Smart Wireless Gateway to Allen-Bradley[®] Integration Manual

Introduction	page 1
Preparing the Gateway for EtherNet/IP connection	page 2
Connecting to the ControlLogix PLC	page 8
Write functionality using RSLogix 5000	page 31
Troubleshooting	page 36
Other information	page 36

1.1 Introduction

EtherNet/IP[™] is the most commonly used industrial communication protocol managed by Open DeviceNet Vendors Association (ODVA). EtherNet/IP is an application layer protocol that is transferred inside a TCP/IP Packet. That means that EtherNet/IP is simply the way data is organized in a TCP or UDP packet. EtherNet/IP is part of CIP, the Common Industrial Protocol. CIP defines the Object structure and specifies the message transfer. CIP protocol over Ethernet is EtherNet/IP.

This document describes how to enable EtherNet/IP protocol support in Smart Wireless Gateway (Gateway). This document also explains the procedure to import Order Options, enable protocol support, and establish various types of connections with Rockwell ControlLogix[®] PLC using Class1, UCMM, and Class3 connections.

The document also explains about understanding different user interface pages within the Smart Wireless Gateway. These pages include, EtherNet/IP statistics, the communication page, and how to map device variables in the EtherNet/IP mapping page. It is assumed that there is general knowledge of how to establish connections using the Rockwell ControlLogix PLC. Consult the manual for the specific PLC. This document is just aimed at users looking to incorporate data values from the Smart Wireless Gateway. For assistance, contact your local wireless specialist.



1.2 Preparing the Gateway for EtherNet/IP connection

1.2.1 Importing EtherNet/IP Order Option

Before importing the order option

Note

If the Gateway was pre ordered with the EtherNet/IP option, skip to "Enable EtherNet/IP Protocol" on page 4. If this is a field upgrade, follow these directions. An option file will need to be purchased for all field upgrades. Contact your local Emerson representative or contact information at the end of this manual.

Figure 1-1. Smart Wireless Gateway

EMERSON	Smart Wireless G Version: 4.5.27	ateway		admin	About Help L	ogout
Free-45x1410 ree-45x1410 System Settings >> Ga	Welhead	Home Devices	System Settings		+ Network Info	ormation
Gateway						
Access List		Features				
Backup And Res	store	. cutures				
Certificate Mana		Gateway Name	rcc-45x1410			
Ethernet Commu	unication	Serial No	753440			
Firmware						
Features		Features installed on	the Celevan			
Logging			the Gateway			
Time		AMS				
Network		EtherNet/IP				
Protocols		HART-IP				
		Modbus/RTU				
Users		Modbus/TCP				
		Secondary Ethernet				
		Wellhead				
		Upgrade Current	Features			
		Select an option file				
		_		_		
		Browse				
	_					
		Install				
	OME DEVICES SYSTEM S	ETTINGS ABOUT HELP		 eedback Terms Of U	56 FW Rev 4 5.27	
EMERSON HC						

Once an option file has been obtained navigate to **Setup>Firmware** options. Under *Select a Gateway option file*, browse to the option file. See Figure 1-1 on page 2.

After selecting the EtherNet/IP order option file associated with the correct Gateways HG serial number, select the **Submit** button to apply the changes and proceed to Restart the Applications as seen below in Figure 1-2.

An application restart is necessary for the installation to be complete. Navigate to **Setup>Restart Applications** if not prompted.

Note

This will result in a temporary loss in communications with the network and will require a network rebuild. The mesh network is maintained, however, the devices will need to establish a connection to the Gateway. WARNING - All communications back to the host will be lost.

EMERSON	Smart Wireless G	Sateway		admin	About Help	Logout
ms-45x1410 x10-45x1410	Welhead	Home Devices	System Settings		+ Network	Information
System Settings >> Ge Gateway	teway >> Backup & Restore					
	nore enterna	backups in a secure k	kups contain user passwords and keys used for encryptin	g communication. Be sure to s	tore downloaded	0
		Save Bac	kup			
Network Protocols Users		Restore System Warning: A system re your system.	store will delete previously saved information and cannot	be undone once completed.Be	sure to back-up	9
		Browse				
		install	Resiore To Default	Restart App		
EMERSON H	OME I DEVICES I SYSTEM	SETTINGS ABOUT HELP		Peetback Teens Of L 0-2015 Extension Elect Consider II Societ.	les : FW Res 4.5.27 n. Co. Al Pagen Rese	net.

Figure 1-2. Setup Restart Applications

After importing the order option

After restarting the Gateway, navigate to the **Setup>Firmware Options** page. The check mark should be seen as shown to ensure that the EtherNet/IP Order Options imported successfully in the Smart Wireless Gateway.

ecc-45a1410 ecc-45a1410	Wethead Hor	ne Devices System	Settings		+ Notwork Information
nSettings >> Protocols >> Neway	Protocols And Ports				
	Protoc	cols And Ports			
	Enabled	Protocol	Port Type	Port	Port Upper Range [UDP]
		нттр	TCP	80	
	12	HTTPS	TCP	443	
		Modbus TCP	TCP	502	
	12	Modbus TCP Secure	TCP	1502	
	12	EtherNet/IP	TCP	44818	
	8	EtherNe01P	UDP	2222	
	12	AMS	TCP	33333	
	12	AMS Secure	TCP	32000	
	12	HART-IP	TCP	5094	
	12	HART-IP	UOP	5094	5126
	12	HART-IP Secure	TCP	5095	
		DHCP	UDP	68	
		NTP	UDP	123	
	12	Ping			
	1 - 14 of 14	results Save Changes	Cancel	6.4.1	> > 15

1.2.2 Enable EtherNet/IP Protocol

Navigate to the **Setup**>**Security**>**Protocols** page to enable the EtherNet/IP Protocol. The Gateway needs to restart in order to apply the changes.

Select the **Enable** checkbox and press the **Submit** button to enable the EtherNet/IP Protocol in the Gateway as shown below. Restart the application to apply the changes.

Navigate to **Setup>Security>Protocols** page. Ensure that the EtherNet/IP Protocol checkbox is enabled as shown in the below screenshot and that there are no error messages on the Protocol Page. A browser reset/cache clear may be required for the option to fully display.

1.2.3 EtherNet/IP Web Pages

EtherNet/IP mapping page

Navigate to the **Setup>EtherNet/IP>EtherNet/IP Mapping** page to map various device variables in Instance Pairs (100-101 or 102-103 or 104-105).

Note

If no devices are configured with the Gateway or if all devices are offline, enable the *Include Gateways* option from the **HART>Hierarchy** page for initial EtherNet/IP communication with the Smart Wireless Gateway. In that case, the user can map *wihartgw.PV*, *wihartgw.QV*, etc. This web page is also useful while reading values from ControlLogix to understand in which pair and as which member user has mapped his particular device variable.

Below represents the EtherNet/IP mapping page of the Gateway. See Table 1-1 on page 1-5 for detailed explanations of the available options.

Figure 1-4. Setup>EtherNet/IP>EtherNet/IP Mapping

rcc-45c1410 rcc-45c1410 stem Settings >> Protocols >> Ethe	Wellhead	Home Devices	System Settings		+ 1	lehvork Informatio
Gateway	a neor					
Network	Et	herNet/IP				
Protocols	Eth	erNet/IP Member I	Мар			
	Add	New Entry Show/Hide S	ystem Members Add All PV	/ Imp	Export Mappings	٩
		Input Instance (DEC)	Output Instance (DEC)	Member	Point Name	
		100 *	101	1	848TX Temperatu ~	
Users		100 *	101	2	DV06200.PV -	
		100 🔹	101	3	rcc-45x1410.PV *	
		100 +	101	4	wireless848t.PV v	

Table 1-1. Summary of Terms used for the EtherNet/IP Mapping Page

Terms	Description
Input Instance	EtherNet/IP Input Static Assembly Instance - 496 bytes.
Output Instance	EtherNet/IP Output Static Assembly Instance - 496 bytes.
Member	EtherNet/IP Instance Member in which data will get produced or consumed.
Point Name	Assigned data point in the format HARTtag.parameter.
New entry	Creates a new entry in this table.

Terms	Description
< <first< td=""><td>Navigates to the first page of this table.</td></first<>	Navigates to the first page of this table.
< <previous< td=""><td>Navigates to the previous page of this table.</td></previous<>	Navigates to the previous page of this table.
Search	Finds the next occurrence of the characters entered into this field.
Next>>	Navigates to the next page of this table.
Last>>	Navigates to the last page of this table.
Delete Selected	Removes the selected entry from this table.
Select All	Selects all table entries.
Select None	De-selects all table entries.
Select Errors	Selects all table entries that have an error message.
Submit	Accepts all changes (highlighted in yellow).

Table 1-1. Summary of Terms used for the EtherNet/IP Mapping Page

EtherNet/IP communication page

This section contains basic information about EtherNet/IP Protocol and error value representation. See Table 1-2 on page 1-6 for details on each section.

Terms	Description
Assembly Object Type	EtherNet/IP use Static assembly object.
EtherNet/IP TCP Port	The TCP Port used to access EtherNet/IP TCP data directly from the Gateway.
EtherNet/IP UDP Ports	The UDP Ports used to access EtherNet/IP UDP data directly from the Gateway.
Incorporate value's associated status as error?	If the HART [®] variable status indicates a critical failure or if there is a loss of communications, it will be reported through the EtherNet/IP member.
Value reported for error (floating point)	Chooses what value is reported if the value's associated status indicates a critical failure. Only used if the Gateway is using float representation
NaN	Not a number is reported if the value's associated status indicates a critical failure.
+Inf	Positive infinity is reported if the value's associated status indicates a critical failure.
-Inf	Negative infinity is reported if the value's associated status indicates a critical failure.
Other	User defined value is reported if the value's associated status indicates a critical failure.
Value reported for error (native integer)	User defined value is reported if the value's associated status indicates a critical failure. Only used if the Gateway is using integer representation.

Table 1-2. Setup>EtherNet/IP>EtherNet/IP Communication

Import/export page

Table 1-3 on page 1-7 shows the *Import/Export Mapping* page. The Import/Export of mapped entries can be saved for later use or they can import settings that have already been created in the.CSV file format.

Table 1-3. Setup>EtherNet/IP> Import/Export

Terms	Description
CSV file	Comma delimited or comma separated file format.
Browse	Opens a navigation window to locate a EtherNet/IP mapping backup file (CSV file) on the PC client.
Upload Configuration	Restores the select EtherNet/IP mapping backup file to the Gateway.
Download Configuration	Collects the Gateway EtherNet/IP mapping data and creates a backup file. This EtherNet/IP mapping backup file is saved on the PC client as a CSV file (*.csv).

EtherNet/IP stats page

The EtherNet/IP Stats Page shows the Communication/Connection Statistics. Navigate to **Diagnostics>Advanced>EtherNet/IP Stats** page.

Table 1-4. Diagnostics > Advanced > EtherNet/IP Stats

Terms	Description
Message Received	Total number of class 3 Received messages.
Message Sent	Total number of class 3 Sent messages.
UCMM Received	Total number of UCMM Received messages.
UCMM Sent	Total number of UCMM Sent messages.
UCMM Error Response	Total number of failed UCMM Read/Write Request.
I/O Packets Received	Total number of received class 1 packets.
I/O Packets Sent	Total number of sent class 1 packets.
I/O Packets Failed to Sent	Number of packets that have failed to send.
I/O Packets Received Error	Number of packets that have failed to be received.
Active connections	Total number of connections established with EtherNet/IP Adapter (Smart Wireless Gateway).
Current I/O Message Connections	Shows total number of active Class 1 connections.
Current CIP Message Connections	Shows total number of active Class 3 connections.
Reset Counts	Clicking this button will reset all EtherNet/IP Statistics counts to zero.

1.3 Connecting to the ControlLogix PLC

This section assumes knowledge of Allen-Bradley software. The IO Module is configured with a valid IP address on the same subnet as the Gateway and the PC.

A basic knowledge of the Emerson Smart Wireless Gateway is required. The Gateway will need to be configured with a valid IP address on the same subnet as the Allen-Bradley control system and the PC.

The Emerson 1420 device uses multiple Class 1 CIP connections within a Generic Profile. The latest version of RSLogix5000 is required for you to use this capability. This requires V19 and higher of RSLogix5000. V20 of RSLogix5000 includes features that automatically populate parameters such as for input/output instances for the Generic CIP Module making some of the steps in this manual unnecessary.

Note

- The PLC processor has to be taken offline to be configured, then downloaded to accept the EtherNet/IP setup. This means the protocol can't be implemented when the process is running.
- EtherNet/IP can only be implemented on ControlLogix processor firmware revision 17 and up.
- EtherNet/IP will only work on the Ethernet 1 connection on the Gateway.
- When mapping data, only use one input "instance" and one output "instance". An Allen-Bradley Ethernet card can only handle one instance per setup in the PLC.
- EtherNet/IP can only be implemented on redundant ControlLogix processors starting with firmware revision 20 and above.
- See "Other information" on page 36 for limitations with explicit messaging before proceeding.

Section 1.3.2, 1.3.4, 1.3.5 and 1.3.6 detail connecting to the ControlLogix PLC using four separate methods, Class 1 Connections: CIP BUS Module, UCMM Connection, Class 3 Connections and Generic Gateway Module respectively. The methods are defined below. Use only one of these methods to connect to the PLC.

Class 1 Connections (I/O): CIP BUS Module - Establishes a periodic exchange of data between a scanner and an adapter. Messages are sent as connected messages which utilize resources within each node that are dedicated in advance to a particular purpose. The messaging is implicit and is time-critical in nature. Implicit messaging (or I/O) is typically used for real-time data exchange when speed and low latency is important. They include very little information about their meaning so its transmission is more efficient, but less flexible than explicit.

UCMM Connection (explicit messaging - unconnected) - Commands or data requests sent from the scanner to individual target nodes (Class 3 messages). Unconnected messaging is used during connection establishment and for infrequent, low-priority messages. The Unconnected Message Manager, or UCMM, refers to the unconnected resources in a device. Explicit messaging connections in general are request-response transactions between two nodes typically used for non-real time data, normally for information. They include a description of their meaning so the transmission is very flexible but less efficient.

Class 3 Connection - Similar to UCMM connection Class 3 connection is used for individual request/response transactions. A request from a scanner always results in a response from the adapter indicating the success or failure of the request. Messaging is explicit and connected rather than unconnected.

Generic Gateway Module - Similar to CIP BUS Module the Generic Gateway Module is established to move application specific I/O data at regular intervals. The Generic Gateway Module however establishes class 1 connection to a single pair at a time whereas the Ethernet CIP BUS Method allows connection to multiple pairs.

For status and output capability, the use of the CIP Bus method is recommended. It should be noted that the CIP Bus method does require more memory than the generic Gateway method.

These are just examples of ways to bring in the data from the network. There are many possible configurations.

Note

For instructions on how to first establish a connection to the Gateway, see either the Quick Start Guide (document number 00825-0200-4420) or the Smart Wireless Gateway manual (document number 00809-0200-4420).

1.3.1 Importing Smart Wireless Gateway EDS file using EDS hardware installation tool

Note

Before doing connections with the controller, the user should import the EDS file of the Smart Wireless Gateway in RSLogix. Navigate to **Start>Programs>Rockwell Software>Version 2.56 >RSLinx>Tools>EDS Hardware Installation Tool**. The .eds file can be obtained by contacting Specialist-Wireless.EPM-RTC@EmersonProcess.com with *Allen-Bradley EDS file* in the subject line.

Equipment used

- Emerson 1420 Gateway with firmware 4.4 or higher and EtherNet/IP enabled (Gateway
 Page>Setup>Security>Protocols)
- 1 or more *Wireless*HART[®] devices connected to the Emerson 1420 Gateway
- 1. After Launching the EDS Hardware installation tool, select **Add**.
- 2. Make sure that *Register a single file* is selected by default. If not, select it.
- 3. Browse for the Smart Wireless Gateway EDS file and select **Next** until there is successful installation of Smart Wireless Gateway's EDS file. Select **Finish** after installation of the EDS file.

If your EDS installation wizard is successful, in *RSLinx Utility* you can see Smart Wireless Gateway as a recognized device with the name *Wireless Gateway - EtherNet/IP* and device logo.

1.3.2 Establishing a Class 1 connection (I/O): CIP BUS Module

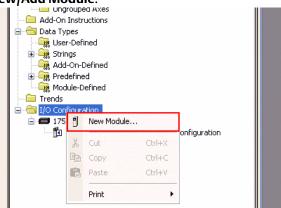
- 1. Power **ON** the PLC.
- 2. Run the RSLogix application and create a new configuration. (Navigate to File>New)
- 3. Enter the appropriate controller information and Name. Select **OK**.
 - a. Choose the controller model from the drop down list. (This is the specific controller model that you are using and may be different than the one used in the image below).
 - b. Set the proper revision for the controller.
 - c. Give the Project a name.
 - d. Choose the chassis type used from the dropdown list.
 - e. Select the slot that the controller occupies.
- 4. Choose where to save the project and select **OK**.

New Controller			×
Vendor:	Allen-Bradley		
<u>Т</u> уре:	1756-L72 ControlLogix5572 Controller	*	OK
Re <u>v</u> ision:	19 🔽		Cancel
	<u>R</u> edundancy Enabled		Help
Na <u>m</u> e:	wireless_gateway_configuration		
Descri <u>p</u> tion:		~	
		~	
<u>C</u> hassis Type:	1756-A10 10-Slot ControlLogix Chassis	~	
Sl <u>o</u> t:	0 😂 Safety Partner Slot: <none></none>		
Cr <u>e</u> ate In:	C:\RSLogix 5000\Projects\Mark Samples		Browse
Security Authority:	No Protection	~	
	Use only the selected Security Authority for Authentication and Authorization		
	Provi folissiko (

Note

When using Compactlogix you don't need to select a slot.

- 5. Add 1756-ENET/B to RSLogix I/O configuration
 - a. Right click on the **I/O Configuration** node in the *Controller Organizer* view and select **New/Add Module**.



b. In the Select Module Type dialog select **1756-ENET/B entry**.

Module	Description	Vendor
- 1756-EN2TR	1756 10/100 Mbps Ethernet Bridge, 2-Port, Twisted-Pair .	Allen-Bradley 🗸
- 1756-EN3TR	1756 10/100 Mbps Ethernet Bridge, 2-Port, Twisted-Pair .	Allen-Bradley
- 1756-ENBF/A	1756 10/100 Mbps Ethernet Bridge, Fiber Media	Allen-Bradley
1756-ENBT	1756 10/100 Mbps Ethernet Bridge, Twisted-Pair Media	Allen-Bradley
- 1756-ENET/A	1756 Ethernet Communication Interface	Allen-Bradley
1756-ENET/B	1756 Ethernet Communication Interface	Allen-Bradley
1756-EWEB/A	1756 10/100 Mbps Ethernet Bridge w/Enhanced Web Serv	Allen-Bradley
1756-RIO	1756 Remote I/O (RIO) Interface	Allen-Bradley
1756-SYNCH/A	SynchLink Interface	Allen-Bradley
MVI56-PDPMV1	PROFIBUS DPV1 Master Communication Interface	ProSoft Tech.
MVI56E-GSC	Generic ASCII Serial Communication Interface	ProSoft Tech.
MVI56E-MCM	Modbus Master/Slave Communication Interface	ProSoft Tech.
OCX-CTN	Fiber Optic ControlNet	Phoenix Digita
		>
	Find	Add Favorite
By Category By V	Vendor Favorites	

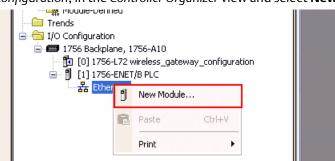
c. RSLogix will open the *Module Properties* dialog box. Enter the IP address of the 1756-ENET/B bridge and select **OK**. This is user determined. In this example, the PLC address was 192.168.1.21.

You may download the configuration to make sure the operation was successful.

New Module			×
Туре:	1756-ENET/B 1756 Ethernet Communica	tion Interface	Change Type ←
Vendor: Parent: Name:	Allen-Bradley Local PLC	Address / Host N	ame
Description:		 IP Address: Host Name: 	192 . 168 . 1 . 21
Slot: Revision:	1 🔹 2 1 🔹	Electronic Keying:	Compatible Keying
🔽 Open Modu	le Properties	ОК	Cancel Help

Add the Gateway as a module in RSLogix

- 1. Ensure that *EtherNet/IP protocol* is enabled in the Smart Wireless Gateway. See Figure 1-3 on page 4 for instructions.
- 2. Right click on the **Ethernet** section, under the 1756-ENET/B EnetBridge node, under I/O Configuration, in the Controller Organizer view and select **New Module**.



3. Under *Communication*, choose **Generic EtherNet/IP CIP Bridge**.

Select Module		
	1	
Module	Description	Vendor
Checker 4G1	Checker 4G Series	Cognex Corp 🔼
Checker 4G7	Checker 4G Series	Cognex Corp
DataMan 200 Seri	ID Reader	Cognex Corp
- DataMan 500 Seri	ID Reader	Cognex Corp
- DataMan 8000 Ser	ID Reader	Cognex Corp
Drivelogix5730 Et	10/100 Mbps Ethernet Port on DriveLogix5730	Allen-Bradley
E1 Plus	Electronic Overload Relay Communications Interface	Allen-Bradley 📃
ETHERNET-BRIDGE	Generic EtherNet/IP CIP Bridge	Allen-Bradley
ETHERNET-MODU	Generic Ethernet Module	Allen-Bradley
EtherNet/IP	SoftLogix5800 EtherNet/IP	Allen-Bradley
ILX34-AENWG	1734 Wireless Ethernet Adapter, Twisted-Pair Media	ProSoft Tech.
In-Sight 1700 Seri	Vision System	Cognex Corp
In-Sight 3400 Seri	Vision System	Cognex Corp 🚩
		>
	Find	Add Favorite
By Category By Ve	ndor Favorites	
	OK Cancel	Help

4. Enter the Name and IP Address of the Emerson Smart Wireless Gateway and select **OK**.

New Module Type: Parent:	ETHERNET-BRIDGE Generic EtherNet/IP CIP Bridge PLC Address / Host Name
Name: Description:	smart_wireless_gateway IP Address: 192.168.1.10
	O Host Name:
🗹 Open Mod	le Properties OK Cancel Help

- 5. Right click on the **CIP Bus** tab and select **New Module**.
- 6. Choose **Generic CIP** module and select **OK**.

Select Module		
Module	Description	Vendor
🖃 Other		
CIP-MODU	JLE Generic CIP Module	Allen-Bradley
		Find Add Favorite
By Category	By Vendor Favorites	
.,	-	OK Cancel Help

- 7. Select **OK**. This will open the *Module Properties* dialog.
- 8. Enter the appropriate name (**Instance_Pair1**) and Connection parameters. Choose the appropriate data type from the dropdown list. Depending on the chosen data type, choose the data size in bytes.

Note

Total Data size should be 496 bytes for each instance. Enter the Input Connection Point (Output Instance no. of Device), Output Connection Point (Input Instance no. of Device), and Configuration Connection Object Instance as **1**. For more information on total data size, see Table 1-5 below or "Other information" on page 36.

Table 1-5. Total Data Size Table

Comm. format - data type	Input instance size (bytes)	Output instance size (bytes)
DINT	124	124
INT	248	248
SINT	496	496
REAL	124	124

Туре:	CIP-MODULE Generic CIP Module			
Parent:	smart_wireless_gateway			
Name:	Instance_Pair1	Connection Para	Assembly Instance:	Size:
Description:		Input:	101	496 🛟 (8-bit)
Comm Format:	Data - SINT 🗸	Output:	100	496 🌔 (8-bit)
Address:		Configuration:	1	0 🛟 (8-bit)
		Status Input:		
		Status Output:		

9. Select **OK** to add the example to the I/O Configuration.

Note

Repeat steps 4 to 9 to establish connection to Instance Pair2 (Input=103 - Output=102) and Instance Pair3 (Input=105 - Output=104).

- 10. A new ETHERNET-MODULE branch of 1756-ENET/B EnetBridge node will appear in the I/O Configuration view.
- 11. New entries will also appear in the *Controller Tags* view: *Smart_Wireless_Gateway:0: I* to view the input data, *Smart_Wireless_Gateway:0: O* to modify the output data and

Smart_Wireless_Gateway:0: C to view the configuration data.

H H H H + + + + + () + (0) + (L)				
< > Favorites & Add-On & Safety & Alarms & Bit & Timer/Counter	🕻 Input/Output 🔏 Compare	Compute/Math	(Move/Logical 🔏 F	File/Misc. 🕻 File/Shift 🔏 Sequencer 👔
🗢 🕸 🖌 🖉 Controller Tags - wireless_gateway_configuration	(controller)			
Scope: 🗊 wireless_gatewa, 💙 Show: All Tags		V 7.	Enter Name Filter	~
Name 28 4	Value 🔶	Force Mask 🔶 🗲	Style	Data Type 🔼
+ smart_wireless_gateway:0:C	{}	{}		AB:1756_MODULE:C:0
+ smart_wireless_gateway:0:1	{}	{}		AB:1756_MODULE_SINT_496Byte
+ smart_wireless_gateway:0:0	{}	{}		AB:1756_MODULE_SINT_496Byte
				~
ion				
_gateway				

Save the configuration

- 1. Use *Communications/Download* to download the new I/O configuration to the controller.
- 2. If you haven't download the PLC before, you'll have to select the appropriate driver. Navigate to **Communication>Who Active.** Browse through the appropriate driver and download the project in the controller as shown.

Backplaine, 1730-410/A Backplaine, 1730-41		👪 Who Active
 B Linx Gateways, Ethernet AB ETH-1, Ethernet 192.168.1.10, Wreless Gateway - EtherNet/IP, Wireless Gateway - EtherNet/IP 192.168.1.21, 1756-ENBT/A, 1756-ENBT/A B Backplane, 1756-AID/A 01, 1756-ENBT/A, 1756-ENBT/A 02, Unrecognized Device, ST-PB3-CLX 03, Unrecognized Device, 19756-TF8H/A HART Analog In 05, 1756-FF8/A, 1756-FF8/A 192.168.1.44, 1757-FFLD Foundation Fieldbus Linking Device AB ETHIP-1, Ethernet AB ETHIP-2, Ethernet AB AB_ETHIP-2, Ethernet AB AB_THIP-3, 1750-AIT/A Virtual Chassis 		Autobrowse Refresh
	higuration Download Update Firmware Close Help Jogy, Inc.	 Workstation, USRTC-SYSONE2 AB_ETH-1, Ethernet 192.168.1.10, Wireless Gateway - EtherNet/IF 192.168.1.12, Computer, AB_ETH-1 192.168.1.14, 1756-ENBT/A 192.168.1.141, 1756-FIEA/A 192.168.1.141, 1757-FFLD Foundation Fieldbus AB_ETHIP-1, Ethernet
Path: AB_ETH-1\192.168.1.21\Backplane\0 Path in Project: <none></none>		

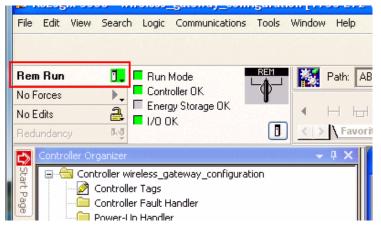
3. Once the download is complete, the controller will automatically establish a new Class1 connection with the device through EtherNet/IP. It will use the configuration parameters entered in the *Module Properties* dialog.

1.3.3 Viewing class1 data on ControlLogix

Note

Class1 connections should be used with experienced users that understand how to implement messaging. Consult the Controllogix manual.

1. Switch *RSLogix* to the *Remote Run* mode.



2. Open **Instance_Pair1: I** and **Instance_Pair1: O** nodes by clicking on the plus sign in front of the nodes.

cope: 🛐 wireless_gatewa, 🔽 Show: All Tag:	8			▼ 7.	Enter Name i			
NameA	Value 🗲	Force Mask 🔸	Style	Data Type		Description	Constant]
	{}	{}		AB:1756_MC	IDULE:C:0		Г	
-smart_wireless_gateway:0:1	{}	{}		AB:1756_MC	DULE_SINT		Γ	
-smart_wireless_gateway:0:1.Data	{}	{}	Decimal	SINT[496]				
+ smart_wireless_gateway:0:1.Data[0]	0		Decimal	SINT				1
smart_wireless_gateway:0:1.Data[1]	-64		Decimal	SINT		d Device Varia		
smart_wireless_gateway:0:1.D ata[2]	99		Decimal	SINT	values.	SINT-8 bit da	ta	
+ smart_wireless_gateway:0:1.Data[3]	68		Decimal	SINT				
+ smart_wireless_gateway:0:1.Data[4]	0		Decimal	SINT				
+ smart_wireless_gateway:0:1.Data[5]	-64		Decimal	SINT				
± smart_wireless_gateway:0:1.Data[6]	99		Decimal	SINT				
± smart_wireless_gateway:0:1.Data[7]	68		Decimal	SINT				
+ smart_wireless_gateway:0:1.Data[8]	0		Decimal	SINT				
+ smart_wireless_gateway:0:1.Data[9]	-64		Decimal	SINT				
+ smart_wireless_gateway:0:1.Data[10]	99		Decimal	SINT				
+ smart_wireless_gateway:0:1.Data[11]	68		Decimal	SINT				
+ smart_wireless_gateway:0:1.Data[12]	0		Decimal	SINT				
+ smart_wireless_gateway:0:1.Data[13]	-64		Decimal	SINT				
+ smart_wireless_gateway:0:1.Data[14]	99		Decimal	SINT				
+ smart_wireless_gateway:0:1.Data[15]	68		Decimal	SINT				
+ smart_wireless_gateway:0:I.Data[16]	0		Decimal	SINT				

3. Values should appear as per selected data type during Configuration.

1.3.4 UCMM connection (explicit messaging - unconnected)

- 1. Start RSLogix, Verify that PLC is **ON**.
- 2. Navigate to **File>New**.

New Controller			X
Vendor:	Allen-Bradley		
Туре:	1756-L72 ControlLogix5572 Controller	~	OK
Revision:	19 🗸		Cancel
	Redundancy Enabled		Help
Name:	UCMM_Messaging		
Description:	Establish UCMM Messaging between PLC and Smart Wireless Gateway		
		~	
Chassis Type:	1756-A10 10-Slot ControlLogix Chassis	~	
Slot:	Safety Partner Slot: <none></none>		
Create In:	C:\RSLogix 5000\Projects\Mark Samples		Browse
Security Authority:	No Protection	~	
	Use only the selected Security Authority for Authentication and Authorization		

- 3. Enter the appropriate Controller information and Name. Select **OK**.
- 4. Right click on **I/O Configuration** and select **New Module**.

⊞-⊊∰ Str -⊊∰ Ad ⊞-⊊∰ Pro	er-De rings Id-On edefir odule- s	efined I-Defined ned -Defined		
📄 🖅 17	IJ	New Module		
ß	¥	Cut	Ctrl+X	
		Сору	Ctrl+C	
	ß	Paste	Ctrl+V	
		Print	•	

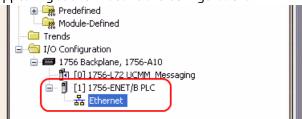
5. Navigate to **Communications>1756 ENET/B 1756 Ethernet communication interface** as shown and select **OK**.

Modu	le	Description	Vendor
	- 1756-EN2F	1756 10/100 Mbps Ethernet Bridge, Fiber Media	Allen-Bradley 🗸
	1756-EN2T	1756 10/100 Mbps Ethernet Bridge, Twisted-Pair Media	Allen-Bradley
	1756-EN2TR	1756 10/100 Mbps Ethernet Bridge, 2-Port, Twisted-Pair	Allen-Bradley
	1756-EN3TR	1756 10/100 Mbps Ethernet Bridge, 2-Port, Twisted-Pair	Allen-Bradley
	- 1756-ENBF/A	1756 10/100 Mbps Ethernet Bridge, Fiber Media	Allen-Bradley
	- 1756-ENBT	1756 10/100 Mbps Ethernet Bridge, Twisted-Pair Media	Allen-Bradley
	- 1756-ENET/A	1756 Ethernet Communication Interface	Allen-Bradley
		1756 Ethernet Communication Interface	Allen-Bradley
	1756-EWEB/A	1756 10/100 Mbps Ethernet Bridge w/Enhanced Web Serv	Allen-Bradley
	1756-RIO	1756 Remote I/O (RIO) Interface	Allen-Bradley
	1756-SYNCH/A	SynchLink Interface	Allen-Bradley
	MVI56-PDPMV1	PROFIBUS DPV1 Master Communication Interface	ProSoft Tech.
	MVI56E-GSC	Generic ASCII Serial Communication Interface	ProSoft Tech. 🚬
< 1			>
			C
		Find	Add Favorite
_	-	Vendor Favorites	
< _		Find	Add Favori

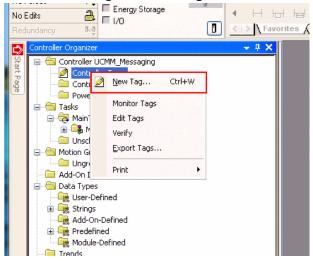
6. Enter Name and Description if the user wants and the IP address of the PLC. Keep the other fields as is.

New Module			
Type: Vendor: Parent: Name: Description: Slot:	1756-ENET/B 1756 Ethernet Communication	Address / Host Na O IP Address:	Change Type ←
Revision:	2 1 C E	Electronic Keying:	Compatible Keying

7. Select **OK** and finish the configuration of the PLC, make sure that the new *Ethernet* tab is appearing as shown. **Save** the Configuration.



8. In the *Controller Organizer* menu, right click on **Controller Tags** and click on **New Tag...**



- 9. In the *New Tag* window give the appropriate name and description for explicit (UCMM) message.
- 10. Select **Type>Base, Data Type>MESSAGE**, *External Access* as **Read** or **Read/Write** depending on the requirement.
- 11. Select OK.

New Tag			
Name:	Read_Identity_Attribute		OK
Description:	UCMM Messaging	<	Cancel Help
Туре:	Base Conne	ction	
Alias For:		~	
Data Type:	MESSAGE)	
Scope:	🚺 UCMM_Messaging	~	
External Access:	Read/Write	*	
Style:		~	
Constant			
🔲 Open MES	SAGE Configuration		

- 12. Again in the *Controller Organizer* menu, right click on **Controller Tags** and select **New Tag**.
- 13. In the *New Tag* window, give the appropriate name and description for message data type.
- 14. Select **Type>Base, Data Type>Data Type of Parameter** to **Read/Write**, *External Access* as **Read** or **Read/Write** depending on requirement.
- 15. Choose *Style* as per data type.
- 16. Select **OK**.

New Tag		
Name:	Data	OK
Description:	Data Value	Cancel
		Help
Туре:	Base Connection	
Alias For:	×	
Data Type:	DINT	
Scope:	🗓 UCMM_Messaging 🛛 👻	
External Access:	Read/Write	
Style:	Decimal 💌	
Constant		
🗌 Open Conf	iguration	

17. **Save** the made configuration. Make sure that you are able to see the above configured tag in *Controller Tags* as shown.

Controller Tags - UCMM_I	Messaging(co	ntroller)						
Scope: 👔 UCMM_Messagi 🛩	Show: All Tag	S			🖌 🔽 Ente	r Name Filter		~
Name	-== 4	Value 🗧 🗲	Force Mask 🔦	Style	Data Type	Description	Constant	^
+ Read_Identity_Attribute		{}	{}		MESSAGE	UCMM Messaging	Г	
+ Data		0		Decimal	DINT	Data Value	Г	
		L.						
Monitor Tags (Edit Tag	is /			<				>

Scope: 🛐 UCMM_Messagi 💊	Show: All Tags	🌱 🔽 Enter Name Filter
Name	_≘ △ Value 🔶 Force Mask ← Style	Data Type Descript
+ Read_Identity_Attribute + Data	New Tag	trl+W Data Val
	Edit "Read_Identity_Attribute" Edit "Read Identity Attribute" Properties A	Nt+Enter
		itrl+I
	Edit "MESSAGE" Data Type	
		Itrl+D Itrl+E
Monitor Tags / Edit	Filter on "MESSAGE"	111
	<u>Go</u> To	Itrl+G
	Toggle Bit C	Etrl+T
	Force On	
	Force Off	
	Remove Force	
		ttrl+X ttrl+C
		trl+V
	Paste Pass-Through	
		Del
	Find All "Read_Identity_Attribute"	
	Expand All "Read_Identity_Attribute" Members C Collapse All "Read_Identity_Attribute" Members	Itrl+Plus

18. Right click on **Tag** which is created in step 8(MESSAGE) and select **Configure Tag**.

- 19. In the Message Configuration table, choose Message Type as **CIP generic**.
- 20. Set *Service Type* as **Get Attribute Single** or **Set Attribute Single** depending on read/write.
- 21. Enter the values of the *Class*, *Instance*, and *Attribute* you want to read write.
- 22. Choose the configured tag in step 12 (Message data) as a destination and click on **Apply**.

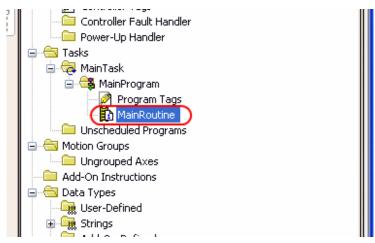
Message Configuration - Read_Identity_At	tribute 🔀
Configuration [*] Communication Tag	
Message Type: CIP Generic	~
Service Get Attribute Single	Source Element:
Type.	Source Length: 0 🔅 (Bytes)
Service e (Hex) Class: 1 (Hex)	Destination Data 🗸
Instance: 1 Attribute: 1 (Hex)	New Tag
O Enable O Enable Waiting O Start	🔾 Done 🛛 Done Length: 0
O Error Code: Extended Error Code:	🔄 Timed Out 🗲
Error Path: Error Text:	
OK	Cancel Apply Help

23. Navigate to **Communication** in the same table and browse for the DUT path. Choose the path. <PLC><SLOT NUMBER><SMART WIRELESS Gateway IP ADDRESS>

Message Configuration - Read_Identity_Attribute
Configuration Communication Tag
Path: Browse
O Broadcast:
Communication Method CIP O DH+ Channet: Destination Link: 0
CIP With Source Link: 0 0 Destination Node: 0 0 (Octal)
Connected Cache Connections
○ Enable ○ Enable Waiting ○ Start ○ Done Done Length: 0
Error Code: Extended Error Code: Timed Out Fror Path;
Error Text:
OK Cancel Apply Help
Aessage Configuration - Read_Identity_Attribute
Configuratio
Pat Path: PLC
🖃 🔄 I/O Configuration
Commun : ☐
CIP' = 11 1756-ENET/B PLC Sour - 뀲 Ethemet (Octal)
O Enable
O Error Co
Error Path: OK Cancel Help
OK Cancel Apply Help
Message Configuration - Read_Identity_Attribute
Configuration Communication* Tag
Path PLC, 2, 192.168.1.10 Browse
PLC, 2, 192.168.1.10
O Broadcast:
Communication Method
CIP With Source Link: 0 Destination Node: 0 10 (Octai)
Connected
◯ Enable ◯ Enable Waiting ◯ Start ◯ Done Done Length: 0
C Error Code: Extended Error Code: Timed Out ◆
Error Path:
OK Cancel Apply Help

24. Select **Apply** and **Save** the configuration.

25. Select **Main Routine** in the tree structure.



26. Add the **Message Block** from *Input/output* to *rung*.

🛃 Path: <none></none>				器		
	msg gsv :	SSV IOT				
Favorites	🕻 Add-On 🧎 A	arms 🔏 Bit	Timer/Counte	∖(Input/Outpu	Compare	🕻 Compute/Math 🔏 N
<u>→ </u>	MainProgram ·					
0	ee					

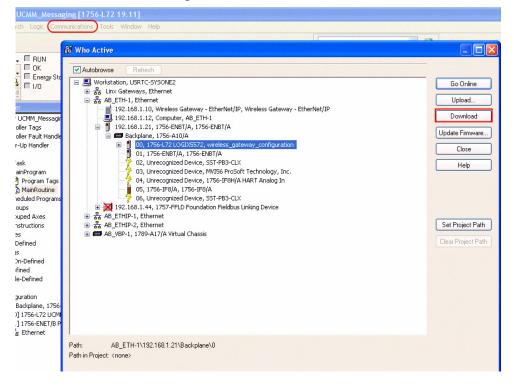
27. Configure this message block as Message tag (tag which is configured in step 3).

- Mannixoutine		n de la companya de la companya de la companya de la companya de 💻
abcd ab ab 💌 Kab>		
		UCMM Messaging MSG Message Control Read_Identity_Attribute
Y. Enter Name Filter	~	Show: MESSAGE
Name	<u>그림</u> Data Type	Description
	MESSAGE	UCMM Messaging
Program		

You can check the configured Message and data by selecting **View Configuration Dialogue box** as shown.

	UCMM Messaging MSG- Message Message Control Read_Identity_Attribute (EN) (ER)
Aessage Configuration - Read_Identity_Att Configuration* Communication Tag Message Type: CIP Generic	ribute
Service Get Attribute Single Type: Service e (Hex) Class: 1 (Hex) Instance: 1 Attribute: 1 (Hex)	Source Element: Source Length: Destination New Tag
Enable Enable Error Code: Error Code: Error Path: Error Text:	◯ Done Done Length: 0

28. **Save** and **Download** the configuration in *Controller*.



Korkstation, USRTC-SYSONE2	Go Online
	Go Unilne
AB_ETH-1, Ethernet	Upload
192.168.1.10, Wireless Gateway - EtherNet/IP, Wireless Gateway - EtherNet/IP	
	Download
😑 📋 192.168.1.21, 1756-ENBT/A, 1756-ENBT/A	(11.14.F)
🖃 📾 Backplane, 1756-A10/A	Update Firmware
Image: 00, 1756-L72 LOGIX5572, wireless_gateway_configuration	Close
01, 1756-ENBT/A, 1756-ENBT/A	
	Help
— 2 03, Unrecognized Device, MVI56 ProSoft Technology, Inc.	
04, Unrecogn 05, 1756-IF8, RSLogix 5000	
06, Unrecogn	
🗉 🗐 192.168.1.44, 1757-f 👔 Done downloading. Change controller mode back to Remote Run?	
AB ETHIP-1, Ethernet	
B & AB ETHIP-2, Ethernet	Set Project Pal
🗄 🚍 AB_VBP-1, 1789-A17/A W Yes No	
	Clear Project Pa
ath: AB ETH-1\192.168.1.21\Backplane\0	

29.	To view the data go to Run mode and navigate to Controller Tags

🗎 MainPro	ogram - MainRoutine		
电压	😤 🕀 🔛 🔤 👶 ab 💌 <ab></ab>		
		Ⅰ □以以支援法法法法	
0 (End)		UCMM Messaging Message Message Control Read_Identity_Attribute (CN) (ER)	
A A Mainl	Routine		>

Controller Tags - UCMM_Messa	ging(co	ntroller)						
Scope: 🛐 UCMM_Messagi 👻 Show	: All Tags	;			🗸 🖌 V. Enter	r Name Filter		~
Name		Value 🔸	Force Mask 🗲	Style	Data Type	Description	Constant	^
+ Read_Identity_Attribute		{}	{}		MESSAGE	UCMM Messaging	Γ	
+ Data		1225)	Decimal	DINT	Data Value	Г	
OUTPUT DATA V	ALUE	IDENITY	YOBJECT	ATTRIBUT	E 1 (VENDOR ID))-1225		
OUTPUT DATA V	ALUE	IDENITY	YOBJECT	ATTRIBUT	e 1 (vendor ID))-1225		

1.3.5 Class 3 connection (explicit messaging - connected)

1. Repeat all steps of UCMM Connection.

Note

In the *Message Configuration* block, under *Communication*, make sure **Connected block** is selected.

C, 2, 192.168.1.10 Browse C, 2, 192.168.1.10 : m Method DH+ Channel: Source Link: 0 0
n Method DH+ Channel: A' Destination Link: 0 (Octa Source Link: 0 (Octa
n Method DH+ Channel: X Destination Link: 0 0 Source Link: 0 0 Destination Node: 0 0 0 (Octa
DH+ Channel: A Destination Link: 0 0 Source Link: 0 0 Destination Node: 0 0 (Octa
DH+ Channel: A Destination Link: U I Destination Node: 0 0 (Oct-
I Casha Connactions
d Cache Connections
d Cache Connections

- 2. **Apply** and **Save** the configuration settings.
- 3. To view the data, go to **Run mode** and navigate to **Controller Tags**.

1.3.6 Utilizing the Generic Gateway Module

Note

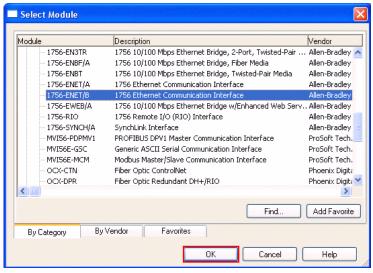
Revision 17 and above is required for EtherNet/IP. When using Compactlogix, you do not need to select a slot.

- 1. Power **ON** the PLC.
- 2. Run the RSLogix application and create a new configuration. Navigate to **File>New**.
- 3. Enter the appropriate Controller information and Name. Select **OK**.
 - a. Choose the controller model from the drop down list.
 - b. Set the proper revision for the controller.
 - c. Give the project a name.
 - d. Choose the chassis type used from the dropdown list.
 - e. Select the slot the controller occupies.
- 4. Choose where to save the project and select **OK**.

New Controller			X
Vendor:	Allen-Bradley		
Туре:	1756-L72 ControlLogix5572 Controller	~	OK
Revision:	19 🗸		Cancel
	Redundancy Enabled		Help
Name:	Class1_Connections		
Description:		~	
		-	
Chassis Type:	1756-A10 10-Slot ControlLogix Chassis	*	
Slot:	Safety Partner Slot: <none></none>		
Create In:	C:\RSLogix 5000\Projects\Mark Samples		Browse
Security Authority:	No Protection	~	
	Use only the selected Security Authority for Authentication and Authorization		

Add 1756-ENet/b to RSLogix I/O configuration

- 1. Right click on the *I/O Configuration* node in the Controller Organizer view and select **New/Add Module**.
- 2. In the Select Module Type dialog choose **1756-ENET/B** entry.



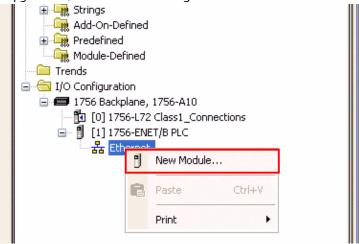
3. RSLogix will open the *Module Properties* dialog box. Enter the IP address of the 1756-ENET/B bridge and select **OK** to add the Interface to your I/O configuration.

New Module			×
Туре:	1756-ENET/B 1756 Ethernet Communicat	ion Interface	Change Type) ←
Vendor:	Allen-Bradley		
Parent:	Local		
Name:	PLC	-Address / Host N	ame
Description:		IP Address:	192 . 168 . 1 . 21
		🔘 Host Name:	
Slot:	1 🗘		
Revision:	2 1 🗘	Electronic Keying:	Compatible Keying 💌
🗹 Open Modu	le Properties	OK	Cancel Help

You may download the configuration to make sure the operation was successful.

Add Gateway as a module in RSLogix

- 1. Ensure that EtherNet/IP protocol is enabled in Wireless Gateway.
- 2. Right click on the *Ethernet* section, under the *1756-ENET/B EnetBridge* node, under *I/O Configuration*, in the Controller Organizer view and select **New Module**.



3. In the Select Module Type dialog choose Generic Ethernet Module.

Select Module	
Module Description	Vendor
- DataMan 500 Seri ID Reader	Cognex Corp 🔼
- DataMan 8000 Ser ID Reader	Cognex Corp
- Drivelogix5730 Et 10/100 Mbps Ethernet Port on DriveLogix5730	Allen-Bradley
E1 Plus Electronic Overload Relay Communications Interface	Allen-Bradley
ETHERNET-BRIDGE Generic EtherNet/IP CIP Bridge	Allen-Bradley
ETHERNET-MODU Generic Ethernet Module	Allen-Bradley
EtherNet/IP SoftLogix5800 EtherNet/IP	Allen-Bradley
ILX34-AENWG 1734 Wireless Ethernet Adapter, Twisted-Pair Media	ProSoft Tech. 📃
- In-Sight 1700 Seri Vision System	Cognex Corp —
- In-Sight 3400 Seri Vision System	Cognex Corp
- In-Sight 5000 Seri Vision System	Cognex Corp
In-Sight Micro Seri Vision System	Cognex Corp
IND560 Ethernet/ Scale Terminal	Mettler-Toled 👱
	>
Find	Add Favorite
By Category By Vendor Favorites	
OK Cancel	Help

- 4. Click **OK**. This will open the *Module Properties* dialog.
- 5. Enter an IP address of the Smart Wireless Gateway in which EtherNet/IP application is running.
- Enter appropriate name (here Instance_Pair1) and connection parameters.
 Select the appropriate data type from the dropdown list.
 Depending on the selected data type choose the data size in bytes.

Note

Total Data size should be 496 bytes for each instance. Enter the Input Connection Point (Output Instance no. of Device), Output Connection Point (Input Instance no. of Device), and Configuration Connection Object Instance as 1. For more information, see "Other information" on page 36.

Comm. format - data type	Input instance size (bytes)	Output instance Size (bytes)
DINT	124	124
INT	248	248
SINT	496	496
REAL	124	124

New Module Type: Vendor: Parent:	ETHERNET-MODULE Generic Etherno Allen-Bradley PLC	et Module				X
Name:	Instance_Pair1	Connection Para				1
Description:			Assembly Instance:	Size:		
D coonpacta		Input:	101	496	🔷 (8-bit)	
	×	Output:	100	496	🛟 (8-bit)	
Comm Format		Configuration:	1	0	😩 (8-bit)	
Address / H					-	
IP Addre	ess: 192 . 168 . 1 . 10	Status Input:			_	
🔿 Host Na	me:	Status Output:				
🔽 Open Modu	le Properties	OK	Cano	el	Help	

- 7. Select **OK** to add the example to the I/O Configuration.
- 8. You should see a new *ETHERNET-MODULE Instance_Pair1* branch of the 1756-ENET/B EnetBridge node in the I/O Configuration view. You should also see 3 new entries in the Controller Tags view: Instance_Pair1:I to view the input data, Instance_Pair1:O to modify the output data and Instance_Pair1:C to view the configuration data:
- 9. **Save** and **Download** the configurations to the controller:

Use Communications/Download to download the new I/O configuration to the controller. Once the download is complete, the controller will automatically establish a new Class1 connection with the configured Instance Pair. It will use the configuration parameters entered in the Module Properties dialog.

Note

In Generic Ethernet Module method, you can establish class 1 connection with single pair at a time. For establishing Class 1 Connection to multiple pairs use Ethernet bridge CIP Bus method.

1.4 Write functionality using RSLogix 5000

Note

This manual describes write functionality for the CIP Bus Method.

- 1. Navigate to **Setup>EtherNet/IP>EtherNet/IP Mapping**.
- 2. Map the Rosemount 702 writable points in the *EtherNet/IP mapping* page.

Figure 1-5. EtherNet/IP Member Map

EMERSON. Process Management	S	mart W	ireless Gate	way		
	EtherNet/IP Mer	nber Map			9 () 👩 admin
₩192.168.1.10 中 ⊡ • Diagnostics					all PV Show/Hide Syste	
P		stance (DEC) 🛆	Output Instance (DEC)	Member	Point	
Overview		~		1	702 DEMO Input/Output.CHANNE	
Devices	100	*	101	2	702 DEMO Input/Output.CHANNE	L_2_SETP[]
Join failures						
E Advanced						
Network Stats						Le.
🗉 🚞 HART Stats						
🗉 🧰 Modbus Stats						
📑 EtherNet/IP Stats	I<< First << Pr	evious	Search	F	Page 1 of 1	Next >> Last >>
📄 System Log						
📑 System Stats	New entry					
Client/Server						
Explorer	Delete selected	Select All	lone Errors			
	Submit					
Ethernet protocol	Caroline					
E Security						
B						

Note

In this example the Rosemount 702 Discrete Wireless Transmitter has both channels set to output and the variables set to on/off (to be either 1 or 0)

3. Observe the mapped variable values in the webpage as shown in the *Explorer* page or in the *Device Published* data page.

Figure 1-6. Explorer

	Explorer					🌻 🕲 💼	admin	
+192.168.1.10	HART Tag	HART status	Last update	PV	sv	TV	QV	Burs
Explorer Setup	702 DEMO Input/Output	•	07/01/13 10:58:02	0.000 🔴	0.000 🗢	24.750 DegC	8.885 V 🔍	4
Help	Rockwell-Gateway	•	07/01/13 10:57:53	4.000 🔴	3.000 🔍	33.750 DegC	34.500 DegC	

CHANNEL_1_COUNTS_CODE	4		07/01/13 10:59:26	8 bit unsigned int
CHANNEL_1_COUNTS_HEALTHY	true		07/01/13 10:59:26	Boolean
CHANNEL_1_COUNTS_STATUS	192		07/01/13 10:59:26	8 bit unsigned int
CHANNEL_1_COUNTS_UNITS	251		07/01/13 10:59:26	8 bit unsigned int
CHANNEL_1_SETPOINT_D	0		07/01/13 10:59:26	16 bit int
CHANNEL_1_SETPOINT_D_HEALTHY	true		07/01/13 10:59:26	Boolean
CHANNEL_1_SETPOINT_D_STATUS	192		07/01/13 10:59:26	8 bit unsigned int
CHANNEL_1_STATE	0.000		07/01/13 10:59:26	32 bit float
CHANNEL_1_STATE_CLASS	0	•	07/01/13 10:59:26	8 bit unsigned int
CHANNEL_1_STATE_CODE	2		07/01/13 10:59:26	8 bit unsigned int
CHANNEL_1_STATE_D	0		07/01/13 10:59:26	16 bit int
CHANNEL_1_STATE_D_HEALTHY	true		07/01/13 10:59:26	Boolean
CHANNEL_1_STATE_D_STATUS	192		07/01/13 10:59:26	8 bit unsigned int
CHANNEL_1_STATE_HEALTHY	true		07/01/13 10:59:26	Boolean
CHANNEL_1_STATE_STATUS	192		07/01/13 10:59:26	8 bit unsigned int
CHANNEL_1_STATE_UNITS	251		07/01/13 10:59:26	8 bit unsigned int
CHANNEL_2_COUNTS	0.000	•	07/01/13 10:59:26	32 bit float
CHANNEL_2_COUNTS_CLASS	0		07/01/13 10:59:26	8 bit unsigned int
CHANNEL_2_COUNTS_CODE	5	•	07/01/13 10:59:26	8 bit unsigned int
CHANNEL_2_COUNTS_HEALTHY	true		07/01/13 10:59:26	Boolean
CHANNEL_2_COUNTS_STATUS	192		07/01/13 10:59:26	8 bit unsigned int
CHANNEL_2_COUNTS_UNITS	251	•	07/01/13 10:59:26	8 bit unsigned int
CHANNEL_2_SETPOINT_D	0	•	07/01/13 10:59:26	16 bit int
CHANNEL_2_SETPOINT_D_HEALTHY	true	•	07/01/13 10:59:26	Boolean

Figure 1-7. Explorer >Choose Hart Tag of Device>Published Data

- 4. Establish a Class 1 Connection with the Smart Wireless Gateway using RSLogix 5000 if not already established.
 - a. Repeat steps 1 to 5 of Class1 Connection (I/O).
 - b. If a connection is established successfully, navigate to **Controller Tags>Input section (I)** as shown in the below screenshot. It will show the present value of mapped Rosemount 702 parameters.

:ope: 🛐 wireless_gatewa 🔽 Show: All Tag	s			👻 🝸 Enter Name I	Silver		
Name _== A	Value 🗲	Force Mask 🔹	Style	Data Type	Description	Constant	
 smart_wireless_gateway:0:1 	{}	{}		AB:1756_MODULE_INT			
smart_wireless_gateway:0:1.Data	{}	{}	Decimal	INT[248]			
+ smart_wireless_gateway:0:1.Data[0]	0		Decimal	INT			
+ smart_wireless_gateway:0:1.Data[1]	0	J	Decimal	INT			
smart_wireless_gateway:0:1.Data[2]	0		Decimal	INT			
+ smart_wireless_gateway:0:1.Data[3]	0		Decimal	INT			
smart_wireless_gateway:0:1.Data[4]	0		Decimal	INT			
smart_wireless_gateway:0:1.Data[5]	0		Decimal	INT			
smart_wireless_gateway:0:1.Data[6]	0		Decimal	INT			
+ smart_wireless_gateway:0:1.Data[7]	0		Decimal	INT			
+ smart_wireless_gateway:0:1.Data[8]	0		Decimal	INT			
smart_wireless_gateway:0:1.Data[9]	0		Decimal	INT			
smart_wireless_gateway:0:1.Data[10]	0		Decimal	INT			
+ smart_wireless_gateway:0:1.Data[11]	0		Decimal	INT			
+ smart_wireless_gateway:0:1.Data[12]	0		Decimal	INT			
+ smart_wireless_gateway:0:1.Data[13]	0		Decimal	INT			
smart_wireless_gateway:0:1.Data[14]	0		Decimal	INT			
smart_wireless_gateway:0:1.Data[15]	0		Decimal	INT			
+ smart_wireless_gateway:0:1.Data[16]	0		Decimal	INT			

Note

In this example the CHANNEL_1_SETPOINT_D and CHANNEL_2_SETPOINT_D are 16 bit integers. This will require a Generic CIP module of the INT data type. If the module is not of the INT data type a new module must be created for this to be changed.

5. Navigate to the **Output** section.

Tr		now: All Tag			L	Y. Enter Name I		1	
_	lame	<u></u>		Force Mask 🗲		Data Type	Description	Constant	
-	-smart_wireless_gateway:0:1		{}	{}		AB:1756_MODULE_INT			
_	-smart_wireless_gateway:0:0) {}			AB:1756_MODULE_INT		Г	
E	-smart_wireless_gateway:0:C		{}	{}		AB:1756_MODULE:C:0		Г	

6. Write the appropriate value in the *output* tabs as shown. (In this case 1 is written to both mapped parameters.)

Note

Data is written properly only in online mode.

ope: 🛅 wireless_gatewa 🔽 Show: All Tag	s		💙 🛛 🖓 Enter Name Filter					
Name <u>=8</u>	Value 🔸	Force Mask 🔹	Style	Data Type	Description	Constant		ŀ
+ smart_wireless_gateway:0:1	{}	{}		AB:1756_MODULE_INT		Γ		
- smart_wireless_gateway:0:0	{}	{}		AB:1756_MODULE_INT				ľ
smart_wireless_gateway:0:0.Data	{}	{}	Decimal	INT[248]				l
smart_wireless_gateway:0:0.Data[0]	1		Decimal	INT				
smart_wireless_gateway:0:0.Data[1]	▼[1]	J	Decimal	INT				
smart_wireless_gateway:0:0.Data[2]	0		Decimal	INT				
smart_wireless_gateway:0:0.Data[3]	0		Decimal	INT				
smart_wireless_gateway:0:0.Data[4]	0		Decimal	INT				
smart_wireless_gateway:0:0.Data[5]	0		Decimal	INT				
smart_wireless_gateway:0:0.Data[6]	0		Decimal	INT				l
smart_wireless_gateway:0:0.Data[7]	0		Decimal	INT				
smart_wireless_gateway:0:0.Data[8]	0		Decimal	INT				
smart_wireless_gateway:0:0.Data[9]	0		Decimal	INT				
smart_wireless_gateway:0:0.Data[10]	0		Decimal	INT				
smart_wireless_gateway:0:0.Data[11]	0		Decimal	INT				
smart_wireless_gateway:0:0.Data[12]	0		Decimal	INT				
smart_wireless_gateway:0:0.Data[13]	0		Decimal	INT				
smart_wireless_gateway:0:0.Data[14]	0		Decimal	INT				1
+ smart_wireless_gateway:0:0.Data[15]	0		Decimal	INT				1

cope: 🛅 wireless_gatewa, 💙 Show: All Tags				👻 🏹 Enter Name i			
Name == [A	Value 🔹	Force Mask 🔹	Style	Data Type	Description	Constant	
- smart_wireless_gateway:0:1	{}	{}		AB:1756_MODULE_INT		Γ	
😑 smart wireless gateway:0:1.Data	{}	{}	Decimal	INT[248]			
± smart_wireless_gateway:0:1.Data[0]	1		Decimal	INT			
smart_wireless_gateway:0:1.Data[1]	1		Decimal	INT			
+ smart_wireless_gateway:0:1.Data[2]	0		Decimal	INT			
smart_wireless_gateway:0:1.D ata[3]	0		Decimal	INT			
smart_wireless_gateway:0:1.D ata[4]	0		Decimal	INT			
+ smart_wireless_gateway:0:1.Data[5]	0		Decimal	INT			
+ smart_wireless_gateway:0:1.Data[6]	0		Decimal	INT			
+ smart_wireless_gateway:0:1.Data[7]	0		Decimal	INT			
+ smart_wireless_gateway:0:1.Data[8]	0		Decimal	INT			
+ smart_wireless_gateway:0:1.Data[9]	0		Decimal	INT			
+ smart_wireless_gateway:0:1.Data[10]	0		Decimal	INT			
+-smart_wireless_gateway:0:1.Data[11]	0		Decimal	INT			
+ smart_wireless_gateway:0:1.Data[12]	0		Decimal	INT			
+ smart_wireless_gateway:0:1.Data[13]	0		Decimal	INT			
+ smart_wireless_gateway:0:1.Data[14]	0		Decimal	INT			
+ smart_wireless_gateway:0:1.Data[15]	0		Decimal	INT			
+-smart wireless gateway:0:1.Data[16]	0		Decimal	INT			

7. Navigate to the *Input* tab again and observe the changed value as shown.

ope: 🛐 wireless_gatewa 💙 Show: All Tag	s	💙 🛛 🖓 Enter Name Filter						
Name <u>=</u> 8 4	Value 🗲	Force Mask 🔸	Style	Data Type	Description	Constant		
smart_wireless_gateway:0:1	{}	{}		AB:1756_MODULE_INT				
🖃 smart_wireless_gateway:0:1.Data	{}	{}	Decimal	INT[248]				
smart_wireless_gateway:0:1.D ata[0]	1		Decimal	INT				
smart_wireless_gateway:0:1.D ata[1]			Decimal	INT				
+ smart_wireless_gateway:0:1.D ata[2]	0		Decimal	INT				
+ smart_wireless_gateway:0:1.D ata[3]	CHAN	GED VALU	E OF 702 N	IAPPED VARIABLE (CHANNEL_2	2_SETPOINT_D		
+ smart_wireless_gateway:0:1.D ata[4]	FROM	0 TO 1 - 10	6 BIT VALU	E				
+ smart_wireless_gateway:0:1.Data[5]	0		Decimal	INT				
smart_wireless_gateway:0:1.D ata[6]	0		Decimal	INT				
smart_wireless_gateway:0:1.D ata[7]	0		Decimal	INT				
	0		Decimal	INT				
+ smart_wireless_gateway:0:1.Data[8]								
+ smart_wireless_gateway:0:1.Data[8] + smart_wireless_gateway:0:1.Data[9]	0		Decimal	INT				
	0		Decimal Decimal	INT INT				
+ smart_wireless_gateway:0:1.Data[9]								
+ smart_wireless_gateway:0:1.Data[9] + smart_wireless_gateway:0:1.Data[10]	0		Decimal	INT				
the smart_wireless_gateway:0:1.Data[9] smart_wireless_gateway:0:1.Data[10] the smart_wireless_gateway:0:1.Data[11]	0		Decimal Decimal	INT INT				
smart_wireless_gateway.0:I.Data[9] smart_wireless_gateway.0:I.Data[10] smart_wireless_gateway.0:I.Data[11] smart_wireless_gateway.0:I.Data[12]	0		Decimal Decimal Decimal	INT INT INT				
smart_wireless_gateway.01.Data[3] smart_wireless_gateway.01.Data[10] smart_wireless_gateway.01.Data[11] smart_wireless_gateway.01.Data[12] smart_wireless_gateway.01.Data[13]	0 0 0 0 0		Decimal Decimal Decimal Decimal	INT INT INT INT		Image:		

8. Verify the same in the webpage.

CHANNEL_1_COONTS_HEACTTT	uue	07/01/15 15.52.77	Doolean
CHANNEL_1_COUNTS_STATUS	192	07/01/13 13:32:47	8 bit unsigned int
CHANNEL_1_COUNTS_UNITS	251	07/01/13 13:32:47	8 bit unsigned int
CHANNEL_1_SETPOINT_D	1	7/01/13 13:32:43	16 bit int
CHANNEL_1_SETPOINT_D_HEALTHY	true	07/01/13 13:32:43	Boolean
CHANNEL_1_SETPOINT_D_STATUS	192	07/01/13 13:32:43	8 bit unsigned int
CHANNEL_1_STATE	1.000	07/01/13 13:32:47	32 bit float
CHANNEL_1_STATE_CLASS	0	07/01/13 13:32:47	8 bit unsigned int
CHANNEL_1_STATE_CODE	2	07/01/13 13:32:47	8 bit unsigned int
CHANNEL_1_STATE_D	1	07/01/13 13:32:43	16 bit int
CHANNEL_1_STATE_D_HEALTHY	true	07/01/13 13:32:43	Boolean
CHANNEL_1_STATE_D_STATUS	192	07/01/13 13:32:43	8 bit unsigned int
CHANNEL_1_STATE_HEALTHY	true	07/01/13 13:32:47	Boolean
CHANNEL_1_STATE_STATUS	192	07/01/13 13:32:47	8 bit unsigned int
CHANNEL_1_STATE_UNITS	251	07/01/13 13:32:47	8 bit unsigned int
CHANNEL_2_COUNTS	2.000	07/01/13 13:32:47	32 bit float
CHANNEL_2_COUNTS_CLASS	0	07/01/13 13:32:47	8 bit unsigned int
CHANNEL_2_COUNTS_CODE	5	07/01/13 13:32:47	8 bit unsigned int
CHANNEL_2_COUNTS_HEALTHY	true	07/01/13 13:32:47	Boolean
CHANNEL_2_COUNTS_STATUS	192	07/01/13 13:32:47	8 bit unsigned int
CHANNEL_2_COUNTS_UNITS	251	07/01/13 13:32:47	8 bit unsigned int
CHANNEL_2_SETPOINT_D	1	07/01/13 13:32:43	16 bit int
CHANNEL_2_SETPOINT_D_HEALTHY	true	07/01/13 13:32:43	Boolean
CHANNEL_2_SETPOINT_D_STATUS	192	07/01/13 13:32:43	8 bit unsigned int



1.5 Troubleshooting

Problem	Suggested solution
Unable to see the Gateway on rslinx as described, although the EDS file was successfully installed.	We consider that the machine on which rslinx is installed is in the same subnet as the Gateway. We can explicitly add the Gateway IP address by choosing the <i>AB_ETH-1</i> driver. See attached screenshots. Also screenshots for EDS file Installation (Allen-Bradley Integration Document are in the user manual already.
Unable to find where to allocate the 'reliability' float and the tools for 'online,' 'PV_healthy,' etc. How do I poll them? Is it a different class instance? (The manual only shows dint/int/real/sint).	Float = real, Booleans also can be mapped. You can map any variable which you can see on <i>Explorer>Device</i> <i>Name>Published data</i> web page and read in RsLogix with the datatype mentioned on web page.
Are the definitions for SYSTEM_DIAG.ADDITIONAL_STATUS shown anywhere for the predefined registers?	Navigate to <i>Explorer>Device name(e.g.wihartgw)>See</i> <i>Additional status</i> tab.Let us know if you are looking for anything else by means of definition.
Do Predefined Registers hold last state if the instrument goes offline like the data does?	It will not hold the last state like other data, It will change according to the particular parameter status i.e good or bad. (Whatever Additional status is seen in the webpage, the same will appear in the RSLogix).

1.6 Other information

1. Only 124 members are allowed for mapping per pair.

In EtherNet/IP, Each Instance Pair can hold the data up to 496 bytes, but the user can only map a maximum of 124 members per instance pair. (Whatever may be the data type of mapped variables, for e.g. If user wants to map all Boolean variables in particular instance, maximum 124 Boolean variables they can map in the selected instance pair.) Some of the hosts support maximum 1500 bytes of data. Hence presently for device variable mapping chosen 3 instance pairs of size 496 bytes each.

2. 32-bit error value, for the Point Name which does not exist or the Point Name which is having bad status while first time mapping.

While mapping of a particular variable for the first time, if mapped variable status is bad/offline, EtherNet/IP will treat that variable as 32 bit (Undefined Data). So as shown in communication page, it will show the error as 32 bit value. (Whatever may be the actual data type of mapped variable).

3. The user can map variables/Point Names of mix data types in any instance pair. (100-101, 102-103, 104-105) In this case it's user's responsibility to find a particular mapped variable value in RSLogix Class1 I/O Connection. Here depending on different data types (8, 16, 32 bit) user need to see mapped variable values in Class 1 Connection.

- 4. Rosemount 702 written data becomes zero after reestablishment of Class 1, Class 3 Connections.
 - EtherNet/IP uses producer consumer model. So on every RPI EtherNet/IP scanner and adapter produces its own data for each other.
 - In Rosemount 702 write case, whenever Class 1, Class3 connection re-establishes, scanner will produce data with all zeros so Smart Wireless Gateway adapter will consume this data.
 - In case of Class 1, Class 3 connection reestablishment, the previous written data to Rosemount 702 devices will be zero (Here only those writable variable values become zero, which mapped to that particular instance). The user needs to record the Rosemount 702 written data before removing the particular connection and rewrite again.
- 5. Currently in the application there are 3 pairs of assembly objects 100-101, 102-103, 104-105 (decimal) can be read. The mapped values from 101, 103 & 105 (in case of explicit messaging) can be read depending on the mapping done in webpage.
- 6. Regarding Input Size 124:

Size of assembly object is 496 bytes (fixed). When you are reading DINT or REAL (float values) which are of 4 bytes you have to read it as an array. For example, float values from the assembly object which is 496 bytes, so the size will be 124 or 496/4. If you want to read values as INT (2 bytes), the size will be 248, 496/2.

Note

Retaining old values vs. using "all zeros" on a new connection is "scanner specific" functionality, there are no rules in EtherNet/IP specs about this behavior.

Global Headquarters

Emerson Process Management

6021 Innovation Blvd

Shakopee, MN 55379, USA

+1 800 999 9307 or +1 952 906 8888

🙃 +1 952 949 7001

RFQ.RMD-RCC@EmersonProcess.com

North America Regional Office

Emerson Process Management

8200 Market Blvd. Chanhassen, MN 55317, USA (1) +1 800 999 9307 or +1 952 906 8888 C) +1 952 949 7001 C) RMT-NA.RCCRFQ@Emerson.com

Latin America Regional Office

Emerson Process Management

1300 Concord Terrace, Suite 400 Sunrise, Florida, 33323, USA

- +1 954 846 5030
- +1 954 846 5121
- RFQ.RMD-RCC@EmersonProcess.com

Europe Regional Office

Emerson Process Management Europe GmbH Neuhofstrasse 19a P.O. Box 1046

CH 6340 Baar Switzerland (1) +41 (0) 41 768 6111 (2) +41 (0) 41 768 6300

RFQ.RMD-RCC@EmersonProcess.com

Asia Pacific Regional Office

Emerson Process Management Asia Pacific Pte Ltd
1 Pandan Crescent
Singapore 128461
+65 6777 8211
+65 6777 0947
Enquiries@AP.EmersonProcess.com

Middle East and Africa Regional Office

Emerson Process Management

Emerson FZE P.O. Box 17033, Jebel Ali Free Zone - South 2 Dubai, United Arab Emirates +971 4 8118100 +971 4 8865465 RFQ.RMTMEA@Emerson.com

Standard Terms and Conditions of Sale can be found at: www.rosemount.com\terms_of_sale. The Emerson logo is a trademark and service mark of Emerson Electric Co. Rosemount and Rosemount logotype are registered trademarks of Rosemount Inc. HART and WirelessHART are registered trademarks of FieldComm Group. EtherNet/IP is a trademark of ControlNet International under license by ODVA. Allen-Bradley and ControlLogix are registered by Rockwell Automation. All other marks are the property of their respective owners. © 2015 Rosemount Inc. All rights reserved.

