DNP 3.0 Master/Slave Communication Module

MVI71-DNP

The MVI71-DNP module is the ideal solution for many applications where DNP 3.0 Master and/or Slave protocol connectivity must be added to a PLC system.

The DNP solution is designed to address the expanding interest in the DNP 3.0 protocol. The protocol was originally developed for the power utility industry and is recommended by the IEEE for RTU-IED communication applications. Additional industrial applications are quickly arising in the water/wastewater and oil & gas industries.

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DNP 3.0 Master/Slave Communication Module

MVI71-DNP

The MVI71 DNP 3.0 Master/Slave Communication Module is a single slot, backplane compatible DNP 3.0 interface solution for the Rockwell Automation PLC platform. This module provides highly configurable support of both DNP 3.0 Master and Slave implementations (level 2 minimum), allowing the many SCADA and field devices supporting the DNP protocol to be integrated into the powerful PLC platform.

Features and Benefits

The module supports DNP Subset Level 2 features and some of the Level 3 features allowing the many SCADA and field devices supporting the DNP protocol to be integrated into the PLC platform. The module acts as an input/output module between the DNP network and the PLC backplane. The data transfer from the PLC processor is asynchronous from the actions on the DNP network. Databases are user defined and stored in the module to hold the data required by the protocol.

General Specifications

- Single Slot – 1771 backplane compatible
- The module is recognized as an Input/Output module and has access to processor memory for data transfer between processor and module
- Ladder Logic is used for data transfer between module and processor. Sample ladder file included.
- Configuration data obtained from configuration text file downloaded to module. Sample configuration file included.

Hardware Specifications

Specification	Description
Form Factor	Single Slot 1771 chassis compatible BTR/BTW data transfer Local or remote rack
Backplane current load	800 mA @ 5 V
Operating temperature	0 to 60°C (32 to 140°F)
Storage temperature	–40 to 85°C (–40 to 185°F)
Shock	30g operational 50g non-operational
Vibration	5 g from 10150 Hz
Relative humidity	5 to 95% (non-condensing)

Specification	Description
LED Indicators	Module status Backplane transfer status Application status Serial activity and error LED status
Debug/Configuration port (CFG)	
CFG Port (P1)	RJ45 (DB-9M with supplied cable) RS-232 only
Configuration Connector	RJ45 RS-232 Connector (RJ45 to DB-9 cable shipped with unit)
Application Ports	
Application Serial port (P2, P3) (Serial Modules)	(2) RJ45 RS-232/422/485 Application ports

Functional Specifications

The module has two DNP protocol ports that can be user configured to operate in a Master/Slave or in a Slave/Slave redundant port configuration.

User defined internal register space is accessible to the protocol driver and to the PLC processor memory.

DNP 3.0 Slave Protocol Specifications

The DNP Slave port(s) accepts DNP commands to control and monitor data stored in the module's DNP Slave databases. If a DNP Master port is also configured, a portion of these slave databases can be derived from or can control IED devices connected to the DNP master port.

- Report-by-Exception data is logged to the module's database
- Supports unsolicited messaging
- Each DNP point type is user configurable by point
- Class assignments are completely user-definable on a Type and point basis (BI, AI, FI point types)
- Supports clock synchronization from a master or from the processor
- Up to 400 events are stored for Floats, Binary In and Analog In Inputs
- Collision avoidance algorithm per DNP organization for redundant port switching (redundant slave mode)
- Special modem AT command string and timing support for dialing out on redundant port (redundant slave mode)

DNP 3.0 Master Protocol Specifications

The DNP 3.0 Master port can be configured as a virtual DNP Master device that actively issues user-defined DNP commands to nodes on the network.

- The Master port supports 300 user defined commands, each one containing its own set of data link and application layer characteristics
- Master port logically supports up to 40 slave devices
- Individual command configuration includes conditional or continuous polling and Poll Delay Time
- Slave status and Command status available for transfer to the processor
- Event data received from the slave devices updates the module database (Date and Time stamping is not stored or used by module)
- Special command handling for Digital Output CROB under processor control for pulse output control

DNP 3.0 ports (PRT1 & PRT2)

- Memory usage is user definable
- Full radio, modem and multi-drop support
- Support for the storage and transfer of all DNP data types across the backplane
- Communication parameters
  - Address: 0 to 65534 (slave mode)
  - Baud rate: 110 to 115K
  - Parity: none, data bits: 8, Stop bit: 1
  - RTS on delay: 0 to 65535 ms
  - RTS off delay: 0 to 65535 ms

Additional Products

ProSoft Technology offers a full complement of hardware and software solutions for a wide variety of industrial communication platforms.

Compatible products in the inRAx product line also include:

IEC 60870-5-101 Master Communication Module for PLC (MVI71-101M)

IEC 60870-5-101 Slave Communication Module for PLC (MVI71-101S)

IEC 60870-5-103 Master Communication Module for PLC (MVI71-103M)

Visit our web site at http://www.prosoft-technology.com for a complete list of products.

Ordering Information

To order this product, please use the following:

MVI71-DNP DNP 3.0 Master/Slave Communication Module

To place an order, please contact your local ProSoft Technology distributor. For a list of ProSoft distributors near you, go to http://www.prosoft-technology.com

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