DNP 3.0 Master/Slave Communication Module

MVI69-DNP

The MVI69-DNP module is an ideal solution where DNP 3.0 Master/Slave protocol connectivity must be added to the CompactLogix platform.

The DNP solution addresses 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 applications include Water/Wastewater and Oil and Gas industries.

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MVI69-DNP

The MVI69 DNP 3.0 module is a single slot, backplane compatible DNP 3.0 interface solution for the CompactLogix 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 CompactLogix 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 CompactLogix platform. The module acts as an input/output module between the DNP network and the CompactLogix processor. The data transfer from the CompactLogix 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 - 1769 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.
- Supports CompactLogix and MicroLogix 1500 LRP Controllers except 1769-L23E-QBFC1B, 1769-L16x, and 1769-L18x

Hardware Specifications

Specification	Description
Dimensions	Standard 1769 Single-slot module
Current Load	800 mA max@ 5 VDC Power supply distance rating of 2
Operating Temp.	0 to 60°C (32 to 140°F)
Storage Temp.	-40 to 85°C (-40 to 185°F)
Relative Humidity	5% to 95% (non-condensing)
LED Indicators	Battery and Module Status Application Status Serial Port Activity CFG Port Activity
CFG Port (CFG)	RJ45 (DB-9F with supplied cable) RS-232 only No hardware handshaking

Specification	Description
App Ports (P1,P2) (Serial modules)	RS-232, RS-485 or RS-422 (jumper selectable) RJ45 (DB-9F with supplied cable) RS-232 handshaking configurable 500V Optical isolation from backplane
Shipped with Unit	RJ45 to DB-9M cables for each port 6-foot RS-232 configuration Cable

Functional Specifications

The MVI69-DNP module supports the DNP 3.0 protocol with a minimum of Level 2 functionality. DNP protocol Subset Definitions for the Master and the Slave drivers are available in the module's User Manual.

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 CompactLogix processor memory.

Redundant Slave Port Operation

When configured in the Slave/Slave port configuration, the module's slave ports operate in a primary and secondary fashion. In this mode, a single host polls the module via redundant physical layer connections. Several methods are supported to automatically switch between the primary and secondary slave ports.

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)
- The analog inputs are class and deadband configurable on a point basis for all formats (integer, float)
- Supports clock synchronization from a master or from the processor
- Support for four octet-strings are supported (object type 110) in the slave driver to return version and other module information
- Up to 400 events are stored for Analog Inputs (AI and FI) and 400 events for Binary Inputs
- In addition to the module generated events, AI and BI events can be generated in the processor and transferred to the module (useful with external timestamping hardware)
- Configurable event buffer transmission threshold based on count and/or time since last event transmission
- 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
- Supports Report-by-Exception and Unsolicited Responses on a Time Interval basis or on a user determined Event Count basis. Analog and Binary input points are supported

Additional Products

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

Compatible products also include:

IEC 60870-5-101 Slave Communication Module for CompactLogix / MicroLogix (MVI69-101S)

IEC 60870-5-103 Master Communication Module for CompactLogix / MicroLogix (MVI69-103M)

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

Ordering Information

To order this product, please use the following:

MVI69-DNP	DNP 3.0 Master/Slave Communication Module

To place an order, please contact your local ProSoft Technology distributor. For a list of ProSoft Technology distributors near you, go to: www.prosoft-technology.com and select *Where to Buy* from the menu.

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