



## **MVI56E-MNET / MNETXT**

**ControlLogix<sup>®</sup> Platform**

**Modbus TCP/IP Interface Module**

## Your Feedback Please

We always want you to feel that you made the right decision to use our products. If you have suggestions, comments, compliments or complaints about our products, documentation, or support, please contact us.

## How to Contact Us

**ProSoft Technology, Inc.**

+1 (661) 716-5100

+1 (661) 716-5101 (Fax)

[www.prosoft-technology.com](http://www.prosoft-technology.com)

[ps.support@belden.com](mailto:ps.support@belden.com)

MVI56E-MNET / MNETXT User Manual

For Public Use.

October 13, 2025

ProSoft Technology<sup>®</sup>, ProLinx<sup>®</sup>, inRAX<sup>®</sup>, ProTalk<sup>®</sup>, and RadioLinx<sup>®</sup> are Registered Trademarks of ProSoft Technology, Inc. All other brand or product names are or may be trademarks of, and are used to identify products and services of, their respective owners.

## Content Disclaimer

This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither ProSoft Technology nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein. Information in this document including illustrations, specifications and dimensions may contain technical inaccuracies or typographical errors. ProSoft Technology makes no warranty or representation as to its accuracy and assumes no liability for and reserves the right to correct such inaccuracies or errors at any time without notice. If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us.

No part of this document may be reproduced in any form or by any means, electronic or mechanical, including photocopying, without express written permission of ProSoft Technology. All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components. When devices are used for applications with technical safety requirements, the relevant instructions must be followed. Failure to use ProSoft Technology software or approved software with our hardware products may result in injury, harm, or improper operating results. Failure to observe this information can result in injury or equipment damage.

Copyright © 2025 ProSoft Technology, Inc. All Rights Reserved.



### For professional users in the European Union

If you wish to discard electrical and electronic equipment (EEE), please contact your dealer or supplier for further information.



**Warning** – Cancer and Reproductive Harm – [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

## Agency Approvals and Certifications

Please visit our website: [www.prosoft-technology.com](http://www.prosoft-technology.com)

## Open-Source Information

### Open-Source Software used in the product

The product contains, among other things, Open-Source Software files, as defined below, developed by third parties and licensed under an Open-Source Software license. These Open-Source Software files are protected by copyright. Your right to use the Open-Source Software is governed by the relevant applicable Open-Source Software license conditions. Your compliance with those license conditions will entitle you to use the Open-Source Software as foreseen in the relevant license. In the event of conflicts between other ProSoft Technology, Inc. license conditions applicable to the product and the Open-Source Software license conditions, the Open-Source Software conditions shall prevail. The Open-Source Software is provided royalty-free (i.e. no fees are charged for exercising the licensed rights). Open-Source Software contained in this product and the respective Open-Source Software licenses are stated in the module webpage, in the link Open-Source.

If Open-Source Software contained in this product is licensed under GNU General Public License (GPL), GNU Lesser General Public License (LGPL), Mozilla Public License (MPL) or any other Open-Source Software license, which requires that source code is to be made available and such source code is not already delivered together with the product, you can order the corresponding source code of the Open-Source Software from ProSoft Technology, Inc. - against payment of the shipping and handling charges - for a period of at least 3 years since purchase of the product. Please send your specific request, within 3 years of the purchase date of this product, together with the name and serial number of the product found on the product label to:

ProSoft Technology, Inc.  
Director of Engineering  
9201 Camino Media, Suite 200  
Bakersfield, CA 93311  
USA

### Warranty regarding further use of the Open-Source Software

ProSoft Technology, Inc. provides no warranty for the Open-Source Software contained in this product, if such Open-Source Software is used in any manner other than intended by ProSoft Technology, Inc. The licenses listed define the warranty, if any, from the authors or licensors of the Open-Source Software. ProSoft Technology, Inc. specifically disclaims any warranty for defects caused by altering any Open-Source Software or the product's configuration. Any warranty claims against ProSoft Technology, Inc. in the event that the Open-Source Software contained in this product infringes the intellectual property rights of a third party are excluded. The following disclaimer applies to the GPL and LGPL components in relation to the rights holders:

"This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License and the GNU Lesser General Public License for more details."

For the remaining Open-Source components, the liability exclusions of the rights holders in the respective license texts apply. Technical support, if any, will only be provided for unmodified software.

# 1 Start Here

To get the most benefit from this User Manual, you should have the following skills:

- **Rockwell Automation® RSLogix™ software:** launch the program, configure ladder logic, and transfer the ladder logic to the processor
- **Microsoft Windows:** install and launch programs, execute menu commands, navigate dialog boxes, and enter data
- **Hardware installation and wiring:** install the module, and safely connect Modbus TCP/IP and ControlLogix devices to a power source and to the MVI56E-MNET module's application port(s)

## 1.1 What's New?

MVI56E products are **backward compatible** with existing MVI56 products, ladder logic, and module configuration files already in use. Easily swap and upgrade products while benefiting from an array of new features designed to improve interoperability and enhance ease of use.

- **ProSoft Configuration Builder (PCB):** New Windows software for diagnostics, connecting via the module's Ethernet port or CIPconnect®, to upload/download module configuration information and access troubleshooting features and functions.
- **ProSoft Discovery Service (PDS):** Utility software to find and display a list of MVI56E modules on the network and to temporarily change an IP address to connect with a module's web page.
- **CIPconnect-enabled:** Allows PC-to-module configuration and diagnostics from the Ethernet network through a ControlLogix 1756-ENBT EtherNet/IP™ module.
- **Personality Module:** An industrial compact flash memory card storing the module's complete configuration and Ethernet settings, allowing quick and easy replacement.
- **LED Scrolling Diagnostic Display:** 4-character, alphanumeric display, providing standard English messages for status and alarm data, and for processor and network communication status.
- **XT series for Extreme Environments:** The MVI56E-MNETXT is part of the new XT series, designed to work at extreme temperatures and in harsh or caustic environments. XT series modules operate over a wider temperature range than the standard MVI56E series. The XT series also comes with conformal coating to protect module components from corrosive environmental elements.

## 1.2 System Requirements

The MVI56E-MNET module requires the following minimum hardware and software components:

- Rockwell Automation ControlLogix® processor (firmware version 10 or higher), with compatible power supply, and one free slot in the rack for the MVI56E-MNET module. The module requires 800 mA of available 5 VDC power and 3 mA of available 24 VDC power.



- Rockwell Automation RSLogix 5000 programming software
  - Version 16 or higher required for Add-On Instruction
  - Version 15 or lower must use Sample Ladder, available from [www.prosoft-technology.com](http://www.prosoft-technology.com)
- Rockwell Automation RSLinx® communication software version 2.51 or higher
- ProSoft Configuration Builder (PCB) (included)
- ProSoft Discovery Service (PDS) (included in PCB)
- Pentium® II 450 MHz minimum. Pentium III 733 MHz (or better) recommended
- Supported operating systems:
  - Microsoft Windows 10
  - Microsoft Windows 7 Professional (32-or 64-bit)
  - Microsoft Windows XP Professional with Service Pack 1 or 2
- 128 Mbytes of RAM minimum, 256 Mbytes of RAM recommended
- 100 Mbytes of free hard disk space (or more based on application requirements)

**Note:** The Hardware and Operating System requirements in this list are the minimum recommended to install and run software provided by ProSoft Technology®. Other third party applications may have different minimum requirements. Refer to the documentation for any third party applications for system requirements.

**Note:** You can install the module in a local or remote rack. For remote rack installation, the module requires EtherNet/IP or ControlNet communication with the processor.

### 1.3 Package Contents

The following components are included with your MVI56E-MNET module, and are all required for installation and configuration.

**Important:** Before beginning the installation, please verify that all of the following items are present.

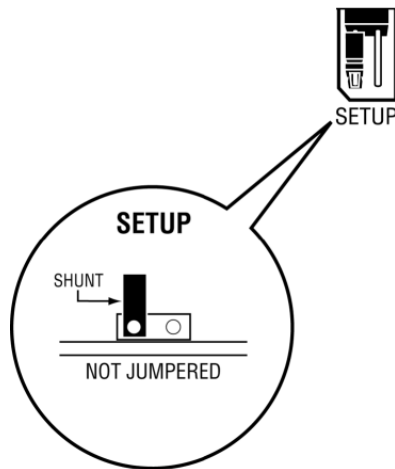
Qty.	Part Name	Part Number	Part Description
1	MVI56E-MNET / MNETXT Module	MVI56E-MNET / MNETXT	Modbus TCP/IP Interface Module

If any of these components are missing, please contact ProSoft Technology Support for replacement parts.

## 1.4 Setting Jumpers

The Setup Jumper acts as "write protection" for the module's firmware. In "write protected" mode, the Setup pins are not connected, and the module's firmware cannot be overwritten. The module is shipped with the Setup jumper OFF. Do not jumper the Setup pins together unless you are directed to do so by ProSoft Technical Support (or you want to update the module firmware).

The following illustration shows the jumper configuration with the Setup Jumper OFF.



**Note:** If you are installing the module in a remote rack, you may prefer to leave the Setup pins jumpered. That way, you can update the module's firmware without requiring physical access to the module.

Security considerations:

Leaving the Setup pin jumpered leaves the module open to unexpected firmware updates.

You should consider segmenting the data flow for security reasons. Per IEC 62443-1-1, you should align with IEC 62443 and implement segmentation of the control system. Relevant capabilities are firewalls, unidirectional communication, DMZ. Oil and Gas customers should also see DNVGL-RP-G108 for guidance on partitioning.

You should practice security by design, per IEC 62443-4-1, including layers of security and detection. The module relies on overall network security design, as it is only one component of what should be a defined zone or subnet.

## 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 MVI56E-MNET module. Refer to your Rockwell Automation product documentation for installation instructions.

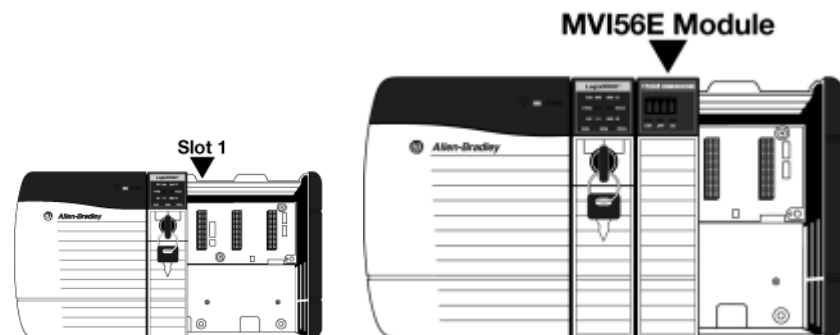
**Warning:** You must follow all safety instructions when installing this or any other electronic devices. Failure to follow safety procedures could result in damage to hardware or data, or even serious injury or death to personnel. Refer to the documentation for each device you plan to connect to verify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

After you have checked the placement of the jumpers, insert the MVI56E-MNET into the ControlLogix chassis. Use the same technique recommended by Rockwell Automation to remove and install ControlLogix modules.

You can install or remove ControlLogix system components while chassis power is applied and the system is operating. However, please note the following warning.

**Warning:** When you insert or remove the module while backplane power is on, an electrical arc can occur. An electrical arc can cause personal injury or property damage by sending an erroneous signal to your system's actuators. This can cause unintended machine motion or loss of process control. Electrical arcs may also cause an explosion when they happen in a hazardous environment. 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 Align the module with the top and bottom guides, and then slide it into the rack until the module is firmly against the backplane connector.



- 2 With a firm, steady push, snap the module into place.
- 3 Check that the holding clips on the top and bottom of the module are securely in the locking holes of the rack.
- 4 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.
- 5 Turn power ON.

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

**Note:** When using the MVI56EMNETXT, you must use the 1756-A5XT or 1756-A7LXT chassis. In these chassis, modules are spaced further apart than in standard ControlLogix chassis. Blank spacers are inserted between active modules.

## 1.6 Importing the Sample Add-On Instruction

**Note:** This section only applies if your processor is using RSLogix 5000 version 16 or higher. If you have an earlier version, please see Using the Sample Program (page 146).

### Before You Begin

Two Add-On Instructions are provided for the MVI56E-MNET module. The first is required for setting up the module; the second is optional.

Copy the files from [www.prosoft-technology.com](http://www.prosoft-technology.com). Save them to a convenient location in your PC, such as *Desktop* or *My Documents*.

File Name	Description
MVI56EMNET_AddOn_Rung_vXXX.L5X	L5X file containing Add-On Instruction, user defined data types, controller tags and ladder logic required to configure the MVI56E-MNET module
MVI56EMNET_Optional_AddOn_Rung_vXX X.L5X	Optional L5X file containing additional Add-On Instruction with logic for changing Ethernet configuration and clock settings.

## 5 Reference

### 5.1 Product Specifications

The MVI56E Modbus TCP/IP Client/Server Communication Module allows Rockwell Automation ControlLogix processors to interface easily with other Modbus compatible devices.

Compatible devices include Modicon Programmable Automation Controllers (PACs), as well as a wide variety of instruments and devices. A 5000-word register space in the module exchanges data between the processor and the Modbus TCP/IP network.

The MVI56E-MNET and MVI56E-MNETXT are functionally the same. The MVI56E-MNET is designed for standard process applications. The MVI56E-MNETXT is designed for the Logix-XT™ control platform, allowing it to operate in extreme environments and at higher operating temperatures. It has a conformal coating to protect it from harsh or caustic conditions.

#### 5.1.1 General Specifications

- Backward compatible with previous MVI56-MNET versions
- Single-slot 1756 ControlLogix backplane compatible
- 10/100 Mbps auto crossover detection Ethernet configuration and application port
- User-definable module data memory mapping of up to 5000 16-bit registers
- CIPconnect-enabled network configuration and diagnostics monitoring using ControlLogix 1756-ENxT and 1756-CNB modules and EtherNet/IP pass-through communication
- ProSoft Configuration Builder (PCB) software supported, a Windows-based graphical user interface providing simple product and network configuration
- Sample ladder logic and Add-On Instructions (AOI) are used for data transfer between module and processor
- 4-character, alpha-numeric, scrolling LED display of status and diagnostics data in plain English – no cryptic error or alarm codes to decipher
- ProSoft Discovery Service (PDS) software used to locate the module on the network and assign temporary IP address
- Personality Module - a non-volatile, industrial-grade Compact Flash (CF) card used to store network and module configuration, allowing quick in-the-field product replacement by transferring the CF card

#### 5.1.2 Modbus TCP/IP Specifications

- ProSoft Technology's Modbus TCP/IP implementation (MNET) includes both Client (Master) and server (slave) capabilities
- Modbus data types overlap in the module's memory database, so the same data can be conveniently read or written as bit-level or register-level data.
- Configurable floating-point data movement is possible, including support for Enron or Daniel® floating-point formats

**Modbus TCP/IP Server (Slave)**

- Supports ten independent server connections for Service Port 502 (MBAP)
- Supports ten independent server connections for Service Port 2000 (Encapsulated)
- Accepts Modbus Function Codes 1, 2, 3, 4, 5, 6,7, 8, 15, 16, 17, 22 and 23
- Module data can be derived from other Modbus server devices on the network through the Client or from the ControlLogix processor

**Modbus TCP/IP Client (Master)**

- Actively reads data from and writes data to Modbus TCP/IP devices, using MBAP or Encapsulated Modbus message formats
- Transmit Modbus Function Codes 1, 2, 3, 4, 5, 6, 7, 15, and 16
- Offers one Client connection with up to 100 commands to talk to multiple servers
- ControlLogix processor can be programmed to use special functions to control the activity on the Client by actively selecting commands to execute from the command list (Command Control) or by issuing commands directly from the ladder logic (Event Commands)

**Status Data**

- Error codes, counters, and module status available from module memory through the server, through the Client, or through the ladder logic and controller tags in RSLogix™ 5000

**5.1.3 Hardware Specifications**

<b>Specification</b>	<b>Description</b>
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	30 g operational 50 g non-operational Vibration: 5 g from 10 Hz 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, Application Port Setting, Port Status, and Error Information
<b>Debug/Configuration/Application Ethernet port (E1)</b>	
Ethernet Port	10/100 Base-T, RJ45 Connector, for CAT5 cable Link and Activity LED indicators Auto-crossover cable detection