

IEC 60870-5-104 Server to IEC 60870-5-101 Master Gateway 5201-104S-101M

The ProLinX IEC 60870-5-104 Server to IEC 60870-5-101 Master Gateway creates a powerful connection between IEC 104 server devices on an Ethernet network and IEC 60870-5-101 Master devices on a serial network. This stand-alone DIN-rail mounted protocol gateway provides one Ethernet port and one configurable IEC 101 Master serial port.

The ProLinX 104S gateway accepts and responds to commands from a network-connected Client (Master) and can also autonomously generate unsolicited messages for cyclic or event-driven data transmission. Firmware versions 3.00 and later support a wider range of IEC 60870-5-104 Edition 2 data types and Causes of Transmission than previously offered.

The ProLinX 101M driver can be configured to act as a IEC 60870-5-101 Master (controlling unit) communicating with IEC 60870-5-101 slaves (controlled units) on a serial communication network. The 101M driver supports polling of up to 16 slave devices, up to five sectors per slave, using up to 100 total polling commands.



Features	Benefits
Powerful network integration	◆ Move data between dissimilar networks using two communication protocols on one gateway ◆ Protocols share access to a common memory database to exchange data between networks ◆ View diagnostic data for both networks from a single configuration/debug port
IEC 60870-5-104 Server protocol interface	◆ Adds an IEC 60870-5-104 Server (Slave) Input and Output link to an Ethernet network ◆ IEC 60870-5-104, Edition 2 Data Types and extended Cause of Transmission Support ◆ Advanced Event Buffer reporting controls allow better network data bandwidth utilization
IEC 60870-5-101 Master protocol interface	◆ Supports IEC 60870-5-101 Master specification: balanced/unbalanced mode, 16 sessions/5 sectors per session, timestamping ◆ Individually configurable serial application port

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.

PCB is not only a powerful solution for new configuration files, but also allows you to import information from previously installed (known working) configurations to new projects.

General Specifications - ProLinX

ProLinX® Communication gateways provide connectivity for two or more dissimilar network types. The gateway, enclosed 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 protocols.

General Specifications – 104 Server

Operating in Server mode (only), the 104S protocol implementation accepts commands from an IEC-60870-5-104 Client to read data stored in or write data into the gateway's internal database memory registers. The 104S implementation is also capable of generating unsolicited messages. Unsolicited messages can be either spontaneous (event-driven) or cyclic (timing-driven) communication.

The remote Client device uses the fully-configurable gateway memory database to control outputs and monitor inputs to devices on the IEC 104 network. Changes to the gateway database can also be used to transfer monitoring and control data to devices connected to the gateway using another installed network protocol. The 104S gateway thus provides a data transfer solution between an IEC 60870-5-104 Ethernet network and other serial and Ethernet network protocols, as well as proprietary interfaces.

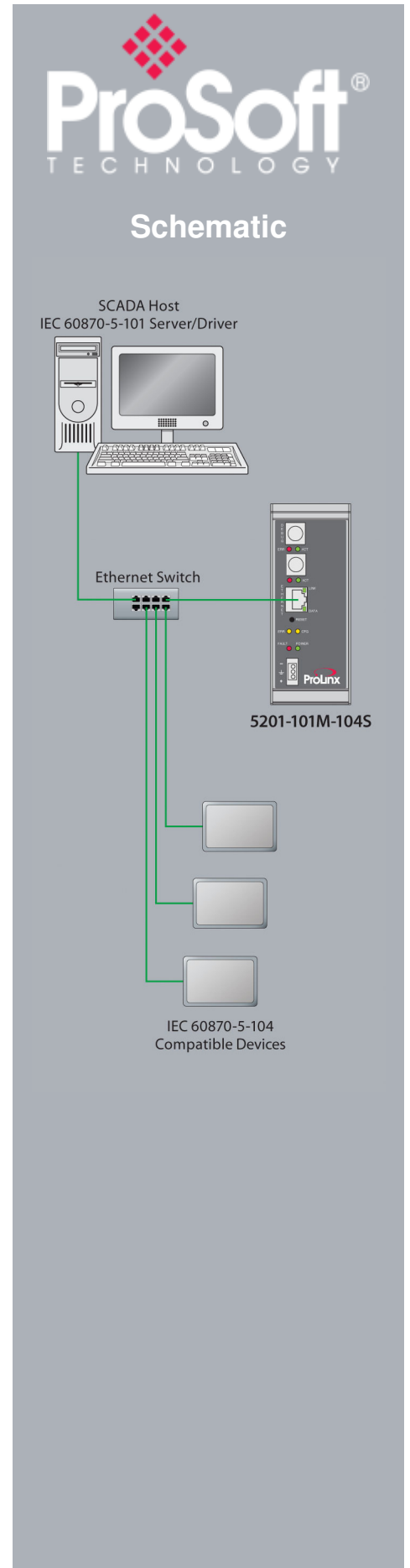
General specifications include:

- ◆ User-definable database memory usage, based on data types and point counts
- ◆ Protocol implementation conforms to the IEC 60870-5-104 specification with fully-configurable parameters
- ◆ SNTP (Simple Network Time Protocol) timestamping for detailed logging of data transactions (events)

General Specifications - 101 Master

The 101M module acts as an input/output module between the IEC 60870-5-101 network and many of the other serial and network protocols, as well as several proprietary interfaces. A 4000-word register space in the module exchanges data between the two protocols.

- ◆ Built in accordance to the approved international specification
- ◆ Support for the storage and transfer of up to 4000 registers between protocols
- ◆ User-definable module memory usage
- ◆ Configuration via a user-generated text file (downloadable to the module)
- ◆ Protocol implementation conforms to the IEC 60870-5-101 specification with fully configurable parameters



Functional Specifications - IEC 60870-5-104 Server

IEC-60780-5-104 Server Functional Specifications

Supported Message Types	Accepts Client Monitor and Control Messages Generates Timed Data Transmission Messages Generates Event Data Transmission Messages Supports all Edition 2 Causes of Transmission	
Supported Data Types	Monitor Points: M_SP_NA M_DP_NA M_ST_NA M_BO_NA M_ME_NA, NB, & NC M_IT_NA	Control Points: C_SC_NA C_DC_NA C_RC_NA C_BO_NA C_SE_NA, NB & NC
Maximum number of points (per Data Type)	500 Points for all Supported Data Types, except 50 Points for Types M_ME_NC and C_SE_NC 4000 total data words, maximum	
Event Message Support	Event Messages with or without Time Stamp Event Buffers up to 99 Events per Data Type Event Report Options: Latest Only or Multiple	
Configurable Parameters	Restricted IP Address Access List Supports "t0" Ethernet Connection Timeout Data Freeze Start and Freeze Interval Cyclic Data Transmission Time Data Type Priority Queues Data Validity Bit Checking and Timeout Control Bit Pulse On/Off Time And more...	

Functional Specifications - IEC 60870-5-101 Master

The IEC 60870-5-101 Master driver provides extensive support for Master implementations of the protocol. The serial port on the gateway is user-configurable to support the IEC protocol (Master, Error Checking, Baud rate, and so on).

The gateway supports:

- ◆ 16 slaves (sessions with distinct Data Link Addresses)
- ◆ Each slave (session) supports up to 5 sectors (with distinct Common ASDU Addresses)
- ◆ Configurable General Interrogation messages during initialization
- ◆ Time comes from the 104S driver (remote host or NTP server)
- ◆ Supports General Interrogation, General Command and Time Synchronization Commands

General Parameters

Communication parameters	Baud Rate: 110 to 19200 baud Stop Bits: 1 or 2 Data Size: 5 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
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IEC 60870-5-101 Master

Configurable Parameters	Baud Rate Parity RTS On RTS Off Minimum Delay Receive Timeout Data Link Address Common ASDU Address
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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 maximum @ 32 Vdc maximum
Operating Temperature	-4 °F to 122 °F (-20 °C to 50 °C)
Storage Temperature	-40 °F to 185 °F (-40 °C to 85 °C)
Relative Humidity	5 to 95% (without condensation)
Dimensions (Height x Width x Depth)	Standard: 5.20 in x 2.07 in x 4.52 in (13.2 cm x 5.25 cm x 11.48 cm) Extended: 5.20 in x 2.73 in x 4.52 in (13.2 cm x 6.934 cm x 11.48 cm)
LED Indicators (On all gateways)	Power and Hardware Fault Configuration and Application Communication Status Serial Configuration Port Activity and Error
Configuration Serial Port	DB-9M RS-232 only No hardware handshaking
Ethernet Port (Ethernet protocol gateways only)	10Base-T half-duplex RJ45 Connector Link LED and Activity LED indicators Electrical Isolation 1500 Vrms 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 Port(s) (Serial protocol gateways only)	RS-232/422/485 RS-232 handshaking configurable RS-422/485 DB-9 to Screw Terminal Adapter Note: The number of serial application ports depends on the gateway type, and the combination of protocols.
Serial Port Isolation	2500 Vrms port signal isolation per UL 1577 3000 Vdc min. isolation port to ground and port to logic
Shipped with Each Unit	Mini-DIN to DB-9M serial cables 4-foot RS-232 configuration cable 2.5mm screwdriver CD (docs and configuration utility) RS-422/485 DB-9 to Screw Terminal Adapter for each serial application port (serial protocols only)

Agency Approvals & Certifications

cULus	ISA 12.12.01 Class I, Div 2 Groups A, B, C, D
cULus	C22.2 No. 213-M1987



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