

December 2005

Modbus Device Database

Users Search for Modbus Devices

When Modbus-IDA launched its new website in August 2005, one goal was to make the site easier for users to navigate. The site is heavily trafficked by both users and developers, and we wanted to make it easy for visitors to find what they need. Developers come to the site to participate in the online discussion forum and download the Modbus specifications and implementation guides. Users come to the site with questions about their Modbus applications, queries about Modbus communications, and to find the right devices for their projects.

Working with comments from members and site users, we sought to develop a site to meet better meet people's needs. One result has been the growing database of devices now available on the Modbus-IDA website. Users can visit the site, click on the Device Directory and select devices to review using a variety of useful filters.

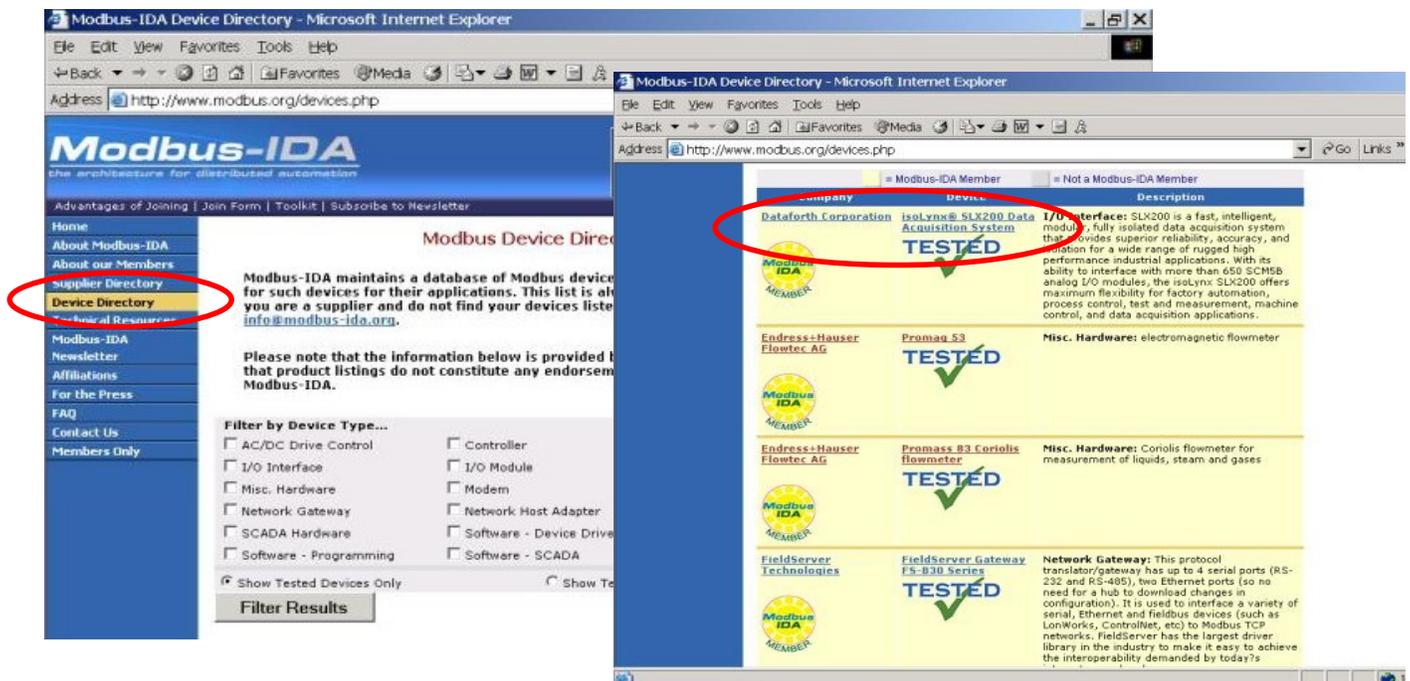
Devices can be selected by hardware categories (e.g., AC/DC drive control, controller, HMI hardware, I/O interface, I/O module, sensor, modem, monitoring hardware, newtwork gateway (protocol converter), network host adapter, remote terminal unit, SCADA hardware) or software categories (e.g.,

device drivers, HMI, programming software, SCADA).

Users can choose to view only Modbus-IDA certified devices or check out the entire selection of products. We invite all Modbus device manufacturers to list their devices on the site. As a service provided to users of Modbus devices, the organization does not require membership for device listings. However, members are given preferential placements, and only member company product announcements and press releases make it to the front page of the site.

As the database grows, we look forward to adding features and capabilities to increase the visibility of Modbus products and help users find what they need as easily as possible. E-mail us (info@modbus-ida.org) with new Modbus products to list, ideas for device database enhancements, or any other comments you may have.

The Board and staff of Modbus-IDA wish you a joyous holiday season and the best for the new year!



Organization News • Organization News

Meet Some of Our Members...



Real Time Automation

Real Time Automation was started in 1989, and began by focusing on RS232/RS422/RS485 serial communications. The company is now heavily involved in CAN, DeviceNet and SDS. It builds CAN related PCB boards, OEM products and board-level industrial I/O systems. RTA's goal is to assist its clients to develop reliable, cost-effective and marketable products. The company uses proven project management systems to assure that projects meet budgets and schedule and engineering development techniques that ensure high-quality, well-tested products to reduce future support costs. RTA is composed of two business segments: connectivity products and engineered systems. (www.rtaautomation.com)



Based in Portland, Maine, **Kepware Technologies** started out developing a low-cost alternative to HMI (human machine interface) packages such as Wonderware and Intellution. This was its primary product goal until 1996, when the company began development of its OPC and DDE server product. Initially this communications product was only a DDE server. While the company's original goal was to augment development of its own HMI product with OPC server sales, the resulting KEServer product line grew to receive market-wide acceptance as a best-of-breed product for OPC communications. Kepware now focuses all its resources on the development of its OPC server products. Kepware plans to continue its focus on the OPC server market as one of the largest companies focused on OPC server technology and communications products. (www.kepware.com)



Since 1986, **Sealevel Systems** has manufactured I/O products to serve its customers serial and digital interface requirements. The company currently offers over 200 standard products backed by a Lifetime Warranty that is standard with all Sealevel manufactured I/O products. As further evidence of the company's commitment to customer satisfaction, Sealevel's management system achieved registration to ISO 9001:2000 in 2002 to provide one of the strongest assurances of product/service quality available. (www.sealevel.com)



CONTROL SOLUTIONS, INC.

Control Solutions, Inc. has been developing networked control products since 1995, specializing in building automation, facility management, and commercial automation. The company offers a line of off-the-shelf embedded control products with LonWorks, Modbus, and SNMP connectivity. Control Solutions also provides custom programming for standard hardware and customized hardware solutions. All Control Solutions products are designed and made in the USA and manufactured under ISO-9000:2000. (www.csimn.com)



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Modbus-IDA
see back cover for
details...

Modbus Tour in China

From all accounts, the Modbus China tour was a rousing success – such a success, in fact, that we are considering sponsoring such a tour again next year. From October 21 through 28, Modbus device suppliers toured four Chinese cities, introducing their products to manufacturers, universities, and government officials.

If you are interested in learning more about plans for the next China Modbus activity, e-mail (info@modbus-ida.org).



From left to right: Li Yunin, Ouyang Jinsong, Huang Pingheng, Zhao Jianying, Hua Rong, Chen Xiaojun, Pietro Mincuzzi, Stephane-Renaud, Victor Chonlane, Jean-Luc Jouas, Dean R. Gabbert, Pan Na, Philippe Gelin, Gary Zhang, Antony Nguyen, Mohammed Fassib-Nia, Chen Xiaocong, Qu Taotao, Hu Jun, Tony Sia, Jiao Feng, Mei ke

Modbus-IDA at Hannover Fair 2006

As we plan our exhibition stand for the upcoming Hannover Fair Show (April 2006), we urge all members to contact us as soon as possible to reserve space in one of our two programs:

Show Partner Program – Exhibit economically at Hannover Fair in your own kiosk within the Modbus-IDA stand. This includes promotion on the Modbus-IDA website as well as a listing in the Hannover Fair guide (print and online).

Show Visibility Program – Designed to give an added presence to members fielding their own booths at the show in the same or a different hall, Show Visibility participation includes your own signage in the Modbus-IDA stand and the opportunity to place your corporate and product literature in the stand for distribution during the show.

For additional information, contact Lenore Tracey (lenore@modbus-ida.org).

Jégu Joins Modbus-IDA Board of Directors

Eric Jégu, Director Machines & Process Architectures & Marketing, Schneider Electric, was elected to the Modbus-IDA Board of Directors following its December 13, 2005 meeting. Mr. Jégu has been with Schneider Electric since 1987. Before working in his current position at Schneider, Jégu was director of the Schneider Automotive Center in Europe. Jégu brings to the Board his extensive experience in the European market as well as personal experience with hardware and software design and commissioning of PLCs, HMI and networks in several automotive industry projects.

Modbus-IDA President Ken Crater welcomes Jégu to the Board. He joins fellow Board members, Serge Bassem (ACT'L), Fred Cohn (Schneider Electric), Komal Mehta (Harting North America), James Moyne (University of Michigan), David Skelton (Phoenix Contact), and Feng Xiaosheng (ITEI).



Modbus-IDA Board Member Eric Jégu

Modbus Products and Innovations



Endress + Hauser Certifies Proline Series Devices

Last year, **Endress + Hauser** began the process of certifying devices from their Proline flow meter product family for conformance to the Modbus over Serial Line Specification. At this point, the company has certified the Proline Promag 53 and Promass 83.



The Proline family of flowmeters consists of robust, space-saving sensors for a wide variety of diameters, pressure ratings and materials. The family offers a broad range of connection choices, including DIN, ANSI, JIS, AWWA, and AS. Versions are also available for high-temperature and hygienic applications.

What can customers expect from Proline transmitters? An easily comprehensible display for operation and for showing brief messages and measured values with backlighting (two-line or four-line); multiplex mode for more information (up to six process variables and status messages can be shown in parallel); and operation by pushbutton or “Touch Control” (operation from outside, no need to open the housing, maximum safety in hazardous areas).

The devices’ Quick Setup menus make commissioning fast and easy. Quick Setups are available for standard commissioning, metering pulsating flow, metering gas flow (Coriolis), filling and dosing applications, and the Modbus RS485 communication.

All Proline flowmeters also feature continuous self-diagnosis during operation. If faults occur they are classified clearly on the display.



The Proline product family's Quick Setup capability is especially user-friendly.



Promag 53

Promag 53 Electromagnetic Flowmeter

The Promag 53 is one of Endress+Hauser’s electromagnetic flowmeters. These meters use a well established technology – in use worldwide for over 50 years – and can be used to measure all electrically conductive liquids ($> 5 \mu\text{S}/\text{cm}$) with or without solids, e.g. water, wastewater, sludge, slurries, pastes, acids, alkalis, juices. The Promag 53 features a four-line, backlit display, “Touch Control” operation, pulsating flow measurement capability, software upgrade options for filling, dosing, and electrode cleaning.

Promass 83 Coriolis Flowmeter

The Promass 83 is one of the company’s Promass Coriolis mass flow measurement devices. Virtually all fluids can be measured with this method, including cleaning agents and solvents, fuels, vegetable oils, animal fats, latex, silicon oils, alcohol, toothpaste, vinegar, ketchup, mayonnaise, gases, and liquefied gases.

And the ability to measure several process variables at the same time opens up completely new application fields. Mass flow, density and temperature (the primary measured variables) can be used to derive other variables such as volume flow, solid contents, concentrations, and complex density functions.



Promass 83

Both the Promag 53 and the Promass 83 are available with following output combinations: Modbus RS485 only; Modbus RS485 with current and frequency output; Modbus RS 485 with two relays outputs.

For more information about Endress+Hauser’s Modbus-certified flowmeters, check out the company website, www.endress.com.

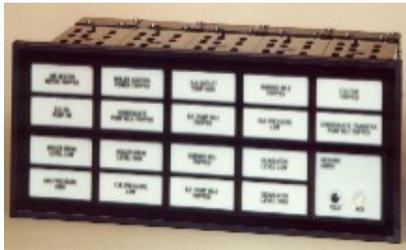
Modbus Products and Innovations

TESTED

Seekirk Annunciator A1700 Certified for Modbus over Serial Line

Seekirk, Inc. of Columbus, Ohio is a repeat supplier of annunciator products, which provide site monitoring and alarming to a power generation utilities and a growing list of industrial processors and plants. Since beginning operation under the Seekirk name in 1982, the company has demonstrated steady growth in sales and revenues, and is currently designated as the annunciator of choice by many transformer, switchgear, and breaker manufacturers around the world.

The Seekirk model A1700 is a Modbus slave window type annunciator offering a wide range of configurations presented to the user. The annunciator can be selected to handle the Modbus data interchange in either the RTU or ASCII serial modes. The annunciator can accept alarm inputs from either the serial input as Modbus commands or from hardwired alarm inputs via the rear panel terminals. The status of any alarm condition can be read from the annunciator by the Modbus master controller. The annunciator can be configured to allow from one to four alarm points per window and with up to 256 alarm points per unit.



Seekirk A1700 Annunciator

For more information, visit www.seekirk.com.

*List your company's
Modbus compatible
products on the
Modbus-IDA website.*

info@modbus-ida.org

WL-ACCESS WiFi Access Point and Bridge

ACKSYS, the French designer and manufacturer of telecommunications solutions for industrial applications offers the WL-ACCESS: Access Point & Ethernet Bridge. The product is compliant to IEEE 802.11b (2.4-GHz wireless Ethernet) and makes it possible to create the infrastructure of a wireless network and to link any Ethernet devices to this network.

The link is made safe by a WEP 64/128-bit encryption key and has a nominal range of 300 m (open space) for an 11-Mbps binary rate. An auto-

fallback system automatically reduces speed to 5.5 Mbps, 2 Mbps and 1 Mbps for greater range and/or better signal immunity.

This device comes with omni directional 2dBi built-in antennas (standard coverage). An external higher-gain antenna can be connected instead for long-distance communications (up to 20 Km) through a RSMA connector.

The WL-ACCESS features a 10/100 Ethernet RJ45 interface and LEDs to monitor LAN/WLAN activity and display the quality of the radio link to get the best result while installing devices.

The WL-ACCESS can be wall or Din rail mounted. Thanks to the built-in web



**WL-ACCESS: WiFi
Access Point and Bridge**

interface, the setup of the device is achieved with a standard web browser installed on your computer (e.g., Internet Explorer, Netscape); no additional software is required.

Modbus-IDA Discussion Forums

Q&A

From the Modbus User's Forum...

Combining ModbusTCP with Ethernet/IP...

Michael King wrote to the forum:

I'm currently investigating a new machine design for my company and I am having difficulties finding some information.

I'm aware of the different protocols available for Ethernet, and I know of basic network communications, hand shaking etc.

What I need to know is can you have 2 devices on an Ethernet network, 1 using Modbus TCP/IP, the other Ethernet/IP. I'm going to go with what I THINK and with what seems common sense and say that they are not compatible because of the handshaking and probably the packet construction used for each protocol.

But I may be unaware of a possibility to use the two together. I'm also thinking that would be a module in itself.

Charlie Peterson suggested:

FieldServer Technologies will provide you with an embedded device (ProtoCessor) which will enable your single protocol product to communicate with other devices which speak various other protocols (like Modbus TCP to Ethernet IP).

CH wrote:

You should have a look at ProSoft Technology, and their ProLinx line of products. They have a plethora of protocol converters.

Here's a link to their Modbus TCP to EtherNet/IP ProLinx unit. <http://www.prolinxgateways.com/content/view/full/7366>

Lynn A Linse offered:

While they can co-exist, Modbus/TCP and Ethernet/IP won't directly talk

since the packet format is different. It's not that hard to add enough Ethernet/IP to support the older PCCC (DF1-like) commands, but you won't have that option if you're just using off-the-shelf equipment.

My Digi One IAP happily bridges between the two and I'm hoping others start erasing this barrier as well. We just assume 4x00001 under Modbus references N7:0 on the AB and so on.

There doesn't need to be this incompatibility; of course don't expect Rockwell to add Modbus/TCP, but small vendors that now only support Modbus/TCP could add enough Ethernet/IP to interoperate with Rockwell equipment without the need for external boxes.

Frank Bollinger commented:

ABB drives offer communications modules that support Ethernet/IP and Modbus TCP.

From Peter Chipkin:

You are correct. Just because the protocols are carried in TCP/IP packets doesn't mean they are compatible. The message formats and payloads are quite different as are the addressing schemes.

You do not have to make a choice. You can integrate the two devices using a protocol gateway.

Additional answers to the question of combining ModbusTCP with Ethernet/IP can be found at the Modbus-IDA discussion forum: modbus.control.com/1026215938.

The Modbus-IDA Newsletter

This is the newsletter of Modbus-IDA, the international nonprofit organization devoted to the evolution and support of the Modbus and IDA protocols.

For more information about membership and other services of Modbus-IDA, please refer to our website: www.modbus-ida.org

Newsletter Editor: Lenore Tracey
+1-508-435-7170
lenore@modbus-ida.org

Copyright 2005 by the Modbus Organization, Inc.
PO Box 628, Hopkinton, MA 01748 USA
ph +1-508-435-7170 • fax +1-508-435-6929
info@modbus-ida.org

The Modbus-IDA Mission

Modbus-IDA is a group of independent users and suppliers of automation devices that seeks to drive the adoption of the Modbus communication protocol suite and the evolution to address architectures for distributed automation systems across multiple market segments. Modbus-IDA will also provide the infrastructure to obtain and share information about the protocols, their application and certification to simplify implementation by users resulting in reduced costs.

Ask your question or help out a fellow engineer on the Modbus User's Forum:
modbus.control.com

Modbus Application Stories

Modern Flour Mills Replace Stone Mills in Egypt

Danetta Bramhall

A hundred years ago, grain was ground into flour using two large stones, called millstones. Since then, the science of milling grain into flour has changed dramatically. Improved equipment, better transportation, and particularly computerization have increased milling capacity, allowing mills to expand their production.

Four recently constructed mills in Egypt are a prime example. In an effort to cut costs and produce a higher-grade flour, developers have built new, modern mills in the same buildings where giant millstones used to stand.

Old Stones to PLC Control

Danish company, United Milling Systems (UMS), designed and built four new mills in Egypt with Automatic Syd A/S as sub-supplier of the electrical system. Two of the mills were converted from old stone mills into modern milling plants. The other two were turnkey projects, rehabilitating old roller mills.

UMS installed a total of 34 new Satake SRMA roller mills in three of the locations. The SRMA incorporates the very latest technology, such as fully electronic feeder units and a toothed belt differential drive. In the fourth mill, UMS installed a short milling system based on their own developed disc mill. This new solution allows the El Tppin mill, (South Cairo & Giza Flour Mills & Bakery Co.), to produce nearly twice as much flour per day, in a substantially reduced area, compared to a conventional roller mill.

Automatic Syd specializes in the design and manufacture of electrical switchboards, control panels and the development of customized PLC and PC software. It was their job to supply a centralized control station that would allow one miller to monitor the entire plant. UMS and Automatic Syd faced a choice: they could install their own version of a proprietary system, running closed applications or, they could opt for an open communication platform.

Proprietary systems used to be the norm. But companies often find that these closed systems are, in the long run, user unfriendly, making the process of integrating new processes and equipment difficult, expensive, and time-consuming. Today, closed systems are slowly being replaced by open communication platforms. Modbus protocol is one of these open applications. It has become so popular, that in many instances it is accepted as the defacto industry standard. This was the application chosen for the mills.

Allen-Bradley PLC5 processors were connected to the mill equipment. However, the A-B processors are not inherently Modbus compatible. So a Modbus interface was needed.

ProSoft Interface

Automatic Syd contacted Rockwell Automation-Denmark for a possible solution. They recommended ProSoft Technology's 3100-MCM module. This module acts as a Modbus interface, providing highly configurable Modbus Master and Slave capabilities to Allen-Bradley PLC and SLC applications.

"Quite simply, the ProSoft Modbus communication interface makes it possible for Allen-Bradley platforms to communicate with a multitude of industrial devices," said Doug Sharratt, lead developer for ProSoft Technology.

"With the ProSoft module," commented Arne Sigfredsen of Automatic Syd, "One miller can easily monitor the entire plant and, in case of emergencies, temporarily take over control until another miller has reached the specific machine to solve the problem. This is a cost effective savings, since it takes fewer personnel and you get a lot of information such as alarms, stock levels, motor loads, etc. from the plant."

The 3100-MCM Modbus module was one of the first products manufactured by ProSoft Technology. Alain Chevalin, ProSoft's regional sales manager for Europe and the Middle East added, "Twelve years after its invention we are still finding new uses for the 3100-MCM Modbus module. Many industrial devices available today have implemented communications using the Modbus protocol. With our communication interfaces, users in a variety of industries are able to gather a great deal of data, which can enhance the understanding of the process or, as in the case of these flour mills, allow the system to be controlled more efficiently."

The Alexandria Flour Mills and Bakery Co., located in Ibrahim Awad and Moharam Bey were the first two mills to go on-line, producing 150 tons and 225 tons of flour per day. A third, located in Sowahey began operating shortly thereafter, also producing 225 tons of flour per day. The new disc mill solution allows the El Tppin mill to produce 450 tons of flour per day.

Danetta Bramhall is the staff editor for ProSoft Technology, Inc.



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, educational institutions, and even individuals.

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-
ida.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 (hint: it's FREE with membership), which 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 highly 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.

But 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-IDA website for the world to see.

Visibility for You and Your Products

And, speaking of the world seeing your products, your membership in Modbus-IDA 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?

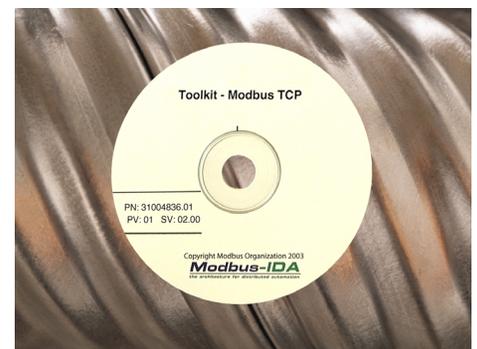
The modbus-ida.org users forum is ready to answer your questions and provide guidance. Thousands of users from diverse backgrounds read the forum, giving you a powerful base of experience from which to draw.

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 CD

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 1.0
- Modbus Messaging on TCP Implementation Guide, Rev. 1.0

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