

DNP over Ethernet to Modbus Master/Slave Communication Module

4201/4202-DNPSNET-MCM(4)

5201/5202-DNPSNET-MCM(4)

Product Description

The ProLinx family DNPSNET to Modbus Master/Slave communications module (4202-DNPSNET-MCM) creates a powerful connection between devices on a DNP Ethernet network and Modbus devices. The module, encased in either plastic or aluminum (ProLinx Plus 5000 series), is a stand-alone DIN rail-mounted protocol gateway that provides one ethernet port and up to four serial ports.

The ProLinx module is capable of supporting the DNP 3.0 protocol as a server using the TCP and UDP protocols using service port 20000. This port is fully configurable, providing a great deal of flexibility.

The Modbus (MCM) protocol driver supports Master and Slave implementations of the protocol. All Modbus serial ports are individually configurable, providing a very powerful and flexible host or device interface solution.

Product Applications

The DNPSNET-MCM modules are the ideal solution for the many applications where DNP Ethernet connectivity can be used to integrate MCM serial devices into a system. The DNP gateway is a powerful module designed with both Client and Server support, enabling easy connection to Rockwell Automation PLCs (CLX, SLC, PLC, CPLX, and similar devices). In combination with the Modbus device support, the module provides a very powerful interface to the many Modbus devices which are in use in the industrial marketplace today. Applications for the module are found in most industries, especially the Manufacturing, Oil and Gas, Electrical Power and Food Processing.

Functional Specifications

Internal Database

The ProLinx module contains an internal database that consists of areas for application data, status information, and configuration information.

The internal database is shared between all ports on the module and is used as a conduit to pass information from a device on one network to one or more devices on another network.

Application Data Area

The data area is used to store and retrieve data by the protocol drivers and for data exchange between protocols. The database is used as a source for write commands to remote devices and holds data collected from the remote devices. Commands defined in the configuration file (stored in the configuration data area) control how the data is to be handled in the database.

Status Data Area

This area is used to store error codes, counters, and port status information for each port.

Configuration Data Area

This area contains module configuration information such as port configuration, network information, and command configuration. This configuration file is downloaded to, or uploaded from, this area.

Optional Web Server for Ethernet Solutions

An HTML server is available for Ethernet ProLinx modules. With this option, HTML text pages can be enabled to:

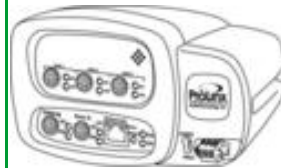
- Display module internal register and status values
- Accept user data input values via POST commands for setpoint, on/off control, etc.



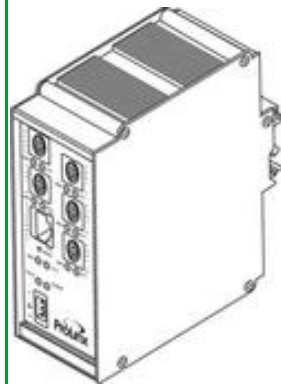
Downloads

- [Modbus Driver Manual](#)
- [DNPSNET Driver Manual](#)
- [ProSoft Configuration Builder](#)
- [Set-Up Guide](#)

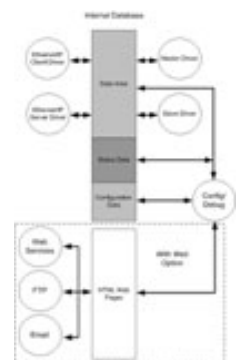
Image Gallery



ProLinx 4000 Series Module



ProLinx 5000 Series Module


[Click for larger view](#)

- Provide limited graphic file support

Type	Specifications
HTML Server (See note below)	Key features of the HTML server include: <ul style="list-style-type: none"> • Max HTML page size: 1MB • Max File Storage: 32MB • Supported context types: jpeg, bmp, css • Supported data types: bit, ASCII, integer, float • Sockets: Up to five (5) connections. Note that this limits the number of simultaneous graphic file and frame references per HTML page
FTP Server	Permits remote HTML file transfer between the module and remote host. Capabilities of the FTP Server include: <ul style="list-style-type: none"> • Single socket connection • Non-passive transfers only • WS_FTP or Command Line FTP recommended CuteFTP, Internet Explorer, Netscape, or NCFTP all support multiple socket connections and therefore are not supported by the ProLinx module
Email Client	E-mail message generation based on database trigger values. Messages can contain dynamic data from the module

Important Note: The Web Server is not designed to act like, or replace, the powerful web servers available in the marketplace today. Please check application specifics with Technical Support if you are unsure if your application will work with the ProLinx Web Server.

DNPSNET Protocol Specifications

The DNPSNET protocol driver exists as a single service port (DNPSNET port 20000) implementation that supports a single TCP port connection and multiple UDP ports on a TCP/IP Ethernet network. The DNPSNET port operates as a server, supporting the DNP 3.0 protocol in a Level 2 implementation using the DNP User Group recommended extension for use on LAN/WAN. This is published in "Transporting DNP V3.00 over Local and Wide Area Networks", December 15, 1998 by the DNP Users Group and is available on the Internet at <http://www.dnp.org>.

The DNPSNET driver will respond to requests from a remote DNP client (master) device. All data in the module's database configured as DNP data points is available to the remote master device for read and write requests. Additionally, the driver can send unsolicited event messages to a connected, TCP, client.

General Parameters	
Type	Specifications
Internal Database	Binary Inputs: 8000 points (500 words) Analog Inputs:500 points of analog input data Counters:250 (500 words) Binary Outputs: 2000 points (125 words) Analog Outputs: 500 points of analog output
DNP Mode	DNP 3.0 Slave – Level 2
DNP Object Support	Reference Appendix for full Object Definition document

DNP Server	
Type	Specifications
ServicePort	20000

Protocols	TCP (1 connection) and UDP
Node address	0 to 65534 – software selectable
Status Data	Error codes, counters and port status

The DNPSNET module accepts DNP commands to control and monitor the data stored in the DNP databases. These data are passed between the module and the other protocol on the ProLinux module.

Modbus Protocol Specifications

The Modbus driver provides access to an internal database of 4000 registers (words), with extensive support provided for both the Master and the Slave implementations of the protocol. The serial port(s) on the gateway can be individually configured to support the Modbus protocol (Master or Slave, RTU or ASCII, Baud Rate, etc).

General Parameters – Modbus Protocol	
Type	Specifications
Communication parameters	Baud Rate: 110 to 115K baud Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 ms
Error Checking	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point	Floating point data movement supported, including configurable support for Enron implementation
Function Codes	1 : Read Output Status 2 : Read Input Status 3 : Read Multiple Data Registers 4 : Read Input Registers 5 : Write Single Bit 6 : Write Single Data Register 15 : Write Multiple Bits 16 : Write Multiple Data Register

Modbus Master	
Type	Specifications
Command List	Up to 100 command per master port, each fully configurable for function, slave address, register to/from addressing and word/bit count
Status Data	Error codes are provided on an individual command basis, as well as a slave status list is maintained per active Modbus Master port.
Polling of command list	Configurable polling of command list, including continuous and on change of data, and dynamically user or automatic enabled.

Modbus Slave	
Type	Specifications
Node address	1 to 247 – software selectable

Status Data	Error codes, counters and port status available per configured slave port. Status data is all pre-mapped in the module
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Hardware Specifications

Power Supply	24 VDC nominal 18-36 VDC allowed Positive, Negative, GND Terminals 2.5 mm screwdriver blade
Current Load	500 mA max@ 24 VDC
Operating Temperature	0 to 50 Deg C 32 to 131 Deg F
Storage Temperature	-40 to 85 Deg C -40 to 185 Deg F
Relative Humidity	5-95% (w/o condensation) ProLinx Module (Plastic Enclosure) 3.7H x 6.06W x 4.70D inches 94.2H x 153.9W x 119.3D mm ProLinx Plus (Aluminum Enclosure)
Dimensions	<i>Standard</i> 5.20H x 2.07W x 4.52D inches 13.2cmH x 5.25cmW x 11.48cmD <i>Extended</i> 5.20H x 2.73W x 4.52D inches 13.2cmH x 6.934cmW x 11.48cmD
LED Indicators	Power and Module Status Application Status Serial Port Activity LED Serial Activity and Error LED Status
Configuration Serial Port	Mini-DIN RS-232 only No hardware handshaking
Ethernet Port	10/100Base-T Connector Link and Activity LED indicators
Application Serial Ports	Mini-DIN RS-232/422/485 RS232 handshaking configurable RS422/485 screw termination included
Port Isolation	2500V Opto-Isolators 500V Power Supply Isolation
Shipped with each unit	Mini-DIN to DB-9M cables per serial port 4 ft RS-232 configuration cable 2.5mm screwdriver CD (docs and Configuration utility) RS-422/485 DB9 to Screw Terminal Adaptor (1 or 4, depending on ports)

[Click here for dimensions diagram](#)

Certifications

The ProLinx gateway module has the following certifications:

UL
UL/C

**CE
ATEX**

Ordering Information

To order this product, please use the following:

ProLinx (Plastic Enclosure)

4201-DNPSNET-MCM

**DNP over Ethernet to Modbus
Master/Slave**

4201-DNPSNET-MCM-WEB

Complete unit with WEB option

4202-DNPSNET-MCM4

**DNP over Ethernet to Modbus
Master/Slave 4 port**

4202-DNPSNET-MCM4-WEB

Complete unit with WEB option

ProLinx Plus (Aluminum Enclosure)

Standard Case

5201-DNPSNET-MCM

**DNP over Ethernet to Modbus
Master/Slave**

5201-DNPSNET-MCM-WEB

Complete unit with WEB option

5202-DNPSNET-MCM4

**DNP over Ethernet to Modbus
Master/Slave 4 port**

Extended Case

5202-DNPSNET-MCM4-WEB

Complete unit with WEB option

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