DATASHEET

ControlLogix Enhanced Modbus Master/Slave Communications Interface Module with Reduced Data Block

MVI56E-MCMR

The MVI56E-MCMR Enhanced Modbus Master/Slave Communication Module with Reduced Data Block allows Rockwell Automation® ControlLogix® processors to easily interface with devices using the Modbus RTU/ASCII serial communications protocol. Compatible devices include a wide variety of instruments, process measurement devices, popular brands of programmable logic controllers (PLCs) and programmable automation controllers (PACs).

The MVI56E-MCMR acts as an input/output module on the ControlLogix backplane, making Modbus data appear as I/O data to the processor. Backplane data transfers to and from the processor are asynchronous from communications on the Modbus network. Two independently-configurable serial ports can operate on the same or different Modbus networks. Each port can be configured as a Modbus Master or Slave, sharing the same user-controlled 5000-word database.

The MVI56E-MCMR utilizes a reduced Input/Output (I/O) data block for transferring data to and from a ControlLogix processor. This reduced data block makes it ideal for use in remote rack applications over ControlNetTM. For EtherNet/IPTM applications where bandwidth is not an issue, it is strongly recommended to use the MVI56E-MCM.

Features	Benefits
Backward Compatibility	♦ All MVI56E products are backward-compatible allowing direct replacement of earlier MVI56 modules without the need to change existing controller programs ♦ Enjoy Enhanced features and flexibility without incurring expensive reprogramming costs
Reduced Data Block	♦ Reduced Data Block implementation requires less backplane/network bandwidth ♦ Smaller data blocks are easier to schedule and transfer on ControlNet™ networks ♦ Ideal solution for remote chassis installations using ControlNet and redundant controllers
CIPconnect®-enabled	♦ ProSoft Configuration Builder software (PCB), with CIPconnect®, facilitates remote user access across the ControlLogix backplane through Rockwell Automation's 1756-ENBT module ♦ Configure, diagnose, and analyze process data and communications status ♦ CIPconnect can bridge through multiple ENBT/CNBT links to connect to MVI56E-MCMRs installed in remote chassis for configuration and diagnostics
4-digit LED display	♦ See critical configuration and status information without connecting to the ports

Configuration

ProSoft Configuration Builder (PCB) provides a graphical configuration tool for quick and easy management of module configuration files, as well as viewing communication and module diagnostic information.

CIPconnect technology routes connections over multiple EtherNet/IP or ControlNet paths, allowing you to manage the module from remote locations.

The MVI56E-MCMR Setup Guide, with the sample configuration, provides step-by-step instructions on how to move data through the module from the network to the processor.

General Specifications

- Backward-compatible with previous MVI56-MCMR version
- Single Slot - 1756 ControlLogix® backplane compatible
- 10/100 MB Ethernet port for configuration with Auto Cable Crossover Detection
- User-definable module data memory mapping of up to 5000 16-bit registers
- CIPconnect®-enabled network configuration and diagnostics monitoring using ControlLogix 1756-ENxT modules and EtherNet/IP® pass-thru communications
- Sample Ladder Logic or Add-On Instruction (AOI) used for data transfers between module and processor
- 4-character scrolling LED display of status and diagnostic data in plain English
- ProSoft Discovery Service (PDS) software finds the module on the network and assigns a temporary IP address to facilitate module access and configuration
- Personality Module (non-volatile CF card) to store all configuration settings, allowing quick in-the-field product replacement by transferring the CF card

Modbus General Specifications

Communication Parameters	Baud Rate: 110 baud to 115.2 kbps Stop Bits: 1 or 2 Data Size: 7 or 8 bits Parity: None, Even, Odd RTS Timing delays: 0 to 65535 milliseconds
Modbus Modes	RTU mode (binary) with CRC-16 ASCII mode with LRC error checking
Floating Point Data	Floating point data movement supported, including configurable support for Enron and Daniel implementations
Modbus Function Codes	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 Register 8: Diagnostics 15: Force (Write) Multiple Coils 16: Preset (Write) Multiple Data Registers 17: Report Slave ID 22: Mask Write 4x Register 23: Read/Write 4x Registers

Functional Specifications

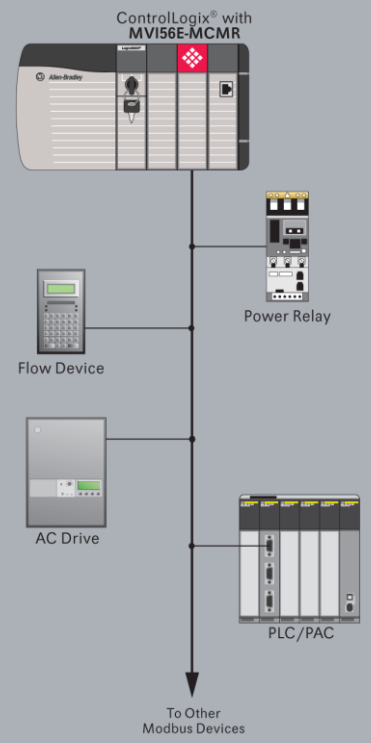
- Adjustable Modbus floating point data support in Enron, Daniels® and other formats
- Powerful Modbus network analyzer diagnostics using ProSoft Configuration Builder
- Optional Message functions, like User-configured Command and Event Command messages, give users the option to place normally automatic Modbus polling under logic control for special situations
- Error codes, network error counters, and port status data may be stored in user data memory or requested by using unscheduled MSG (message) instructions
- 40 Word Data Block (Scheduled)

Modbus Master Specifications

Command List	Up to 100 commands per Master port, each fully configurable for function code, slave address, register to/from addressing and word/bit count.
Optimized Polling	Configuration options allow Master ports and commands to be optimized to poll slaves with communication problems less frequently.
Command Status/Error Monitoring	Command Status or Error codes are generated for each command as it executes, allowing careful monitoring of communication health between the Master and its Slaves.
Slave Polling Control	Master Port maintains a Slave Status list of all network Slaves. Polling of each Slave may be disabled and enabled using this list.

ProSoft® TECHNOLOGY

ControlLogix Modbus Integration



Modbus Slave Specifications

Full Memory Access	A port configured as a Modbus Slave permits a remote Master to read from or write to any of the 5000 registers that make up the user memory database.
Multi-source Slave Data	Data presented at the Slave port can be derived from other Modbus Slave devices on a different network through the module's Master port or from the processor tag database.
Node Address	1 to 247 (software selectable)
Status Data	Slave port error codes, counters and statuses are available separately for each port when configured as a Slave.

Hardware Specifications

Specification	Description
Backplane Current Load	800 mA @ 5 Vdc 3 mA @ 24 Vdc
Operating Temperature	0°C to 60°C (32°F to 140°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Shock	30g Operational 50g Non-operational Vibration: 5 g from 10 to 150 Hz
Relative Humidity	5% to 95% (without condensation)
LED Indicators	(ERR) Not used (APP) Application Status (OK) Module Status
4-Character, Scrolling, Alpha-Numeric LED Display	Shows Module, Version, IP, Port Status, P1 and P2 Settings, and Error Information
Debug/Configuration Ethernet port (E1 - Config)	
Ethernet Port	10/100 Base-T, RJ45 Connector, for CAT5 cable Link and Activity LED indicators Auto-crossover cable detection
Serial Application ports (P1 & P2)	
Software configurable communication parameters	Baud rate: 110 baud to 115.2 kbps RS-232, RS-485, and RS-422 Parity: none, odd or even Data bits: 5, 6, 7, or 8 Stop bits: 1 or 2 RTS on/off delay: 0 to 65535 milliseconds Full hardware handshaking control (optional) Radio and modem support
App Ports (P1, P2)	RJ45 (DB-9M with supplied adapter cable) Configurable RS-232 hardware handshaking 500V Optical isolation from backplane RS-232, RS-422, RS-485 jumper-select, per port RX (Receive) and TX (Transmit) LEDs, each port
Shipped with Unit	RJ45 to DB-9M cables for each serial port

Agency Approvals & Certifications

Please visit our website: www.prosoft-technology.com

Additional Products

ProSoft Technology® offers a full complement of hardware and software solutions for a wide variety of industrial communication platforms. For a complete list of products, visit our web site at: www.prosoft-technology.com

Ordering Information

To order this product, please use the following:

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MVI56E-MCMR

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