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MVI69E-GSC

CompactLogix™ or MicroLogix™ Platform

Generic ASCII Serial Communication Module

December 12, 2022



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MVI69E-GSC User Manual For Public Use.

December 12, 2022

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North America Warnings

- A This Equipment is Suitable For Use in Class I, Division 2, Groups A, B, C, D or Non-Hazardous Locations Only.
- **B** Warning Explosion Hazard Substitution of Any Components May Impair Suitability for Class I, Division 2.
- **C** Warning Explosion Hazard Do Not Disconnect Equipment Unless Power Has Been Switched Off Or The Area is Known To Be Non-Hazardous.
- **D** The subject devices are powered by a Switch Model Power Supply (SMPS) that has regulated output voltage of 5 VDC.

ATEX/IECEx Warnings and Conditions of Safe Usage:

Power, Input, and Output (I/O) wiring must be in accordance with the authority having jurisdiction.

- A Warning Explosion Hazard When in hazardous locations, turn off power before replacing or wiring modules.
- **B** Warning Explosion Hazard Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.
- **C** These products are intended to be mounted in an ATEX/IECEx Certified, tool-secured, IP54 enclosure. The devices shall provide external means to prevent the rated voltage being exceeded by transient disturbances of more than 40%. This device must be used only with ATEX certified backplanes.
- **D** Before operating the reset switch, be sure the area is known to be non-hazardous.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Agency Approvals & Certifications

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

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1 Start Here

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

- Studio 5000 Logix Designer[®]: 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 and CompactLogix or MicroLogix devices to a power source and to the MVI69E-GSC module's application port(s)

1.1 System Requirements

The MVI69E-GSC module requires the following minimum hardware and software components:

 Rockwell Automation CompactLogix or MicroLogix 1500-LRP[®] processor (firmware version 10 or higher), with compatible power supply and one free slot in the rack, for the MVI69E-GSC module.

Important: The MVI69E-GSC module has a power supply distance rating of 4 (L43 and L45 installations on first 2 slots of 1769 bus). It consumes 500 mA at 5 VDC.

Important: For 1769-L23x processors, please make note of the following limitation: 1769-L23E-QBFC1B = 450 mA at 5 VDC (No MVI69E module can be used with this processor.)

- The module requires 500 mA of available 5 VDC power
- Rockwell Automation Studio 5000 Logix Designer version 16 or higher
- 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
 - Microsoft Windows Vista
 - Microsoft Windows 2000 Professional with Service Pack 1, 2, or 3
 - Microsoft Windows Server 2003
- 128 Mbytes of RAM minimum, 256 Mbytes of RAM recommended
- 100 Mbytes of free hard disk space (or more based on application requirements)
- 256-color VGA graphics adapter, 800 x 600 minimum resolution

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.

1.2 Package Contents

The following components are included with your MVI69E-GSC 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	MVI69E-GSC Module	MVI69E-GSC	Generic ASCII Serial Communication Module
2	Adapter Cable	Cable #14	RJ45 to DB9 Male Adapter cable. For DB9 connection to module's serial application ports
2	Screw Terminal Adapter	1454-9F	DB9 female to 9-pin screw terminal. Used for RS422 or RS485 connections to Port 1 and 2 of the module

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

1.3 Setting Jumpers

When the module is manufactured, the port selection jumpers are set to RS-232. To use RS-422 or RS-485, you must set the jumpers to the correct position. The following diagram describes the jumper settings.



Note: Jumper pin placement on the circuit board may vary.

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. If an update of the firmware is needed, apply the Setup jumper to both pins.

The following illustration shows the MVI69E-GSC jumper configuration, with the Setup Jumper OFF.



1.4 Install the Module in the Rack

Make sure the processor and power supply are installed and configured before installing the MVI69E-GSC module. Refer to the Rockwell Automation product documentation for installation instructions.

Warning: Please 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 to be connected to verify that suitable safety procedures are in place before installing or servicing the device.

After you verify the jumper placements, insert the MVI69E-GSC into the rack. Use the same technique recommended by Rockwell Automation to remove and install CompactLogix or MicroLogix 1500-LRP modules.

Warning: This module is not hot-swappable! Always remove power from the rack before inserting or removing this module, or damage may result to the module, the processor, or other connected devices.

1 Align the module using the upper and lower tongue-and-groove slots with the adjacent module and slide forward in the direction of the arrow.



2 Move the module back along the tongue-and-groove slots until the bus connectors on the module and the adjacent module line up with each other.

3 Push the module's bus lever back slightly to clear the positioning tab and move it firmly to the left until it clicks. Ensure that it is locked firmly in place.



4 Close all DIN-rail latches.

5 Press the DIN-rail mounting area of the controller against the DIN-rail. The latches will momentarily open and lock into place.



2 Configuring the Module in RSLogix

To add the MVI69E-GSC module in Studio 5000, you must:

- 1 Create a new project in Studio 5000.
- 2 Add the module to the Studio 5000 project.
 - You can manually create the module using a generic 1769 profile, and then manually configure the module parameters.
- **3** Download the *MVI69EGSC_AddOn_Rung.L5X* file from www.prosoft-technology.com.
- 4 Import the Add-On Instruction (the .L5X file) into Studio 5000.

The .L5X file contains the Add-On Instruction, user-defined data types, controller tags and ladder logic required to configure the MVI69E-GSC module.

2.1 Creating the Module in an Studio 5000 Project

In a Studio 5000 project, you can manually create and configure the module using a generic 1769 profile.

1 Expand the **I/O CONFIGURATION** folder in the Project tree. Right-click the appropriate communications bus and choose **New MODULE**.

SI/O Configuration Backplane, Compacting 1769-L35E My_C 1769-L35E Ethernet Table Ethernet CompactBus Loc	Logix Contro met P	System oller Port LocalENB	
	1	New Module	
		Discover Modules	
	Ж	Cut	Ctrl+X
	Ð	Сору	Ctrl+C
	8	Paste	Ctrl+V
		Delete	Del
		Cross Reference	Ctrl+E
		Properties	Alt+Enter
		Print	•

This opens the Select Module Type dialog box.

:

2 In the Select Module Type dialog, select the **1769-MODULE** and click on the **CREATE** button.

Module Type Category Filters Analog Communication	Module Type Ve	ndor Filters
Digital Uther Specialty	Advanced Micro Lontrols Inc. Hardy Process Solutions Prosoft Technology Spectrum Controls, Inc.	(AMCI)
Catalog Number Description 1769-MODULE Generic 1769 Module	Vendor Allen-Bradle	Category ny Other
1 of 58 Module Types Found		Add to Favorites

3 Set the *Module Properties* values as follows:

Parameter	Value
Name	Enter a module identification string. Example: MVI69EGSC
Description	Enter a description for the module. Example: ProSoft communication module for Serial Modbus communications.
Comm Format	Select DATA-INT
Slot	Enter the slot number in the rack where the MV69E-GSC module is installed.
Input Assembly Instance	101
Input Size	60
Output Assembly Instance	100
Output Size	60
Configuration Assembly Instance	102
Configuration Size	0

	1769 MODULE Canada 1	700 Madula					
arent:	Local	1/63 Module	Connection Par	ameters Assembly Instance:	Size:		
lame:	MVI69EGSC		Input:	101	60	•	(16-bit)
escription:	I	^	Output:	100	60	•	(16-bit)
		~	Configuration:	102	0	÷	(16-bit)
omm Format	Data - INT	\sim					
lot:	1						

4 On the *Connection* tab, set the **REQUESTED PACKET INTERVAL** value for your project and click **OK**. A value of **10.0** ms or more is recommended.

Module Properties Report: Local:1 (1769-MODULE 1.1)
General Connection
<u>R</u> equested Packet Interval (RPI): 5.0 ≑ ms (2.0 - 750.0 ms)
Major Fault On Controller If Connection Fails While in Run Mode
Module Fault
Status: Offline OK Cancel Apply Help

The MVI69E-GSC module is now visible in the I/O Configuration tree.



2.2 Importing the Add-On Instruction

Note: This section only applies if you are using Studio 5000 version 16 or higher. If you are configuring the MVI69E-GSC module with an earlier version of Studio 5000, please refer to Adding the Module to an Existing CompactLogix Project (page 22).

The following file is required before you start this procedure. You can download it from www.prosoft-technology.com.

File Name	Description
MVI69EGSC_AddOn_Rung.L5X	File containing Add-On instruction, user defined data types, data objects and ladder logic required to set up the MVI69E- GSC module

2.2.1 Importing the Add-On Instruction

- 1 In RSLogix, expand the Tasks > Main Task > Main Program folder.
- 2 Double-click on the *MainRoutine* icon.
- 3 In an empty rung, right-click the mouse button to open a shortcut menu.
- 4 On the shortcut menu, choose **IMPORT RUNGS...**



5 Select the *MVI69EGSC_AddOn_Rung_v1_x.L5X* file. The Add-On Instruction file is located at <u>www.prosoft-technology.com</u>. Click on the **IMPORT** button.

💰 Import Rungs						X
Look jn:	MVI69E-GSC	•	G	۵ 🕫 🌶	-	
Recent Places	Name	^ AddOn_Rung_v1_6.L5X		Date modi 1/21/2020	fied 7:39 AM	Type Logix
Desktop						
Libraries						
Computer						
	•					Þ
Network	File <u>n</u> ame:	MVI69GSC_AddOn_Rung_v1_6		•	lmp	ort
	Files of type:	Logix Designer XML Files (*.L5X)		*	Car	ncel
	Files <u>c</u> ontaining:	H Rungs		*	He	lp
	Int <u>o</u> :	🚺 MainRoutine (MainProgram)		-		
	Overwrite Selec	sted Rungs				.4

6 The following window displays the controller tags to be created during the import procedure. Make sure the slot number reference (Local:**x**) is correct.

💽 Import	t Configuration											×
<u>7</u> <u>7</u>	Find: Find Within: Final Name	•	A A Er	nd/Replace								
Import Co	Import Content:											
- 🚑	MainTask	Configure Tag References										
	🚭 MainProgram		Import Name		Operation		Final Name	Δ	1	Alias For	Data Type	Description
-0	MainRoutine (Rungs)	1	A0169GSC		Create		A0I69GSC		•••		A0169GSC	
*		1	GSC		Create		GSC		•••		GSCModuleDel	
- Dig	Add-On Instruction	۳ 🖞	Local:1:1		Undefined		Local:1:1					
	Data Types	ال 🍸	Local:1:0		Undefined		Local:1:0					
		•			111							Þ
•	m Þ											
										OK	Cancel	Help
One or m	ore tags in this collection requires at	tention.										

7 When the import is complete, the new rung with the Add-On instruction is visible as shown in the following illustration.

Controller Organizer 🛛 🗸 🕈 🗙	HE HE HE and the and t	
Controller My_Controller	Add-On for Add-On for MVR9E-GSC and MVR9E-GSC modules Add-On for MVR9E-GSC modules Add-On for MVR9E-GSC modules Add-On for MVR9E-GSC and MVR9E	ŕ
A MainTask A MainProgram Program Tags MinBrouture Unscheduled Programs / Phases Monormal Control Phases	e AOBSOSC AOBSOSC e Connection_inut Locat110bta connection_output Locat120bta oSC OSC	ш
L G Ungrouped Axes Add-On Instructions G A01969SC ADJ Parameters and Local Tags D Logic Prescan	(End)	
Type Ladder Diagram (Main)	MainRoutine* MainProgram	+

The procedure imports new user defined data types, data objects and the Add-On instruction.



8 Save and download the project into the processor.

2.2.2 Adding Multiple Modules in the Rack (Optional)

Important: If your application requires more than one MVI69E-GSC module in the same project, follow the steps below.

1 In the I/O Configuration folder, right-click the mouse button to open a shortcut menu, and then select **New MODULE**.



2 Under the *Module Type Vendor Filters* section, select **ProSoft Technology**. Then select the **MVI69** option and click the **CREATE** button.

Note: You can also add the module as a 'Generic 1769 module', as described in *Creating the Module in an Studio 5000 Project* on page 12.

Enti	Module Discovery Favor	ivpa	ear Filters		Hide Filters 🕱
V	Module Ty	pe Category Filters		Module Type Vendor Fil	ters
 <	Analog Communication Digital Other Specialty		Allen-Bradley Advanced M Advanced M Hardy Proces Prosoft Tech Spectrum Co	icro Controls Inc. (AMCI) ss Solutions nology ntrols, Inc.	
-	Catalog Number	Description		Vendor	Category
	MV169	MVI 1769 Family		Prosoft Technol	Communication
	MVI69E-MBS	Modbus Serial Enhanced Cor	nmunication Module	Prosoft Technol	Communication
	MVI69E-MBTCP	Modbus TCP/IP Enhanced C	ommunication Module	Prosoft Technol	Communication
	MVI69L-MBS	Modbus Serial Lite Communic	ation Module	Prosoft Technol	Communication
	MVI69L-MBTCP	Modbus TCP/IP Lite Commun	nication Module	Prosoft Technol	Communication
∢ [III			•
5 of !	58 Module Types Found				Add to Favorites

3 In the *New Module* dialog, enter the *Name*, *Description*, and *Slot* options for your application, then click on the *Connection* tab.

New Module	And Description of the	on See	Same Colores	X
General* Connec	tion Vendor			
Type:	M∨l69 M∨l 1769 Family			
Vendor:	Prosoft Technology			
Parent:	Local			
Na <u>m</u> e:	MVI69E_GSC_2	Sl <u>o</u> t	2 🔻	
Descri <u>p</u> tion:				
-Module Definitio	on			
Series:	A Change			
Revision:	1.001			
Electronic Keyi	ing: Compatible Module			
Connection:	Output			
Data Format:	Integer			
I/O Table Sizes	s: 60/60 words			
Status: Creating			OK Cancel	Help

4 Select the *Request Packet Interval* value for scanning the I/O on the module. This value represents the minimum frequency the module will handle scheduled events. This value should not be set to less than 2 millisecond. Values between 2 and 10 milliseconds should work with most applications.

New Module	×
General* Connection Vendor	
Requested Packet Interval (RPI): 2.0 ms (1.0 - 750.0)	
🔲 Inhibit Module	
Major Fault On Controller If Connection Fails While in Run Mode	
Module Fault	
Status: Creating OK Cancel H	lelp

5 Click OK to confirm. The new module is now visible in the I/O Configuration:



- 6 Expand the *Tasks* folder, and then expand the *MainTask* folder.
- 7 On the *MainProgram* folder, right-click the mouse button to open a shortcut menu. On the shortcut menu, choose **New Routine**.
- 8 In the *New Routine* dialog box, enter the name and description of your routine, and then click **OK**.
- **9** Select an empty rung in the new routine, and then right-click the mouse button to open a shortcut menu. On the shortcut menu, choose **IMPORT RUNG...**



10 Select the *MVI69EGSC_AddOn_Rung.L5X* file, and click **IMPORT**.

💰 Import Rungs					×
Look jn:	🐌 MVI69E-GSC	•	G	🏂 📂 🛄 🕇	
Ca.	Name	*		Date modified	Type
Recent Places	MVI69GSC_	AddOn_Rung_v1_6.L5X		1/21/2020 7:39 AM	Logix
Desktop					
Libraries					
	•	III			Þ
Network	File <u>n</u> ame:	MVI69GSC_AddOn_Rung_v1_6		- I <u>m</u>	port
Hetwork	Files of type:	Logix Designer XML Files (*.L5X)		- C	ancel
	Files containing:	H Rungs			lelp
	Int <u>o</u> :	🚺 MainRoutine (MainProgram)		T	
	🔲 O <u>v</u> erwrite Sele	cted Rungs			

- 11 This opens the **IMPORT CONFIGURATION** dialog box. Click the **TAGS** tab to show the controller tags in the AOI. You must edit the **FINAL NAME** column of the tags for the second module to make them unique.
- 12 Associate the I/O connection variables to the correct module in the corresponding slot number. The default values are Local:1:I and Local:1:O. You must edit these values if the card is placed in a slot location other than slot 1 (Local:1:x means the card is located in slot 1). Since the second card is placed in slot 2, change the FINAL NAME to Local:2:I and Local:2:O. Also, you can append a '_2' at the end of the FINAL NAME of 'AOI69_GSC' and 'GSC' arrays as shown below.

Import Configuration			×
Find:	✓ A A Eind/Replace		
Import Content:			
- 🤯 MainTask	Configure Tag References		
MainProgram	Import Name	Operation 🕞 Final Name 🗠	Alias For Data Type Description
References	A0169GSC	Use Existing A0169GSC	A0169GSC
	gsc	Use Existing GSC	GSCModuleDel
- 🔄 Add-On Instruction	Local:1:I	Use Existing 🕞 Local:2:1	PS:MVI69_M
Data Types	* 🖞 Local:1:0	Use Existing 📊 Local:2:0	PS:MVI69_M
	4	111.	,
4			
			OK Cancel Help
Ready			

13 Click OK to confirm.



14 The setup procedure is now complete. Save and download the project to the processor.

2.3 Downloading the Sample Program to the Processor

Note: The key switch on the front of the CompactLogix processor must be in the REM or PROG position.

- 1 If you are not already online to the processor, open the **COMMUNICATIONS** menu, and then choose **DOWNLOAD**. *RSLogix* will establish communication with the processor.
- 2 When communication is established, *RSLogix* will open a confirmation dialog box. Click the **DOWNLOAD** button to transfer the sample program to the processor.

Downloa	ıd	X
1	Download to the controller: Name: MV169 Type: 1769-L35E/A CompactLogix5335E Controller Path: AB_DF1-2 Security: (None)	
	Download Cancel Help	

- **3** *RSLogix* will compile the program and transfer it to the processor. This process may take a few minutes.
- 4 When the download is complete, *RSLogix* will open another confirmation dialog box. Click **OK** to switch the processor from *PROGRAM* mode to *RUN* mode.

RSLogix	5000
⚠	Done downloading, Change controller mode back to Remote Run?
	Yes No

Note: If you receive an error message during these steps, refer to your *RSLogix* documentation to interpret and correct the error.

3 Optional AOI

The Optional AOI supports the following optional features:

- Read/Write IP Address
- Read/Write Date Time

Using controller tags, the Optional AOI allows you to request and set the module's IP address, date, and time. These optional features are not supported by the MVI69-GSC legacy module.

Note: The Optional AOI may be added to an existing legacy MVI69-GSC application to add the new functionality during a module replacement.

3.1 Importing the Optional AOI

1 Add a new rung to the existing processor ladder logic. Right-click on the new rung and select *Import Rungs…*

围墙	8 E	· · · · · · · · · · · · · · · · · · ·		
0	ў Ф	Cuj Rung Copy Rung Paste Delete Rung Add Rung	Ctrl+X Ctrl+C Ctrl+V Del Ctrl+R	Add-On for the MM969-GSC module. AD890SC Add On for the MM959 SC module. AD890SC AD890SC Connection_Ipput Local:11.Dtata Connection_Ipput Local:10.Dtata GSC GSC GSC
(End)		Edit <u>R</u> ung Comment	Ctrl +D	
		Import Rungs		
		Export Rungs		

2 Select the Optional AOI file: *MVI69E_GSC_Optional_AddOn_Rung.L5X*

💰 Import Rung	
G v Local Disk (C:) + temp +	- + Search temp
Organize New folder	II - 🗌 🔞
🚖 Favorites 🔷 Name	Date modified Type
Desktop 📙 NEW GSCs	11/12/2019 5:16 PM File folder
Downloads MVI69E_GSC_Optional_AddOn_Rung_v1_0.L5X	11/19/2019 2:49 PM Logix Designer X
 Recent Places Libraries Documents Music Pictures Videos Computer Local Disk (C:) 	
🙀 Shared Folders (\\	
▼	•
File name: MVI69E_GSC_Optional_AddOn_Rung_v1_01.5X	✓ Logix Designer XML Files (*. ✓ Open Cancel

3 At the *Import Configuration* window, select the *Operation* parameter to **CREATE**. Then click **OK**.

Import Configuration - MVI69E_GSC_Optional_A	IdOn_Rung_v1_0.L5X
주 또 Find:	🕰 Find/Replace
Import Content:	
- Configure	ung Properties
MainProgram Imported Imported Rungs:	1
References Operation	Create after last Runq
- I ags - II ags - III Add-On Instructions	configured in the References folders
- I Data Types - I Errors/Warnings Routine I	roperties
Name:	MainRoutine
Descrip	uuri:
	T. C.
Type:	🗎 Ladder Diagram
In Proc	am: 🕞 MainProgram
Preserve existing tag values in offline project	OK Cancel Help
Ready	

4 The imported AOI rung is now in place.

0	Add-On for the MVB9-GSC module.
	Connection_Output Local:1:0.Data GSC GSC MVI89E-GSC Optional Add-On Ethernet/Clock. -AOI89E GSC_Optional
1	MVI89E-GSC Optional Add-Optional Add-Optiona
(End)	

3.2 Setting up the Optional AOI

1 Click on the *ReadEthernetMSG* icon to configure the message route:

MVl69E-GSC Optional Add-On Ethemet/Clock						
A0/69EG	SC Ontional					
MVI69E-GSC Optional AOI69EGSC_Optional MVI69EGSCEthernet MVI69EGSCClock ReadEthernetMSG WriteEthernetMSG ReadClockMSG WriteClockMSG	Add-On Ethernet/Clock. AOI69EGSC_Optional MVI69EGSCEthernet MVI69EGSCClock ReadEthernetMSG WriteEthernetMSG ReadClockMSG WriteClockMSG					

2 In the *Message Configuration* dialog, under the *Communication* tab, select the **BROWSE** button.

Message Configuration - ReadEthernet	MSG		×
Configuration Communication Tag			
Path:		Brows	e
🔿 Broadcast 🔹 💌			
Communication Method CIP DH+ Channel: CIP With Source ID Source Link:	IAI → Des 0 → Des	tination Link: 0 tination Node: 0	(Octal)
Connected	Cache Connections	€ Large	Connection
O Enable O Enable Waiting	O Start O Dor	ne Done Length:	0
O Error Code: Extended Error Path: Error Text	Error Code:	Timed Out	¢
	OK Ca	ancel Apply	Help

3 Select the MVI69E-GSC module configured at the 1769 Bus and click at **OK**.



4 The module name is displayed at the path field. Select **OK** to confirm the route configuration.

onfiguration	Communi	cation* Tag						
Path:	GSC					Brow	se	
	GSC							
🔘 Broad	cast	-						
Communic	ation Metho	d						
() CIP	OH+	Channel:	'A'	💌 Destinati	on Link:	0	×	
CIP Wi Source	ith e ID	Source Link:	0	Destinati	on Node:	0	(Octa	al)
Conne	ected		Cache C	Connections	•	Large	Connection	
Enable	⊖ Enable	Waiting	O Start	O Done	Done	e Length:	0	
Error Code		Extended	Error Code:		Ti Ti	imed Out	•	
rror Path:								

- **5** Repeat the same procedure to set the route for the remaining messages:
 - WriteEthernetMSG
 - ReadClockMSG
 - WriteClockMSG

3.3 Synchronizing the IP Settings from the MVI69E-GSC to the Processor

This section covers the process to read the IP settings from the MVI69E-GSC, and implement them in the processor.

1 To trigger the IP settings read operation, set the MVI69EGSCEthernet.Read bit to '1'.

Name 📑 🛆	Value 🔸
⊟ MVI69EGSCEthernet	{}
-MVI69EGSCEthernet.Read	1

2 Once the operation is concluded, the tag will be automatically reset to '0'

Name 📰 🛆	Value 🔸
⊡ MVI69EGSCEthernet	{}
-MVI69EGSCEthernet.Read	0

3 The data is stored in the *MVI69EGSCEthernet.Config* tags (IP, Netmask, Gateway) as follows:

Name 📑	🛯 🛆 Value 🛛 🗲
HVI69EGSCEthernet.Config	{}
MVI69EGSCEthernet.Config.IP	{ }
HVI69EGSCEthernet.Config.IP[0]	192
	168
	0
HVI69EGSCEthernet.Config.IP[3]	250
MVI69EGSCEthernet.Config.Netmask	{}
HVI69EGSCEthernet.Config.Netmask[0]	255
⊞ MVI69EGSCEthernet.Config.Netmask[1]	255
⊞ MVI69EGSCEthernet.Config.Netmask[2]	255
⊞ MVI69EGSCEthernet.Config.Netmask[3]	0
HVI69EGSCEthernet.Config.Gateway	{}
■ MVI69EGSCEthernet.Config.Gateway[0]	192
■ MVI69EGSCEthernet.Config.Gateway[1]	168
■ MVI69EGSCEthernet.Config.Gateway[2]	0
MVI69EGSCEthernet.Config.Gateway[3]	1

3.4 Synchronizing the IP Settings from the Processor to the MVI69E-GSC

This section covers the process to send the IP settings from the processor to the MVI69E-GSC.

1 Populate the IP settings in the *MVI69EGSCEthernet.Config* tag:

Name 📰 🛆	Value 🔸
MVI69EGSCEthernet.Config	{}
HVI69EGSCEthernet.Config.IP	{}
MVI69EGSCEthernet.Config.IP[0]	192
■ MVI69EGSCEthernet.Config.IP[1]	168
MVI69EGSCEthernet.Config.IP[2]	0
MVI69EGSCEthernet.Config.IP[3]	250
HVI69EGSCEthernet.Config.Netmask	{}
MVI69EGSCEthernet.Config.Netmask[0]	255
MVI69EGSCEthernet.Config.Netmask[1]	255
MVI69EGSCEthernet.Config.Netmask[2]	255
MVI69EGSCEthernet.Config.Netmask[3]	0
HVI69EGSCEthernet.Config.Gateway	{}
MVI69EGSCEthernet.Config.Gateway[0]	192
MVI69EGSCEthernet.Config.Gateway[1]	168
MVI69EGSCEthernet.Config.Gateway[2]	0
E MVI69EGSCEthernet.Config.Gateway[3]	1

2 Set the *MVI69EGSCEthernet*. Write bit to '1' to trigger the IP settings write operation.

Na	me	== 스	Value	*
	-MVI69EGSCEthernet.Write			1

3 The *MVI69EGSCEthernet.Write* bit will be automatically reset once the operation is concluded.

Na	me 🔳 🗠	Value 🔸	I
	MVI69EGSCEthernet.Write	C	1

3.5 Reading the Date/Time from the MVI69E-GSC to the Processor

1 Toggle the *MVI69EGSCClock.Read* bit to '1' to toggle the date/time read operation.

Na	me 📑	Δ	Value	٠
	-MVI69EGSCClock.Read			1

2 The *MVI69EGSCClock.Read* bit will be automatically reset once the operation is concluded.

Name		_== A	Value	÷
-MVI69EG	SCClock.Read			0

3 The date and time read from the MVI69E-GSC is stored at the *MVI69EGSCClock.Config* tag.

Name 📰 🛆	Value 🔸
HVI69EGSCClock.Config	{}
MVI69EGSCClock.Config.Year	2019
MVI69EGSCClock.Config.Month	11
MVI69EGSCClock.Config.Day	9
MVI69EGSCClock.Config.Hour	11
MVI69EGSCClock.Config.Minute	21
MVI69EGSCClock.Config.Seconds	34

3.6 Writing the Date/Time from the Processor to the MVI69E-GSC

1 Populate date and time values in the *MVI69EGSCClock.Config* tag.

Name 💼 🛆	Value 🔸
⊟ MVI69EGSCClock.Config	{}
MVI69EGSCClock.Config.Year	2019
MVI69EGSCClock.Config.Month	11
■ MVI69EGSCClock.Config.Day	9
MVI69EGSCClock.Config.Hour	11
MVI69EGSCClock.Config.Minute	21
MVI69EGSCClock.Config.Seconds	34

2 Toggle the *MVI69EGSCClock.Write* bit to '1' to trigger the write date/time operation.

Name 💷 🛆	Value 🔸	Ι
-MVI69EGSCClock.Write	1	T

3 The *MVI69EGSCClock.Write* tag will be automatically reset once the write date/time operation is concluded.

Name			Value	٠
	MVI69EGSCClock.W	rite		0

4 Using ProSoft Configuration Builder

ProSoft Configuration Builder (PCB) provides a quick and easy way to manage module configuration files customized to meet your application needs. *PCB* is not only a powerful solution for new configuration files, but also allows you to import information from previously installed (known working) configurations to new projects.

4.1 Installing ProSoft Configuration Builder Software

You must install the *ProSoft Configuration Builder (PCB)* software to configure the module. You can download the newest version of *ProSoft Configuration Builder* from <u>www.prosoft-technology.com</u>.

Installing ProSoft Configuration Builder from the ProSoft website

- 1 Open your web browser and navigate to *http://www.prosoft-technology.com/pcb*
- 2 Download the latest version of *ProSoft Configuration Builder*.
- 3 Choose SAVE or SAVE FILE when prompted.
- 4 Save the file to your *Windows Desktop*, so that you can find it easily when you have finished downloading.
- 5 When the download is complete, locate and open the file, and then follow the instructions on your screen to install the program.

4.2 Setting Up the Project

ProSoft Configuration Builder's window consists of a tree view on the left, an information pane and a configuration pane on the right side of the window.

Untitled - ProSoft Configuration Builder				_		×
File View Project Tools Help						
📄 🖻 🖬 🕇 🗕 🖄 🐿 🔶 🐂 🥘 .						
⊡ Default Project		Name	Status			In
E Default Location	Å	Default Module	Please Select	Module	Туре	
Default Module		Unknown Product Line				
		Last Change:	Never			
		Last Download:	Never			
	#	Module Information				^
						~
	<					>
Ready			Default Modul	e CAP	NUM	SCRL:

4.2.1 Adding the MVI69E-GSC module to the project.

1 Right click **DEFAULT LOCATION** (which you can rename) and choose **ADD MODULE**.



2 Right-click **New Module** and choose **Choose Module Type**.



3 In the *Choose Module Type* dialog box, select **MVI69E** in the **PRODUCT LINE FILTER** area, and then select **MVI69E-GSC** as the **MODULE TYPE**. Click **OK**.

Choose N	lodule Type				2	×
		Produc	t Line Filter —			-
C AI	C PLX4000 C PLX5000 C MVI69E	 PLX6000 PLX30 MVI69L 	C MVI46 C MVI69 C PLX80	C MVI56 C MVI56E	C MVI71 C PTQ	
		Search	Module Type			
STEP :	1: Select Module T	ype	Module Definit	ion:		
MVI6 MVI6 MVI6	9E-MBS 9E-MBS 9E-MBTCP 9E-GEC	• •	Modbus Maste Module	r/Slave Comm	unication	
MVI6 Se	9E-GSC ction	Status	Actio	on Required		
4444	Wodule MBS Port 1 MBS Port 2 Vetwork Comment	Used Used Used Used Used	UnC	heck if Not Use	:d	
				ОК	Cancel	

4.3 Renaming PCB Objects

Notice that the contents of the information pane and the configuration pane changed when you added the module to the project.

Image: Default - ProSet Configuration Builder - - × File: Vew Project Tools Help - - - × Image: Default Acadion Image: Default Acadion - - - × Image: Default Acadion Image: Default Acadion Mid96-GSC Configured Mid96-GSC - - - × Image: Default Acadion Image: Default Acadion Image: Default Acadion Image: Default Acadion -								
File View Project Tools Help Image: Default Location	Untitled - ProSoft Configuration Builder				-		\times	
Image: Image	File View Project Tools Help							
Be Defuelt Project Name Satus Information ▲ Be Defuelt Indication MM68E-GSC GG66 MM68E-GSC MM68E-GSC Be Activation MM68E-GSC GG66 NU00E-GSC MM68E-GSC MM68E-GSC Be Activation MM68E-GSC GG66 Nu00E-GSC MM68E-GSC MM68E-GSC Be Activation GSC Part 2 Value OK Disabled Disabled GSC Part 2 Be Activation Module Information Value OK Disabled Value OK Disabled Comment Value OK Module Information V V V V # Module Information # Last Defundic: vever # Application Rev: # Configuration V V # Last Change: Never # Application Rev: # Module Configuration Module 2 Mm68E-GSC Module 2 Mm68E-GSC Module 2 Mm68E-GSC Backplane Eatl Count 0 [GSc Port 1] : NO 1 Module 2 Mm68E-GSC Module 2 Mm68E-GSC Backplane Eatl Count : 0 : 0 : 0 : 0 : 0 : 0 Backplane Eatl Count : 0 : 0 : 0 <t< td=""><td>🗋 🤌 🖶 🕂 🗖 🖄 🔶 🛧 🕅 🕘 .</td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	🗋 🤌 🖶 🕂 🗖 🖄 🔶 🛧 🕅 🕘 .							
Default Location WM695-GSC Configured MM695-GSC MM695 GSC Mm695 GSC Port 1 GSC Port 1 GSC Port 2	🖃 🧰 Default Project	Name	Status	Information			^	
Image: Second and the second and th	🗄 🖼 Default Location	✓ MVI69E-GSC	Configured	MVI69E-GSC				
Image: Module Module Value: OK Image: SC: Port 1 GSC Port 1 Value: OK Disabled Image: SC: Port 2 GSC Port 2 Value: OK Disabled Image: SC: Port 2 GSC Port 2 Value: OK Disabled Image: SC: Port 2 Notation Rev: * * Image: SC: Port 1 SC: Port 1 SC: Port 2 Image: SC: Port 1 SC: Port 1 SC: Port 1 Image: SC: Port 1 SC: Port 1 SC: Port 1 Image: SC: Port 1 SC: Port 1 SC: Port 1 Image: SC: Port 1 SC: Port 1 SC: Port 1 Image: SC: Port 1 SC: Port 1 SC: Port 1 Image: SC: Port 1 SC: Port 1 SC: Port 1 Image: SC: Port 1 S	HVI69E-GSC	MVI69E	GSE6	1.00				
implement GSC Port 1 Value OK Disabled implement GSC Port 2 Value OK Disabled implement Comment Value OK Disabled implement Comment Value OK Disabled implement Value OK Disabled	🖶 💑 Module	Module	Values OK					
GSC Part2 GSC Part2 Value OK Dashed Comment Value OK Value OK VATTCP Value OK I at fhamme Newer # Module Information # Last Owning Charge: Never # Application Rev: # Application Rev: # Application Rev: # Application Rev: # Module Configuration [wodule Configuration [wodule Information # Last Owning Charge: Never # Application Rev: # Application Rev: # Module Configuration [wodule Configuration [wodule Type: NVIG0E-GSC Module Type: NVIG0E-GSC <	🕀 💑 GSC Port 1	GSC Port 1	Values OK	Disabled				
Comment Let theme Configuration ist Change: New Y # Module Information # Module Information # Module Information # Module Information # Module Information # Last Change: New # # Configuration Module Configuration Module Configuration [Cost Pure : NV169E-65C Backplane Fail Count : 0 [Cost Pure : NV169E-65C Backplane Fail Count : 0 [Cost Pure : NV169E-65C Backplane Fail Count : 0 [Top Bits : 1 RTS off King RT Term Characters : 13 10 RT Term Characters :	GSC Port 2	GSC Port 2	Values OK	Disabled				
Initial Configuration Initial Configuration # Module Information # Last Change: Never # Module Information # Last Change: Never # Application Rev: # Go Rev: # Application Rev: # Go Rev: # Module Configuration [wodule] [wodule] Initial Configuration	🕀 💑 Comment	WATTCR	Values OK					
I set fhame Newer # Module Information * # Module Information * # Last Chamge: Never * # Configuration * Module Configuration * Module Name Number Sec * Backplane Fail Count : 0 * [GSE Port 1] * Type * Badd Rate * Stop Bits * Stop Bits * * * Rx Term Characters * Rx Term Characters * Rx Term Characters * * *	젊을 Ethernet Configuration	WATTOP	values OK					
I ad Change New # Module Information * # Module Information * # Last Download: Never * # Application Rev: * # Application Rev: * # Module configuration * Module Name: MVIS9E-SSC *								
<pre></pre>		Last Change	Never				~	
<pre># Module Information # Last Configuration # Last Deviloadia: Never # Dollard: Never # Module configuration Module Configuration Module None Module None Backplane Fail Count : 0 [GC Port 1] F The det : 100 [GC Port 1] [GC P</pre>		<					>	
<pre>book a Module Allowant Cold</pre>		# Module Information					^	
<pre># Last Change: Never # Last Download: Never # OS Rev: # DS Rev: # No.Address: # Configuration [module configuration [module configuration [module Numese-osc Module Rame: NVIGE-osc Module Rame: NVIGE-osc Backplane Fail Count : 0 [cost port 1] Fabled : No Type : 10 Badd Rate : 19200 Parity : None Badd Rate : 19200 Parity : 19200 Parit</pre>		# Plotare Información						
<pre># Application Rev: # Application Rev: # Coder Rec: # Configuration [wodule] Module type: MVIGHE-GSC Module type: MVIGHE-G</pre>		# Last Change: Never						
<pre># oS Rev: # configuration # Module configuration Module Type : MVI69E-65C Module Type : MVI69E-65C Backplane Fail Count : 0 [65E Port 1] Badd Rate : 19200 Parity TS : None Badd Rate : 19200 Parity TS : 1920 Parity TS : 1920 Pari</pre>		# Application Rev:						
<pre># Mail Andress: # Mail Andress: # Configuration [wodule] # Nodule Configuration [wodule] # Nodule Type : NV169E-65C Module Type</pre>		# OS Rev:						
<pre># configGit Version: 4.4.24.14 # Module configuration [Module Type: MVI89E-GSC Module Type: MVI89E-GSC Backplane Fail Count : 0 [GSE.Port 1] Badd Rate : 19200 Badd Rate</pre>		# MAC Address:						
# Module Configuration [wodule] [wodule] Module Type: MV168E-05C Module Type: MV168E-05C Backplane Fail Count : : N0 : : <td></td> <td># ConfigEdit Version: 4</td> <td>4.4.24.14</td> <td></td> <td></td> <td></td> <td></td>		# ConfigEdit Version: 4	4.4.24.14					
[module] Wodule Type: Backplane Fail Count [GSC.port 1] Image: State Fail Count Image: State Fail Count </td <td></td> <td># Module Configuration</td> <td></td> <td></td> <td></td> <td></td> <td></td>		# Module Configuration						
Module Type : MVIG9E-GSC Module Name : MVIG9E-GSC Backplane Fail Count : 0 [GSE Port 1] Trabled Fabled Bad Rate Stop Bits Stop Bits Stop Bits Rater Char Count Rater Char Count Bade Rater Stop Bits Control Count Rater Stop Bits Stop Bits Bade Rater Stop Bits Control Count		[Module]						
Module Name : MV199E-GSC Backplane Fail Count : 0 [GSC Port 1] Enabled : N0 Parity : 19200 Parity : 19200		Module Type : MVI69E-G	5C					
Backplane Fail Count : 0 [csc.port.1] : NO Type : 1 Baud Rate : 1000 Data Sits : 10 Data Sits : 1 Rts on r : 0 Rt Term Char Count : 2 Rt Term Charters : 1310 State Term Charters : 1310		Module Name : MVI69E-G	SC					
Back/inite Fail Count - 0 Gack/inite Fail Count - 0 Frabled : N0 Thaud Rate : 19200 Parity : None Data Bits : 8 RTS On : 0 RTS OF : 0 Rate Count : 19200 Rate		Packelane Fail Count						
[GSC PORt 1] Enabled : N0 Tabled : 1 Badd Rate : 1 Parity : None Data Bits : 1 Rts : 0 Rts : 10 Control : 0 : 10 Control : 0 : 10		Backprane Farr Counc	. •					
Badd		[GSC Port 1]						
báúd Rate : 19200 Parity : None Data Bits : 8 Stop on : 1 Provide State : 1 Provide State : 1 RX Term Characters : 1 Provide Loopth : 0 Pade : 0		Type	1 NO					
Parta Vits None bara Vits None Stop Bits 1 RTS on 0 RTS of 0		Baud Rate	: 19200					
stop Bits : 1 RTS off : 0 RTS off		Data Bits	None 8					
RTS ONF CONFICTION CONFICTUATION CONFICTUATICA CONFICACIA CONFICACIA CONFICACIA CONFICACIA CONFICACIA CON		Stop Bits	: 1					
Randshaking : None R Term Char Count : 2 R Term Characters : 13 10 C Packet Loopth : 0 R Aver Count : 2 R Term Characters : 13 10 R Term Characters : 10 10 R Term Characters		RTS ON RTS OFF	: 8					
Rx Term Char Count : 2 Rx Term Characters : 1110		Handshaking	: None					
Ready MV/66F.CCC (AD M/M CC)		Rx Term Char Count	: 2					
Ready Multiderest Capital States		By Backet Length	: ** 10				. *	
	Ready	1.			MVI69E-GSC CAD	NUM SC	RI .	

At this time, you may wish to rename the *Default Project* and *Default Location* folders in the tree view.

- 1 Select the object, and then right-click the mouse button to open a shortcut menu. From the shortcut menu, choose **RENAME.**
- **2** Type the name to assign to the object.
- 3 Click *away* from the object to save the new name.

Configuring Module Parameters

- 1 Click on the [+] sign next to the module icon to expand module information.
- 2 Click on the [+] sign next to any in icon to view module information and configuration options.
- **3** Double-click any ^B icon to open an *Edit* dialog box.
- 4 To edit a parameter, select the parameter in the left pane and make your changes in the right pane.
- 5 Click **OK** to save your changes.

Printing a Configuration File

- 1 Select the module icon, and right-click the mouse button to open a shortcut menu.
- 2 On the shortcut menu, choose **VIEW CONFIGURATION.** This action opens the *View Configuration* window.
- 3 In the *View Configuration* window, open the **FILE** menu, and choose **PRINT.** This action opens the *Print* dialog box.
- 4 In the *Print* dialog box, choose the printer to use from the drop-down list, select printing options, and then click **OK**.

4.4 Module Configuration Parameters

This section describes the MVI69E-GSC parameters configured in ProSoft Configuration Builder.

4.4.1 Module Parameters

🖃 🧰 Default Project
🖻 🔚 Default Location
MVI69E-GSC
🖻 💑 Module
💦 Module
GSC Port 1
GSC Port 2
E & Comment
Ethernet Configuration

Edit - Module			×
Backplane Fail Count	0	Backplane Fail Cou	unt
		Comment: Definition:	
		Determines if BP f cause protocol to l (0=Ignore, >0 = f to disable)	ailure will A be disabled ailure count
		Reset Tag	Reset All
		ок	Cancel

[Section]/Item	Range	Description
[MODULE]		Module section header
Backplane Fail Count:	0 to 65535	This parameter specifies the number of successive transfer errors that must occur before the communication ports are shut down. If the parameter is set to zero, the communication ports will continue to operate under all conditions. If the value is set larger than 0 (1 to 65535), communications will cease if the specified number of backplane failures occur.

4.4.2 GSC Port x Parameters

The GSC Port 1 and 2, respectively, have identical port parameters.



Enabled	Yes	Enabled	
Type Baud Rate Parity Data Bits Stop Bits RTS On RTS Off Handshaking Rx Term Char Count Rx Term Char Count Rx Term Characters Rx Packet Length Rx Message Timeout Rx Intercharacter Delay Rx Swap Bytes Tx Message Timeout Tx Minimum Delay Tx Swap Bytes	1 19200 None 8 1 0 None 2 13 10 0 150 150 150 150 150 10 No	Ves Comment: Definition: Port enable flag (Yes/No)
		Reset Tag	Reset All
		OK	Canaal

Parameter	Range	Description
[GSC Port 1 or 2]		MVI69E-GSC port definition header
Enabled	Yes or No	This parameter defines if this port will be utilized.
Туре	0 to 15	This parameter specifies the receive termination characteristics for the port. This value is bit mapped as follows: Bit 0 = Termination character(s) used Bit 1 = Message timeout used Bit 2 = Intercharacter delay timeout used Bit 3 = Packet size limit used. If the parameter is set to zero, the port is placed in stream mode.
Baud Rate	From selected list of codes	This is the baud rate to be used on the port. Enter the baud rate as a value. For example, to select 19K baud, enter 19200. Valid entries for this field include: 110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 384 or 3840 for 38400, 576 or 5760 for 57600 and 115 or 1150 for 115200.

Parameter	Range	Description
Parity	None, Even, Odd, Mark or Space	This is the Parity code to be used for the port.
Data Bits	5 to 8	This parameter sets the number of data bits for each word used by the protocol.
Stop Bits	1 or 2	This parameter sets the number of stop bits to be used with each data value sent.
RTS On	0 to 65535	This parameter sets the number of milliseconds to delay after RTS is asserted before the data will be transmitted.
RTS Off	0 to 65535	This parameter sets the number of milliseconds to delay after the last byte of data is sent before the RTS modem signal will be set low.
Handshaking	NONE, RTS/CTS, DTR/DSR or XON/XOFF	This parameter specifies the handshaking used on the port. The values are as follows: None = No hardware or software handshaking RTS/CTS = Hardware handshaking DTR/DSR = Hardware handshaking XON/XOFF = Software handshaking
Rx Term Char Count	0 to 12	This parameter is used if bit 0 of the <i>Type</i> parameter is set. This value (0 to 12) defines the number of termination characters used to define the end of received message.
Rx Term Characters	List of up to 12 integer values	This array of 12 integer values representing the characters used to define the termination characters at the end of each received message. The number of characters to be used in the array is set in the <i>RTermCnt</i> parameter.
Rx Packet Length	0 to 4096	This parameter is used if bit 3 is set in the <i>Type</i> parameter. The parameter sets the length of data required to be received on the port before transferring the data to the processor.
Rx Message Timeout	0 to 65535	This parameter is used if bit 1 is set in the <i>Type</i> parameter. The parameter sets the number of milliseconds to wait after the first character is received on the port before automatically sending the data to the processor.
Rx Intercharacter Delay	0 to 65535	This parameter is used if bit 2 is set in the <i>Type</i> parameter. The parameter sets the number of milliseconds to wait between each character received on the port before sending the data to the processor.
Rx Swap Bytes	Yes or No	This parameter specifies if the data received should have its bytes swapped before sending over the backplane.
Tx Message Timeout	0 to 65535	This parameter specifies the timeout period to transmit a message out the port. A message must be transmitted out the port within the specified timeout period. Message transmission will be aborted if the timeout is exceeded.
Tx Minimum Delay	0 to 65535	This parameter specifies the minimum number of milliseconds to delay before transmitting a message out the port. This pre-send delay is applied before the RTS on time. This may be required when communicating with slow devices.
Tx Swap Bytes	Yes or No	This parameter specifies if the data to be transmitted out the port will have the bytes swapped from the data presented across the backplane.
4.4.3 MVI69E-GSC IP Address Configuration

This section defines the permanent IP address, Subnet Mask, and Gateway of the module.

1 In the ProSoft Configuration Builder tree view, double-click the **ETHERNET 1** icon.



Edit - WATTCP			X
my_ip netmask gateway	192.168.0.250 255.255.255.0 192.168.0.1	my_ip 192 . 168 . Comment: Definition: Default private cla	0 . 250
		Reset Tag	Reset All
		ОК	Cancel

Parameter	Description
My_ip	Unique IP address assigned to the module
Netmask	Subnet mask of module
Gateway	Gateway (if used)

2 Click **OK** when complete.

4.5 Downloading the Configuration File to the Module

1 In the ProSoft Configuration Builder tree view, right-click the module icon and choose **DOWNLOAD FROM PC TO DEVICE**.



2 In the Download Files from PC to Module dialog box, select BROWSE DEVICES.

wnload files from PC t	to module	
STEP 1: Select Com	munication Path:	
Select Connection	Type: Ethernet	Browse Device(s)
Ethernet:	192 . 168 . 0 . 2	50 Use Default IP
CIPconnect:		CIP Path Edit
	, ,	RSWho
STEP 2: Transfer File	e(s):	
DOWNLOAD	Abort	Test Connection
		OK Cancel

3 In the *ProSoft Discovery Service* dialog box, select the **MVI69E-GSC** module:



4 The *IP address* field is populated with the module's IP address. Click **DOWNLOAD** to confirm the operation:

nload files from PC to module	
TEP 1: Select Communication Path:	
Select Connection Type: Ethernet	Browse Device(s)
Ethernet: 192 . 168 . 0 . 172	Use Default IP
CIPconnect:	CIP Path Edit
	RSWho
STEP 2: Transfer File(s):	

5 Once concluded, the status field shows 'Module Running'. Click **OK**.

Download files from PC to module X				
STEP 1: Select Comm	nunication Path:			
Select Connection	Type: Etherne	et 💌	Browse Device(s)	
Ethernet:	192 . 168 . 0	. 172	Use Default IP	
CIPconnect:		2	CIP Path Edit	
			RSWho	
STEP 2: Transfer File	(s):			
DOWNLOAD	Abort		Test Connection	
		ок	Cancel	

4.6 Uploading the Configuration File from the Module

1 In the ProSoft Configuration Builder tree view, right-click the **MVI69E-GSC** icon and choose **UPLOAD FROM DEVICE TO PC**.



2 Click the **BROWSE DEVICE(S)** button.

load files from modul	e to PC					
STEP 1: Select Com	munication	n Path: -				
Select Connection	Type:	Eth	ernet	-	Browse	Device(s)
Ethernet:	192 .	168 .	ο.	250	Use De	efault IP
CIPconnect:					CIP P	ath Edit
	,				RS	Who
STEP 2: Transfer File	e(s):					
UPLOAD		Abort			Test Co	nnection
				OK		Cancel
				011		Cancer

3 In the *ProSoft Discovery Service* dialog box, select the MVI69E-GSC module. The *Ethernet* field will be automatically populated with the module's IP address.

Rosoft Discovery Service	-	\times
: Q		0
Sn: 0002398C MVI69E-GSC 192 168.0.250		
Click the search is an to begin the browse		

4 Once the file is uploaded, the following message is displayed:

Upload files from module to PC	×
Upload Complete	
STEP 1: Select Communication Path:	
Select Connection Type: Ethernet 💌	Browse Device(s)
Ethernet: 192 . 168 . 0 . 250	Use Default IP
CIPconnect:	CIP Path Edit
	RSWho
STEP 2: Transfer File(s):	
UPLOAD Abort	Test Connection
ок	Cancel

5 PCB now displays the uploaded configuration file.

4.7 Converting a Legacy MVI69-GSC to an MVI69E-GSC

The MVI69E-GSC product is backward compatible with the legacy MVI69-GSC product. You may replace the existing MVI69-GSC module with a new MVI69E-GSC without requiring any modifications to the existing ladder logic.

This section shows how to convert an existing MVI69-GSC project to a MVI69E-GSC.

1 In PCB, right-click on the module and select CHANGE MODULE TYPE TO MVI69E-GSC.



2 The legacy project will be converted to the MVI69E-GSC project with the same module settings:



3 The new configuration file can now be downloaded to the MVI69E-GSC.

5 Using Controller Tags

The MVI69E-GSC data is stored in controller tags in the ladder logic. Controller tags are used to manage the communications between the MVI69E-GSC module and the CompactLogix or MicroLogix 1500-LRP processor:

- View the read and write data being transferred between the module and the processor.
- View status data for the module.
- Set up and trigger special functions.
- Initiate module restarts (Warm Boot or Cold Boot).

Individual controller tags can be grouped into collections of controller tags called controller tag structures. A controller tag structure can contain any combination of:

- Individual controller tags
- Controller tag arrays
- Lower-level controller tag structures

The controller tags are included in the MVI69E-GSC Add-On Instruction. After you import the Add-On Instruction, you can find the controller tags in the *Controller Tags* subfolder, located in the *Controller* folder in the *Controller Organizer* pane of the main Studio 5000 window.

The Add-On Instruction also includes user-defined data types (UDTs). UDTs are collections of data types and declares the data types for the controller tag structures.

The MVI69E-GSC Add-On Instruction is extensively commented to provide information on the purpose and function of each user-defined data type and controller tag. For most applications, the Add-On Instruction works without needing any modification.

5.1 MVI69E-GSC Controller Tags

The main controller tag structure, *GSC*, is broken down into four lower-level controller tag structures.

⊡-GSC	
+-GSC.DATA	
+-GSC.STATUS	
+-GSC.CONTROL	
+-GSC.UTIL	

The four lower-level controller tag structures contain other controller tags and controller tag structures. Click the [+] sign next to any controller tag structure to expand it and view the next level in the structure.

For example, if you expand the *GSC.DATA* controller tag structure, it contains two controller tags; *GSC.DATA.Port1* and *GSC.DATA.Port2*, which stores the data received/sent to each port.

⊟-GSC	{}
⊟-GSC.DATA	{}
GSC.DATA.Port1	{}
GSC.DATA.Port1.ReadString	{}
GSC.DATA.Port1.WriteLength	0
E GSC.DATA.Port1.WriteString	{}
GSC.DATA.Port1.ArrayIndex	0
E GSC.DATA.Port1.RSindex	0
E-GSC.DATA.Port2	{}
GSC.DATA.Port2.ReadString	{}
■ GSC.DATA.Port2.WriteLength	0
■ GSC.DATA.Port2.WriteString	{}
GSC.DATA.Port2.ArrayIndex	0
E GSC.DATA.Port2.RSindex	0
∃ GSC.STATUS	{}
E GSC.CONTROL	{}
⊞ GSC.UTIL	{}

The controller tags in the Add-On Instruction are commented in the **DESCRIPTION** column.

5.2 User-Defined Data Types (UDTs)

User-defined data types (UDTs) allow you to organize collections of data types into groupings. You can use these groupings, or data type structures, to declare the data types for controller tag structures. Another advantage of defining a UDT is that you may reuse it in other controller tag structures that use the same data types.

The Add-On Instruction for the MVI69E-GSC module has pre-defined UDTs. You can find them in the *User-Defined* subfolder, located in the *Data Types* folder in the *Controller Organizer* pane of the main RSLogix window. Like the controller tags, the UDTs are organized in a multiple-level tree structure.

5.2.1 MVI69E-GSC User-Defined Data Types

Several UDTs are defined for the MVI69E-GSC Add-On Instruction. The main UDT (*GSCModuleDef*) contains all the data types for the module. There are several UDTs that are one level below *GSCModuleDef*.

These lower-level UDTs were used to create the GSC.DATA, GSC.STATUS, GSC. CONTROL, and GSC.UTIL controller tag structures.

Name:	GSCModuleDef		Data Type Size: 2084 bytes
Description:		This object holds all MVI69E-GSC module definitions.	
Members:			
🖌 Name	Data Type	Description	
DATA	GSCDATA	ASCII data transferred between module Ports and processor.	<u>^</u>
STATULE	JS GSCSTATUS	Status information in each read block.	E
► CONT	ROL GSCCONTROL	This tag group controls the Module's functional capabilities.	
▶ UTIL	GSCUTIL	Functions performend by the PLC code to interface with the Module.	*
		OK Cancel	Apply Help

5.3 GSC Controller Tag Overview

This section details the GSC controller tags.

Tag Name	Description
GSC.DATA	Port 1 and Port 2 tags for data transfer
GSC.STATUS	Status information
GSC.CONTROL	Tasks that the processor may request from the module.
GSC.UTIL	Generic tags used for internal ladder processing (DO NOT MODIFY)

5.3.1 GSC.DATA

GSC.DATA contains the controller tags required for data exchange between the processor and the remote serial devices. This data contains one sub tag for each serial port (Port 1 and Port 2):

Name 📰 🛆
⊟GSC
GSC.DATA
E-GSC.DATA.Port1
E-GSC.DATA.Port2

Each port tag contains the following controller tags for data exchange:

Name	-== A
⊟-GSC	
⊟ GSC.DATA	
GSC.DATA.Port1	
GSC.DATA.Port1.ReadString	
■ GSC.DATA.Port1.WriteLength	
GSC.DATA.Port1.WriteString	
∃ GSC.DATA.Port1.ArrayIndex	
E GSC.DATA.Port1.RSindex	

Note: The *ArrayIndex* and *RSindex* tags are updated by the AOI logic to process the data transfer. Your application should not have to access these tags.

5.3.2 GSC.STATUS

The GSC.STATUS tag stores the module, backplane, and port diagnostics:

Name 📑	Δ	Value 🔸
⊟·GSC		{}
E GSC.DATA		{}
GSC.STATUS		{}
⊡ GSC.STATUS.PassCnt		-21656
I GSC.STATUS.Product		{}
⊡ GSC.STATUS.Rev		{}
⊡ GSC.STATUS.OP		{}
⊡ GSC.STATUS.Run		{}
∃ GSC.STATUS.BlockStaus		{}
⊡-GSC.STATUS.Port1		{}
⊡·GSC.STATUS.Port2		{}

For further information about each diagnostics tag, please refer to the *Status Data Definition* section.

5.3.3 GSC.CONTROL

The *GSC.CONTROL* tag contains all control tasks that may be requested by the processor to the module. The MVI69E-GSC supports two control operations: Warmboot and Coldboot.

To perform a module reboot (Warmboot or Coldboot), toggle the associated controller tag to '**1**'. The AOI logic will automatically reset the tag back to '**0**'.

Name 📰 🛆	Value 🔸
	{ }
-GSC.CONTROL.WarmBoot	0
GSC.CONTROL.ColdBoot	0

6 Transmitting ASCII Data

6.1 Sending ASCII Strings from the Processor to a Serial Device

1 In order to send data from the processor to a remote serial device, you must first copy the source data to the *GSC.DATA.PortX.WriteString* array tag:

Name 💷 🛆	Value 🔸
E GSC.DATA.Port1.WriteLength	• 0
GSC.DATA.Port1.WriteString	{}
	· T ·
	'H'
E GSC.DATA.Port1.WriteString[2]	'I'
	's'
E-GSC.DATA.Port1.WriteString[5]	'I'
	'S'
	'A'
GSC.DATA.Port1.WriteString[10]	'T'
GSC.DATA.Port1.WriteString[11]	'E'
GSC.DATA.Port1.WriteString[12]	'S'
GSC.DATA.Port1.WriteString[13]	· T ·

2 In the *GSC.DATA.PortX.WriteLength* tag, enter the number of characters to send. Once the AOI detects a non-zero value in the tag, the string data is sent to the remote serial device.

	Name	-8 4	Value	+
*	E-GSC.DATA.Port1.WriteLength		•	14]

3 Once the operation is concluded, the AOI will automatically reset the WriteLength tag to '**0**'.

Name		📰 🛆 Value	¢
	GSC.DATA.Port1.WriteLength	•	0

4 String diagnostics.

You can check the status of the data transmission by monitoring the *GSC.STATUS.Port1.TxMsgCnt* (transmitted message count) and *GSC.STATUS.Port1.TxCharCnt* (transmitted character count) tags.

6.2 Receiving ASCII Strings from a Serial Device to the Processor

The MVI69E-GSC continuously buffers the data received from remote serial devices until the criteria to flush the data to the processor is met. The criteria to interrupt data buffering and flush the data to processor is determined by the *Type* configuration parameter which includes a combination of the following options:

- Termination Characters
- Message Timeout
- Intercharacter Delay
- Packet Size

For further information about the Type configuration parameter, refer to section **GSC Port x Parameters**

The serial data received on the port is copied to the GSC.DATA.PortX ReadString tag.

Name 🔡 🛆	Value 🔸
EGSC	{ }
GSC.DATA	{}
GSC.DATA.Port1	{}
GSC.DATA.Port1.ReadString	{}
GSC.DATA.Port1.ReadString[0]	'D'
■ GSC.DATA.Port1.ReadString[1]	'A'
GSC.DATA.Port1.ReadString[2]	'T'
GSC.DATA.Port1.ReadString[3]	'A'
E-GSC.DATA.Port1.ReadString[4]	• •
GSC.DATA.Port1.ReadString[5]	• •

Note: Monitor the *GSC.STATUS.PortX* tag to indicate an incoming string has been received on the port. Copy the string from the *GSC.DATA.PortX ReadString* array to another array since the *GSC.DATA.PortX ReadString* array will be overwritten by subsequent, incoming strings.

7 Diagnostics and Troubleshooting

The module provides information on diagnostics and troubleshooting in the following forms:

- LED status indicators on the front of the module provide general information on the module's status.
- Status data contained in the module can be viewed through the Configuration/Debug port, using the troubleshooting and diagnostic capabilities of *ProSoft Configuration Builder (PCB)*.
- Status data values can be transferred from the module to processor memory and can be monitored there manually or by customer-created logic. For details on Status Data values, see MVI69E-GSC Status Data Area.

7.1 LED Status Indicators

The LEDs indicate the module's operating status as follows:

LED	Status	Indication
ETH	On	Ethernet communications are OK
	Off	No Ethernet cable connected
P1	Green	Data is being transferred
	Red	Not used
	Off	No serial communication activity
P2	Green	Data is being transferred
	Red	Not used
	Off	No serial communication activity
CFG	Green	Configuration is OK
	Yellow	Module is reading configuration
	Red	Configuration error
	Off	Module did not establish connection with processor or the processor is in program mode
BP	Green	The LED is on when the module is performing a write operation on the backplane. Under normal operation, the LED should blink rapidly on and off.
	Red	Backplane error, processor fault, processor in program mode
OK	Green	Module is OK
	Red	The program has detected an error or is being configured. If the LED remains red for over 10 seconds, the program has probably halted.

If the BP ACT and OK LEDs blink at a rate of every one-second, this indicates a serious problem with the module. Call ProSoft Technology support to arrange for repairs.

7.2 Ethernet LED Indicators

The Ethernet LEDs indicate the module's Ethernet port status.

LED	State	Description
100 Mbit	Off	Ethernet connected at 10Mbps duplex speed
	Amber Solid	Ethernet connected at 100Mbps duplex speed
LINK/ACT Off No con		No physical network connection is detected. No Ethernet communication is possible. Check wiring and cables.
	Green Solid or Blinking	Physical network connection detected. This LED must be ON solid for Ethernet communication to be possible.

7.3 Clearing a Fault Condition

Typically, if the OK LED turns red for more than ten seconds, a hardware problem has been detected in the module or the program has exited.

To clear the condition, follow these steps:

- 1 Turn off power to the rack.
- 2 Remove the card from the rack.
- **3** Verify that all jumpers are set correctly.
- 4 Re-insert the card in the rack and turn the power back on.
- 5 Verify correct configuration data is being transferred to the module from the CompactLogix or MicroLogix controller.

If the module's OK LED does not turn green, verify that the module is inserted completely into the rack. If this does not resolve the problem, contact ProSoft Technology Technical Support.

7.4 Troubleshooting

Use the following troubleshooting steps if you encounter problems when the module is powered up. If these steps do not resolve your problem, please contact ProSoft Technology Technical Support.

Processor Errors

Problem description	Steps to take
Processor fault	Verify that the module is securely plugged into the slot that has been configured for the module in the I/O Configuration in RSLogix. Verify that the slot location in the rack has been configured correctly in the ladder logic.
Processor I/O LED flashes	This indicates a problem with backplane communications. A problem could exist between the processor and any installed I/O module, not just the MVI69E-GSC. Verify that all modules in the rack are correctly configured.

Module Errors

Problem description	Steps to take
BP ACT LED remains Off or blinks slowly	This indicates that backplane transfer operations are failing. To establish backplane communications, verify the following items:
	 The processor is in RUN or REM RUN mode. The backplane driver is loaded in the module. The module is configured for read and write data block transfer. The ladder logic handles all read and write block situations. The module is properly configured in the processor I/O configuration and ladder logic.
OK LED remains red	The program has halted or a critical error has occurred. If the program has halted, turn off power to the rack, remove the card from the rack, then re-insert it, and then restore power to the rack.

7.5 Configuring a Temporary IP Address

This feature is useful if your laptop is on a different subnet than the module's IP address. The module can be configured to use the same subnet as your laptop.

Important: ProSoft Configuration Builder (PCB) locates MVI69E-GSC modules through UDP broadcast messages. These messages may be blocked by routers or layer 3 switches. In that case, **ProSoft Discovery Service** is unable to locate the modules.

To use **PCB**, arrange the Ethernet connection so that there is no router/ layer 3 switch between the computer and the module, OR reconfigure the router/ layer 3 switch to allow routing of the UDP broadcast messages.

1 In the tree view in **ProSoft Configuration Builder (PCB)**, select the **MVI69E-GSC** module.



2 Right-click the module icon in the tree and choose **DIAGNOSTICS**.



3 In the *Diagnostics* window, click the **SET UP CONNECTION** button.



4 In the *Connection Setup* dialog box, click **BROWSE DEVICE(S)** to start *ProSoft Discovery Service*. Right-click the module and choose **ASSIGN TEMPORARY IP**.

🛔 Prosoft Disc	overy Service	_	×
Ø,			0
Sn: MVI 192	00023990C 69E-GSC 169 A 250 Device Details Remove Temporary IP View module's webpage Select for PCB		
Click the search	icon to begin the browse		

5 The module's default IP address is usually 192.168.0.250. Choose an unused IP within your subnet, and then click **OK**.

🛔 Assign Temporar	y IP Address
Temporary IP:	105 . 102 . 0 . 233
Network Mask:	255 . 255 . 255 . 0
ОК	Cancel

Important: The temporary IP address is only valid until the next time the module is initialized.

- 6 Close the *ProSoft Discovery Service* window. Enter the temporary IP address in the **ETHERNET ADDRESS** field of the *Connection Setup* dialog box, then click **TEST CONNECTION** to verify that the module is accessible with the current settings.
- 7 If the *Test Connection* is successful, click **CONNECT**. The *Diagnostics* window is now accessible.

ProSoft Configuration Builder (PCB) provides diagnostic menus for debugging and troubleshooting.

7.6 Diagnostics Menu

1 In the tree view in ProSoft Configuration Builder, right-click the **MVI69E-GSC** module and then choose **DIAGNOSTICS**.

🖃 🧰 Default Project	Name	
⊢ ⊡ Default Location	MVI69E-GSC MVI69E	
	Delete	
	Сору	
	Paste	
	View Configuration	
	Write to Removable Media	
	Export Configuration File(s)	
	Load Config File	
	Add External File	
	Change Module Type to MVI69-GSC	
	Download from PC to Device	
	Upload from Device to PC	
	Diagnostics	

2 After the *Diagnostics* window opens, click the **SET UP CONNECTION** button to browse for the module's IP address.



3 In the *Ethernet* field of the *Connection Setup* dialog box, enter the current IP address, whether it is temporary or permanent. Click **TEST CONNECTION** to verify that the module is accessible with the current settings.

Connection Setup		
Select Connection Type: Ethernet		
Ethernet		
ProSoft Discovery Service (PDS) Browse Device(s)		
CIPconnect		
t:192.168.0.100,p:1,s:0\$56		
CIP Path Edit		
Test Connection Connect Cancel		

4 If the **TEST CONNECTION** is successful, click **CONNECT**. The *Diagnostics* window is now visible.

S Diagnostics		×
Connection Log Module		
M MVISE-GSC GENERAL	Select item within "GENERAL" for diagnostic information	Time : 16.12.42 -
Path "Ethernet - 192.168.0.250"		

7.6.1 Diagnostics Menu Navigation

In the *Diagnostics* window in ProSoft Configuration Builder, the Diagnostics menu is available through the Ethernet configuration port. The menu is arranged as a tree structure.

		~
Diagnostics		X
Connection Log Module		
		Time : 16.12.42
i <mark>i ₄ GENERAL</mark> i i GENERAL i i GENERAL i GENERAL RETWORK	Select item within "GENERAL" for diagnostic information	
E Config		
GSC PORT 2		
		•
Path "Ethernet - 192.168.0.250"		

7.6.2 Monitoring Network Configuration Information

In the *Diagnostics* window in Prosoft Configuration Builder, click **NETWORK** and then click **ConFig** to view the Ethernet network configuration information.

S Diagnostics			×
Connection Log Module			
MVIGEE-GSC MURGEE-GSC METWORK METWORK GCONIN GCONIN GCONIN GSC PORT 1 GCONIN GSC PORT 1 GCONIN GSC PORT 2 GSC PORT	MVI69E-GSC > NETWORK > Config Link status Link Lost Auto-negotiation Speed Duplex ETHERNET ADDRESS (MAC) IP Address Sub-Net Mask Gateway	: :UINK OK :100 :FULL-DUPLEX :00:0d:8d:03:29:8C :192.168.0.250 :255.255.255.0 :192.168.0.1	Time : 16.13.38 ▲ [Refresh Counter: 1]
			-
Path "Ethernet - 192.168.0.250"			

7.6.3 Monitoring Backplane Information

In the *Diagnostics* window in ProSoft Configuration Builder, click **BACKPLANE** to view the backplane information. This menu has two submenus:

- CONFIGURATION
- STATUS

S Diagnostics			×
Connection Log Module			
Connection Log Module	MVI69E-GSC > BACKPLANE > Com Block size	fig : :60	
Path "Ethernet - 192,168,0,250"			•

S Diagnostics			×
Connection Log Module			
NS RTFA 117			
MV169E-GSC MV169E-GSC MGENERAL Question METWORK Question MACKPLANE Question GSCPORT 1 GSCPORT 1 GSCPORT 2 GSCPORT 2 GSCPORT 2 GStatus	MVI69E-GSC > BACKPLANE > St Processor State Last write Data Transfer Last Read Data Transfer Retry BP Status Fail Cnt Read Write Parsing Error	atus :	Time : 16.14.31) [Refresh Counter: 1]
			_
, Path "Ethernet - 192.168.0.250"			_

7.6.4 Port x Module Information

The GSC Port 1 and GSC Port 2 menus include the following submenus:

- Configuration
- Status (General status for the port)



7.6.5 Data Analyzer

The Data Analyzer feature allows you to view the serial communications traffic as it is received and sent from the selected MVI69E-GSC communications port.

1 Click on the **SETUP DATA ANALYZER** icon.



2 Select the *Time Tick* setting, the port number, and the data format.

Data Analyzer Setup	×
Time Tick	
Communication Port Port 1 C Port 2 C Port 3 C Port 4	
OK	

- 3 Click OK to confirm.
- 4 Select the **START DATA ANALYZER** button to start the data analyzer capture.

🝯 Diagnostics	
Connection Log Module	\sim
MVI69E-GSC	\smile

5 Each byte will be enclosed with < > for data transferred out of the port, and [] for data received on the port.



6 Click on the same **DATA ANALYZER** button to stop the data analyzer operation:



7 You may also log the data analyzer capture to a text file. Click on the following **START LOG** button to log the data analyzer capture:



8 Click on the same **Log** button to stop the data capture logging:



9 Click on the VIEW LOG FILE button to view the log file:



10 The log file opens in Notepad

PCB-Log - Notepad
File Edit Format View Help
Log Start : 2019.10.25 17.26
TTTTTTTT <r+><02><03><e8><00><0A><45><8E><r->_TTTT</r-></e8></r+>
TTTTTTTTTT <r+><02><03><03><e8><00><0A><45><8E><r->_TTTTTTTTTTTTTT_</r-></e8></r+>
TTTTTT <r+><02><03><e8><00><0A><45><8E><r->_TTTTTTTTTTTTTTTTTTT</r-></e8></r+>
TT <r+><01><10><03><e8><00><0A><14><0F><d0><0F><c00><0F><c0><0F><c0><<0F><c0><<0F><c0><<0F><c0><<0F><</c0></c0></c0></c0></c0></c00></d0></e8></r+>
<d0><0F><d0><0F><c00><0F><c00><0F><c00><0F><c00><0F><c00><84><fa><r->[01][10][03][E8][00][0A][C0][7E]</r-></fa></c00></c00></c00></c00></c00></d0></d0>
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_TT_TT_TT_TT_KR+><02><03> <e8><00><0A><45><8E><r->_TT_TT_TT_TT_TT_TT_TT_</r-></e8>
_TT_TT_ <r+><02><03><e8><00><0A><45><8E><r->_TT_TT_TT_TT_TT_TT_TT_KR+></r-></e8></r+>

11 To clear the log file before a new logging session starts, click the CLEAR LOG FILE button.



7.7 Connecting to the Module's Webpage

The module's internal web server provides access to module version and status information, as well as the ability to set the date and time, reboot the module, and download firmware upgrade to the module. Enter the assigned IP address of the module into a web browser or use the following steps in PCB.

1 In the PCB Diagnostics window, click the **SET UP CONNECTION** button.



- 2 In the Connection Setup dialog box, click **BROWSE DEVICE(S)** to start *ProSoft* Discovery Service.
- **3** Right-click the module icon and choose **VIEW MODULE'S WEBPAGE** to launch your default browser and display the module's webpage.





8 Reference

8.1 **Product Specifications**

The MVI69E-GSC allows Rockwell Automation[®] CompactLogix or MicroLogix 1500-LRP[®] I/O compatible processors to interface easily with other ASCII protocol compatible devices.

The module acts as an input/output communications module between the ASCII network and the CompactLogix or MicroLogix 1500-LRP backplane. The data transfer from the CompactLogix or MicroLogix 1500-LRP processor is asynchronous from the actions on the Modbus network. Databases are user-defined and stored in the module to hold the data required by the protocol.

- Single-slot, 1769 backplane-compatible
- The module is recognized as an Input/Output module and has access to processor memory for data transfer between processor and module.
- Ladder Logic is used for data transfer between module and processor. Sample Add-On Instruction file included.
- Configuration data obtained from and stored in the module
- Supports CompactLogix or MicroLogix 1500-LRP processors with 1769 I/O bus capability and at least 500 mA of 5 VDC backplane current available.

Specification	Description
Dimensions	Standard 1769 Single-slot module
Current Load	500 mA max @ 5 VDC Power supply distance rating of 4 (L43 and L45 installations on first 4 slots of 1769 bus)
Operating Temp.	32° F to 140° F (0° C to 60°C)
Storage Temp.	-40° F to 185° F (-40° C to 85° C)
Relative Humidity	5% to 95% (with no condensation)
LED Indicators	Module OK Status Backplane Activity Ethernet Port Activity Configuration Activity Serial port Activity
CFG Port (ETH)	Diagnostics over Ethernet connection
App Ports (P1,P2)	RS-232, RS-485 or RS-422 (jumper selectable) RJ45 Port (DB-9F with supplied cable) 500V Optical isolation from backplane
Shipped with Unit	RJ45 to DB-9M cables for each application port

8.1.1 Hardware Specifications

8.1.2 Functional Specifications

- ASCII Communication ports 1 & 2 (PRT1, PRT2)
 - Both ports are capable of transmitting and/or receiving ASCII character strings. Each port is individually configurable:
 - $\circ \quad \text{Termination types} \\$
 - Stream mode
 - Termination character(s)
 - Message timeout
 - Intercharacter timeout
 - Packet size limit
 - Baud rate: 110 to 115.2K baud
 - Parity: none, even, odd
 - Stop bits: 1 or 2
 - Data bits: 5 to 8
 - RTS on/off timing: 0 to 65535 milliseconds
 - Minimum response delay: 0 to 65535 milliseconds
- Handshaking (optional)
 - Hardware: RTS/CTS, DTR/DSR
 - Software: XON/XOFF
- ASCII character strings up to 4096 characters in length supported
- Full hardware handshaking control provides radio, modem and multi-drop support
- User-definable module memory usage, supporting the storage and transfer of up to 4000 registers to/from the control processor
- Module error and status conditions returned to processor for diagnostic purposes
 - Module status
 - Port error status word (bit mapped)
 - Port receive state
 - Port receive character count
 - Port receive block count
 - o Port transmit state
 - Port transmit character count
 - Port transmit block count
- All data related to the module is contained in a single controller tag with defined objects to simplify configuration, monitoring and interfacing with the module
- Module configuration and communication configuration data is transferred to the module via a predefined user data type in the processor

8.2 Functional Overview

8.2.1 General Concepts

The MVI69E-GSC module uses ladder logic to communicate with the CompactLogix or MicroLogix 1500-LRP processor across the backplane. The ladder logic handles the module data transfer, configuration data transfer, special block handling, and status data receipt.

The following topics describe several concepts that are important for understanding the operation of the MVI69E-GSC module. This is the order of operations on power-up:

- **1** The module begins the following logical functions:
 - Initialize hardware components
 - Initialize CompactLogix or MicroLogix 1500-LRP backplane driver
 - Test and clear all RAM
- 2 Read configuration from the CompactLogix or MicroLogix 1500-LRP processor through ladder logic
- 3 Allocate and initialize Module Register space
- **4** Enable application port(s)

After the module has received the module configuration, the module begins communicating with other devices on the network, depending on the configuration of the module.

8.2.2 Backplane Data Flow

The following topics describe the flow of data between the hardware (CompactLogix processor and MVI69E-GSC module) and other devices on the network under the module's different operating modes.

Backplane Data Transfer

The MVI69E-GSC module communicates directly over the CompactLogix or MicroLogix backplane. Data is paged between the module and the CompactLogix processor across the backplane using the module's input and output images. The update frequency of the images is determined by the scheduled scan rate defined by the user for the module and the communication load on the module. Typical updates are in the range of 2 to 10 milliseconds.

The data is paged between the processor and the module using input and output image blocks (fixed at 60 words).

This bi-directional transference of data is accomplished by the module filling in data in the module's input image to send to the processor. Data in the input image is placed in the Controller Tags in the processor by the ladder logic.

The processor inserts data to the module's output image to transfer to the module. The module's program extracts the data and places it in the module's internal database.

The following illustration shows the data transfer method used to move data between the CompactLogix processor, the MVI69E-GSC module, and the network.



Normal Data Transfer

Normal data transfer includes the paging of the user data to and from the module's ports and bringing in status data. These data are transferred through read (input image) and write (output image) blocks. The structure and function of each block is discussed in the following topics.

Block Request from the Processor to the Module

These blocks of data are used to transfer information from the CompactLogix processor to the module. The structure of the output image used to transfer this data is shown below:

Port	Word Offset	Description
Port 1	0	Block Sequence Number (Read block number as sent by module) (0 to 127)
	1	Inter-character delay for this message (milliseconds between characters)
	2	Number of characters to transmit on Port 1 (0 to 50)
	3 to 27	Port 1 ASCII character codes to transmit (up to 50 ASCII characters)
Port 2	28	Inter-character delay for this message (milliseconds between characters)
	29	Number of characters to transmit on Port 2 (0 to 50)
	30 to 54	Port 2 ASCII character codes to transmit (up to 50 ASCII characters)
	55 to 59	Reserved

The Block Sequence Number is that received on the last read block transfer through the input image on the module. The ladder logic should copy this value from byte 0 of the input image to byte 0 of output image in the ladder logic. This must be the last operation performed when constructing the write block. The module's program will trigger the process write block function when a new value is recognized in byte 0 of the output image.

If the number of characters to transmit in the write block is not set to zero (non-zero value in bytes 2 and 29), this indicates to the module there is data present in the block that needs to be transmitted. If the selected port is not already busy transmitting data from a previous write block, the data in the block will be moved to the port's transmit buffer and sent out the port as soon as possible.

In order to pace the characters for the write operation, an inter-character delay value is associated with each write message. For devices that do not buffer received data, when interfacing with a modem in command mode or when simulating keyboard or keypad entry, inter-character delays may be required. For example, if the port is tied to a device that expects input with delays of 200 milliseconds between each character, place the data to send in the write block output image along with the length and set the inter-character delay byte (bytes 1 and 28) to a value of 200 in the module's output image in the processor's ladder logic program.

The message will be transmitted with a 200-millisecond wait period between each character. Because this delay value is sent from the processor for each write message, the inter-character delay can be set independently for each message. For example, when writing AT commands to a dial-up modem, an inter-character delay of 100 may be required. But when the modem is in data mode, the inter-character delay can be set to 0. When the delay is set to 0, the whole packet of data will be placed in the module's transmit buffer at one time.

Block Response from the Module to the Processor

These blocks transfer information from the module to the processor. The structure of the input image used to transfer these data is shown below. The Block Sequence Number (byte 0) is an index value used to signal to the processor that a new block is ready for processing. The ladder logic must recognize a change in this value and process the data encapsulated in the input image. The block contains the data received on each port and status data. The two byte values in bytes 1 (port 1 receive length), and 28 (port 2 receive length), hold the number of characters received on each port to be processed by the ladder logic. ASCII character code data received on the ports are found starting at byte 3 and 30 for Port 1 and 2, respectively. The simpler version of the example ladder logic assumes the number of ASCII characters received on each port is less than or equal to fifty characters (25 words per port, times 2 characters per word).

	Word Offset	Description
	0	Block Sequence Number (Bumped each scan by module) (0 to 127)
Port 1	1	Number of characters (0 to 50) in Port 1 receive block (3 to 27). If the string received on the port is larger than 50 characters, multiple blocks will be transferred. Any block with a value of -1 in this field represents the first or continuation block and the block contains 50 characters of ASCII code data. The last block of data will contain a positive number in this field that represents the number of characters in the last block. Status data will be returned in words 3 to 27 if this word contains a value of 0.
	2	Number of characters transmitted (0 to 50) from last block write for Port 1
	3 to 27	Port 1 data received (up to 50 ASCII character codes of data). If the number of characters received for the port is 0, status data will be returned in this area.
Port 2	28	Number of characters (0 to 50) in Port 2 receive block (30 to 54). If the string received on the port is larger than 50 bytes, multiple blocks will be transferred. Any block with a value of -1 in this field represents the first of continuation block and the block contains 50 characters of ASCII code data. The last block of data will contain a positive number in this field that represents the number of characters in the last block. Status data will be returned in words 30 to 54 if this word contains a value of 0.
	29	Number of characters transmitted (0 to 50) from last block write for Port 2
	30 to 54	Port 2 data received (up to 50 ASCII character codes of data). If the number of characters received for the port is 0, status data will be returned in this area
	55 to 59	Reserved

The receive buffer in the module can hold up to 4096 characters. This large size permits the buffering of a large amount of data before a transfer of the data to the controller is required. The module buffers incoming ASCII characters in its receive buffer until one of the user-specified termination conditions is recognized. The module will then transfer the received terminated string to the controller.

The ladder logic required to properly handle transfer of terminated strings longer than 50 characters per port is more complex than the simpler version of ladder logic discussed above. If the terminated string is larger than 50 characters, multiple blocks will be used to transfer the data to the controller. The first block will contain a value of -1 in the "Number of Characters Received" data field. This indicates that there will be more blocks to follow and that the current block contains 50 ASCII character codes. As long as more than 50 characters remain in the buffer waiting to be sent to the ladder logic, successive Read Blocks will continue to show the "Number of Characters Received" as -1. When 50 or fewer ASCII characters remain in the buffer, the module will send the last block with a positive number in the length field. The value passed represents the number of characters present in the data area, which is the last characters of the complete, terminated string. The ladder logic must recognize the presence of one or more successive blocks with -1 lengths and then the positive number of the last block as indication that a single, complete, long string has been completely transferred.

The two byte values at bytes 1 (port 1 transmit count) and 29 (port 2 transmit count) inform the processor of the number of ASCII characters transferred in the last write block to the respective port transmit buffers. If a value of zero is returned in one of these words and data was sent in the last write block, the ladder logic must re-send the data in the next write block because the port was in a busy state and could not transmit the last data to be written at the time the Write Block was receive by the module from the ladder logic. If a non-zero value is returned in one of these bytes, the value represents the number of ASCII characters from the last write block that were successfully moved into the port's transmit buffer.

The status information transferred in the read block can be used by the processor to determine the state and "health" of the module and the device(s) attached to each application port. An important member of the value in the status object is error word for each port. This value contains the configuration error flags for each port and the receive buffer overflow error flag.

8.2.3 Special Function Blocks

Special Function blocks are blocks used to control the module or request special data from the module. The current version of the software supports two Special Functions, warm boot and cold boot.

Warm Boot Block (9998)

This block is sent from the CompactLogix or MicroLogix processor to the module (output image) when the module is required to perform a warm-boot (software reset) operation. The following table describes the format of the control block.

Offset	Description	Length
0	9998	1
1	Spare	

Cold Boot Block (9999)

This block is sent from the CompactLogix or MicroLogix processor to the module (output image) when the module is required to perform the cold boot (hardware reset) operation. This block is sent to the module when a hardware problem is detected by the ladder logic that requires a hardware reset. The following table describes the format of the control block.

Offset	Description	Length
0	9999	1
1	Spare	

8.3 Ethernet Port Connection

8.3.1 Ethernet Cable Specifications

The recommended cable is Category 5 or better. A Category 5 cable has four twisted pairs of wires, which are color-coded and cannot be swapped. The module uses only two of the four pairs.

The Ethernet port or ports on the module are Auto-Sensing. You can use either a standard Ethernet straight-through cable or a crossover cable when connecting the module to an Ethernet hub, a 10/100 Base-T Ethernet switch, or directly to a PC. The module detects the cable type and uses the appropriate pins to send and receive Ethernet signals.

Some hubs have one input that can accept either a straight-through or crossover cable, depending on a switch position. In this case, you must ensure that the switch position and cable type agree.

Refer to Ethernet Cable Configuration (page 71) for a diagram of how to configure Ethernet cable.

Ethernet Cable Configuration

Note: The standard connector view shown is color-coded for a straight-through cable.

Crossover cable			Straight- through cable	
RJ-45 PIN	RJ-45 PIN	Pin #1	RJ-45 PIN	RJ-45 PIN
1 Rx+	3 Tx+	\mathbf{N}	1 Rx+	1 Tx+
2 Rx-	6 Tx-		2 Rx-	2 Tx-
3 Tx+	1 Rx+		3 Tx+	3 Rx+
6 Tx-	2 Rx-		6 Tx-	6 Rx-
		12345678		

Ethernet Performance

Ethernet performance in the MVI69E-GSC module can be affected in the following way:

- Accessing the web interface (refreshing the page, downloading files, and so on) may affect performance
- Also, high Ethernet traffic may impact module performance, so consider one of these options:
 - Use managed switches to reduce traffic coming to module port
 - Use CIPconnect for these applications and disconnect the module Ethernet port from the network

8.4 Application Port Cable Connection

The application ports on the MVI69E-GSC module support RS-232, RS-422, and RS-485 interfaces. Please inspect the module to ensure that the jumpers are set correctly to correspond with the type of interface you are using.

Note: When using RS-232 with radio modem applications, some radios or modems require hardware handshaking (control and monitoring of modem signal lines). Enable this in the configuration of the module by setting the UseCTS parameter to 1.

8.4.1 RS-232 Wiring

When the RS-232 interface is selected, the use of hardware handshaking (control and monitoring of modem signal lines) is user definable. If no hardware handshaking is used, here are the cable pin-outs to connect to the port.


RS-232: Modem Connection (Hardware Handshaking Required)

This type of connection is required between the module and a modem or other communication device.



The "Use CTS Line" parameter for the port configuration should be set to 'Y' for most modem applications.

RS-232: Null Modem Connection (Hardware Handshaking)

This type of connection is used when the device connected to the module requires hardware handshaking (control and monitoring of modem signal lines).



RS-232: Null Modem Connection (No Hardware Handshaking)

This type of connection can be used to connect the module to a computer or field device communication port.



Note: For most null modem connections where hardware handshaking is not required, the *Use CTS Line* parameter should be set to **N** and no jumper is required between Pins 7 (RTS) and 8 (CTS) on the connector. If the port is configured with the *Use CTS Line* set to **Y**, then a jumper is required between the RTS and the CTS lines on the port connection.



8.4.2 RS-422 Wiring

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:



8.4.3 RS-485 Wiring

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: This type of connection is commonly called a RS-485 half-duplex, 2-wire connection. If you have RS-485 4-wire, full-duplex devices, they can be connected to the gateway's serial ports by wiring together the TxD+ and RxD+ from the two pins of the full-duplex device to Pin 1 on the gateway and wiring together the TxD- and RxD- from the two pins of the full-duplex device to Pin 8 on the gateway. As an alternative, you could try setting the gateway to use the RS-422 interface and connect the full-duplex device according to the RS-422 wiring diagram. For additional assistance, please contact ProSoft Technical Support.

Note: Depending upon devices on the network, if there are problems in RS-485 communication that can be attributed to the signal echoes or reflections, then consider adding 120 OHM terminating resistors at both ends of the RS-485 line.

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.

8.4.4 DB9 to RJ45 Adaptor (Cable 14)





Wiring Diagram



8.5 Status Data Definition

This section contains a description of the members present in the **GSCStatus** object. This data is transferred from the module to the processor as part of each read block.

Object in GSCInStat	Block Offset	Description	
PassCnt	3	Program cycle counter	
Product	4 to 5	Product name as ASCII string	
Rev	6 to 7	Revision level as ASCII string	
OP	8 to 9	Operating system level as ASCII string	
Run	10 to 11	Run number as ASCII string	
BlkErrs.Read	12	Number of blocks transferred from module to processor	
BlkErrs.Write	13	Number of blocks transferred from processor to module	
BlkErrs.Parse	14	Number of blocks parsed by module	
BlkErrs.Err	15	Number of block errors in module	
Port1.RxState	16	Port 1 receive state: -1 = Listening for data 1 = Receiving Port Data 2 = Waiting for Backplane transfer	
Port1.RXCharCnt	17	Port 1 receive character count	
Port1.RxMsgCnt	18	Port 1 receive block count	
Port1.TxState Port1.TxCharCnt	19 20	Port 1 transmit state: 0 = Waiting for Data to Send 1 = RTS On 2 = RTS Timeout 3 = Sending data 4 = Waiting for RTS Off 5 = RTS turned off 30 = Intercharacter Delay 31 = Intercharacter Delay 32 = Intercharacter Delay 100 = Message Delay before Transmit 101 = Message Delay before Transmit Port 1 transmit character count	
Port1 TyMsgCnt	21	Port 1 transmit block count	
Port1 ErrorWord	22	Port 1 error word	
Port2.RxState	30	Port 2 receive state: -1 = Listening for data 1 = Receiving Port Data 2 = Waiting for Backplane transfer	
Port2.RXCharCnt	31	Port 2 receive character count	
Port2.RxMsgCnt	32	Port 2 receive block count	
Port2.TxState	33	Port 2 transmit state: 0 = Waiting for Data to Send 1 = RTS On 2 = RTS Timeout 3 = Sending data 4 = Waiting for RTS Off 5 = RTS turned off 30 = Intercharacter Delay 31 = Intercharacter Delay 32 = Intercharacter Delay 100 = Message Delay before Transmit 101 = Message Delay before Transmit	

Object in GSCInStat	Block Offset	Description
Port2.TxCharCnt	34	Port 2 transmit character count
Port2.TxMsgCnt	35	Port 2 transmit block count
Port2.ErrorWord	36	Port 2 error word

Member Name	Bit in Word	Description
Cfg_type	Bit 0	The termination type configured for the port is not valid. Values between 0 and 15 are the only ones valid. The module will use type 0 (stream mode) for the port.
Cfg_Baud	Bit 1	The baud rate entered for the port is not valid. The module will use 9600 baud for the port.
Cfg_Parity	Bit 2	The parity value entered is not valid. Values between 0 and 4 are accepted. The module has set the parity to a value of none (0).
Cfg_DataBits	Bit 3	The number of data bits for the protocol is not valid. Values between 5 and 8 are accepted. The module assumes a value of 8 data bits.
Cfg_StopBits	Bit 4	The number of stop bits for the protocol is not valid. Values of 1 or 2 are accepted. The module assumes a value of 1 stop bit.
Cfg_Handshake	Bit 5	The handshake code for the port is not valid. The value entered must be in the range of 0 to 3. The module assumes a value of 0 (no handshaking).
Cfg_Rtermcount	Bit 6	The number of termination characters is not valid. The value must be set between 1 and 12 when using the termination character string to end a receive buffer. The module will not terminate a buffer when using the termination character(s) when this bit is set.
Cfg_RPacketLen	Bit 7	The number of characters for a packet is not valid. The value must be set between 1 and 4096 when the packet size termination option is used. The module will not use the packet length termination option when this bit is set.
Cfg_Rtimeout	Bit 8	The message timeout value is set to zero. The module will not use the message timeout termination option when this bit is set.
Cfg_Rdelay	Bit 9	The intercharacter delay value configured is set to zero. The module will not use the intercharacter delay option when this bit is set.
Cfg_Wtimeout	Bit 10	The write message timeout parameter is set to zero. The module assumes a value of 5000 milliseconds.
	Bit 11	
	Bit 12	
	Bit 13	
	Bit 14	
Err_ROverflow	Bit 15	Data is being received faster on the port than the ladder logic can process the read blocks. Alter the configuration of the module or the connected device. Receive data is being lost.

GSCErrorWord Definition

9 Support, Service & Warranty

9.1 Contacting Technical Support

ProSoft Technology, Inc. is committed to providing the most efficient and effective support possible. Before calling, please gather the following information to assist in expediting this process:

- 1 Product Version Number
- 2 System architecture
- 3 Network details

If the issue is hardware related, we will also need information regarding:

- 1 Module configuration and associated ladder files, if any
- 2 Module operation and any unusual behavior
- 3 Configuration/Debug status information
- 4 LED patterns
- 5 Details about the interfaced serial, Ethernet or Fieldbus devices

Note: For technical support calls within the United States, ProSoft Technology's 24/7 after-hours phone support is available for urgent plant-down issues.

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For additional ProSoft Technology contacts in your area, please visit: <u>www.prosoft-technology.com/About-Us/Contact-Us</u>.

9.2 Warranty Information

For complete details regarding ProSoft Technology's TERMS & CONDITIONS OF SALE, WARRANTY, SUPPORT, SERVICE AND RETURN MATERIAL AUTHORIZATION INSTRUCTIONS, please see the documents at: <u>www.prosoft-technology/legal</u>