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Modbus TCP/IP to Siemens 3964R Protocol Gateway
5202-MNET-S3964R4

The ProLinx® Modbus TCP/IP to Siemens 3964R Gateway allows point-to-point communication between a Modbus TCP/IP Ethernet network and 3964R serial communication partners.

The Modbus TCP/IP protocol driver supports Schneider Electric processors as well most other devices that use Modbus TCP/IP for communicating over Ethernet networks. The gateway offers both Client (Master) and Server (Slave) configurations that use standard Ethernet TCP/IP connections and recognize both Modbus TCP/IP MBAP and Encapsulated Modbus messages. The Modbus TCP/IP implementation on this gateway has been specially developed to provide tight integration with 3964R protocol requirements.

The 3964R protocol was designed by Siemens for bi-directional data communication. It provides a point-to-point, serial interface connection that supports assigning high-priority or low-priority read and write access to each communication partner. This reduces initialization errors and improves data messages, increasing its versatility and range of possible applications.

Features	Benefits
Powerful network integration	◆ Communicate between dissimilar networks
	◆ Shared database exchanges information from devices on both networks
	◆ View diagnostics between both networks
Modbus TCP/IP protocol interface	◆ Modbus TCP/IP adds Ethernet capability to one of the most widely used industrial protocols
	◆ Suitable for SCADA and 'foreign device' interface applications
	◆ Floating point data movement supported, including configurable support for Enron and Daniel® floating point applications
	◆ Communicate with programmable controllers, intelligent devices, sensors and instruments
	◆ Allows PCs and HMIs to monitor field devices
S3964R Protocol Interface (on four serial ports)	◆ Integrates with Schneider Electric baggage-handling projects using Siemens 3964R protocol
	◆ Bi-directional data communication with communication partner high/low priority assignment
	◆ Support simultaneous connections to as many as four 3964R communication partners
	◆ Shares common database with Modbus TCP/IP network
Backed by ProSoft Technology®	◆ 20-year history of delivering high-quality, reliable solutions designed with you in mind
	◆ Free, unlimited, worldwide Technical Support by phone anytime for pre-sale, set-up, or troubleshooting support helps you get going sooner and stay running longer
	◆ Three-Year Warranty ensures reliability and protects against equipment failures
	◆ Free ProSoft Software tools tightly integrated with our hardware...a simple and quick, total solution to help you make our products fit your applications

Configuration

ProSoft Configuration Builder (PCB) provides a PC-based software configuration solution for quick and easy management of gateway configuration files, as well as viewing communication and network diagnostics. The 5202-MNET-S3964R4 Setup Guide and sample configuration provide an quick and easy example with step-by-step instructions on how to move data from one network to the other.

General Specifications

ProLinx® Communication Gateways provide connectivity for two or more dissimilar network types. The gateways, encased in sturdy extruded aluminum, are stand-alone DIN-rail-mounted solutions that provide data transfer between many of today's most widely used industrial automation.

Modbus TCP/IP

ProSoft's Modbus TCP/IP implementation uses the gateway's shared internal memory database for data transfer. Sharing the memory database with another protocol driver allows the gateway to transfer data between Modbus TCP/IP devices and other devices on other networks.

Configurable floating point data movement is supported, including support for Enron or Daniel® floating point applications.

Modbus TCP/IP Server (Slave)

The server driver accepts incoming connections on Service Port 502 for clients using Modbus TCP/IP MBAP messages and from clients on Service Port 2000 (or other Service Ports) for clients using Encapsulated Modbus messages..

◆ Supports five independent server connections for Service Port 502 (MBAP)

◆ Supports five independent server connections for Service Port 2000 (Encapsulated)

◆ The Modbus TCP/IP implementation in this gateway has been specially designated to meet the unique requirements of the 3964R protocol. This provides a more tightly integrated solution for data transfer between the two protocols.

◆ Modbus data types overlap in the gateway's memory database, so the same data can be conveniently read or written as bit-level or register-level data.
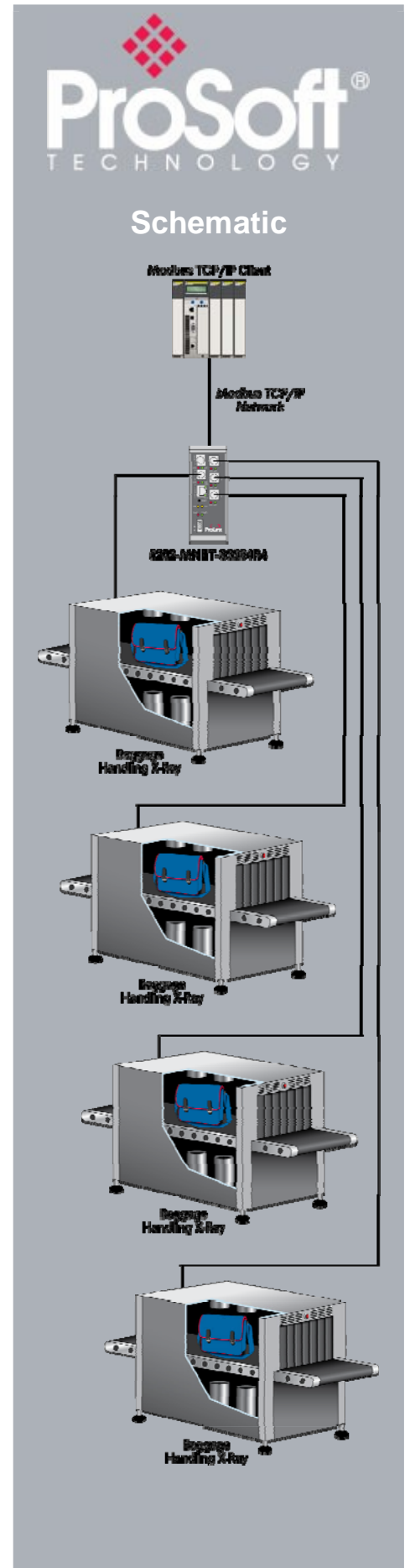
Modbus TCP/IP Client (Master)

◆ Actively reads data from and writes data to Modbus TCP/IP devices, using MBAP or Encapsulated Modbus message formats

◆ Offers one client connection with up to 100 commands to talk to multiple severs

Status Data

Error codes, counters, and port status available

S3964R

• Supported baud rates: 600 through 19200 are typical; up to 115200 is possible

• Supported protocols: 3964 with RK512, 3964 without RK512

• Priority setting to define the behavior of the protocol in case of an initialization conflict.

• Offers four independently configurable serial ports. Each port can communicate using 3964R protocol with or without RK512 formatting. Each port can be set to use an RS-232 or RS-422 serial signal interface. The ports operate independently from each other and each port is assigned its own space in the gateway's user memory database.

• When using S3964R without RK512 communications mode, Port 0, Port 1, Port 2, and Port 3 can initiate or receive DB-SEND instructions.

• RK512 mode on Port 0, Port 1, Port 2, and Port 3 allow evaluation of RK512 header information: DB data block, DW data word, Coordination Byte 9, and CPU Coordination Byte 10.

• When using S3964R without RK512 communications mode, Port 0, Port 1, Port 2, and Port 3 can send or receive standard communication telegrams (message packets).

• In either mode, 512 bytes is the maximum amount of data transferred per data transfer operation

• Data byte order can be swapped to support different device-specific word formats

• Communication activity indications and diagnostic information are available through LEDs and acknowledgment telegrams.

Schematic

Functional Specifications - Modbus TCP/IP

Modbus Commands Supported (Client and Server)	1 : Read Coils Status 2 : Read Input Status 3 : Read Holding Registers 4 : Read Input Registers 5 : Force (Write) Single Coil 6 : Preset (Write) Single Holding Register 15 : Force (Write) Multiple Coils 16: Preset (Write) Multiple Holding Registers
Configurable Parameters: (Client and Server)	Gateway IP Address Modbus data type starting address offsets Floating point start address and database offset
Configurable Parameters: Client	Minimum Command Delay Response Timeout Retry Count Command Error Pointer
Command List	Up to 100 fully-configurable Client commands
Status Data	Error codes reported individually for each command
Polling of command list	Each command can be individually enabled or disabled; write-only-on-data-change is available

Functional Specifications - S3964R

Ports	4 independent RS-232/422 serial application ports
Baud rates	Typical: 600, 1200, 2400, 4800, 9600, 19200 bps (available on all four ports) Additional Possible: 38400, 57600, 115200 bps (available only on Port 1, Port 2, and Port 3)
Parity	Even, odd, None
Data bits	8
Stop bits	1
Maximum distance	RS 232 - 15 cable meters RS 422 - 1230 cable meters
Maximum Data Transfer	512 bytes per data transfer operation

Hardware Specifications

Specification	Description
Power Supply	24 VDC nominal 18 to 32 VDC allowed Positive, Negative, GND Terminals 2.5 mm screwdriver blade
Current Load	500 mA max @ 32 VDC max
Operating Temperature	-20 to 50°C (-4 to 122°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Relative Humidity	5% to 95% (non-condensing)
Dimensions	Standard: 5.20H x 2.07W x 4.52D in. (13.2cmH x 5.25cmW x 11.48cmD) Extended: 5.20H x 2.73W x 4.52D in. (13.2cmH x 6.934cmW x 11.48cmD)
LED Indicators	Power and General Status Application Status Serial Port Activity LED Serial Activity and Error LED Status
Configuration Serial Port	Mini DIN8 RS-232 only (Mini-DIN8/DB9M adapter included) No hardware handshaking
Ethernet Port	10Base-T half duplex RJ45 Connector Link and Activity LED indicators Electrical Isolation 1500 V rms at 50 Hz to 60 Hz for 60 s, applied as specified in section 5.3.2 of IEC 60950: 1991 Ethernet Broadcast Storm Resiliency = less than or equal to 5000 [ARP] frames-per-second and less than or equal to 5 minutes duration
Application Serial Ports	RS-232/422/485 RS-232 handshaking configurable RS-422/485 screw termination included
Serial Port Isolation	2500V RMS port signal isolation per UL 1577 3000V DC min. port to ground and port to logic power isolation
Shipped with Each Unit	Mini-DIN to DB-9M serial cable adapters 4 ft RS-232 null-modem DB9F configuration cable 2.5mm screwdriver CD (docs and Configuration utility) RS-422/485 DB-9 to Screw Terminal Adaptor

Agency Approval & Certification

ISA	ISA 12.12.01 Class 1 Div 2
CSA/cUL	C22.2 No. 213-1987

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