

March 2008

Modbus-IDA at Hannover Fair with ODVA: Hall 11, Stand E40

In April Modbus-IDA will exhibit at Hannover Fair for the fifth year. However, this year, you will find Modbus-IDA in **Hall 11, Stand E40**. We will join ODVA and offer visitors presentations and information about the recently announced integration of Modbus devices in CIP networks. In the fall of 2007, ODVA extended the CIP standard to provide seamless access to Modbus devices, requiring no change for Modbus TCP and Modbus serial target devices or EtherNet/IP target devices (*CIP Networks Library Volume Seven: Integration of Modbus Devices into the CIP Architecture, Edition 1.0*).



Conforming solutions will allow Modbus devices to be integrated and accessed from CIP originators and software tools, giving CIP originators basic read/write access to data in Modbus devices. Modbus data will be brought into the CIP application in a way that is consistent with the CIP communications model. Any device that can function as a Modbus server device will be able to be included in a CIP network. This includes both simple devices, such as HMIs, and complex devices, such as PLCs.

This is good news all around. Users and integrators will be able to consider and specify product from among the many Modbus devices available as they work on projects where a CIP network is being deployed. For suppliers, of course, this broadens the market for their Modbus devices. Look for product announcements in the coming months as suppliers begin to offer CIP originator devices that support this integration.

We look forward to seeing you at the fair and sharing information about this and other Modbus developments.



Modbus-IDA

Modbus Conformance & Interoperability Test Accredited by National Accreditation Service for Conformity Assessment

The Measurement Control Device & System Lab (MCDL) of the Instrumentation Technology and Economy Institute (ITEI) received accreditation from the China National Accreditation Service for Conformity Assessment (CNAS). The laboratory can independently undertake the test of control network conformance and interoperability, including Modbus protocol conformance testing. It can also undertake safety testing for measurement, control and laboratory electric devices, as well as information technology devices. The laboratory is the first accredited test laboratory of industrial control and field bus networks by CNAS in the industrial automation domain.



ITEI received authorization to be a third-party test laboratory from the Modbus Organization in April 2006. This is the first time the Modbus Conformance Test will have received the CNAS domestic accreditation.

Help Celebrate 30 Years of Modbus Communications

For our celebration of 30 years of Modbus in 2009, we are still gathering information about the far-flung uses of the most popular industrial communications protocol in the world. Tell us about your Modbus experience!

- Who has the oldest application that is still working?
- What is the installation with the largest number of Modbus nodes?
- What is the oddest or most bizarre application of the Modbus communications?

We will be selecting stories for future publication as part of the upcoming celebration.

Send your story to info@modbus-ida.org.

Organization News • Organization News

Meet Some of Our Members...



IntelliCom Innovation's mission is to provide remote device management solutions to network-enable, monitor, and control automation devices from any suitable location. The company's core business is within M2M (machine-to-machine), Ethernet/web solutions and gateways. IntelliCom has extensive experience with automation and network connectivity, offering Modbus products since 1997.

The company has worked with Ethernet, Modbus, LonWorks, GSM/GPRS, GPS, Profibus, CAN, Metasys, BACnet and many communication protocols. Today, its product lines include embedded boards, development kits, standard networking gateways, web server applications for monitoring and control. IntelliCom has customers and installations in over 40 countries around the world.

(www.intellicom.se)



SoftDel Systems Limited

is a software products and services, focused on engineering applications in selected domains. The company leverages its expertise in real-time, embedded, and PC-hosted software development combined with application domain knowledge to provide customized services to its clients. SoftDEL partners with companies developing software-based products, by providing software development services and solutions that quickly transform a product vision into reality. SoftDel's partners are typically the software developers or manufacturers of high-tech products that have significant software content or are themselves software application developers or service providers. SoftDEL's services are delivered in several domains including process and factory automation, building automation, test and measurement instruments, RTOS/embedded tools.

(www.softdel.com)



Since 1983, **Spectrum Controls** has been a premier provider of hardware and related software products for the industrial controls marketplace.

Products fall into three major categories: I/O modules, human-machine interfaces and communications devices. Spectrum Controls' corporate headquarters is located in Bellevue, Washington.

Spectrum Controls' products have been successfully deployed in water/wastewater, utility/power, oil/petrochemical, mining/quarrying, pulp/paper, food/beverage, material handling, biopharmaceuticals and a variety of other industries.

Spectrum Controls is an alliance partner with Schneider Electric and a Rockwell Automation Global Encompass Partner, licensed to develop Allen-Bradley Compatible I/O.

(www.spectrumcontrols.com)



Ask a question or help out a fellow engineer on the Modbus Discussion Forum:
modbus.control.com

Modbus-IDA Discussion Forums

Q&A

Modbus Comms between MicroLogix 1100 and Multilin 735 Relay...

On February 18, Shawn Norton wrote to the forum:

I cannot get my Modbus comms to work between an AB MicroLogix 1100 and a GE Multilin hooked up [with] DH485.

I have done a lot of Modbus with the SLC and ControlLogix units but this is the first with an 1100 and I cannot get it to talk. Any ideas or sample "msg" commands?

chapssa replied:

The Multilin 735 baud rate setting and unit (slave) is set with the switch located in front of the relay.

1. Configure the 735 relay's baud rate and slave address to 19200 and 1 (or any one you desire).
2. Launch the Enervista 735 setup program. (<http://www.enervista.com>)
3. Configure the setup program baud rate and slave address.
4. Use RS-232 cable to connect your PC with DH485 and to the relay.
5. Establish communication (instruction is located in the instruction book or can be downloaded from [enervista.com](http://www.enervista.com)).
6. If you still have a problem, try to get the GE Multilin F485 protocol converter to communicate with the relay.
7. Attempt to isolate the problem to setting, relay, protocol converter, or AB Micrologix 1100.

Carl Ellis added:

Consider using a PC with one of the freeware or shareware Modbus Master programs (Simply Modbus, Win-Tech's Modscan32, or ModPoll) and a 232/485 converter for the serial port, to establish the conditions under which [the] slave unit operates.

Then go to the Micrologix.

From the Modbus Discussion Forum...

Carl Burgess suggested:

I just used a MicroLogix 1100 with Modbus last week. Works a treat.

A few pointers:

There's a simple getting started guide in the AB knowledgebase that helped me. It's called "Quickstart Modbus Channel Configuration for MicroLogix 1100/1200/1500."

The serial port (Ch0) has to be set up for Modbus, not DF1; this means programming through the Ethernet port. I just used a crossover patch lead, and ran the BOOTP server that comes with RSLinx.

I think you will need a SVC instruction somewhere in your ladder to service the comms.

Hopes this helps.

Ken Roach's advice:

DH485 is a specific A-B protocol that runs over RS-485 wiring. Don't mistake it for other protocols (Modbus, DF1 Half Duplex, ASCII) that also can be run over RS-485 wiring.

Do you have any information about error codes, or how you wired up the connection, or what Modbus function codes and addresses you are trying to read or write?

One important thing I've found with the MicroLogix 1100 when you are using Modbus with the built-in RS-485 port and 1763-NC01 cable is that you need to set the Handshaking mode to "No Handshaking (485 Network)," which is the last on the list of handshaking options.

Read more comments or add your advice to this thread, at modbus.control.com/1026243722.

Modbus TCP Communication with PLC...

In January, Okan Benli posed this question to the forum:

We will build a SCADA system using Modbus TCP Protocol. SCADA Host (SCADA software) will be client and read data from PLC/RTUs, which are thought to be servers. However, RTU/PLCs need to communicate with each other also. So for an RTU/PLC, is it possible to open double socket/channel (via Ethernet port) where one will be treated as Client and the other as Server? Or will we need two Ethernet ports for this purpose?

Mark replied:

Sometimes nomenclature can get mixed up. Ethernet is the media and does not care about the protocol.

I have a PC with an Ethernet port and some software that acts as a Modbus master and connects to a device (XYZ) that acts as a Modbus slave.

If the device (XYZ) is capable, it can act as a Modbus master and connect to a Modbus slave.

A device can be a master, slave or master/slave.

It would be normal for the device to allow all communications through one Ethernet connection.

The PC I am typing this on will communicate with Modbus masters, Modbus slaves, AB EtherNet/IP, Automation Direct, etc. all at the same time.

It comes down to the software of the device. Ethernet will not be the limitation other than physical connections.

Add your advice to this thread, at modbus.control.com/1026243213.

Modbus Products and Innovations

Bernecker+Rainer Modbus TCP Bus Controller Certified

The **Bernecker+Rainer** BC0087 bus controller makes it possible to connect X2X Link I/O nodes to Modbus TCP. The bus controller is operated with the Modbus TCP library or by external systems with a Modbus TCP master function. The BC0087 has an integrated 2x switch for efficient cabling, LEDs for status display, and two RJ45 connections. The device reaction time is less than one to eight ms (depending on load). The device can be mounted either vertically or horizontally. Required accessories include B+R's standard X20 terminal block (12-pin), an X20 supply module for the bus controller and internal I/O supply, X2X link bus supply, and the basic X20 bus controller, for bus controller fieldbus interface and bus controller supply module.

The X20BC0087 was tested for conformance to Modbus-IDA Conformance Test Policy Version 2.1.



ACT'L Announces Talk2M

ACT'L recently announced Talk2M, which stands for Talk to Machines, an Internet service designed to address the growing need for broadband and wireless access to perform remote maintenance and access distant equipment.

Together with the eWON range of industrial modem-routers, Talk2M provides new opportunities for Internet remote access and maintenance, being compliant with a wide range of Modbus RTU or TCP devices.

Talk2M offers the added value of full integration of IT security standards by allowing an Internet communication tunnel between the user and the remote machine without any IT network security change on either side. This major breakthrough allows easy deployment while hiding the complexity of the IT network infrastructure.

Designed with affordability in mind, Talk2M's User Interface is your eWON address book and single click access to your machines!

For more information on Talk2M visit www.talk2m.com.



Advertise Your Modbus Products on the Modbus Website

With our growing number of site visitors and the increasing popularity of our device directory, what better place to advertise your Modbus devices and software than at www.modbus.org? E-mail lenore@modbus-ida.org for a rate sheet.

Modbus Products and Innovations

Schneider Electric's ConneXview

Industrial Ethernet is growing at an impressive rate. New Ethernet features are being added to improve network efficiency and performance. Yet budgets are not being increased to manage the rapidly growing, complex networks being implemented in factories today. Staff responsible for managing networks require diagnostic tools to address this growing gap.

Schneider Electric's diagnostic tool, ConneXview, provides customers a user-friendly, powerful diagnostic software program that allows visualization of the entire network on a single screen, making it easy to monitor, edit, and troubleshoot the industrial Ethernet network. ConneXview provides maintenance managers and control engineers tools to find and solve network problems quickly. ConneXview discovers and queries devices using both SNMP and Modbus TCP protocols to provide additional device-level data not available through SNMP alone.

Providing Modbus TCP capabilities gives additional diagnostics to help read binary and word registers from PLCs and I/O devices. It can also generate alarms based on register changes, user-defined monitors, or limit values.

IT personnel and control engineers need a view of the network topology to manage the network effectively. In the past, control engineers received the topology from their system integrators, but often failed to update drawings when they upgraded their systems. Building and maintaining a network topology costs money. Each time the plant network is upgraded, the topology also has to be updated.

ConneXview helps eliminate this expense by discovering all connected devices on network automatically, drawing the topology of the network, and providing a list of all IP and MAC addresses of the devices.

ConneXview helps instantly visualize the health of the network, helping to

ConneXview Specifications

Processor: Intel 1.2 GHz Pentium 4 CPU or higher

RAM Memory 512 MB or higher

Hard Drive 250 MB of free space or more

OS Windows 2000, XP Professional

ConneXview Licenses

TCSEAZ01PSFM20S Server Single License with one local client.

TCSEAZ01PSFM20C Client Single License

Subscription services

TCSEAZ01PSSM20S Single Server Subscription



reduce network downtime. The health of each segment and device on the network is shown by color. Green indicates normal operation, yellow means there is a potential problem, and red requires immediate attention.

ConneXview's client/server architecture helps decrease travel expenses to diagnose network problems.

ConneXview allows a trusted system integrator or a service provider to monitor the network remotely, check network performance, or troubleshoot problems from the other side of the plant or the other side of the world. Notifications can be sent by e-mail, pager, or text message. The ConneXview network assistant helps users understand details about an alarm

and suggests actions to solve the problem.

They say those who ignore history are condemned to repeat it. That's why ConneXview offers alarm logging functionality – to put tools in users' hands to ensure that past problems don't keep coming back. Alarms can be filtered by time and by device to give added control in determining what action to take.

Raedah Saman is Sr. Product Market Manager at Schneider Electric, Inc.



Visit Modbus.org or see back page for details about membership, conformance testing, and the Modbus TCP toolkit.

Join! Design! Test! Promote! Apply!

We're with you. Modbus-IDA exists to help suppliers and users of Modbus protocols succeed. Our members range from suppliers of Modbus-compliant products, to system integrators, end users, and educational institutions.

The common link? They all value the information and services provided by Modbus-IDA, and they all play a role in determining the future of the world's most broadly applied protocol.

To join Modbus-IDA, order a Toolkit, or arrange conformance testing, visit our website:

**WWW.
modbus.org**

Designing with Modbus

Each day, Modbus developers turn to Modbus-IDA for valued assistance with their projects:

- Start with downloading specifications and other design documents from the modbus-ida.org website.
- To really save time, purchase the Modbus TCP Toolkit CD (FREE with general membership); it contains source code and a myriad of other resources.
- Then, if you come across technical issues that have you stumped, post your question on our active developer's forum. One of the many experienced Modbus implementers who frequent this forum will likely have your answer.

Conformance Testing

When your project's done, what then? How do you know it really conforms to Modbus specifications? How do your users know?

The answer starts with running the conformance test suite included with your Modbus TCP Toolkit. This self-test helps you check your design assumptions and catch the subtle

"gotchas" that might otherwise slip through your design review.

To make the definitive statement of your company's commitment to open protocols, submit your product for testing to the independent Modbus-IDA Conformance Test Lab. We'll certify your product as compliant, and post that information on the Modbus website for the world to see.

Visibility for You and Your Products

Your products, your membership in Modbus-IDA also opens the door to a powerful range of visibility options to highlight your company as a supplier of Modbus-based products.

Exposure on our website, in our newsletter, and through our various trade show appearances are all options that allow you to make the most of your Modbus-IDA membership.

If your company is truly on the cutting edge of new technology, you'll likely also value the opportunity to participate in our technical committees. There, your company's knowledge, experience and technology can help guide future enhancements, extensions and adaptations of Modbus to keep it the world's leader for decades to come.

Time to Apply

When it comes time to get your Modbus network up and running, it's comforting to know that hundreds of thousands of applications have preceded yours. But what if things don't go as planned?

The modbus-ida.org users forum is ready to answer your questions and provide guidance. Thousands of users from diverse backgrounds read the forum, giving you a powerful base of experience from which to draw.

The Future is Yours

So, whatever your role in the use of Modbus, consider joining Modbus-IDA. You'll get the support you need today, and have opportunities to help guide Modbus to a dynamic future.

The Modbus TCP Toolkit

The Modbus TCP Toolkit provides all the necessary pieces to develop a Modbus-compliant device, including documentation, diagnostic tools, sample source code, and pre-test software to prepare for Modbus-IDA conformance certification. The toolkit is available as a benefit of membership in Modbus-IDA or can be purchased separately for US\$500 plus shipping and handling.

Toolkit Contents



Modbus Documentation

- Modbus Application Protocol Specification, V 1.01b
- Modbus Messaging on TCP Implementation Guide, Rev. 1.0b

Tools

- Modbus/TCP Client Diagnostic Tool
- Modbus/TCP Server Diagnostic Tool

Sample Source Code

- Modbus/TCP Sample Client Code for Visual Basic Win32
- Modbus/TCP Sample Client Code for C/C++ Win32
- Modbus/TCP Sample Server Code for C/C++ Win32
- Modbus/TCP Sample Server Code for C VxWorks
- Modbus/TCP Sample Server Code for C++ VxWorks

Conformance Testing

- Modbus/TCP Conformance Test Software