6 Reference

6.1 Product Specifications

The MVI56E Enhanced Modbus Master/Slave Communication Modules allow Rockwell Automation® ControlLogix® processors to easily interface with devices using the Modbus RTU/ASCII serial communications protocol.

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. Data transfer to and from the processor is asynchronous from the 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, 10,000-word database.

The two modules are functionally the same. The MVI56E-MCM is designed for standard process applications. 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 it also has a conformal coating to protect it from harsh or caustic conditions.

6.1.1 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
- CIPconnect®-enabled network diagnostics and 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 and for module configuration
- 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

6.1.2 General Specifications - Modbus Master/Slave

Specification	Description
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 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, Daniel®, and other implementations
Modbus Function Codes Supported	1: Read Coil Status 2: Read Input Status 3: Read Holding Registers 4: Read Input Registers 5: Force (Write) Single Coil 6: Preset (Write) Single Holding Register 8: Diagnostics (Slave Only, Responds to Subfunction 00) 15: Force(Write) Multiple Coils 16: Preset (Write) Multiple Holding Registers 17: Report Slave ID (Slave Only) 22: Mask Write Holding Register (Slave Only) 23: Read/Write Holding Registers (Slave Only)

6.1.3 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)

- CIPconnect® enabled for module and network configuration using 1756-ENxT module with EtherNet/IP pass-through communications
- Supports Enron version of Modbus protocol for floating-point data transactions
- 4-digit LED Display for English based status and diagnostics information
- PCB includes powerful Modbus network analyzer
- Error codes 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. 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 issue commands directly from ladder logic or actively select commands from the command list to execute under ladder logic control.

Note: To use up to 325 commands, your MVI56E-MCM module needs to have firmware version 3.01 or higher, and your MVI56E-MCM Add-On Instruction needs to be version 2.8 or higher. Earlier versions support up to 100 commands.

6.1.4 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)
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	Application Status (APP) Module Status (OK)
4-Character, Scrolling, Alpha-Numeric LED Display	Shows Module, Version, IP, Port Client/Server Setting, Port Status, and Error Information
Communication Ethernet port	
Ethernet Port	10/100 Base-T, RJ45 Connector, for CAT5 cable Link and Activity LED indicators Auto-crossover cable detection