networks Conference & 11th Annual Meeting held in February in Phoenix, Arizona. Contemporary Controls talked with ODVA Executive Director Katherine Voss about the ascent of the EtherNet/IP technology as discussed at the meeting.

Q: It was announced that one million EtherNet/IP nodes are installed. It is expected that there will be a 30% annual growth. Is this surprising?

A: It is not at all surprising that over one million nodes of EtherNet/IP have been shipped or that the growth rate of EtherNet/IP is expected to continue at over 30% per year for the foreseeable future. The first edition of the EtherNet/IP specification was published in 2001 and today over 150 companies from around the world have obtain vendor IDs for EtherNet/IP. With this huge base of global vendor support and the many factors that weigh-in in favor of EtherNet/IP—its first-to-market advantage, use of CIP, use of standard unmodified Ethernet and Internet standards, and requirements for conformance testing—manufacturers simply can find more application solutions and interoperable devices on EtherNet/IP than any other Industrial Ethernet network. The node shipment and growth rate statistics simply mean that EtherNet/IP is being rapidly adopted by industry due to its growing recognition as the most developed, proven, and complete Industrial Ethernet network available today.

Q: What does the future hold for EtherNet/IP? How will the ODVA accomplish this feat?

A: The ascent of EtherNet/IP, as the number one Industrial Ethernet network, has only just begun. EtherNet/IP provides the users with the tools to deploy standard Ethernet technology for manufacturing applications while enabling Internet and enterprise connectivity. Further, because it uses the Common Industrial Protocol (CIP) for the upper layers of the protocol, it allows users to solve applications for control, information, configuration, diagnostics, safety, synchronization and motion with a single network technology. The result is seamless communication from the plant floor through the enterprise with a scalable, future-proof and coherent architecture. Ultimately, this helps minimize engineering and installation, and maximizes the user's return on investment.

The role of ODVA, as the body responsible for the development and management of the EtherNet/IP standard, will be a key contributor to the future trajectory of EtherNet/IP's ascent. Open standards, like EtherNet/IP, empower people and industry to innovate on a broad scale and define new thresholds for operational and business excellence. Together with its vendor members, ODVA will continue to drive an Industrial Ethernet network architecture that enables this empowerment.

The Decline of Cut-Through Switching

With cut-through switching (CTS), a switch starts forwarding a frame after processing the destination address—well before the whole frame is received. CTS reduces latency (time through the switch), but data reliability suffers.

CTS impairs reliability because the frame checksum (FCS) must be checked by every device in the path—but since it cannot be checked until the entire packet is received, a corrupted packet can be forwarded.

Recently a customer asked which Contemporary Controls switches offer CTS—such products being hard to find. I replied only one of our lines (the EIS Series) offers this feature.

There are several reasons why CTS is becoming difficult to find.

Years ago when Shared Ethernet was the main Ethernet technology, CTS was of more concern due to the 10 Mbps data rate. As 100 Mbps Fast Ethernet grew in popularity, CTS became less important. The duration of 100 Mbps packets is one-tenth that of 10 Mbps packets so latency is proportionately better in Fast Ethernet. As a minor issue, faster signaling exposes the data stream to greater reliability threats — and since CTS already degrades reliability, store-and-forward operation appeared more attractive.

Probably the main reason for the decline of CTS is the queuing backlog. This occurs when a packet that is ostensibly cut-through, nevertheless must be stored due to traffic already passing through the same port. The bottleneck could worsen if several devices must communicate through a single channel to a server.

CTS is of greater concern in certain critical real-time networks like PowerLink or non-Ethernet networks such as InfiniBand. In common Industrial Ethernet applications, however, CTS has become an obsolete method of packet switching. Because of limited use in specialized markets, CTS availability in the future will likely be an option that is hard to find.

Bill's Blog Comments on the World of Industrial Ethernet

It has been a long day at work, but it is not over. You get home and after dinner you need to catch up on the latest news about Industrial Ethernet technology. What do you do? Go to the Internet and read "Bill's Blog" authored by Contemporary Controls. Visit www.ctrlink.com/blog.htm or go to www.ctrlink.com where it is located under the Support Menu.

Bill Greer, Senior Product Specialist at Contemporary Controls, writes this blog as another form of communication on this ever-growing technology in the industry. Greer will share his thoughts, experiences and insights on Ethernet topics ranging from the simple to the most challenging. Previous topics have already included link LEDs and cabling distance and the question: Is Your CAT5 Cable Properly Paired?

He hopes that if you encounter an interesting Industrial Ethernet issue, you'll choose to post a comment and share your knowledge with other readers. Greer encourages readers to come back often to the site—here to find just the right solution to a problem and some enjoyable reading!

As for his background, he began his electronics career in 1966 as Radio Relay Repairman in the USAF. Later he worked in cathodic protection and office equipment repair before becoming National Service Manager for a line of calculators and cash registers. After a stint as Field Service Engineer in the wafer fabrication industry, Greer taught electronics and math for several years before joining Contemporary Controls in 2000.

George Thomas to be a Keynote Speaker at ICOA 2006

The 1st International Congress on Open Automation (ICOA) will be held in Shanghai on May 12–13, 2006 and George Thomas, president of Contemporary Controls, has been invited to be one of the keynote speakers. Mr. Thomas intends to speak about the worldwide use of Industrial Ethernet and the evolution of the Industrial Ethernet University sponsored by Contemporary Controls. The focus of the conference will be on industrial communications. A co-sponsor of the event is the Industrial Automation Open Networking Alliance (IAONA) based in Germany. This is an alliance of more than 130 leading international manufacturers and users of automation systems. Contemporary Controls is a member of IAONA. The main objective of IAONA is to advance and promote innovative IT standards for the purpose of accelerating the adoption of these standards by the field of industrial automation. Mr. Thomas will also present a paper entitled "Recovery Time Experience With Various Ethernet Redundancy Schemes." This conference will run in parallel with the instruments and automation show IAC 2006.

European Sales Meeting Plans a Year of New Products, New Web Site, and New Literature

Contemporary Controls' 2006 European Sales Meeting in Frankfurt, Germany gave way to new ideas voiced by the company's United Kingdom and German subsidiaries and its distributors. The meeting welcomed Mr. D.A. Satish of Dearborn Electronics as one of our new distributors. Dearborn Electronics in India will be representing the company in Industrial Ethernet technology as well as distributing Contemporary Controls' CAN products. Distributors from Austria and Germany were also in attendance.

George Thomas, President of Contemporary Controls, led the session that reviewed the CTRLink® product line.

The company's CTRLink® product line was reviewed and future development plans were shared with the distributors. One of the sessions allowed the distributors the opportunity to advance their ideas for new products and relate how Contemporary Controls can best support them. Their feedback was invaluable.

Jan Thriene, Sales Manager at Contemporary Controls GmbH, commented that a new European catalog will be printed in the English and German languages to be shared by both Contemporary Controls Ltd and Contemporary Controls GmbH. This catalog will be available later in the year. Contemporary Controls GmbH also plans to launch a new web site to be hosted under the new .eu extension in the summer of 2006. It will be in English, German, and Spanish.

The meeting was successful and plans call for repeating the event near Frankfurt next year.
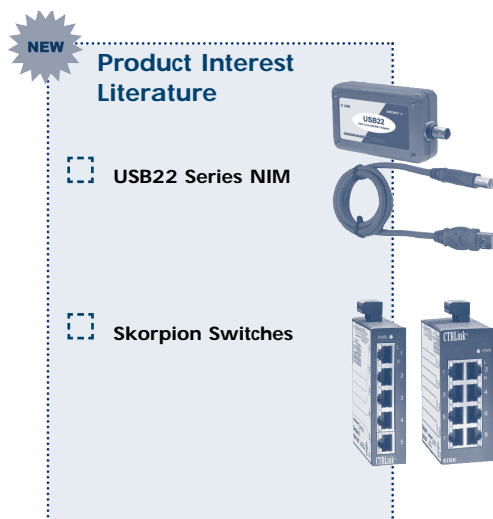
CONTEMPORARY CONTROLS

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NEW

Product Interest Literature

☐ **USB22 Series NIM**

☐ **Skorpion Switches**

ℹ Information

- Contemporary Controls designs the only ARCNET USB interface in the industrial market.

- Chat with the company's Senior Product Specialist about Industrial Ethernet issues by visiting Bill's Blog.

- Learn why cut-through switching (CTS) is difficult to find.

For your automation networking solutions visit: www.ccontrols.com