ProSoft Technology MVI56-MCM

Modbus Serial Communication Module



ProSoft Technology MVI56-MCM adds two independent Modbus serial interfaces to a ControlLogix system. It exchanges coil and register data with Modbus instruments, controllers and supervisory systems, using either RTU or ASCII communication. Each port can operate as a master or slave, and the onboard database links serial transactions to the ControlLogix application through the 1756 backplane. The module supports cyclic polling, controller-triggered transactions and Enron/Daniel floating-point data handling for compatible devices.

Technical Specifications

Product Identity	
Manufacturer	ProSoft Technology
Model	MVI56-MCM
Platform	ControlLogix / 1756 backplane
Functional Configuration	
Protocol	Modbus RTU / ASCII
Port roles	Master or slave, independently configured
Application ports	2; RS-232 / RS-422 / RS-485
Performance & Power	
Database	5,000 16-bit registers
Command list	Up to 100 per master port
Backplane current	800 mA at 5 V DC; 3 mA at 24 V DC
Environment	
Operating temperature	0 to +60 °C
Storage temperature	–40 to +85 °C
Humidity	5–95%, non-condensing

Selected original manufacturer pages follow on pages 3–4.

Compatibility & Selection Guide

ControlLogix integration. MVI56-MCM uses a 1756 ControlLogix chassis and model-specific controller data types and ladder routines to exchange configuration, process data and status.

Modbus device selection. A port can be configured independently for Modbus RTU or ASCII and as a master or slave. In slave mode the station address is configurable from 1 to 247. The connected equipment must use the same serial settings and Modbus framing.

Wiring & Installation Reference

Serial connections

Application ports. Set the hardware jumpers for the required RS-232, RS-422 or RS-485 interface before connecting P1/P2.

Configuration port. Use the separate RS-232 configuration/debug connection; it is not an Ethernet port.

Rack mounting

Isolate power. Turn off chassis power before installation.

Insert the module. Align the upper and lower guides and slide the module into the ControlLogix rack until the backplane connector is engaged.

Secure and identify. Engage both retaining clips and use the actual slot number in the controller project.

Installation precautions. Remove power or confirm a non-hazardous location before disconnecting equipment. Energized removal can cause an electrical arc. Use the applicable serial pinout and interface jumpers; RJ45 connector shape alone does not define the interface.

Mounting reference · PDF page 3 | Installation / connection reference · PDF page 4

Source: ProSoft Technology MVI56-MCM manufacturer manual, February 11, 2011.

1.5 Installing the Module in the Rack

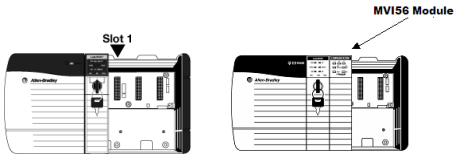
If you have not already installed and configured your ControlLogix processor and power supply, please do so before installing the MVI56-MCM module. Refer to your Rockwell Automation product documentation for installation instructions.

Warning: You must follow all safety instructions when installing this or any other electronic devices. Failure to follow safety procedures could result in damage to hardware or data, or even serious injury or death to personnel. Refer to the documentation for each device you plan to connect to verify that suitable safety procedures are in place before installing or servicing the device.

After you have checked the placement of the jumpers, insert MVI56-MCM into the ControlLogix chassis. Use the same technique recommended by Rockwell Automation to remove and install ControlLogix modules.

Warning: When you insert or remove the module while backplane power is on, an electrical arc can occur. This could cause an explosion in hazardous location installations. Verify that power is removed or the area is non-hazardous before proceeding. Repeated electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance that can affect module operation.

1. Turn power OFF.
2. Align the module with the top and bottom guides, and slide it into the rack until the module is firmly against the backplane connector.

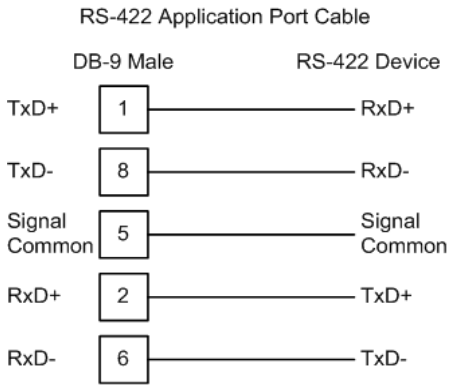


3. With a firm but steady push, snap the module into place.
4. Check that the holding clips on the top and bottom of the module are securely in the locking holes of the rack.
5. Make a note of the slot location. You must identify the slot in which the module is installed in order for the sample program to work correctly. Slot numbers are identified on the green circuit board (backplane) of the ControlLogix rack.
6. Turn power ON.

Note: If you insert the module improperly, the system may stop working, or may behave unpredictably.

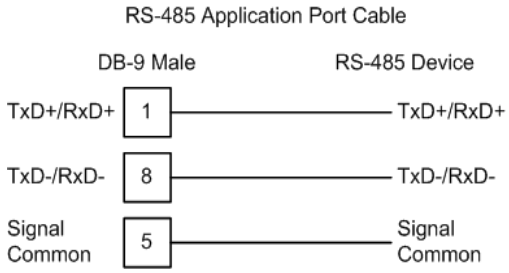
7.3.3 RS-422

The RS-422 interface requires a single four or five wire cable. The Common connection is optional, depending on the RS-422 network devices used. The cable required for this interface is shown below:



7.3.4 RS-485 Application Port(s)

The RS-485 interface requires a single two or three wire cable. The Common connection is optional, depending on the RS-485 network devices used. The cable required for this interface is shown below:



Note: Terminating resistors are generally not required on the RS-485 network, unless you are experiencing communication problems that can be attributed to signal echoes or reflections. In these cases, installing a 120-ohm terminating resistor between pins 1 and 8 on the module connector end of the RS-485 line may improve communication quality.

RS-485 and RS-422 Tip

If communication in the RS-422 or RS-485 mode does not work at first, despite all attempts, try switching termination polarities. Some manufacturers interpret + and -, or A and B, polarities differently.