Write Single Block

The Write Single Block command writes one block of user data to an RFID tag.

Set the following values in the output image table:

a. xx:O.Channel[0].Command = 10
b. xx:O.Channel[0].Address = starting address to write
c. xx:O.Channel[0].BlockSize = 0, 4, or 8
d. xx:O.Channel[0].Data[0...112] = data to write
e. xx:O.Channel[0].Length = 0, 4, or 8
f. xx:O.Channel[0].BlockSize = 0, 4, or 8
g. xx:O.Channel[0].Reset = 0
h. xx:O.Channel[0].Timeout = 0
i. xx:O.Channel[0].UIDLow = 0 (or UIDLow)
j. xx:O.Channel[0].UIDHi = 0 (or UIDHi)

If UIDLow and UIDHi are set to 0, this command operates on the first tag in the field. Specify a UUID in xx:O.Channel[0].UIDLow and xx:O.Channel[0].UIDHi to perform the command on a specific tag.

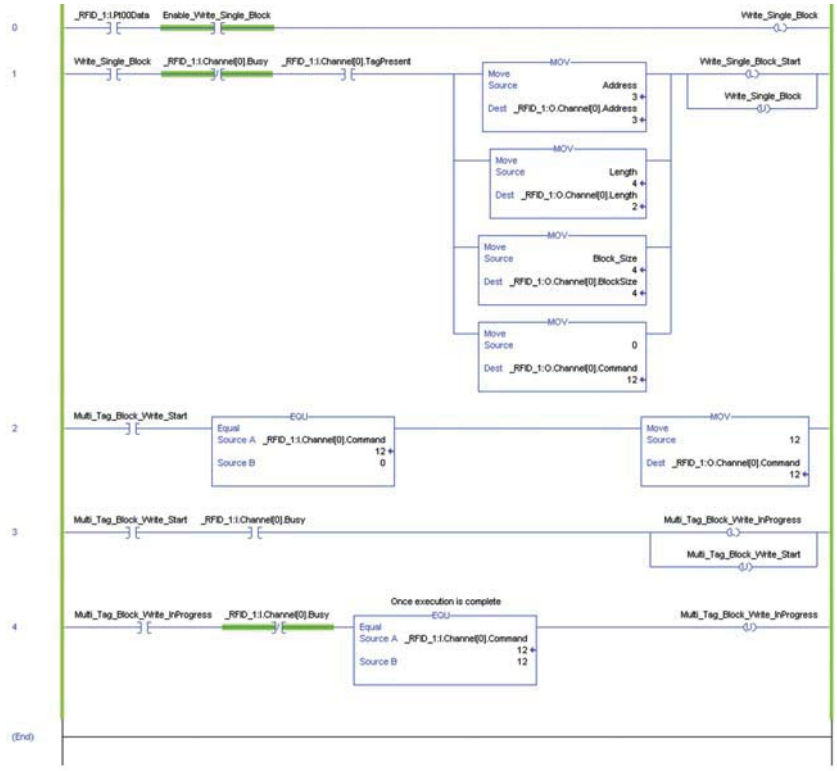
The Length and Block Size fields are used to specify the number of bytes/block of the tag. Valid values are:

- 0 = 4 bytes/block
- 4 = 4 bytes/block
- 8 = 8 bytes/block

Typically, ISO15693 tags have a block size of 4 bytes/block, and FRAM tags have a block size of 8 bytes/block.

Example Routine

In the following example, 4 bytes of data is written to Block 3. The data is loaded into the output channel image table. Block three is populated with Data[0...3] = 41, 42, 43, and 44.



Example Results

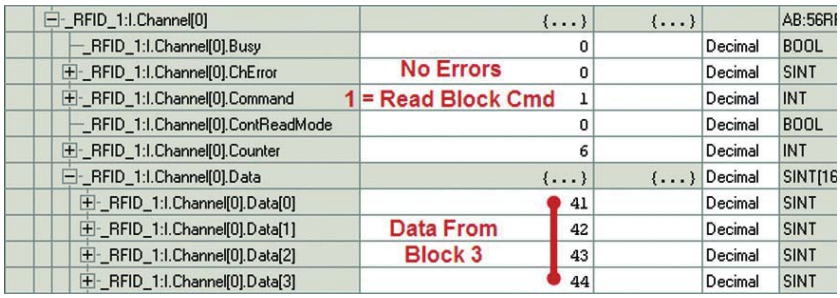
The output image table shows that the address is set to Block 3; the block size is 4 and the command is 10. The data to be written to block 3 is 41, 42, 43, and 44.

-_RFID_1:O.Channel[0]		{...}	{...}		AB:56RF_I
+-_RFID_1:O.Channel[0].Address	Write to Block 3	3		Decimal	INT
+-_RFID_1:O.Channel[0].BlockSize	Block Size is 4	4		Decimal	INT
+-_RFID_1:O.Channel[0].Command		10		Decimal	INT
-_RFID_1:O.Channel[0].Data		{...}	{...}	Decimal	SINT[112]
+-_RFID_1:O.Channel[0].Data[0]		41		Decimal	SINT
+-_RFID_1:O.Channel[0].Data[1]	4 Bytes of Data	42		Decimal	SINT
+-_RFID_1:O.Channel[0].Data[2]	to Write to Block	43		Decimal	SINT
+-_RFID_1:O.Channel[0].Data[3]		44		Decimal	SINT

Upon successful completion of the write block command, the Input Image table shows that Command = 10 and ChError = 0. The input channel data fields are all zero.

-_RFID_1:I.Channel[0]	{...}	{...}		AB:56RF
_RFID_1:I.Channel[0].Busy	0		Decimal	BOOL
+-_RFID_1:I.Channel[0].ChError	No errors 0		Decimal	SINT
+-_RFID_1:I.Channel[0].Command	10		Decimal	INT
_RFID_1:I.Channel[0].ContReadMode	0		Decimal	BOOL
+-_RFID_1:I.Channel[0].Counter	5		Decimal	INT
-_RFID_1:I.Channel[0].Data	{...}	{...}	Decimal	SINT[16
+-_RFID_1:I.Channel[0].Data[0]	0		Decimal	SINT
+-_RFID_1:I.Channel[0].Data[1]	Data Bytes are 0 0		Decimal	SINT
+-_RFID_1:I.Channel[0].Data[2]	0		Decimal	SINT

Use the Read Single Block command (=1), with option flag set to zero, to read the contents of the tag in block 3.



Continuous Read Mode

The Continuous Read command is used for specialty applications that require high line speeds (up to 3 ms). See Continuous Read Mode on page 114 for details on this command.

Stop Continuous Read

The Stop Continuous Read command is used with the Continuous Read command for specialty applications that require high line speeds (up to 3 ms). See Continuous Read Mode on page 114 for details on this command.

Teach Continuous Read

The Teach Continuous Read command is used to train the interface for Continuous Read operations. See Continuous Read Mode on page 114 for details on this command.

Notes:

SLC Code Examples

This sample code example uses an SLC-5/05 with a catalog number 56RF-IN-IPD22 interface block.

Read Byte Routine

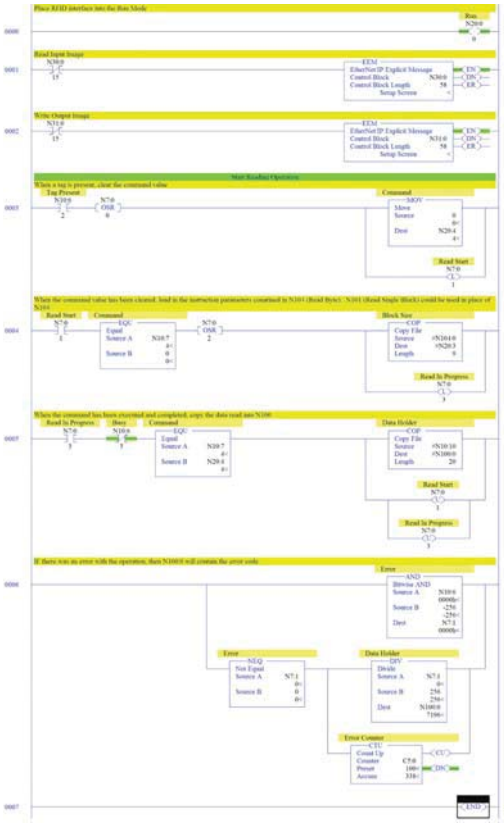
The Read Byte command (value =4) reads a user-specified number of bytes from a tag, starting at a user-specified address. Additionally, an Option Flag can be set to return the UUID of the tag.

- Option Flag 0
  Returns the specified user data
- Option Flag 1
  Returns the UUID of the tag and the specified user data

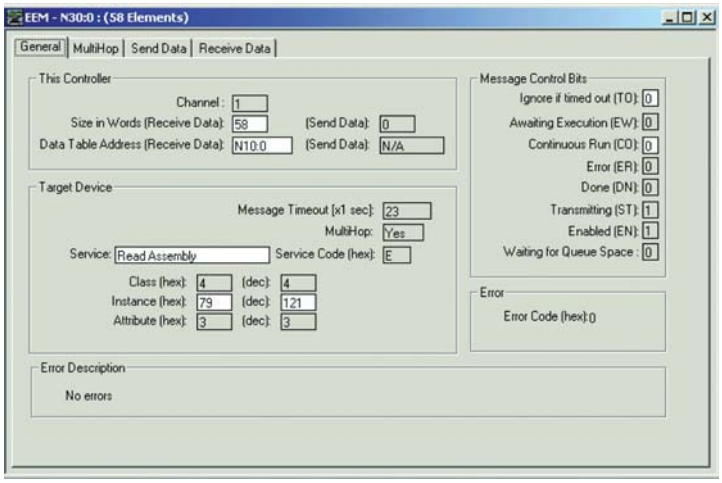
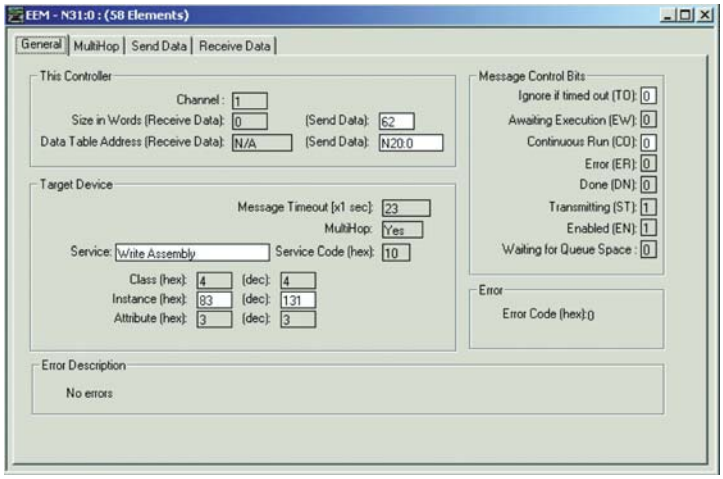
IMPORTANT This command operates only on the first tag in the field.

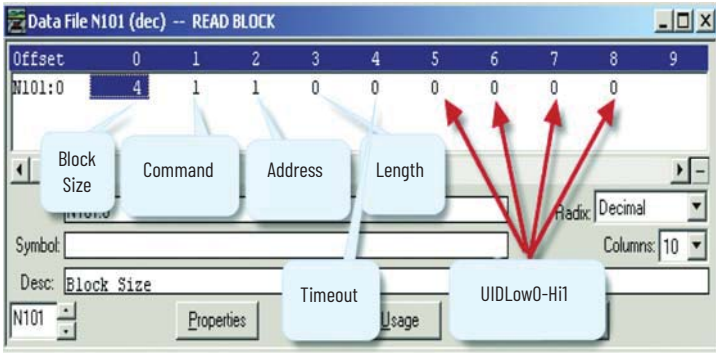
Example Routine

The following example code is for an SLC-5/05.



Example Routine

Rung	Description
0000	Place RFID interface into the Run mode. The bit must be highlighted in green. If the bit is not green, right-click it and click Toggle Bit.
0001	Read Input Image. Double-click the EEM box to enter the setup screen. Input Size is 116 bytes (58 words). Click the MultiHop tab to configure an EtherNet/IP™ device. 
0002	Write Output Image. Double-click the MSG box to enter the setup screen. Output size is 124 bytes (62 words). Click the MultiHop tab to configure an EtherNet/IP device. 
0003	The Tag Present bit is highlighted in green when a tag is present. When a tag is present, clear the command value.

Rung	Description
0004	When the command value has been cleared, load in the instruction parameters contained in N104 (Read Byte). N101 (Read Single Block) could be used in place of N104. 
0005	Wait for the read command to run. The Read in Progress bit is highlighted in green when the command is running. When the command has completed, the Read in Progress bit returns to its original state. When the command has been executed and completed, copy the data that is read into N100.
0006	If there was an error with the operation, then N100:0 contains the error code.

Notes:

MicroLogix 1400 Code Examples

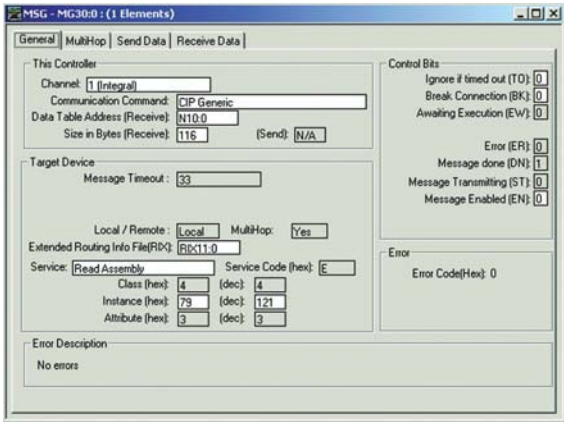
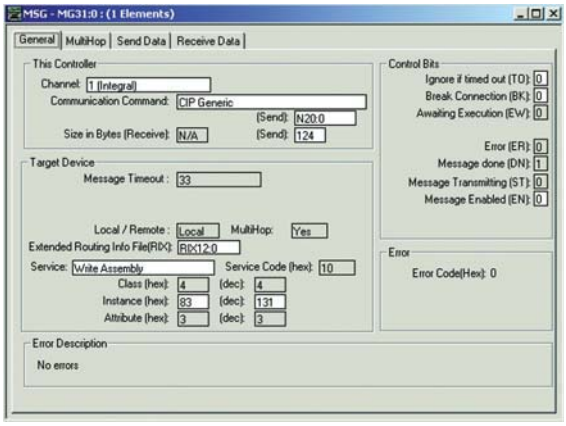
Read Byte

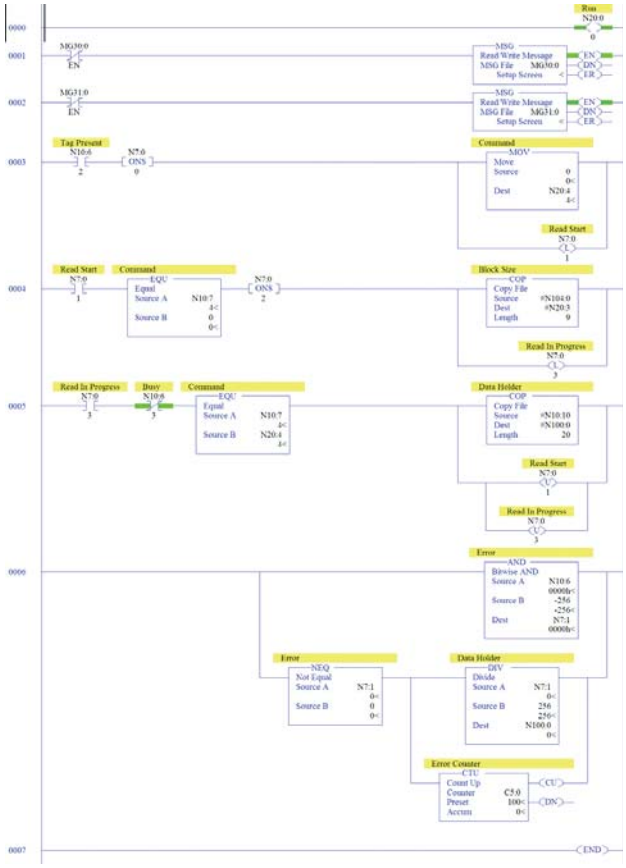
The Read Byte command (value =4) reads a user-specified number of bytes from a tag, starting at a user-specified address. Additionally, an Option Flag can be set to return the Universally Unique Identifier (UUID) of the tag.

- Option Flag 0
  Returns the specified user data
- Option Flag 1
  Returns the UUID of the tag and the specified user data

IMPORTANT This command operates only on the first tag in the field.

Example Routine

Rung	Description
0000	Place RFID interface into the Run Mode. The bit must be highlighted in green. If the bit is not green, right-click it and click Toggle Bit.
0001	Read Input Image. Double-click the MSG box to enter the setup screen. Input size is 116 bytes (58 words). Click the MultiHop tab to configure an EtherNet/IP™ device. 
0002	Write Output Image. Double-click the MSG box to enter the setup screen. Output size is 124 bytes (62 words). Click the MultiHop tab to create an EtherNet/IP device. 
0003	The Tag Present bit is highlighted in green when a tag is present. When a tag is present, clear the command value.
0004	When the command value has been cleared, load in the instruction parameters contained in N104 (Read Byte). N101 (Read Single Block) could be used in place of N104.
0005	Wait for the read command to run. The Read in Progress bit is highlighted in green when the command is running. When the command has completed, the Read in Progress bit returns to its original state. When the command has been executed and completed, copy the data that is read into N100.
0006	If there was an error with the operation, then N100:0 contains the error code.



Write Byte

The Write Byte command (value = 14) writes bytes of user data to a tag. You can specify the data, the start byte, and the number of bytes to write.

IMPORTANT This command operates only on the first tag in the field.

Example Routine

Rung	Description
0000	Place RFID interface into the Run Mode. The bit must be highlighted in green. If the bit is not green, right-click it and click Toggle Bit.
0001	Read Input Image. Double-click the MSG box to enter the Setup Screen. Input Size is 116 bytes (58 words). Click the MultiHop tab to configure an EtherNet/IP device.
0002	Write Output Image. Double-click the MSG box to enter the Setup Screen. Output Size is 124 bytes (62 words). Click the MultiHop tab to configure an EtherNet/IP device.
0003	The Tag Present bit is highlighted in green when a tag is present. When a tag is present, clear the command value.
0004	When the command value has been cleared, load in the instruction parameters contained in N114 (Write Byte). N110 (Write Single Block) could be used in place of N114.
0005	Wait for the write command to run. The Write in Progress bit is highlighted in green when the command is running. When the command has completed, the Write in Progress bit returns to its original state. When the command has been executed and completed, copy the data that is read into N100.
0006	If there was an error with the operation, then N100:0 contains the error code.

Read Multiple Blocks

The Read Multiple Blocks command (value = 2) reads multiple blocks of user data from a tag. Additionally, Option Flags can be set to return information such as the UUID or the Data Storage Format Identifier (DSFID) of the tag.

- Option Flag 0
  Returns multiple blocks of user data
- Option Flag 1
  Returns multiple blocks of user data and the security status of each block

IMPORTANT Unless a UUID is specified, this command operates on the first tag in the field.

Example Routine

Rung	Description
0000	Place RFID interface into the Run Mode. The bit must be highlighted in green. If the bit is not green, right-click it and click Toggle Bit.
0001	Read Input Image. Double-click the MSG box to enter the Setup Screen. Input Size is 116 bytes (58 Words.) Click the MultiHop tab to configure an EtherNet/IP device.
0002	Write Output Image. Double-click the MSG box to enter the Setup Screen. Output Size is 124 bytes (62 Words). Click the MultiHop tab to configure an EtherNet/IP device.
0003	The Tag Present bit is highlighted in green when a tag is present. When a tag is present, clear the command value.
0004	When the command value has been cleared, load in the instruction parameters contained in N102 (Read Multiple Blocks).
0005	Wait for the read command to run. The Read in Progress bit is highlighted in green when the command is running. When the command has completed, the Read in Progress bit returns to its original state. When the command has been executed and completed, copy the data that is read into N100.
0006	If there was an error with the operation, then N100:0 contains the error code.

Write Multiple Blocks

The Write Multiple Blocks command (value = 11) writes multiple blocks of user data to an FRAM tag.

IMPORTANT This command only works on FRAM tags. Unless a UUID is specified, this command operates on the first tag in the field.

Example Routine

Rung	Description
0000	Place RFID interface into the Run Mode. The bit must be highlighted in green. If the bit is not green, right-click it and click Toggle Bit.
0001	Read Input Image. Double-click the MSG box to enter the Setup Screen. Input Size is 116 bytes (58 Words.) Click the MultiHop tab to configure an EtherNet/IP device.
0002	Write Output Image. Double-click the MSG box to enter the Setup Screen. Output Size is 124 bytes (62 Words). Click the MultiHop tab to configure an EtherNet/IP device.
0003	The Tag Present bit is highlighted in green when a tag is present. When a tag is present, clear the command value.
0004	When the command value has been cleared, load in the instruction parameters contained in N111 (Write Multiple Blocks).
0005	Wait for the write command to run. The Write in Progress bit is highlighted in green when the command is running. When the command has completed, the Write in Progress bit returns to its original state. When the command has been executed and completed, copy the data that is read into N100.
0006	If there was an error with the operation, then N100:0 contains the error code.

Input Image Layout

See Appendix on page 125 for details on the Input Image Layout.

Output Image Layout

See Appendix on page 125 for details on the Output Image Layout.

Notes:

RFID Tag Speed

Table 27...Table 30 on page 114 are guides to help determine the amount of information that can be written to/read from an RFID tag, which is based on the speed of your application. For example, to read 8 bytes consistently from a tag using the square transceiver, your line speed must be 0.827 ms or slower.

If you have a high-speed application, it is best to choose the largest transceiver, larger tag, which provides the largest antenna range. The larger tag provides the longest time that the tag is in the field for read/write functions and also helps with tag misalignment issues.

If your tag is stopped when all read/write functions occur, and tag misalignment is not an issue, you can use smaller transceivers.

IMPORTANT W recommend that the tag is stopped if large amounts of data are written to/read from the tag.

Table 27 - Rectangular (80x90) Transceiver

Bytes	Max Tag Speed (ms)	
	Read	Write
4	1.488095	1.328609
8	1.378676	1.121915
16	1.202887	0.8566533
32	0.9578544	0.5811701
64	0.6802721	0.3535235
112	0.4743833	0.2227833
160	0.3641661	0.1626369
2000	0.03674939	0.01432665

Table 28 - Square (40x40) Transceiver

Bytes	Max Tag Speed (ms)	
	Read	Write
4	0.8928571	0.7971656
8	0.8272058	0.6731489
16	0.7217322	0.513992
32	0.5747126	0.348702
64	0.4081633	0.2121141
112	0.28463	0.13367
160	0.2184996	0.09758213
2000	0.02204964	0.008595988

Table 29 - M18 Transceiver

Bytes	Max Tag Speed (ms)	
	Read	Write
4	0.1984127	0.1771479
8	0.1838235	0.1495886
16	0.1603849	0.1142204
32	0.1277139	0.07748935
64	0.09070295	0.04713646
112	0.06325111	0.02970444
160	0.04855547	0.02168492
2000	0.004899919	0.00191022

Table 30 - M30 Transceiver

Bytes	Max Tag Speed (ms)	
	Read	Write
4	0.3373016	0.3011515
8	0.3125	0.2543007
16	0.2726544	0.1941748
32	0.2171137	0.1317319
64	0.154195	0.08013199
112	0.1075269	0.05049755
160	0.0825443	0.03686436
2000	0.008329863	0.003247374

Continuous Read Mode

Command Objective

Perform tag read operations as fast as possible.

Operation

Command 5 is issued from the controller to place an interface RFID channel into continuous read mode; no additional commands are required from the controller to retrieve information from a tag. The read type that is issued would be a Read Multiple Block or a Read Single Block depending on the number of blocks requested. The maximum number of blocks that can be read at one time is 10. Each time the interface reads a tag successfully, the counter value increments by 1. If there was an issue reading the tag, the counter value does not increment and the ChError indicates the error code value.

While the interface is in this mode, it rejects all other commands sent to it for that channel except a Stop Continuous Read. The interface does not perform its normal poll cycle on that channel while it is in this mode of operation. During Continuous Read Mode, the ContReadMode and Busy bit is set to true.

When the interface receives a stop command, Command 6, it reverts to the normal mode of operation and resume the polling cycle. Continuous Read mode can also be canceled by issuing a channel reset (reset bit in the output image word set to 1).

When using a 50 mm (1.97 in.) disk tag, catalog number 56RF-TR-8090 transceiver, and reading 4 bytes of data, it can be possible to achieve a line speed of up to 3 ms.

Modes of Operation

Only one type of mode of operation can be used on each channel. To change modes you must issue a Stop Continuous Read, and then reissue a Start Continuous Read with the new mode. Both channels can be configured for the same mode or different modes simultaneously. Modes of operation are limited based on the model number of the interface.

56RF-IN-IPS12 Interface Block

- One RFID channel (Channel 0)
- One discrete input and one discrete output
- Support modes 0 and 1 only

56RF-IN-IPD22 Interface Block

- Two RFID channels (Channel 0, Channel 1)
- One discrete input and one discrete output
- Support modes 0, and 1 only.

The single input can be used for either channel.

56RF-IN-IPD22A Interface Block

- Two RFID channels (Channel 0, Channel 1)
- Two discrete inputs
- Support modes 0, 1, 2, and 3

The same input can be used for either channel.

Mode Overview

Mode	Description
1. Mode 0	The interface waits for the delay time, sends out a read, obtains data, and returns that data back to the PLC. This cycle repeats until a Stop Continuous Read command is issued.
2. Mode 1	The interface waits for input point 0 to turn ON, waits for the delay timer to expire then sends out a read, obtains data, and returns that data back to the PLC. This cycle repeats until a Stop Continuous Read command is issued.
3. Mode 2	The interface waits for input point 1 to turn ON, waits for the delay timer to expire then sends out a read, obtains data, and returns that data back to the PLC. This cycle repeats until a Stop Continuous Read command is issued.
4. Mode 3	The interface waits for both input point 0 and 1 to turn ON, waits for the delay timer to expire then sends out a read, obtains data, and returns that data back to the PLC. This cycle repeats until a Stop Continuous Read command is issued.

Command Structure

a. xx:O.Channel[0].Reset =0
b. xx:O.Channel[0].Command = 5
c. xx:O.Channel[0].BlockSize = Bytes per Block in the tag
d. xx:O.Channel[0].Address = Starting Block
e. xx:O.Channel[0].Length = Number of blocks to read
f. xx:O.Channel[0].Timeout = Delay time between sending commands
g. xx:O.Channel[0].UIDLow = 0
h. xx:O.Channel[0].UIDHi = 0
i. xx:O.Channel[0].Data[0] = Mode x
j. xx:O.Channel[0].Data[1] = Option Flag

Table 31 - Commands

Command	Description
Address	Block within the tag to start read operations from.
BlockSize	Size in bytes per block of the tag.
Length	Number of blocks to read
Timeout	Delay time between sending command attempts in Mode 0. Delay time after input condition is true before sending commands in modes 1...3.
UIDLow/UIDHigh	Can be used to target only a specific tag for read operations, otherwise this value would be 0 to read any tag.
Mode x	Specifies the mode of operation for the Continuous Read.
Option Flag	Used to specify the mode of one or more Read Multiple/Read Single Block commands. A zero value would only read the data that is requested starting at the address that is specified, for the number of blocks specified in the Length field. A value of 1 would read and return both the security block status and the tag data. For modes 1...3, you can either set the delay time on their own or they can train the interface and the transceiver so that the value is determine automatically based on their system setup and line speed. A delay time of 0 causes the interface to send out the command as soon as it sees that the input condition goes true. For mode 0, there is no ability to train the system.

Teach Continuous Read

Command Objective

This operation is valid only for modes 1...3 and is used to train the interface to the approximate delay time that must be used before it sends out the read command, which is based on input conditions and tag speeds.

Operation

Command 8 is issued from the Controller to place an RFID interface channel into teach mode.

When first entering Teach Mode (Phase 1), the interface waits for one or more input conditions to go true, and then poll for tag detection. Once 10 good detections have occurred, the unit enters phase 2.

During Phase 2, the unit waits for one or more input conditions to go true, then issues the Read Multiple/Read Single Block command after the predetermined time delay and adjusts the delay time as necessary. Once 10 good reads in a row have occurred, the unit exits teach mode and reports back the average and recommended delay time in milliseconds.

If the interface is unable to obtain 10 good reads in a row, it decrements the delay time by 1 ms and starts again in phase 2. If the delay time has been decremented more than 30 ms from the average, the interface exits teach mode and reports back the recommended delay time of -1. A -1 value indicates that the interface cannot determine what the best delay time would be due to variations in tag speed.

Phase progression in teach mode can be monitored by viewing the counter value in the input image table. Phase 1 is always a value <10, Phase 2 is always a value >10. Once the counter reaches 20, the interface exits teach mode and reports the average and recommended delay times. You must load the recommended delay time value into the Timeout field before initiating a continuous read.

During Teach Mode, the ContReadMode and Busy bit are set to true.

An issued channel reset can cancel Teach mode (reset bit in the output image word set to 1).

Command Structure

a. xx:O.Channel[0].Reset =0
b. xx:O.Channel[0].BlockSize =Bytes per Block in the tag
c. xx:O.Channel[0].Command = 8
d. xx:O.Channel[0].Address = Starting Block
e. xx:O.Channel[0].Length = Number of Blocks
f. xx:O.Channel[0].Timeout = 0
g. xx:O.Channel[0].UIDLow = 0
h. xx:O.Channel[0].UIDHi = 0
i. xx:O.Channel[0].Data[0] = Mode x
j. xx:O.Channel[0].Data[1] = Option Flag

Notes:

RFID Interface Block Webpage

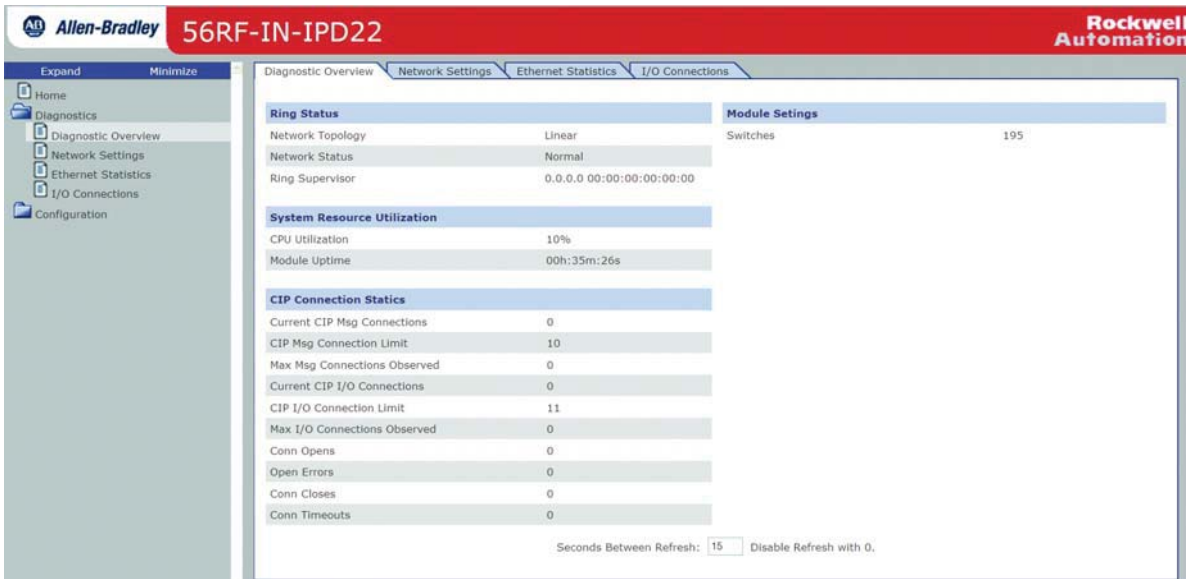
The RFID interface block webpage provides diagnostic and configuration for the RFID interface block. You can access the webpage by entering the IP address of the interface block into a web browser. The interface block must have Ethernet connectivity and power to be viewable on the webpage.

Home

The home page allows you to view basic information about the interface block. Data cannot be changed on the home page. The Device Description and Device Location are specified and can be changed on the Device Identity tab in the Configuration section.

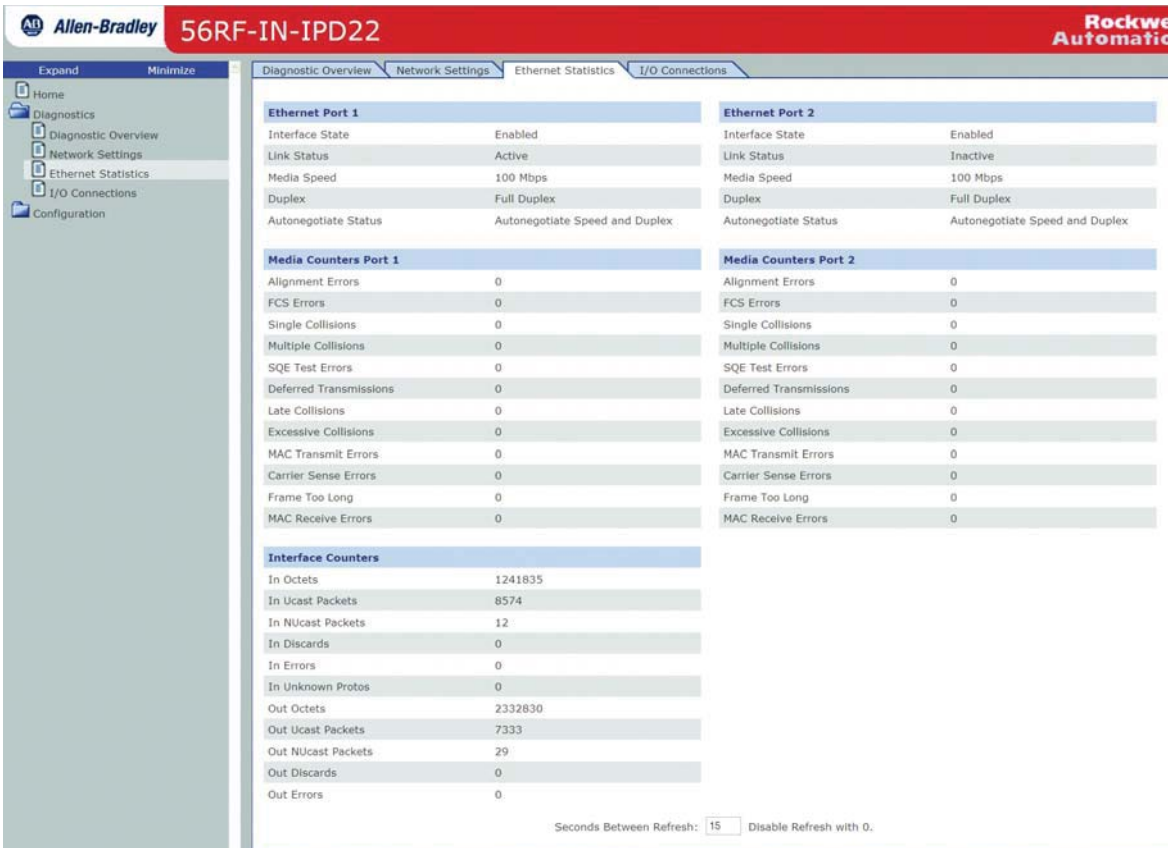
Diagnostics

The Diagnostic page has three tabs of view-only detailed information on the status of the interface block. The tabs show Diagnostic Overview, Network Settings, and Ethernet Statistics. The I/O Connections tab contains a field that allows you to change the webpage refresh rate.

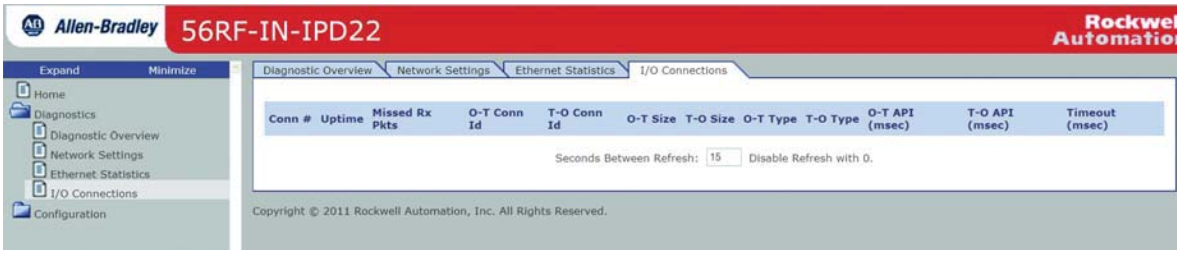


Network Settings

Ethernet Statistics



I/O Connections



Configuration

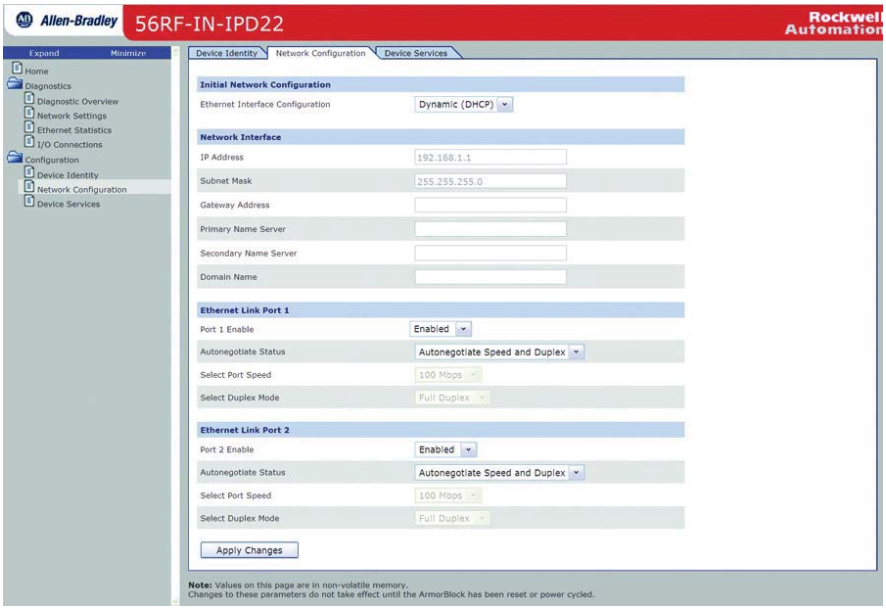
To access the configuration section of the RFID interface block webpage, a username and password are required. The default username is Admin, and there is no password by default. The username and password can be changed on the Device Services tab.

IMPORTANT If the username and password are lost, the interface block must be reset to default before it can be accessed again. The username and password are reset to the default values.

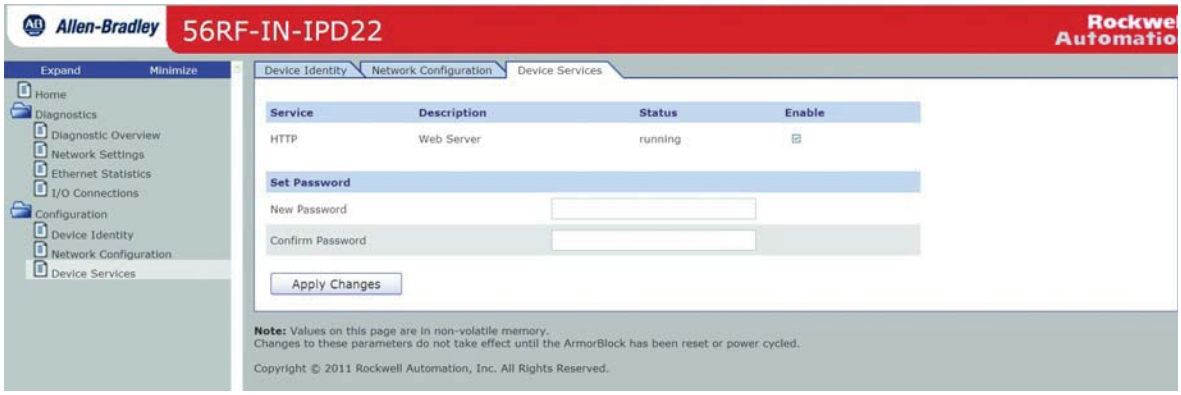
Device Identity

Change the device name, description, or location. Changes take place after power to the interface block has been cycled.

Network Configuration



Device Services



Error Codes for RFID Interface Block

Error Codes

The error codes for the RFID interface block are stored in the input for each channel. In the examples in the manual, the error codes are stored in the image table RFID_1:I:Channel[0].ChError and RFID_1:I:Channel[1].ChError.

Error Codes	Status Word	Binary
0	OK	0000
1	Transceiver not found	0001
2	Invalid Response	0010
3	Invalid Parameter	0011
4	No Tag Detected	0100
5	Instruction Timed Out	0101
6	Block Access Error	0110
7	Format Error	0111
8	Tag Communications Error	1000
9	Address Error	1001
10	Mismatch Error	1010
11	Internal Channel Error	1011
12	Malformed Packet	1100
13	Unit in Program Mode	1101
14	Reserved	1110
15	Module Error	1111

- OK (Decimal 0)

  Indicates that there are no issues with the channel in question when the decimal value of these bits is equal to zero.
- Transceiver not found (Decimal 1)

  Indicates that communication with the transceiver for the specified channel has been lost.
- Invalid Response (Decimal 2)

  Indicates that the response to a command is not what was expected.
- Invalid Parameter (Decimal 3)

  Indicates that either a passed or received parameter was out of bounds.
- No Tag Detected (Decimal 4)

  Indicates that a command was attempted on a channel but no tag was detected in the field.
- Instruction Timed Out (Decimal 5)

  Indicates that the timeout value that is associated with a command was exceeded before a response could be obtained.
- Block Access Error (Decimal 6)

  Indicates that either:
  - A read command attempted to read a block but was denied access.
  - A write command attempted to write to a block but was denied access.

- Format Error (Decimal 7)

  Indicates that the format of the command or response was invalid.
- Tag Communications Error (Decimal 8)

  Indicates that the interface block was not able to complete command execution with a tag before the tag left the field or the Output Channel Timeout is set too short. For example, set the Output Channel Timeout to 100 ms and then try to read 112 bytes of data from a catalog number 56RF-TG-30 tag.
- Address Error (Decimal 9)

  Indicates that the block address value was out of bounds for the tag.
- Mismatch Error (Decimal 10)

  Indicates that there are more tags that are detected in the field than the unit can process.
- Internal Channel Error (Decimal 11)

  Indicates that there is some internal issue with channel (hardware fault).
- Malformed Packet (Decimal 12)

  Indicates an issue with the command packet that the transceiver received.
- Unit in Program Mode (Decimal 13)

  Indicates that a command was issued but the module is in program mode.
- Module Error (Decimal 15)

  Indicates that there is some internal issue interface block (hardware fault).

CIP Information

Product Codes and Name Strings

Figure 32 lists the product codes and name strings for the EtherNet/IP™ interface block.

Table 32 - Product Codes and Name Strings

Product Type	Product Code	Cat. No.	Identity Object Name String
139	4	56RF-IN-IPS12	RFID Adapter 1 Port + 1In/1 Out
139	5	56RF-IN-IPD22	RFID Adapter 2 Port + 1In/1 Out
139	6	56RF-IN-IPD22A	RFID Adapter 2 Port + 2In/0 Out

CIP Explicit Connection Behavior

The RFID interface block allows connected explicit messages to drive user outputs when no I/O connection exists, or when an I/O connection exists in the idle state. One EtherNet/IP Class 3 explicit connection is allowed to send explicit control messages via an Active Explicit connection. An EtherNet/IP Class 3 explicit connection becomes the explicit control connection when it becomes the first EtherNet/IP Class 3 explicit connection to send a set service to one of the following:

- The Value attribute of any DOP instance (class code 0x09).
- The Data attribute of any output (consumed) Assembly Instance (class code 0x04).
- Attribute 3 or 4 of the Control Supervisor Object (class code 0x29).

CIP Objects

The following CIP™ objects are covered in the following subsections. CIP objects provide a window into the devices properties that can be read/written to. Each CIP Class contains instances (copies of a class structure), and attributes for each instance. Most devices have only one instance of a class.

Class	Object
0x0001	Identity Object
0x0004	Assembly Object
0x0008	Discrete Input Point Object
0x0009	Discrete Output Point Object

Identity Object Class Code 0x0001

This Identity Object provides identification of and general information about the device.

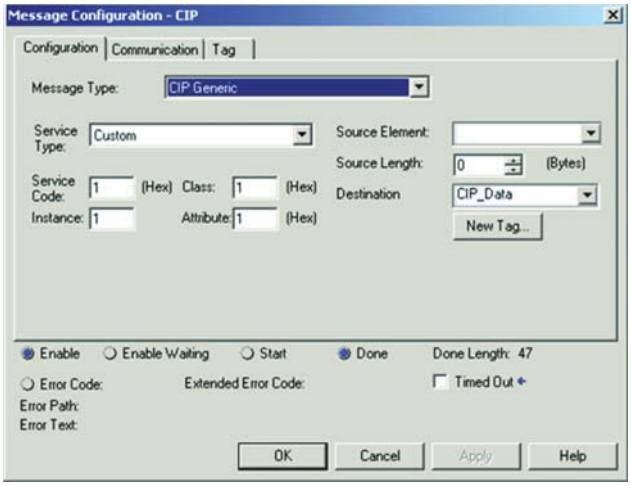
Instance 1 of the Identity Object contains the following attributes:

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Vendor	UINT	1
2	Get	Device Type	UINT	139
3	Get	Product Code	UINT	4, 5, or 6
4	Get	Revision Major Revision Minor Revision	Structure of: USINT USINT	The initial release is Major Rev. 1, Minor Rev. 1.
5	Get	Status	WORD	See Table 33 on page 127.
6	Get	Serial Number	UDINT	Unique number for each device
7	Get	Product Name String Length ASCII String	Structure of: USINT STRING	Product Code specific

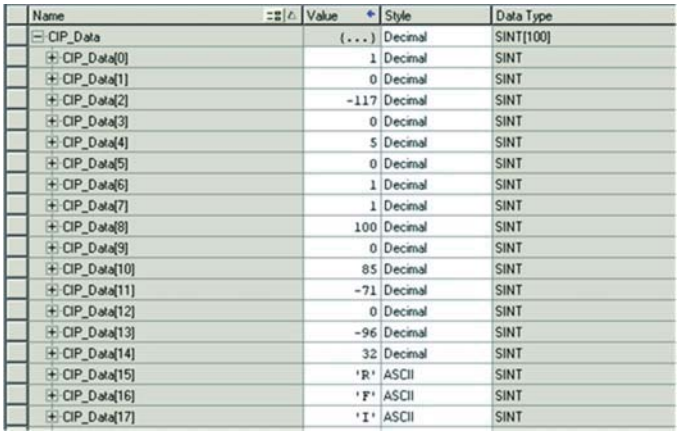
The following common services are implemented for Instance 1.

Service Code	Implemented for:		Service Name
	Class	Instance	
0x01	Yes	Yes	Get_Attributes_All
0x05	No	Yes	Reset
0x0E	Yes	Yes	Get_Attributes_Single

To access the Identity Object, the creation of a Message Instruction (MSG) to be configured as a CIP Generic type is required.



- Service Code: 1- Get Attribute All
- Class: 1 - Identity Object
- Instance: 1 - First instance
- Attribute: 1 - First attribute
- Destination: CIP_Data - a SINT[100] array to hold the data



Name	Value	Style	Data Type
CIP_Data	{...}	Decimal	SINT[100]
CIP_Data[0]	1	Decimal	SINT
CIP_Data[1]	0	Decimal	SINT
CIP_Data[2]	-117	Decimal	SINT
CIP_Data[3]	0	Decimal	SINT
CIP_Data[4]	5	Decimal	SINT
CIP_Data[5]	0	Decimal	SINT
CIP_Data[6]	1	Decimal	SINT
CIP_Data[7]	1	Decimal	SINT
CIP_Data[8]	100	Decimal	SINT
CIP_Data[9]	0	Decimal	SINT
CIP_Data[10]	85	Decimal	SINT
CIP_Data[11]	-71	Decimal	SINT
CIP_Data[12]	0	Decimal	SINT
CIP_Data[13]	-96	Decimal	SINT
CIP_Data[14]	32	Decimal	SINT
CIP_Data[15]	'R'	ASCII	SINT
CIP_Data[16]	'F'	ASCII	SINT
CIP_Data[17]	'I'	ASCII	SINT

- CIP_Data[0]...[1]= Vendor (1=Allen-Bradley)
- CIP_Data[2]...[3]= Device Type (139=RFID)
- CIP_Data[4]...[5]=Device Code (5=56RF-IN-IPS12)
- CIP_Data[6]= Major Revision (1)
- CIP_Data[7]= Minor Revision (1)
- CIP_Data[8]...[9]= Status (100 decimal, 000000001100100 binary)
- CIP_Data[10]...[13]= Serial Number (A000B955)
- CIP_Data[14]= Product Name Length (32 bytes)
- CIP_Data[15]-[n]= Product Name

Table 33 - Device Status (CIP_Data[8...9])

Bits	Name	Description
0	Owned	0=Not Owned, 1=Owned by a Master
1	Reserved	Reserved
2	Configured	0=Not configured, 1=Configured
3	Reserved	Reserved
4...7	Extended Device Status	See Table 34
8	Minor Recoverable Fault	1=Detected a recoverable minor fault
9	Minor Unrecoverable Fault	1=Detected a nonrecoverable minor fault
10	Major Recoverable Fault	1=Detected a recoverable major fault
11	Major Unrecoverable Fault	1=Detected a nonrecoverable major fault
12...15	Reserved	Reserved

Table 34 - Values for the Extended Device Status (Bits 4...7)

Value	Description
0	Self-Testing or Unknown
1	Firmware Update in Progress
2	At least one faulted I/O connection
3	No I/O connections established
4	Non-Volatile Configuration Bad
5	Major Fault
6	At least one I/O connection in run mode
7	At least one I/O connection is established, all in idle mode
8 & 9	Reserved
10...15	Vendor specific

Assembly Object Class Code 0x0004

The Assembly Object binds attributes of multiple objects, which allows data to be sent to or received from each object over one connection. Controllers that cannot create and establish a class 1 (scheduled) connection can use the Assembly Object in a message instruction to obtain both the input and output assemblies of the RFID interface.

The following services are implemented for the Assembly Object:

Service Code	Implemented for:		Service Name
	Class	Instance	
0x0E	Yes	Yes	Get_Attribute_Single
0x10	No	Yes	Set_Attribute_Single
0x18	No	Yes	Get_Member

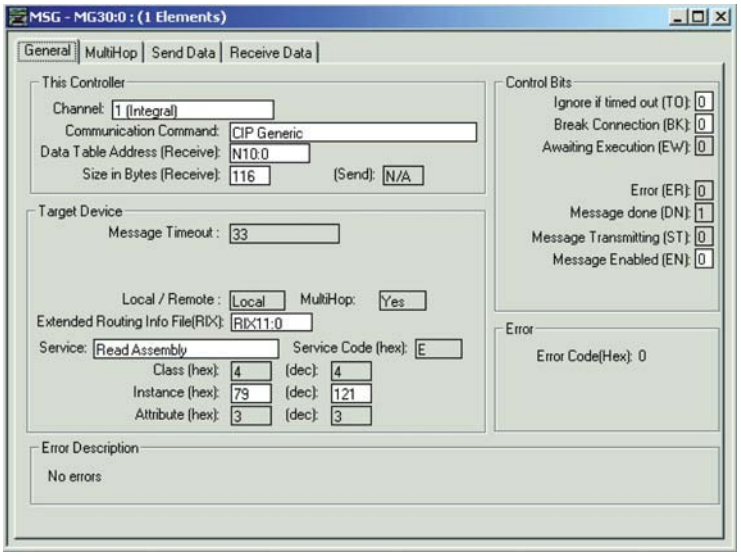
Different connection instances are needed for each RFID interface, which is based on the model. These class 3 connection instances are different than the class 1 instances that are used by a ControlLogix® or CompactLogix™ processor due to the limitations within the SLC™ and MicroLogix™ for handling Send and Receive data.

Use Table 35 to determine the class 3 connection instance and Send/Receive size for your unit.

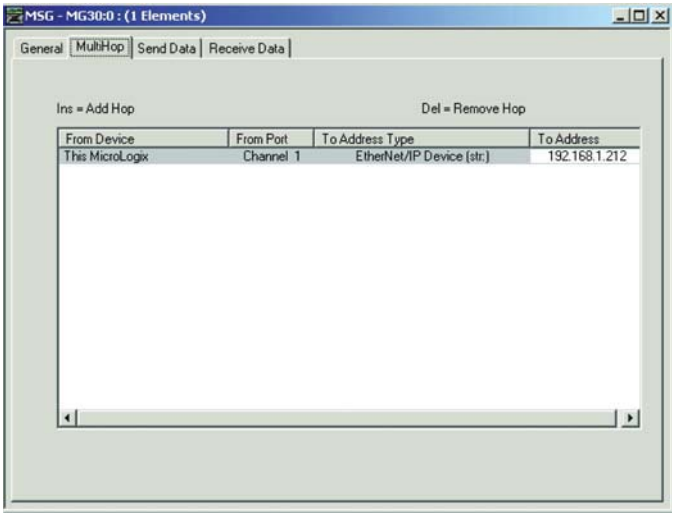
Table 35 - Class 3 Connection Instances with Size (in bytes)

Cat. No.	Input	Size	Output	Size	Config	Size
56RF-IN-IPS12	120	64	130	64	103	16
56RF-IN-IPD22	121	116	131	124	109	20
56RF-IN-IPD22A	122	116	132	124	112	24

Read the Input Image Table of a 56RF-IN-IPD22 Interface Block with a MicroLogix 1400



- N10:0 is the data table address where the input image is stored and spans N10:0...N10:57.
- The number of bytes to receive is 116 (58 words).
- The extended routing file (RIX11:0) is used to store the Multi-Hop routing information.
- Service is type Read Assembly
- Class 4 is the Assembly Instance Class
- Instance 79h is the input image connection instance.
- Attribute 3 is the assembly attribute for the input image table



The Multi-Hop information is used to configure the communications path from the MicroLogix to the RFID interface.

Input Image (56RF-IN-IPD22 Interface Block)

Word	Description	Word	Description
N10:0 – N10:1	Module Connection Status	N10:9	Length
N10:2	Module Status	N10:10 – N10:31	Data
N10:3	Reserved	N10:32	Channel[1] Diagnostics
N10:4	Block Status	N10:33	Command Value
N10:5	I/O Data	N10:34	Counter Value
N10:6	Channel[0] Diagnostics	N10:35	Length
N10:7	Command Value	N10:36 – N10:57	Data
N10:8	Counter Value		

Module Status

Bit	Definition	Bit	Definition
0	Run Status	8	Reserved
1	Block Fault	9	Reserved
2	Aux Power Fault	10	Reserved
3	Reserved	11	Reserved
4	Pt00 Input Fault	12	Pt00 Output Fault
5	Pt00 Open Wire	13	Pt00No Load
6	Pt00 Input Short Circuit	14	Pt00 Output Short Circuit
7	Reserved	15	Reserved

I/O Data

Bit	Definition	Bit	Definition
0	Pt00 Data	8	Pt00 Readback
1	Reserved	9	Reserved
2	Reserved	10	Reserved
3	Reserved	11	Reserved
4	Reserved	12	Reserved
5	Reserved	13	Reserved
6	Reserved	14	Reserved
7	Reserved	15	Reserved

Channel[n] Diagnostics

Bit	Definition	Bit	Definition
0	Reset	8	Error Code
1	Fault	9	Error Code
2	Tag Present	10	Error Code
3	Busy	11	Error Code
4	Reset in Progress	12	Reserved
5	Continuous Read Mode	13	Reserved
6	Reserved	14	Reserved
7	Reserved	15	Reserved

Input Image (56RF-IN-IPD22A Interface Block)

Word	Description	Word	Description
N10:0 – N10:1	Module Connection Status	N10:9	Length
N10:2	Module Status	N10:10 – N10:31	Data
N10:3	Reserved	N10:32	Channel[1] Diagnostics
N10:4	Block Status	N10:33	Command Value
N10:5	I/O Data	N10:34	Counter Value
N10:6	Channel[0] Diagnostics	N10:35	Length
N10:7	Command Value	N10:36 – N10:57	Data
N10:8	Counter Value		

Module Status

Bit	Definition	Bit	Definition
0	Run Status	8	Pt01 Input Fault
1	Block Fault	9	Pt01 Open Wire
2	Aux Power Fault	10	Pt01 Input Short Circuit
3	Reserved	11	Reserved
4	Pt00 Input Fault	12	Reserved
5	Pt00 Open Wire	13	Reserved
6	Pt00 Input Short Circuit	14	Reserved
7	Reserved	15	Reserved

I/O Data

Bit	Definition	Bit	Definition
0	Pt00 Data	8	Reserved
1	Pt01 Data	9	Reserved
2	Reserved	10	Reserved
3	Reserved	11	Reserved
4	Reserved	12	Reserved
5	Reserved	13	Reserved
6	Reserved	14	Reserved
7	Reserved	15	Reserved

Channel[n] Diagnostics

Bit	Definition	Bit	Definition
0	Reset	8	Error Code
1	Fault	9	Error Code
2	Tag Present	10	Error Code
3	Busy	11	Error Code
4	Reset in Progress	12	Reserved
5	Continuous Read Mode	13	Reserved
6	Reserved	14	Reserved
7	Reserved	15	Reserved

Input Image (56RF-IN-IPS12 Interface Block)

Word	Description	Word	Description
N10:0 – N10:1	Module Connection Status	N10:6	Channel[0] Diagnostics
N10:2	Module Status	N10:7	Command Value
N10:3	Reserved	N10:8	Counter Value
N10:4	Block Status	N10:9	Length
N10:5	I/O Data	N10:10 – N10:31	Data

Module Status

Bit	Definition	Bit	Definition
0	Run Status	8	Reserved
1	Block Fault	9	Reserved
2	Aux Power Fault	10	Reserved
3	Reserved	11	Reserved
4	Pt00 Input Fault	12	Pt00 Output Fault
5	Pt00 Open Wire	13	Pt00 No Load
6	Pt00 Input Short Circuit	14	Pt00 Output Short Circuit
7	Reserved	15	Reserved

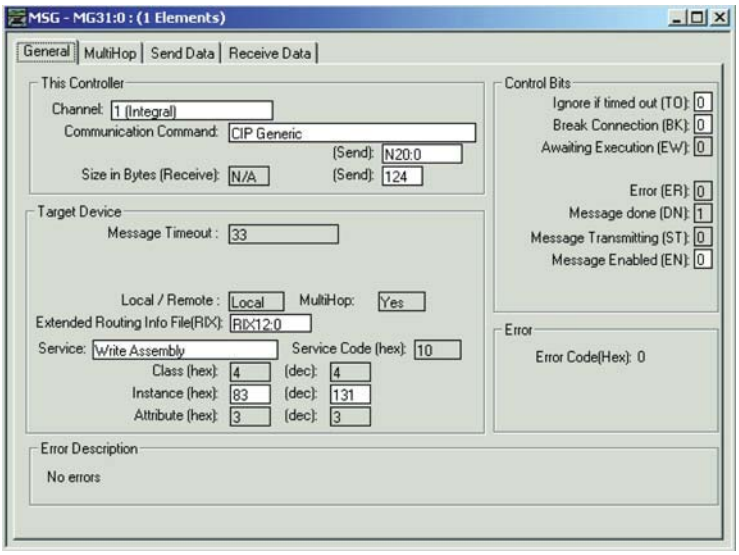
I/O Data

Bit	Definition	Bit	Definition
0	Pt00 Data	8	Pt00 Readback
1	Reserved	9	Reserved
2	Reserved	10	Reserved
3	Reserved	11	Reserved
4	Reserved	12	Reserved
5	Reserved	13	Reserved
6	Reserved	14	Reserved
7	Reserved	15	Reserved

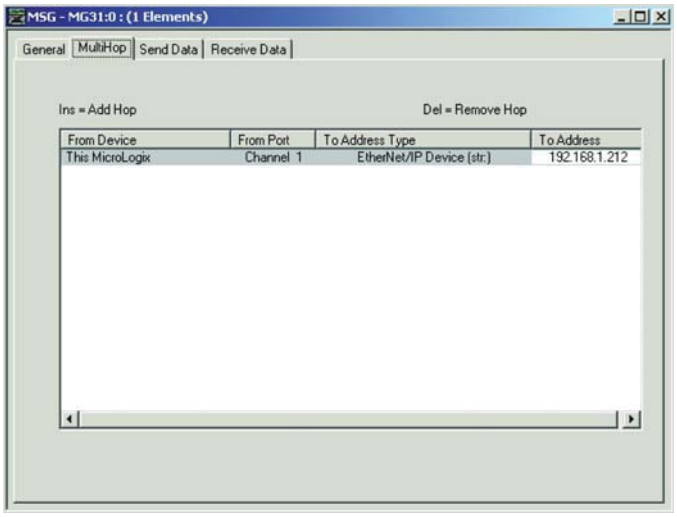
Channel[n] Diagnostics

Bit	Definition	Bit	Definition
0	Reset	8	Error Code
1	Fault	9	Error Code
2	Tag Present	10	Error Code
3	Busy	11	Error Code
4	Reset in Progress	12	Reserved
5	Continuous Read Mode	13	Reserved
6	Reserved	14	Reserved
7	Reserved	15	Reserved

Write to the Output Image Table of a 56RF-IN-IPD22 Interface Block with a MicroLogix 1400



- N20:0 is the data table address to store the output image and spans N20:0...N20:61.
- The number of bytes to send is 124 (62 words).
- The extended routing file (RIX12:0) is used to store the Multi-Hop routing information.
- Service is type Write Assembly
- Class 4 is the Assembly Instance Class
- Instance 83h is the output image connection instance.
- Attribute 3 is the assembly attribute for the output image table



The Multi-Hop information is used to configure the communications path from the MicroLogix to the RFID interface.

Input Image (56RF-IN-IPD22 Interface Block)

Word	Description	Word	Description
N20:0	Module Data	N20:12...N10:31	Data
N20:1	Reserved	N20:32	Channel[1] Reset
N20:2	Channel[0] Reset	N20:33	Block Size
N20:3	Block Size	N20:34	Command
N20:4	Command	N20:35	Address
N20:5	Address	N20:36	Length
N20:6	Length	N20:37	Timeout
N20:7	Timeout	N20:38...N20:39	UIDLow
N20:8...N20:9	UIDLow	N20:40...N20:41	UIDHi
N20:10...N20:11	UIDHi	N20:42...N20:61	Data

Module Data

Bit	Definition	Bit	Definition
0	Run Mode	8	Pt00 Data
1	Reserved	9	Reserved
2	Reserved	10	Reserved
3	Reserved	11	Reserved
4	Reserved	12	Reserved
5	Reserved	13	Reserved
6	Reserved	14	Reserved
7	Reserved	15	Reserved

Input Image (56RF-IN-IPD22A Interface Block)

Word	Description	Word	Description
N20:0	Module Data	N20:12...N10:31	Data
N20:1	Reserved	N20:32	Channel[1] Reset
N20:2	Channel[0] Reset	N20:33	Block Size
N20:3	Block Size	N20:34	Command
N20:4	Command	N20:35	Address
N20:5	Address	N20:36	Length
N20:6	Length	N20:37	Timeout
N20:7	Timeout	N20:38...N20:39	UIDLow
N20:8...N20:9	UIDLow	N20:40...N20:41	UIDHi
N20:10...N20:11	UIDHi	N20:42...N20:61	Data

Module Data

Bit	Definition	Bit	Definition
0	Run Mode	8	Reserved
1	Reserved	9	Reserved
2	Reserved	10	Reserved
3	Reserved	11	Reserved
4	Reserved	12	Reserved
5	Reserved	13	Reserved
6	Reserved	14	Reserved
7	Reserved	15	Reserved

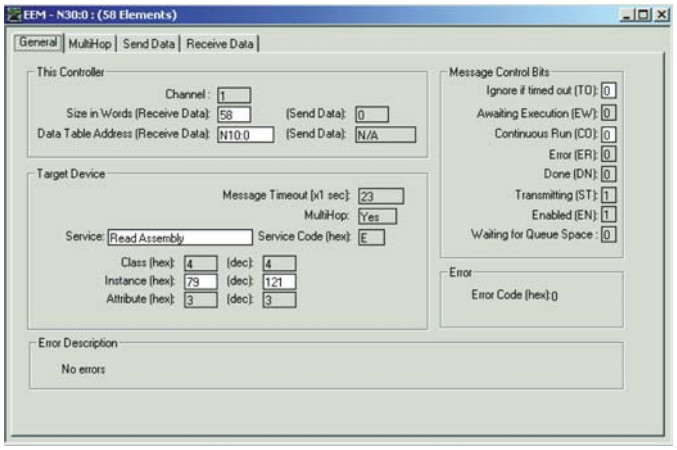
Input Image (56RF-IN-IPS12 Interface Block)

Word	Description	Word	Description
N20:0	Module Data	N20:6	Length
N20:1	Reserved	N20:7	Timeout
N20:2	Channel[0] Reset	N20:8...N20:9	UIDLow
N20:3	Block Size	N20:10...N20:11	UIDHi
N20:4	Command	N20:12...N10:31	Data
N20:5	Address		

Module Data

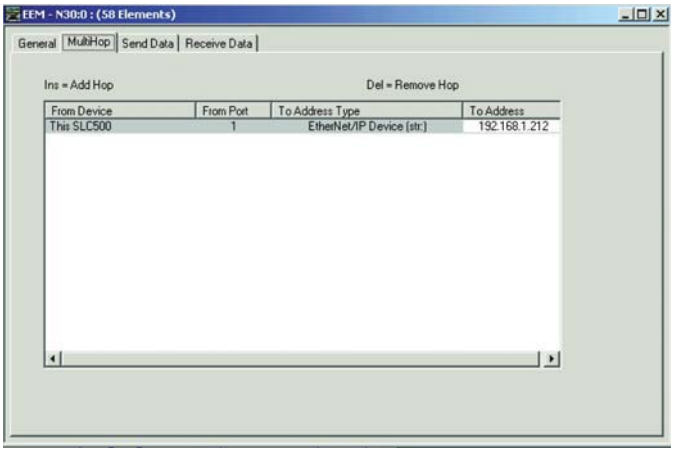
Bit	Definition	Bit	Definition
0	Run Mode	8	Pt00 Data
1	Reserved	9	Reserved
2	Reserved	10	Reserved
3	Reserved	11	Reserved
4	Reserved	12	Reserved
5	Reserved	13	Reserved
6	Reserved	14	Reserved
7	Reserved	15	Reserved

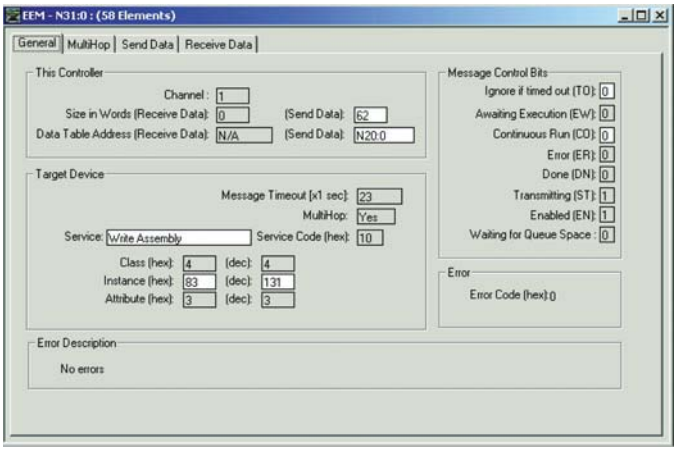
Read the Input Image Table of a 56RF-IN-IPD22 Interface Block with an SLC-5/05



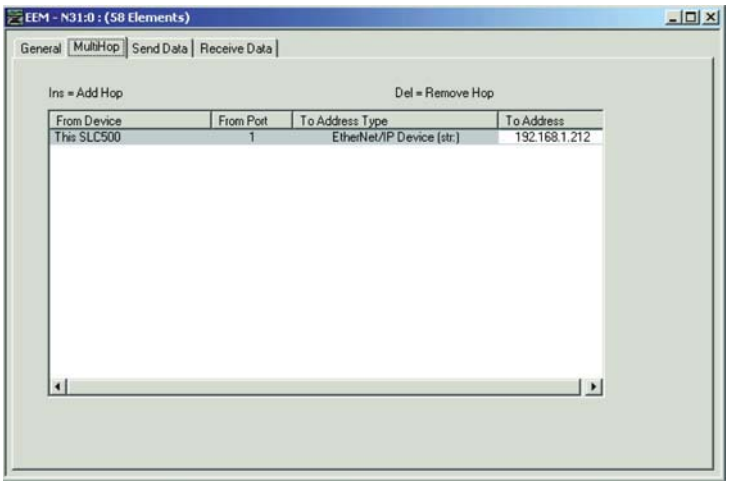
The main difference between the MicroLogix1400 and the SLC-5/05 is that the SLC uses an EEM instruction instead of an MSG instruction, but the setup is similar. The routing information for the EEM is stored within the Control Block address (N30:0)

- N10:0 is the data table address where the input image is stored and spans N10:0...N10:57.
- The size in words is 58 (116 bytes).
- Service is type Read Assembly
- Class 4 is the Assembly Instance Class
- Instance 79h is the input image connection instance.
- Attribute 3 is the assembly attribute for the input image table





- N20:0 is the data table address to store the output image and spans N20:0...N20:61.
- The Send Data size is 62 (124 bytes).
- Service is type Write Assembly
- Class 4 is the Assembly Instance Class
- Instance 83h is the output image connection instance.
- Attribute 3 is the assembly attribute for the output image table



Class 1 Connections

Class 1 connections are used to transfer I/O data, and can be established to the Assembly Object instances. Each Class 1 connection establishes two data transports, one consuming and one producing. The heartbeat instances are used for connections that can access only inputs. Class 1 uses UDP transport.

- Total number of supported Class 1 connections equals 2 (total for: exclusive owner + input only + listen-only)
- Supported API: 2...3200 ms (The minimum API can be higher if processor resources become a problem)
- T->O Connection type: Point-to-point, multicast
- O->T Connection type: Point-to-point
- Supported trigger type: Cyclic, change of state

The producing instance can be assigned to multiple transports, with any combination of multicast and point-to-point connection types.

Only one Exclusive-owner connection is supported at each time. If an Exclusive-owner connection is already established and an originator tries to establish a new Exclusive-owner connection, an Ownership conflict (general status = 0x01, extended status = 0x0106) error code is returned.

For a connection to be established, the requested data sizes must be an exact match of the connections points that the connection tries to connect to. If the requested and actual sizes do not match, an Invalid connection size (general status = 0x01, extended status = 0x0109) error code is returned.

Exclusive Owner Connection

This connection type is used for controlling the outputs of the module and must not be dependent on any other condition. Only one exclusive owner connection can be opened against the module.

If an exclusive owner connection is already opened a Connection in use (general status = 0x01, extend status = 0x0100) error code is returned.

- Connection point O -> T must be Assembly Object, Instance 3, 162 or 166 (162 for product codes <= 0x100 only, 166 for product codes > 0x100 only).
- Connection point T -> O must be Assembly Object, Instance 52, 150 or 151 (150 for product codes <= 0x100 only, 151 for product codes > 0x100 only).

Input Only Connection

This connection is used to read data from the module without controlling the outputs. This connection is not dependent on any other connection.

It is recommended that the originator sets the data size in the O->T direction of the Forward_Open to zero.

IMPORTANT If an exclusive owner connection is opened against the module and times out, the input only connection times out as well. If the exclusive owner connection is properly closed, the input only connection is not be affected.

- Number of supported input only connections equals two (shared with exclusive owner and listen-only connection).
- Connection point O -> T must be Assembly Object, Instance 191 (Input only heartbeat).
- Connection point T -> O must be Assembly Object, Instance 52, 150, or 151 (150 for product codes <= 0x100 only, 151 for product codes > 0x100 only).

Listen-only Connection

This connection is dependent on another connection to exist. If that connection(exclusive owner or input only) is closed, the listen-only connection must be closed as well.

It is recommended that the originator sets the data size in the Forward_Open to zero.

- Number of supported listen-only connections equals two (shared with exclusive owner and listen-only connection).
- Connection point O -> T must be Assembly Object, Instance 192 (listen-only heartbeat)
- Connection point T -> O must be Assembly Object, Instance 52, 150 or 151 (150 for product codes <= 0x100 only, 151 for product codes > 0x100 only)

Class 3 Connections

Class 3 connections are used to establish connections to the message router. The connection is used for Explicit Messaging. Class 3 connections use TCP connections.

- Three concurrent encapsulation sessions are supported
- Six concurrent Class 3 connections are supported
- Multiple Class 3 connections per encapsulation session are supported
- Supported API: 100...10000 ms
- T->O Connection type: Point-to-point
- O->T Connection type: Point-to-point
- Supported trigger type: Application

Discrete Input Point Object Class Code 0x0008

The following class attributes are currently supported for the Discrete Input Point Object:

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Revision	0xC7	2
2	Get	Max Instance	UINT	4

Two instances of the Discrete Input Point Object are supported. All instances contain the following attributes.

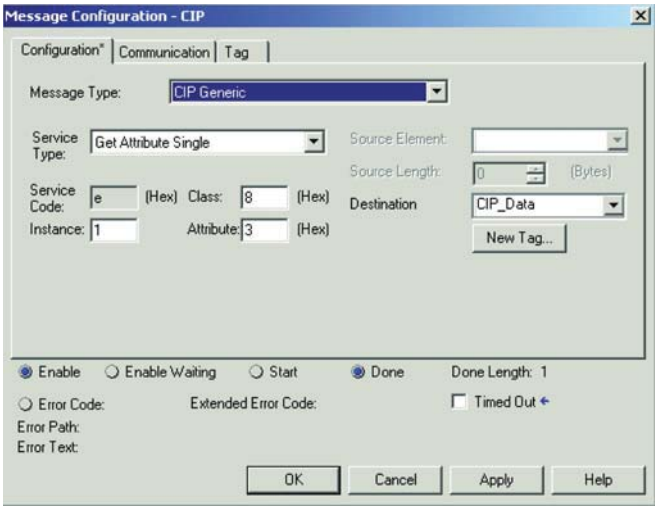
Attribute ID	Access Rule	Name	Data Type	Value
3	Get	Value	BOOL	0 = OFF, 1 = ON
5		FilterOffOn	0xC7	0 = No delay 1000 = 1 ms 2000 = 2 ms 4000 = 4 ms 8000 = 8 ms 16000 = 16 ms
6		FilterOnOff	0xC7	0 = No delay 1000 = 1 ms 2000 = 2 ms 4000 = 4 ms 8000 = 8 ms 16000 = 16 ms

The following common services are implemented for the Discrete Input Point Object.

Service Code	Implemented for:		Service Name
	Class	Instance	
0x0E	Yes	Yes	Get_Attribute_Single
0x10	No	Yes	Set_Attribute_Single

To obtain the status of an input point (ON or OFF), configure a CIP message as shown in Figure 25

Figure 25 - Obtain Status of Input

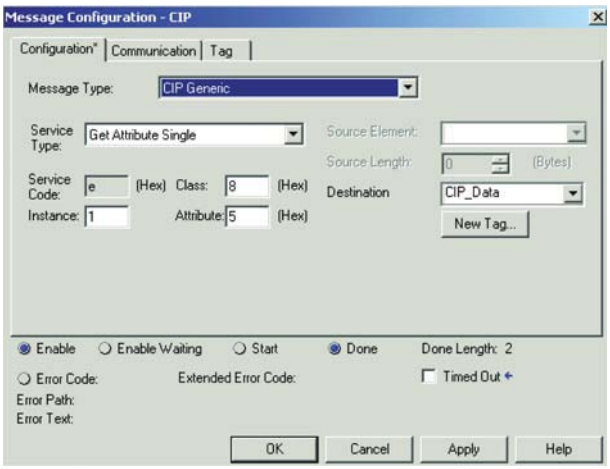


Instance 1 is the first input (Pt00), if the RFID interface supports two inputs, then Pt01 would be instance 2.

The return value in CIP_Data[0] is either 0 (Input OFF) or 1 (Input ON).

To obtain the Input Filter Off/On value of an input point, configure a CIP message as shown in Figure 26 on page 139:

Figure 26 - Obtain Input Filter Off/On Value



Instance 1 is the first input (Pt00), if the RFID interface supports two inputs, then Pt01 would be instance 2.

The return value contains the filter time in milliseconds.

Discrete Output Point Object Class Code 0x0009

The following class attributes are supported:

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Revision	0xC1	1
2	Get	Max Instance	UINT	4 or 10

Two instances of the Discrete Output Point Object are supported. All instances contain the following attributes.

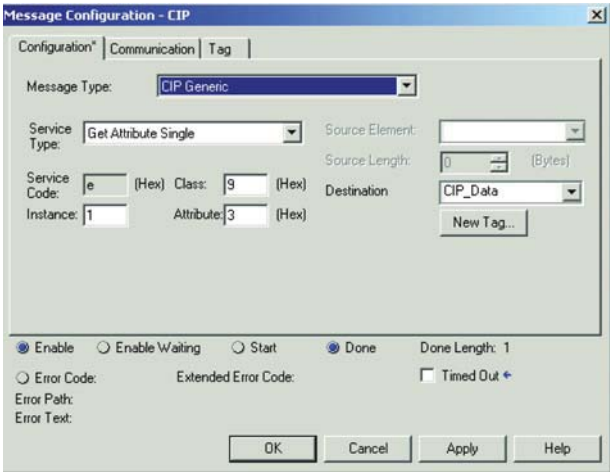
Attribute ID	Access Rule	Name	Data Type	Value
3	Get	Value	BOOL	0 = OFF, 1 = ON
5	Get/Set	FaultMode	BOOL	0 = Use Fault Value 1 = Hold Last State
6	Get/Set	FaultValue	BOOL	0 = OFF 0 = ON
7	Get/Set	ProgMode	BOOL	0 = Use Program Value 1 = Hold Last State
8	Get/Set	ProgValue	BOOL	0 = OFF 1 = ON

The following common services are implemented for the Discrete Output Point Object.

Service Code	Implemented for:		Service Name
	Class	Instance	
0x0E	Yes	Yes	Get_Attribute_Single
0x10	No	Yes	Set_Attribute_Single

To obtain the state of an output point, configure a CIP message as shown in Figure 27:

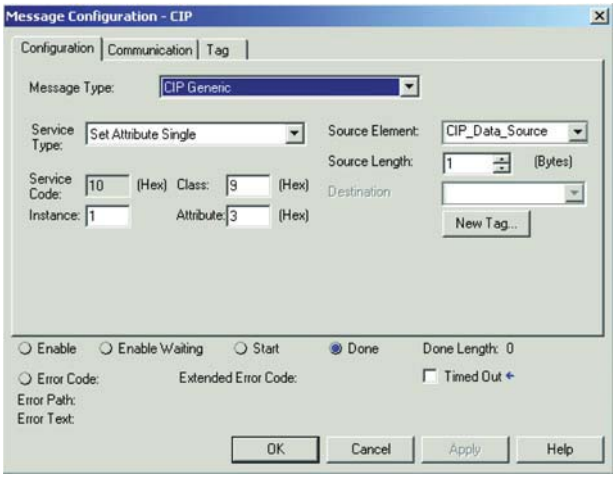
Figure 27 - Obtain State of Output



The return value contains the state of the output (0=Off, 1=On)

To set the state of an output point, configure a CIP message as shown in Figure 28:

Figure 28 - Set State of Output



CIP_Data_Source is a SINT that contains the value to set the output too (0=Off, 1=On).

Install the Add-on Profile

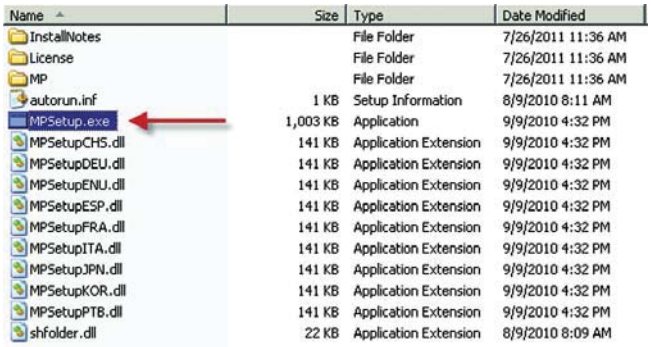
Introduction

This appendix goes through the Add-on Profile (AOP) of the RFID transceivers with the RSLogix 5000® program. AOPs are files that you add to your Rockwell Automation® library. These files contain the pertinent information for configuring a device that is added to the Rockwell Automation network.

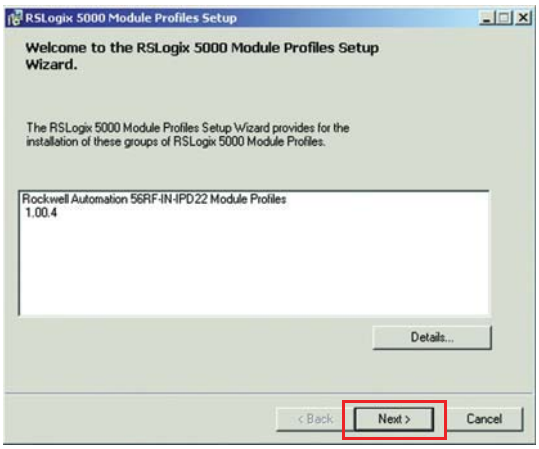
The AOP simplifies the setup of devices. The AOP presents the necessary fields in an organized fashion, which allows you to create and configure your system in a quick and efficient manner.

The AOP is a folder that contains numerous files for the device. It comes as an installation package. Follow the on-screen instructions to install the AOP.

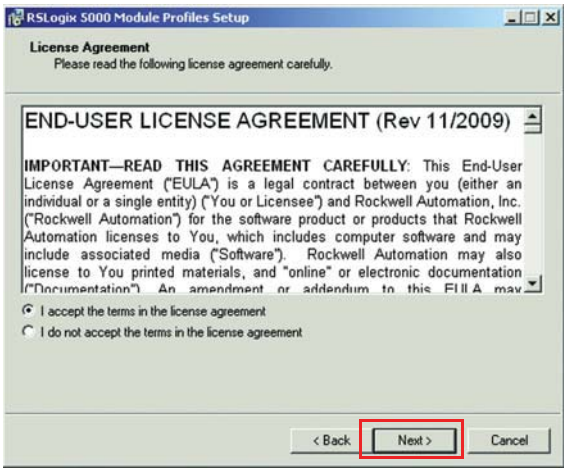
1. In the File Explorer, locate the directory where the installation files were extracted.
2. Click MPSetup.exe



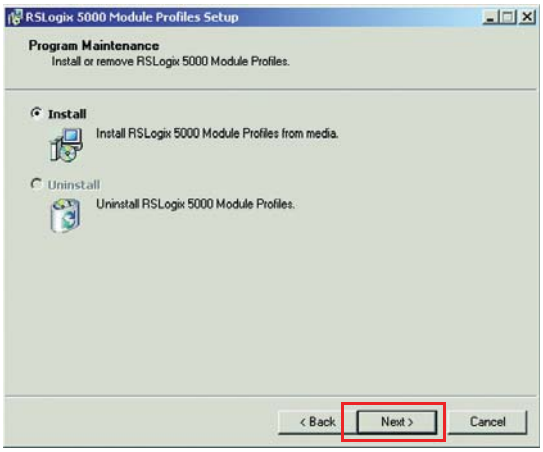
3. The window identifies the module profiles and the firmware revision. Click Next.



4. Accept the terms of the license agreement and click Next.

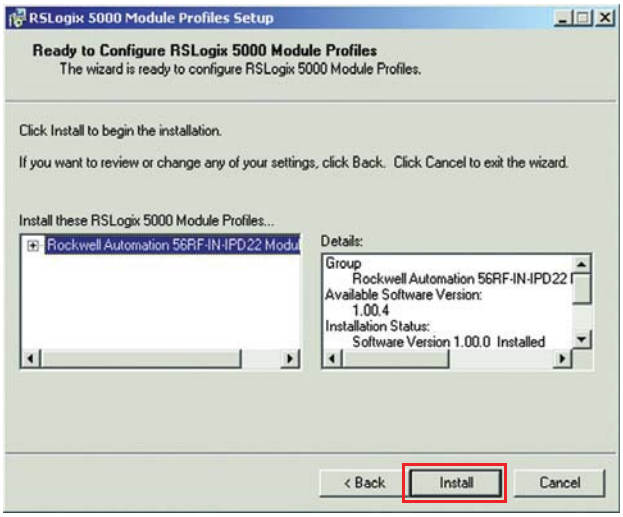


5. With Install selected, click Next.



6. The profile name appears in the left-hand box and its details appear in the right-hand box. Verify that the module name is correct.

   Click Install.



Troubleshooting

Common Solutions

Table 36 lists common problems and solutions for the RFID system.

Table 36 - Problems/Solutions

Problem	Solution
I just hooked this unit up out-of-the-box and cannot see the RFID interface in the RSLinx software.	The RFID interface is shipped with DHCP/BootP enabled and does have an assigned EtherNet/IP™ address unless the MAC address of the RFID is in the relationship list. There are three rotary switches on the RFID interface (all set to 0 by default), adjust the switches to a valid IP address in the range of 192.168.1.xxx where xxx is the position of the three rotary switches. Once the switches are in place, cycle power to the RFID interface.
I am getting a yellow triangle in the RSLogix 5000 software for my RFID interface.	Open the properties of the RFID interface in the RSLogix 5000® software and verify: The Inhibit Module box in the connection tab is not checked. The IP address in the General Tab is the same as the IP address configured in the RFID interface. The IP address of the RFID interface is on the same subnet as the Ethernet module in the Logix rack. Also, verify that the RFID interface has power by checking that the Aux Power status indicator is steady green, the MOD status indicator is steady green, the Link 1 status indicator is flashing green, and the NET status indicator is steady green.
My RFID channel[x] status indicator is flashing red on the interface.	Flashing red indicates no communications between the interface and the transceiver. Check cables between the RFID interface and transceiver. Verify that the power status indicator on the transceiver is green.
When I put a tag in the RFID field the status indicator on my transceiver and interface turns amber.	When one or more RFID tags are detected in the field, the status indicators on the interface and transceiver turn amber, which indicates tag presence. When no tags are detected, the status indicators turn green indicating that no tags are detected but communications are healthy.
When I put a tag in the RFID field the power status indicator on the transceiver is steady green, the R/W Status status indicator is steady green, and the status indicator for that channel is steady green.	Verify that the RFID tag is an ICODE compatible or SL2 style tag. The RFID interface is not to detect proprietary tag types.

Notes:

Numerics

A

B

C

D

N

O

P

Q

R

S

T

U

V

W

Rockwell Automation Support

Use these resources to access support information.

Technical Support Center	Find help with how-to videos, FAQs, chat, user forums, and product notification updates.	rok.auto/support
Knowledgebase	Access Knowledgebase articles.	rok.auto/knowledgebase
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
Literature Library	Find installation instructions, manuals, brochures, and technical data publications.	rok.auto/literature
Product Compatibility and Download Center (PCDC)	Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes.	rok.auto/pcdc

Documentation Feedback

Your comments help us serve your documentation needs better. If you have any suggestions on how to improve our content, complete the form at rok.auto/docfeedback.

Waste Electrical and Electronic Equipment (WEEE)

At the end of life, this equipment should be collected separately from any unsorted municipal waste.

Rockwell Automation maintains current product environmental compliance information on its website at rok.auto/pec.

Rockwell Otomasyon Ticaret A.Ş. Kar Plaza İş Merkezi E Blok Kat:6 34752, İçerenköy, İstanbul, Tel: +90 (216) 5698400 EEE Yönetmeliğine Uygundur

Connect with us.

rockwellautomation.com — expanding **human possibility**

AMERICAS: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
EUROPE/MIDDLE EAST/AFRICA: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
ASIA PACIFIC: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

Publication 56RF-UM001D-EN-P - November 2021
Supersedes Publication 56RF-UM001C-EN-P - August 2019