

DATASHEET

Modbus Master/Slave Communication Module MVI56E-MCM/MCMXT

The MVI56E Communication Module allows for Modbus Master and/or Slave connectivity from Rockwell Automation® ControlLogix® processors to Modbus RTU/ASCII devices. Each MVI56E port can be configured as a Master or Slave.

The MVI56E-MCM and MVI56E-MCMXT act as input/output modules on the ControlLogix backplane, making Modbus data appear as I/O data to the processor. Two independently configurable serial ports can operate on the same or different Modbus networks. The MVI56E-MCM is designed for standard process applications and the MVI56E-MCMXT is designed for the Logix-XT™ control platform, allowing it to operate in extreme environments. It can tolerate higher operating temperatures, and has conformal coating to protect it from harsh or caustic conditions.



Features	Benefits
Backward Compatibility	<ul style="list-style-type: none"> All MVI56E products are backward-compatible with earlier MVI56 modules allowing direct replacement without the need to change existing controller programs
10,000 Word Database	<ul style="list-style-type: none"> Allows you to gather more data from your devices, which improves operational performance Enjoy Enhanced features and flexibility without incurring expensive reprogramming costs
Add-On Instruction	<ul style="list-style-type: none"> Module configuration stored within the RSLogix™ 5000 project (ACD file) No additional programming or configuration software is required Add-On Instruction for RSLogix 5000 version 16 or higher cuts development time and costs
CIPconnect® Enabled	<ul style="list-style-type: none"> Facilitates remote user access across the ControlLogix backplane through Rockwell Automation's 1756-ENBT module Configure, diagnose, and analyze process data and communications status Bridge through multiple ENBT/CNBT links to connect to MVI56E-MCMs installed in remote chassis for configuration and diagnostics
Add-On Profile	<ul style="list-style-type: none"> Simplifies adding the module in an RSLogix 5000 project

Configuration

The module configuration is defined in the Add on Instruction. The AOI is fully commented, and includes user-defined data types, ladder rungs and controller tags. The AOI can be used without modification for most application.

The MVI56E-MCM User Manual and sample configuration provide a quick and easy example with step-by-step instructions on how to move data through the module from the Modbus network to the processor.

General Specifications

- Backward-compatible with previous MVI56-MCM version
- Single Slot - 1756 ControlLogix® backplane compatible
- 10/100 MB Ethernet port for network configuration and diagnostics with Auto Cable Crossover Detection
- User-definable module data memory mapping of up to 10,000 16-bit registers
- 4-character, scrolling, alphanumeric 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
- Supports RIUP (Remove and Insert Under Power)

Functional Specifications

The MVI56E-MCM will operate on a Local or Remote rack (For remote rack applications with smaller data packet size please refer to the MVI56E-MCMR product)

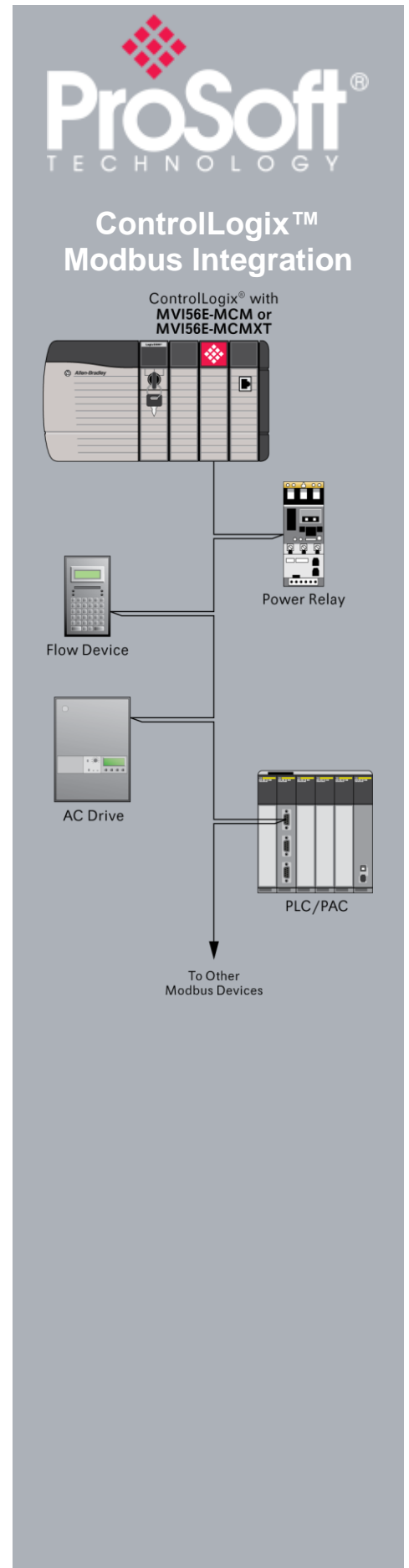
- Supports Enron version of Modbus protocol for floating-point data transactions
- PCB includes powerful Modbus network analyzer
- Special functions (command control, event commands, status, and so on) are supported by message transfer (unscheduled) using the MSG instruction
- Error codes, network error counters, and port status data available in user data memory

Slave Specifications

The MVI56E-MCM module accepts Modbus function code commands of 1, 2, 3, 4, 5, 6, 8, 15, 16, 17, 22, and 23 from an attached Modbus Master unit. A port configured as a Modbus Slave permits a remote Master to interact with all data contained in the module. This data can be derived from other Modbus Slave devices on the network, through a Master port, or from the ControlLogix processor.

Master Specifications

A port configured as a virtual Modbus Master device on the MVI56E-MCM module actively issues Modbus commands to other nodes on the Modbus network. Up to 325 commands are supported on each port. Additionally, the Master ports have an optimized polling characteristic that polls Slaves with communication problems less frequently. The ControlLogix processor ladder logic can issues commands directly from ladder logic or actively select commands from the command list to execute under ladder logic control.



General Modbus 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

Modbus Master Specifications

Command List	Up to 325 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.

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 10,000 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



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Hardware Specifications

General

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) - MVI56E-MCM -25°C to 70°C (-13°F to 158°F) - MVI56E-MCMXT
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Extreme/Harsh Environment	MVI56E-MCMXT comes with conformal coating
Shock	30 g operational 50 g non-operational Vibration: 5 g from 10 to 150 Hz
Relative Humidity	5% to 95% (without condensation)
LED Indicators	Battery Status (ERR) Application Status (APP) Module Status (OK)
4-Character, Scrolling, Alpha-Numeric LED Display	Shows Module, Version, IP, Port Master/Slave Setting, Port Status, 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
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Serial Application ports (P1 & P2)

Full hardware handshaking control, providing radio, modem, and multi-drop support	
Software configurable communication parameters	Baud rate: 110 baud to 115.2 kbps RS-232, 485 and 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
Serial Applications 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, each port RX (Receive) and TX (Transmit) LEDs, each port
Shipped with Unit	RJ45 to DB-9M cables for each serial port

Agency Approvals & Certifications

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Ordering Information

To order this product, please use the following:

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