Assembly Connections for POINT I/O and ArmorPOINT I/O EtherNet/IP Adapters

Allen-Bradley

Catalog Numbers Bulletins 1734 and 1738
User Manual

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Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (publication SGI-1.1 available from your local Rockwell Automation sales office or online at http://literature.rockwellautomation.com) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

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WARNING 	Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.
ATTENTION 	Identifies information about practices or circumstances that can lead to: personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.
SHOCK HAZARD 	Labels may be on or inside the equipment, such as a drive or motor, to alert people that dangerous voltage may be present.
BURN HAZARD 	Labels may be on or inside the equipment, such as a drive or motor, to alert people that surfaces may reach dangerous temperatures.

Table of Contents

Read this preface to familiarize yourself with the rest of the manual. It provides information concerning:

- the purpose of this manual
- related documentation
- conventions used in this manual

Why Read This Manual

This manual is a reference guide for using Assembly Connections with POINT I/O and ArmorPOINT I/O modules.

Who Should Use This Manual

You must be able to program and configure industrial automation controllers and I/O to use the connections specified in this manual. You should also be familiar with the POINT I/O or ArmorPOINT I/O families of product to use these connections.

We assume that you are familiar with the material presented in this manual. If you are not, refer to product-specific documentation before you attempt to use this manual. Related documentation for Rockwell Automation products is listed in the table below.

About the Vocabulary

In this manual, we refer to the:

- 1734 family as POINT I/O modules
- 1738 family as ArmorPOINT I/O modules

Related Documentation

The following documents contain additional information concerning Rockwell Automation products.

Resource	Description
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	In-depth information on grounding and wiring Allen-Bradley programmable controllers.
Application Considerations for Solid-State Controls SGI-1.1	A description of important differences between solid-state programmable controller products and hard-wired electromechanical devices.
Allen-Bradley Industrial Automation Glossary AG-7.1	A glossary of industrial automation terms and abbreviations.
Getting Results with RSNetWorx for DeviceNet, publication DNET-GR001D-EN-E	A getting results guide on how to effectively use the RSNetWorx for DeviceNet software and how to access and navigate the online help.
RSLogix 5000 software online help	An online help system that accompanies the RSLogix 5000 programming software package.

Resource	Description
POINT I/O and ArmorPOINT I/O module publications	Publications for POINT I/O and ArmorPOINT I/O modules are available from the Rockwell Automation Literature Library.
National Electrical Code - Published by the National Fire Protection Association of Boston, MA.	An article on wire sizes and types for grounding electrical equipment.

You can view or download publications at http://www.literature.rockwellautomation.com. To order paper copies of technical documentation, contact your local Rockwell Automation distributor or sales representative.

Common Techniques Used in this Manual

The following conventions are used throughout this manual:

- Bulleted lists such as this one provide information, not procedural steps.
- Numbered lists provide sequential steps or hierarchical information.
- *Italic* type is used for emphasis.

Introduction

About Assembly Connections

This document describes Assembly connections, a new connection type for POINT I/O and ArmorPOINT I/O EtherNet/IP adapters. These adapters currently support Rack Optimized connections between ControlLogix or CompactLogix controllers and the discrete I/O modules in the chassis.

They are also capable of bridging direct connections between any EtherNet/IP-capable connection originator and the I/O modules, via the backplane. This new functionality being presented will permit the exchange of data between an originator and all POINT I/O modules present in the chassis in one connection.

This new Assembly connection is mutually exclusive to other connection types, for example, Rack Optimized or Direct to module connections. In other words, if this connection is in use by one connection originator, other originators are prevented from making Rack Optimized or Direct Connections to the modules in the same chassis. Furthermore, the connection is all-inclusive; every module present in the backplane participates in the connection.

The I/O data that is exchanged with the adapter takes the following form:

Adapter Data Exchange

T →O produced I/O data	O →T consumed I/O data
64-bit Status header	Run/Idle header
Slot 1 data	Slot 1 data
Slot 2 data	Slot 2 data
:	:
:	:
Slot N[1] data	Slot N data

(1) N is the number of I/O modules

The 64-bit Status header is optional and the packing of the data is dependant on the selected alignment choice. The exact method for determining the data structure is covered in the following sections.

Choose a Connection

The Assembly connection supports an optional 64-bit status header and also supports requests from listen-only originators.

Data Headers

In the Target to Originator (T →O) direction, the adapter can be configured to produce a status header for the connection. The header consists of an 8-byte bitmap, where bits 1 - 63 indicate the health of each of the 63 possible backplane connections. This is similar to existing Rack Optimized connections. A "1" indicates that a module is not connected or that slot is not populated. A "0" indicates that the module is actively participating in the connection. Currently, Bit 0 is reserved and should be ignored.

When the header is used, modules may be removed and reinserted without breaking the I/O connection to the adapter. Modules not present or that are failed are reflected in the status header.

If the optional status header is not included, the adapter cannot support RIUP without breaking the I/O connection. If any one I/O module fails or is removed, the adapter will break the connection to the connection originator. Since no status is provided, this is the only way to reflect the fact that a problem exists with the I/O modules on the backplane.

In the Originator to Target (O →T) direction the adapter supports the 4-byte Run/Idle header. Sending a "1" indicates that the controller is in the Run mode and that the adapter should apply the data that was just received. Sending a "0" indicates that the controller is in program or idle mode and that the adapter should put the I\O modules in their idle mode.

Listen Only Connections

Using an Assembly connection will allow multiple originators to consume data from the POINT I/O system. However, only one owner of the connection is permitted. That one owner will control all output devices present in the chassis as well as the configuration of the connection.

Connection Points

The following table lists the connection points that are supported for the different connection styles discussed.

Supported Connection Points for Connection Styles

Connection	Configuration Connection Point	Consumed Connection Point	Produced Connection Point
Exclusive Owner	102	100	101
Listen-only	102	191	101
Input-only	102	190	101
Owning with no status header	102	100	103
Listen-only with no status header	102	191	103
Input-only with no status header	102	190	103

Notes:

Configuration

About This Chapter

This chapter describes the various configuration options that you can use to set up assembly connections.

Configure the Connection

This connection is accepted with or without a configuration assembly present. If a configuration assembly is present, it must contain the following minimum information.

Minimal Adapter Configuration Assembly

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Config 0	Reserved (Set to 0)							
Config 1	Reserved (Set to 0)							
Config 2	Reserved (Set to 0)							
Config 3	Reserved (Set to 0)							
Config 4	Chassis size (Low Byte)							
Config 5	Chassis size (High Byte)							
Config 6	Alignment for Produced Assembly (T →O)							
Config 7	Size per slot (T→O) (in Bytes)							
Config 8	Alignment for Consumed Assembly (O →T)							
Config 9	Size per slot (O →T) (in Bytes)							

Chassis Size

Before establishing I/O connections, you must configure the 1734 adapters for chassis size. This ensures that the correct number of modules are present in the chassis at power up. The chassis size must include 1 count for the adapter (Chassis Size = number of I/O modules + 1).

Data Alignment

Some computing devices require data to be aligned on boundaries that are proper for their data type. There are several alignment options available to reduce or prevent shifting operations in the originator:

Byte Boundaries

Each node's I/O data is mapped at the next available byte. Byte data can appear at any address.

Word Boundaries

If a node's I/O data is one byte in length, it is mapped at the next available byte. Otherwise the previous data is padded so that the node's data starts on a 16-bit boundary.

TIP This does not mean that every slot occupies two bytes in the image. Word data can only begin on even addresses, for example, 0, 2, 4, 8, 0xA, or 0xC.

Double Word Boundaries

If a node's I/O data is one byte in length, it is mapped at the next available byte. If a node's data is two bytes in length, padding is added to ensure that it is mapped to an even address. If a node's data is greater than 2 bytes in length, padding is added to ensure that the data is mapped to a Double Word boundary.

TIP This does not mean that every slot occupies 4 bytes in the image. Double Word data and array data larger than 2 bytes in size must be aligned on addresses ending in 0, 4, 8, and 0xC.

Fixed Boundaries

The fixed boundary allows you to choose the fixed "size per slot" that each module occupies in the I/O data. Mapping size ranges from 1…24 bytes.

The alignment choices are independently selected for each direction; O →I and T →O. If Fixed Boundaries are selected, the Size per Slot choice determines how many bytes are reserved for each slot in the I/O packet. If the size selected is larger than a module's data, that module's data is padded with 0's out to the size selected. If the size selected is smaller than a module's data, that module's data is truncated at the size selected.

When Fixed Boundaries are selected, the formula for mapping is: H+(N-1)(size per slot), where N = slot position and H is the size of the optional status header (8 if used, 0 if not used).

The choice of alignment is highly dependent on the originator used and application-specific requirements.

- If data size is at a premium, Byte alignment is the most efficient choice.
- If the originator can only process data on DINT boundaries (as is the case with RSLogix controllers), then Double Word alignment should be used.
- If ease of programming is desired, the Fixed Boundaries option allows for easy location of the data within the data packet. Additionally the use of Fixed Boundaries along with the 1734-ARM module will allow modules to be added later without having the location of any slot's data change. The ARM module will reserve data space for future modules. Since each slot occupies the same size in the data image, when the ARM module is replaced with a future module, the data boundaries are preserved.

Individual Module Configuration Options

The request for an Assembly connection is accepted with or without a configuration assembly present. If a configuration assembly is present, it must contain the minimum information presented in the Configuring the Connection section. See Table Minimal Adapter Configuration Assembly on page 5. If individual module configuration is required, it can be appended to the end of the minimum configuration structure for any or all modules that require configuration. The construction of this configuration data structure is a manual process.

Alternatively any tool that is capable of sending CIP packets can configure the parameters of individual POINT I/O modules. The configuration is stored locally in the module's non-volatile storage. When the configuration is sent from the connection originator via the connection request, the adapter also stores a copy of this configuration and restores it if that module is ever replaced. This is similar to the Automatic Device Replacement feature of DeviceNet scanners. If the configuration is sent from the connection originator via the connection request, the configuration assembly size is limited to the maximum packet size of 510 bytes. This may be an issue in larger systems that require module configuration. Configuring modules through a separate tool will allow the configuration to be sent to modules individually, effectively eliminating the packet size limitation. Furthermore, the configuration tool of choice may provide a rich graphical user interface, reducing the possibility that configuration is incorrectly entered. One such tool is RSNetWorx for DeviceNet.

Module Configuration Sent with the Connection Request

Individual module configuration must be manually constructed and appended to the minimal configuration assembly specified in the table Minimal Adapter Configuration Assembly on page 5. For each module that needs to be configured, the following information must be provided:

Module Configuration Information

Field	Data Type	Description
Slot number	USINT	The slot number to identify modules that require configuration data.
Configuration size	USINT	The size, in bytes, of the Configuration Data for the given module. It does not include the size of the first three fields shown here.
Configuration assembly instance	UINT	The adapter reads this field to access the module configuration assembly's instance number.
Configuration data	Array of BYTE	The configuration assembly data as defined by the module's EDS file.

This structure may be repeated for as many modules as necessary until the whole assembly exceeds 509 bytes. The module order is not important as long as all module configuration follows the minimal header information from the table Minimal Adapter Configuration Assembly on page 5.

If any part of the configuration assembly is wrong (either the minimal assembly or a portion directed to an I/O module), the connection request will be rejected with the General Return Code indicating an Error in the Data Segment (0x09). The Extended Error code will indicate the byte offset into the configuration data segment where the error was detected. The Configuration assembly details for all of the 1734 and 1738 I/O modules are presented in Module Assembly Information on page 31.

Module Configuration with RSNetWorx for DeviceNet

RSNetWorx for DeviceNet provides a rich parameter-based configuration user interface. The POINT I/O and ArmorPOINT I/O adapters have the capability to present their backplane as a DeviceNet subnet to RSLinx. The subnet can be used to bridge configuration data from RSNetWorx for DeviceNet to backplane devices. With this method, all configuration for a POINT I/O backplane can be stored to the DeviceNet network file (.DNT) and restored via this file if necessary.

Calculate the Connection Size

The I/O assembly size is limited to the maximum size that can be specified in the standard Forward_Open service (509 bytes). The size needs to be manually calculated based on the alignment choices, inclusion of the optional status header, and the I/O sizes for the modules present in the chassis. The adapter validates the connection size in the forward open against what it calculates from the backplane and the alignment choice. If the two do not match, the connection request is rejected with extended error code 0x0109, Invalid Connection Size.

Connection Size Calculation Example

The following system will be used to demonstrate the connection size calculation. The adapter's produced size (T →O) must include 8 bytes if the optional status header is included. In some software the consumed size (O →T) does not need to account for the 4 byte Run/Idle header as it is assumed and already included. For the example both header sizes have been included.

POINT I/O system example

Cat #	AENT	IB8	IE2C	OB4E
Slot #	0	1	2	3

Module	Tx size	Rx size
IB8	1 – byte	0
OB4E	1 – byte	1 – byte
IE2C	6 - int - int - byte - byte	0

	T →O alignment	T →O size	O →T alignment	O →T size
1	Byte	16 bytes	Byte	5 bytes
		status 8 bytes slot 1 byte slot 2 int slot 2 int slot 2 byte slot 2 byte slot 3 byte		run /idle 4 bytes slot 3 byte

	T →O alignment	T →O size	O →T alignment	O →T size
2	Double Word	19 bytes	Double Word	5 bytes
		status 8 bytes slot 1 byte slot 1 pad slot 1 pad slot 1 pad slot 2 int slot 2 int slot 2 byte slot 2 byte slot 3 byte		run / idle 4 bytes slot 3 byte
3	6 bytes per slot	26 bytes	1 byte per slot	7 bytes
		status 8 bytes slot 1 6 bytes slot 2 6 bytes slot 3 6 bytes		run /idle 4 bytes slot 1 byte slot 2 byte slot 3 byte

In row 1, the data is packed on byte boundaries. This is the most efficient data representation when alignment is not a concern.

In row 2 the data for slot 1 is padded so that slot 2's data began on a Double Word boundary.

In row 3 every slot takes up the selected size per slot regardless of whether that module has any data to produce.

This section touches briefly on data alignment. More comprehensive examples of data alignment are provided in Assembly Structure Examples on page 23.

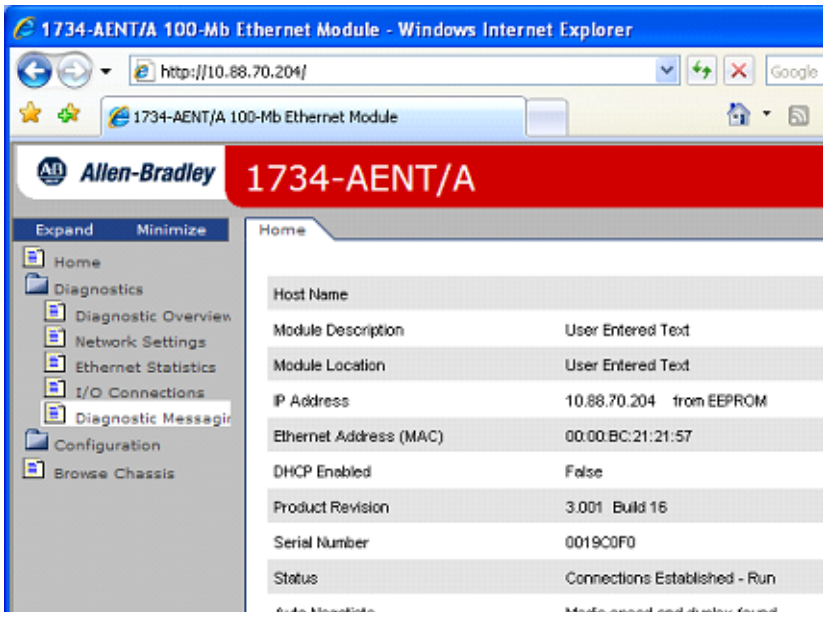
Troubleshooting Connection Size Errors

If the adapter returns the Invalid Connection Size error in response to a connection request, it is possible to query the adapter for its calculated size.

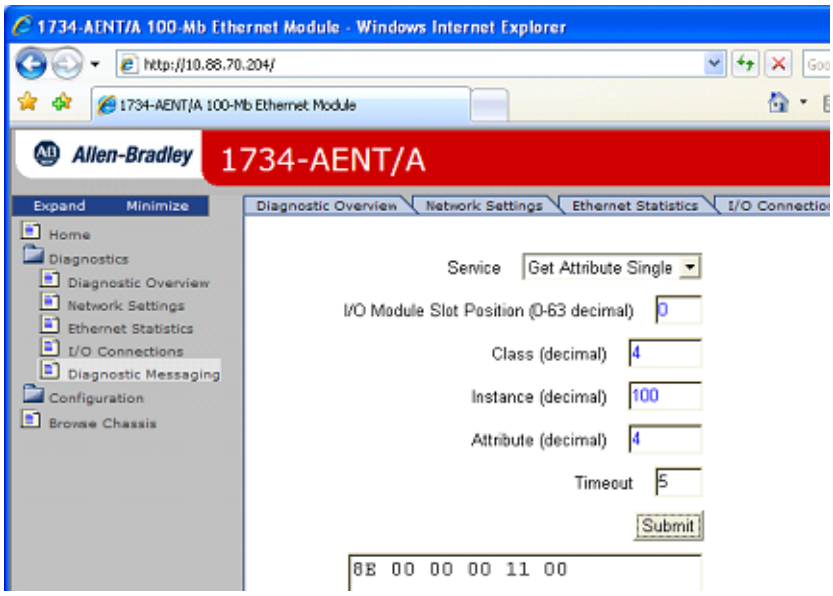
This section highlights a technique that can be used to help resolve connection size errors.

The adapter cannot validate connection sizes until the request to open the connection is received. It is within that request that the adapter receives the alignment choice and status election. Based on all the information in the request and the modules present, the request may be rejected by the adapter because of a size error.

1. Open the adapter's web page and select the Diagnostics folder.



2. On the Diagnostic Messaging tab, enter the Slot, Class, Instance, and Attribute to get the adapter's calculated connection sizes.



Diagnostic Messaging Field Description

Field	Description
Service	Get Attribute Single
Slot Position	0
Class	4

Diagnostic Messaging Field Description

Field	Description
Instance	100 (O →T data) 101 (T →O data with status) 103 (T →O data without status)
Attribute	4
Response	8E 00 00 00 xx xx 8E 00 — Indicates message was processed successfully 00 00 — 0 = success. Non-zero indicates an error code xx xx — Indicates size (Little Endian format)[1]

(1) in Little Endian format, the least significant byte is shown first. A returned value of A2 01 should be interpreted as 0x01A2 hex (418 decimal).

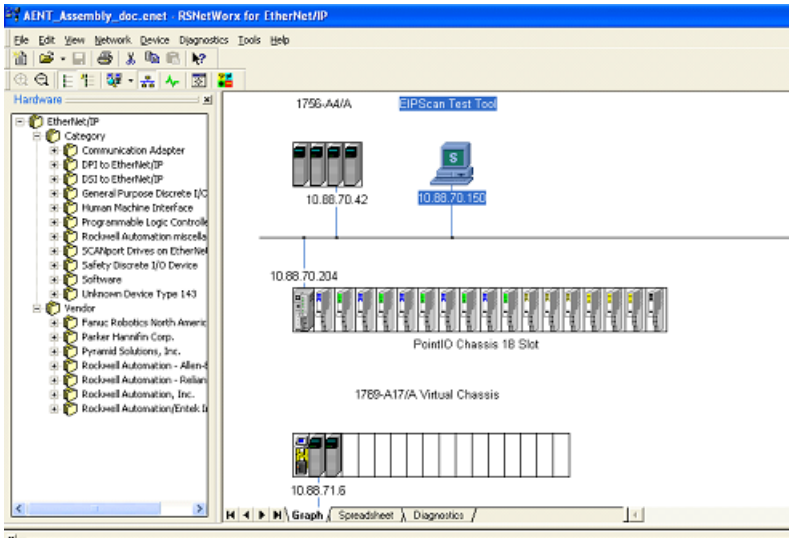
Once you have the sizes from the adapter, return to your calculations to resolve the differences between your expected size and the size from the adapter.

Using an Assembly Connection

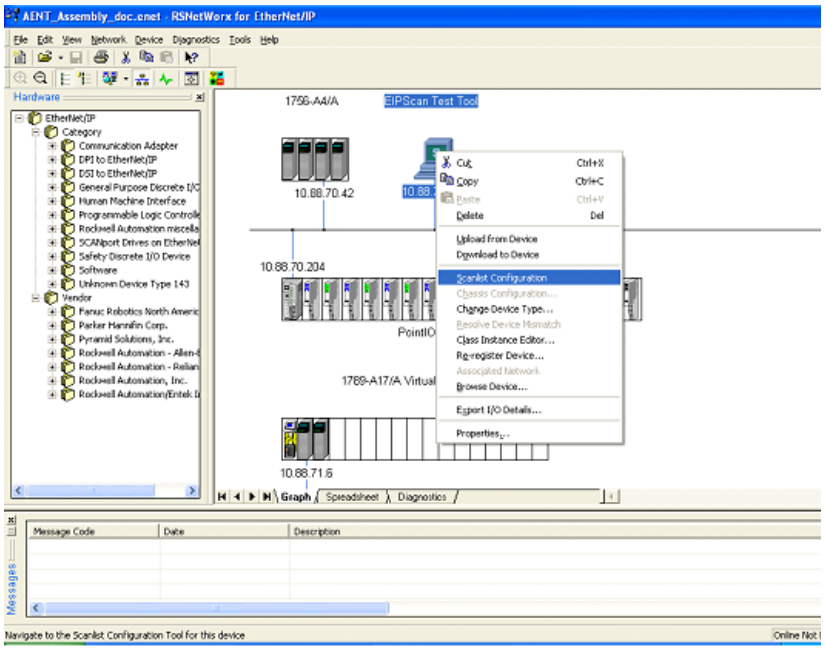
Use an Assembly Connection with RSNetWorx for EtherNet/IP

This section provides an illustration of the steps needed to configure the Assembly connection using RSNetWorx for EtherNet/IP.

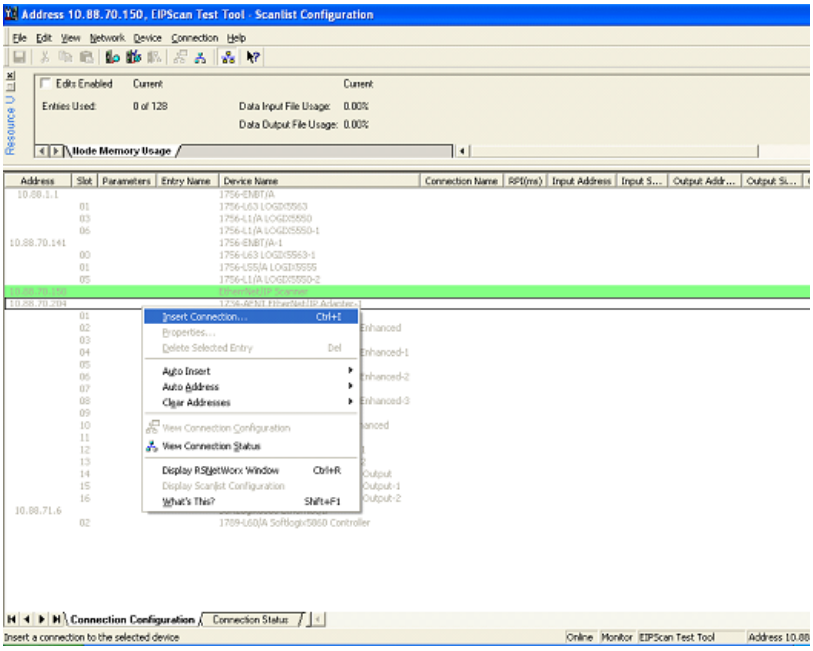
1. Browse the EtherNet/IP network.



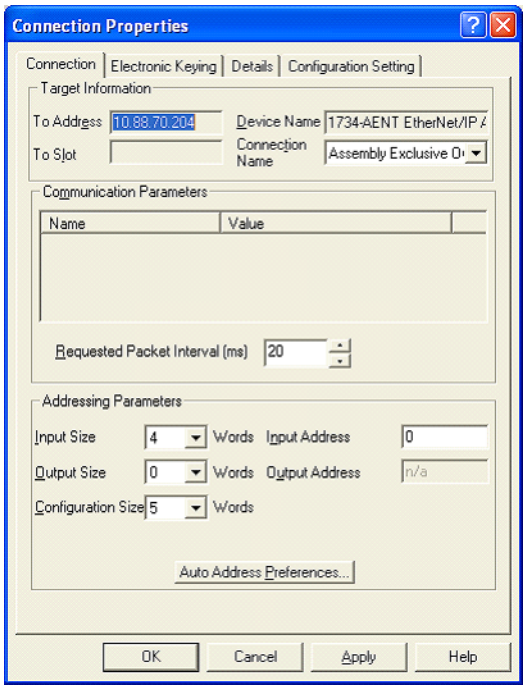
2. Select the connection originator that will make the connection to the 1734-AENT. Right click that device and select Scanlist Configuration to launch the Scanlist Configuration tool.



3. Right click the targeted adapter and select Insert Connection to display the Connection Properties dialog.



4. On the Connection tab of this dialog, select the connection from the Connection Name pull-down (for example, Exclusive Owner and Listen-Only connections). Listen-Only connections are only accepted if an Exclusive Owner connection already exists.

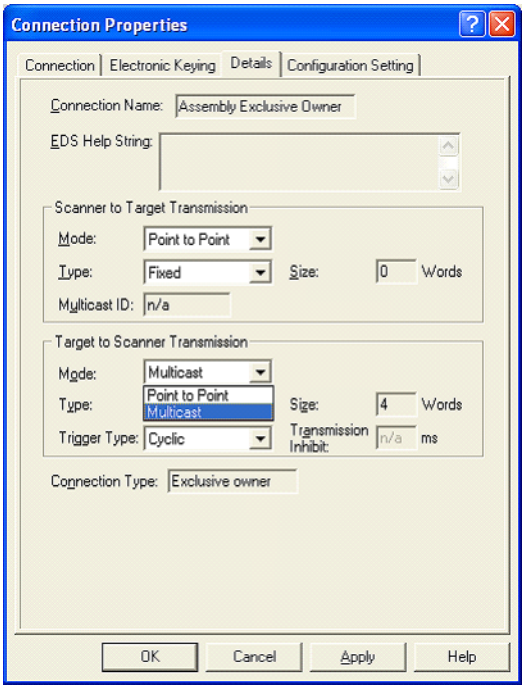


You can also select the Requested Packet Interval and connection sizes. For a full discussion on connections sizes, refer to the Configuration Setting tab step that follows and Calculate the Connection Size. The defaults reflect an empty system (with the adapter only).

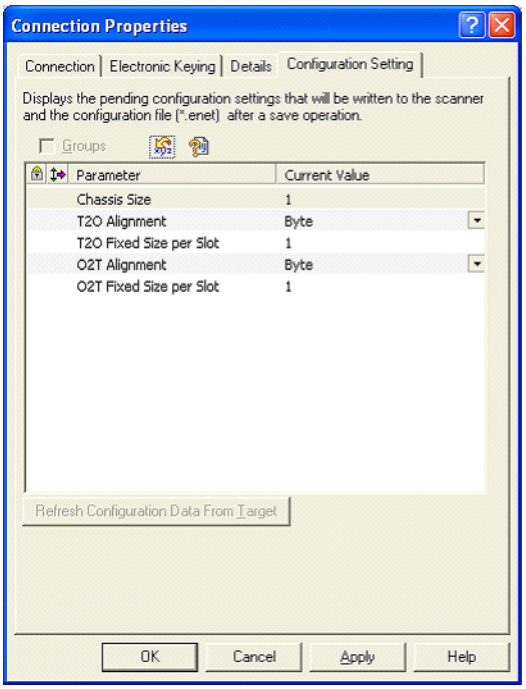
TIP

In RSNetWorx, the 4-byte Run/Idle header is not considered when calculating the Output Size. When you enter the connection size on this dialog, make sure to subtract 4 bytes from your calculated size. Also note that this dialog expresses the size in Words. If your calculation was performed in Bytes, you must divide by 2.

5. In the Details tab, you can select between Point to Point and Multicast for the Target to Scanner data.



6. The Configuration Setting tab displays the configuration options for the connection. Here, you can specify the Chassis Size and Data Alignment. The terms T2O and O2T are abbreviations for Target to Originator and Originator to Target.



TIP Remember when specifying the Chassis Size to include 1 for the adapter.

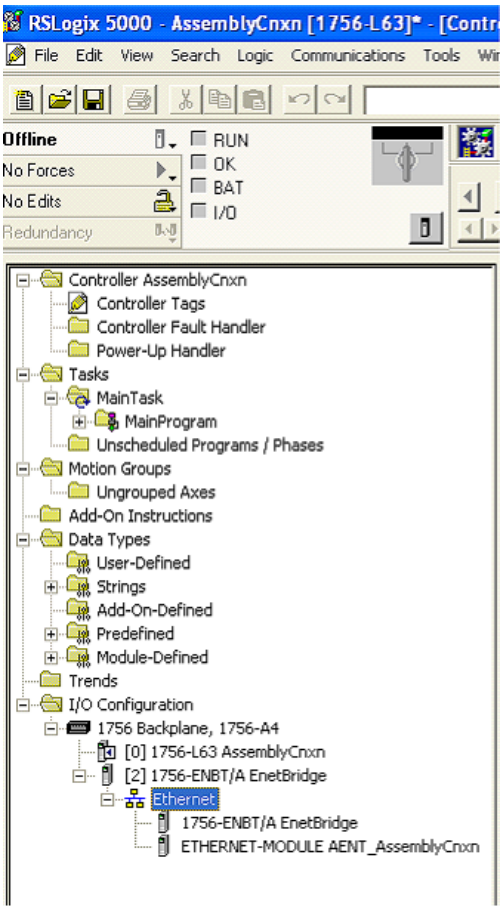
See Data Alignment for alignment choices.

Use an Assembly Connection with RSLogix5000

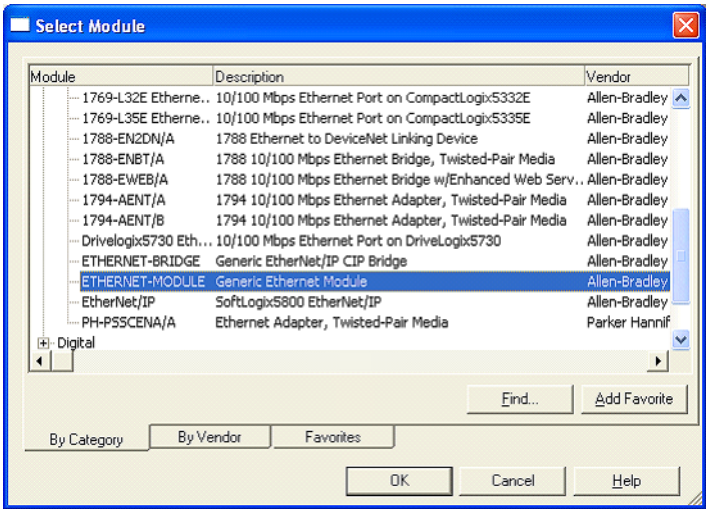
The Assembly connection can be used with RSLogix5000 and the Generic EtherNet/IP profile. When this connection is used in RSLogix5000, there are no intelligent Tags created for the adapter. All Input, Output, and Configuration data are in unstructured Tag arrays.

Add the Hardware to the I/O Configuration Tree

1. Add a new module to the Ethernet network in the I/O Configuration section of the Controller Organizer pane.



2. Select a Generic Ethernet Module.



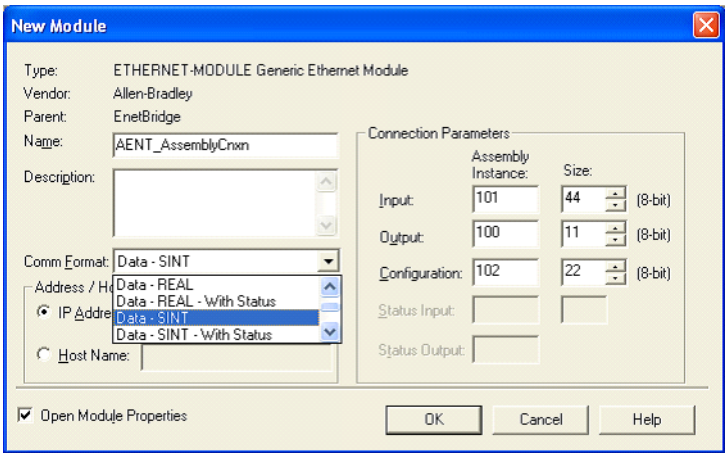
Enter the Connection Parameters

In the New Module Properties dialog, enter Connection Parameters, the Comm Format, the module's IP Address, and a name.

Enter a Name for the module that RSLogix 5000 uses in the tags that are created for this module. The Data - SINT Comm Format should be selected, indicating that all sizes are to be interpreted as a number of bytes. If this connection is a Listen only connection, select the Input Data - SINT Comm Format since it is otherwise not possible to enter an Output config assembly size of 0.

Next, enter the Assembly Instances for the desired connection as described in Connection Points. Enter the sizes (in bytes) for the Input and Output instances per your calculations. See Calculate the Connection Size for details on obtaining the sizes. If the optional status header is being used, its size (8 bytes) must be included in the Input Size. For RSLogix 5000 the Output Size does not include the Run/Idle header. Here the terms Input and Output refer to the adapter's Produced and Consumed data respectively.

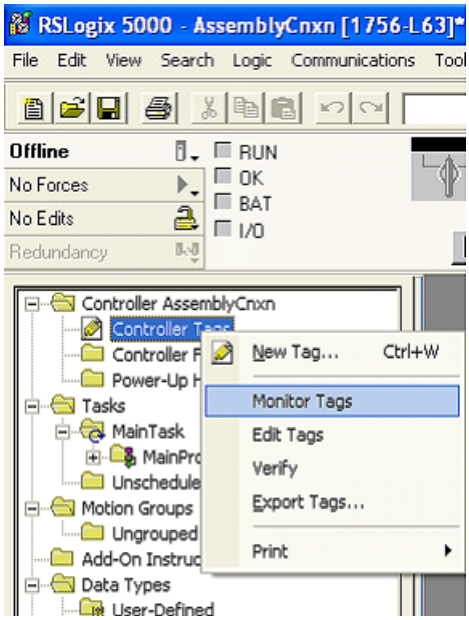
It is possible to make the connection without sending any configuration data. The adapter's Chassis Size can be set from its web page and the adapter will align produced and consumed data by default on byte boundaries. If these options and the default configuration of all I/O modules are acceptable, a 0 can be entered for the Configuration Size on the Module Properties dialog. The configuration Assembly Instance must be entered even if the size is 0. The following section will describe the steps taken when configuration is needed.



Build the Configuration Tag

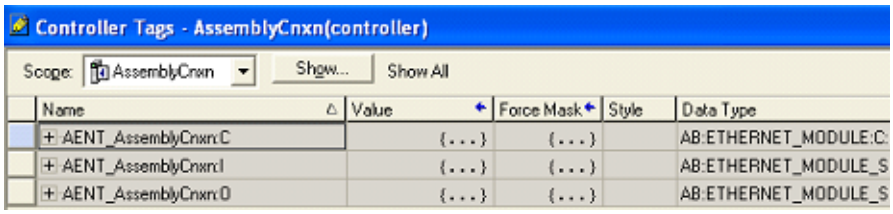
If any configuration is required, the minimum configuration header must be sent and then any individual module configuration may follow. Open the

Controller Tags by right-clicking the Controller Tags option from the Controller Organizer pane. Select Monitor Tags.



Monitor Tags

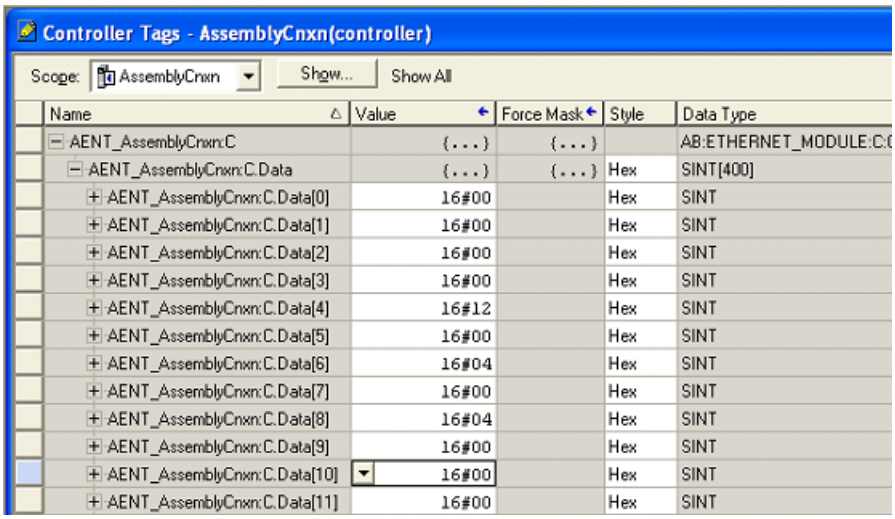
You should see three Tags with the module's name. They will have an C, I, or O suffix denoting Configuration, Input, or Output respectively. Note that the I and O Tags are sized according to the sizes that were entered on the properties page. The C Tag always has 400 bytes allocated for it regardless of the size specified.



Add Configuration Header

Bytes 0…9 must contain the minimum configuration header information described in Minimal Adapter Configuration Assembly. As can be seen from the figure below, the Chassis Size is set to 0x12 (18 decimal). The produced

and consumed alignment choice is Double Word alignment which is enumerated as a 4. See the following table for valid alignment values.



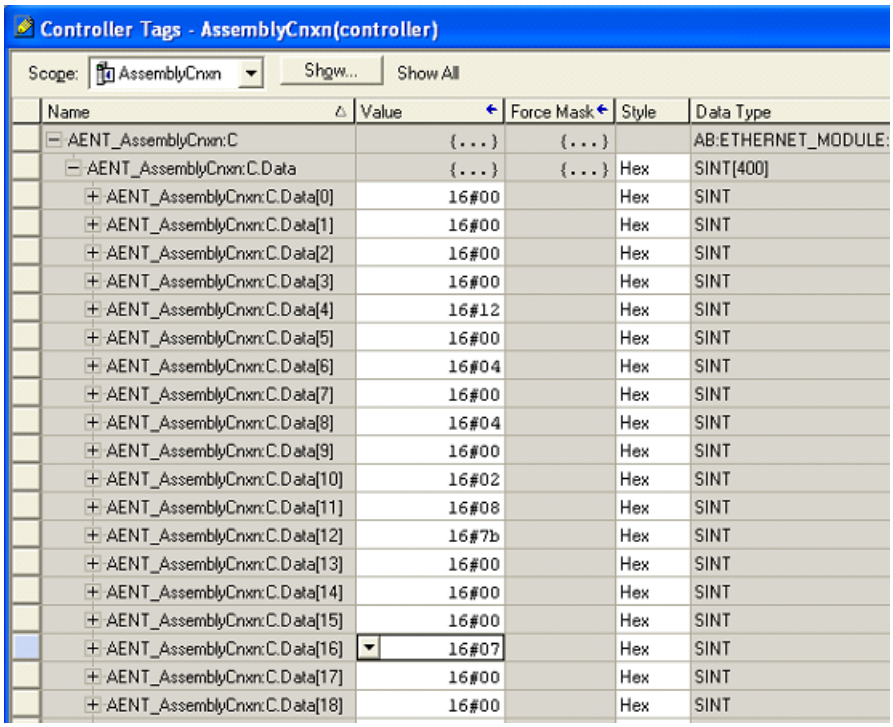
Alignment choices for configuration header

Alignment Choice	Value
Byte	0
Word	2
Double Word	4
Fixed size per slot	0xFF

Add I/O Module Configuration

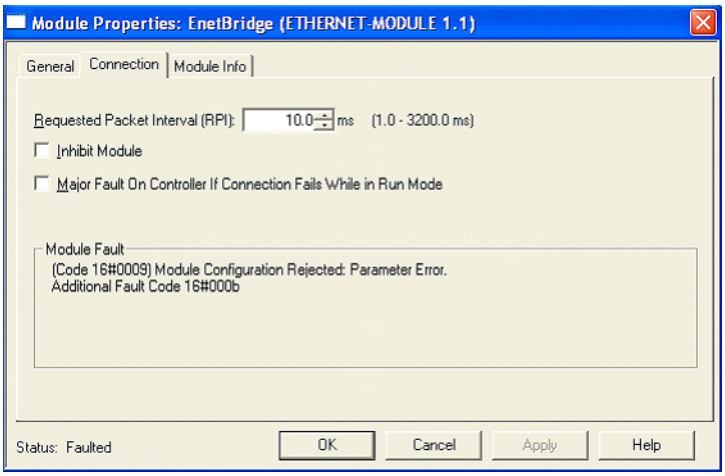
If individual module configuration is required, it can be appended to the configuration header. In the example shown below a 1734-OB4E module is being configured. Byte 10 indicates that the data is to be sent to slot 2. Byte 11 specifies the size of the data as 8 bytes. Bytes 12 and 13 specify the OB4E module configuration assembly instance 0x7B. The instance number is entered in little endian (least significant byte first). In byte 16 the value of 7 indicates that when the module is in Idle mode, Hold Last State should be enabled for channels 0, 1, and 2 but not channel 3. If more module configuration is needed, it could begin at byte 22 with the slot number of the next module to be configured.

For more information on configuration, see 1734/1738 I/O Module Assembly Information.



After the configuration has been entered into the tag, remember to save the RSLogix 5000 project. The tags are only retained upon a save. Also remember that any configuration added here must be reflected in the Configuration Size of the Connection Parameters entered on the Module Properties dialog.

If any part of the configuration assembly is wrong (either the minimal assembly or a portion directed to an I/O module), the connection request will be rejected with the General Return Code indicating an Error in the Data Segment (0x09). The Extended Error code will indicate the byte offset into the configuration data segment where the error was detected.



The error shown above was created by entering an invalid configuration assembly size on the Module Properties page. A size of 18 bytes was entered. The error here points to an offset of 0x000b (11 decimal). If we return to the configuration tag, byte 0x000b is the location that contains the size of the I/O module configuration. The header is 10 bytes and the module has 8 bytes of configuration. However, we have neglected to add the 4 bytes of overhead needed to describe the slot 2 configuration. When the adapter parsed the configuration assembly to byte 0x000b it saw that it needed 8 more bytes of information. It had already parsed through byte 11, therefore 18 would not be an adequate size. The adapter returns the offset of the first byte where the error is detected (0x000b).

Assembly Structure

Assembly Structure Examples

Byte, Word, and Double Word Alignment

The following chassis is used to demonstrate how the data is aligned for the Byte, Word, and Double Word alignment options. This chassis was intentionally assembled as shown to demonstrate as many use cases as possible. Discrete and analog modules are intermixed. An ARM module is used to reserve space for a future device. The 1734-IB4D module in slot 8 is configured to produce 2 bytes while the IB4D module in slot 7 is configured to produce 1 byte. The ASCII module in slot 10 is configured to produce 9 bytes.

Example POINT system

Cat #	AENT	IB4	IB8	IB2	OB2E	OB4E	OB8E	IB4D	IB4D	IE2C	ASC	ARM	OW4	IB4
Slot #	0	1	2	3	4	5	6	7	8	9	10	11	12	13

Produced Assembly, Byte Aligned

Byte	Bit 7	Bit 6	Bit5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Produce 0	Slot 7 status	Slot 6 status	Slot 5 status	Slot 4 status	Slot 3 status	Slot 2 status	Slot1 status	Slot 0 status
Produce 1	Slot 15 status	Slot 14 status	Slot 13 status	Slot 12 status	Slot 11 status	Slot 10 status	Slot 9 status	Slot 8 status
Produce 2	Slot 23 status	Slot 22 status	Slot 21 status	Slot 20 status	Slot 19 status	Slot 18 status	Slot 17 status	Slot 16 status
Produce 3	Slot 31 status	Slot 30 status	Slot 29 status	Slot 28 status	Slot 27 status	Slot 26 status	Slot 25 status	Slot 24 status
Produce 4	Slot 39 status	Slot 38 status	Slot 37 status	Slot 36 status	Slot 35 status	Slot 34 status	Slot 33 status	Slot 32 status
Produce 5	Slot 47 status	Slot 46 status	Slot 45 status	Slot 44 status	Slot 43 status	Slot 42 status	Slot 41 status	Slot 40 status
Produce 6	Slot 55 status	Slot 54 status	Slot 53 status	Slot 52 status	Slot 51 status	Slot 50 status	Slot 49 status	Slot 48 status
Produce 7	Slot 63 status	Slot 62 status	Slot 61 status	Slot 60 status	Slot 59 status	Slot 58 status	Slot 57 status	Slot 56 status
Produce 8	Reserved				Slot 1 Bit 3	Slot 1 Bit 2	Slot 1 Bit 1	Slot 1 Bit 0
Produce 9	Slot 2 Bit 7	Slot 2 Bit 6	Slot 2 Bit 5	Slot 2 Bit 4	Slot 2 Bit 3	Slot 2 Bit 2	Slot 2 Bit 1	Slot 2 Bit 0
Produce 10	Reserved						Slot 3 Bit 1	Slot 3 Bit 0
Produce 11	Reserved						Slot 4 Bit 1	Slot 4 Bit 0
Produce 12	Reserved				Slot 5 Bit 3	Slot 5 Bit 2	Slot 5 Bit 1	Slot 5 Bit 0
Produce 13	Slot 6 Bit 7	Slot 6 Bit 6	Slot 6 Bit 6	Slot 6 Bit 4	Slot 6 Bit 3	Slot 6 Bit 2	Slot 6 Bit 1	Slot 6 Bit 0
Produce 14	Slot 7 Bit 7	Slot 7 Bit 6	Slot 7 Bit 5	Slot 7 Bit 4	Slot 7 Bit 3	Slot 7 Bit 2	Slot 7 Bit 1	Slot 7 Bit 0

Produced Assembly, Byte Aligned

Byte	Bit 7	Bit 6	Bit5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Produce 15	Slot 8 Bit 7	Slot 8 Bit 6	Slot 8 Bit 5	Slot 8 Bit 4	Slot 8 Bit 3	Slot 8 Bit 2	Slot 8 Bit 1	Slot 8 Bit 0
Produce 16	Slot 8 Bit 15	Slot 8 Bit 14	Slot 8 Bit 13	Slot 8 Bit 12	Slot 8 Bit 11	Slot 8 Bit 10	Slot 8 Bit 9	Slot 8 Bit 8
Produce 17	Slot 9 Channel 0 - Low Byte							
Produce 18	Slot 9 Channel 0 - High Byte							
Produce 19	Slot 9 Channel 1 - Low Byte							
Produce 20	Slot 9 Channel 1 - High Byte							
Produce 21	Slot 9 Channel 0 - Status							
Produce 22	Slot 9 Channel 1 - Status							
Produce 23	Slot 10 ASCII Data 1							
Produce 24	Slot 10 ASCII Data 2							
Produce 25	Slot 10 ASCII Data 3							
Produce 26	Slot 10 ASCII Data 4							
Produce 27	Slot 10 ASCII Data 5							
Produce 28	Slot 10 ASCII Data 6							
Produce 29	Slot 10 ASCII Data 7							
Produce 30	Slot 10 ASCII Data 8							
Produce 31	Slot 10 ASCII Data End of String Delimiter							
Produce 32	Slot 11 ARM - Reserved Byte							
Produce 33	Reserved				Slot 13 Bit 3	Slot 13 Bit 2	Slot 13 Bit 1	Slot 13 Bit 0

Consumed Assembly, Byte Aligned

Byte	Bit 7	Bit 6	Bit5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Consume 0	Reserved							Run/Idle
Consume 1	Reserved							
Consume 2	Reserved							
Consume 3	Reserved							
Consume 4	Reserved						Slot 4 Bit 1	Slot 4 Bit 0
Consume 5	Reserved				Slot 5 Bit 3	Slot 5 Bit 2	Slot 5 Bit 1	Slot 5 Bit 0
Consume 6	Slot 6 Bit 7	Slot 6 Bit 6	Slot 6 Bit 5	Slot 6 Bit 4	Slot 6 Bit 3	Slot 6 Bit 2	Slot 6 Bit 1	Slot 6 Bit 0
Consume 7	Slot 10 ASCII Data 1							
Consume 8	Slot 10 ASCII Data 2							
Consume 9	Slot 10 ASCII Data 3							
Consume 10	Slot 10 ASCII Data 4							
Consume 11	Slot 10 ASCII Data 5							
Consume 12	Slot 10 ASCII Data End of String Delimiter							
Consume 13	Reserved				Slot 12 Bit 3	Slot 12 Bit 2	Slot 12 Bit 1	Slot 12 Bit 0

Produced Assembly, Word Aligned

Byte	Bit 7	Bit 6	Bit5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Produce 0	Slot 7 status	Slot 6 status	Slot 5 status	Slot 4 status	Slot 3 status	Slot 2 status	Slot1 status	Slot 0 status
Produce 1	Slot 15 status	Slot 14 status	Slot 13 status	Slot 12 status	Slot 11 status	Slot 10 status	Slot 9 status	Slot 8 status
Produce 2	Slot 23 status	Slot 22 status	Slot 21 status	Slot 20 status	Slot 19 status	Slot 18 status	Slot 17 status	Slot 16 status
Produce 3	Slot 31 status	Slot 30 status	Slot 29 status	Slot 28 status	Slot 27 status	Slot 26 status	Slot 25 status	Slot 24 status
Produce 4	Slot 39 status	Slot 38 status	Slot 37 status	Slot 36 status	Slot 35 status	Slot 34 status	Slot 33 status	Slot 32 status
Produce 5	Slot 47 status	Slot 46 status	Slot 45 status	Slot 44 status	Slot 43 status	Slot 42 status	Slot 41 status	Slot 40 status
Produce 6	Slot 55 status	Slot 54 status	Slot 53 status	Slot 52 status	Slot 51 status	Slot 50 status	Slot 49 status	Slot 48 status
Produce 7	Slot 63 status	Slot 62 status	Slot 61 status	Slot 60 status	Slot 59 status	Slot 58 status	Slot 57 status	Slot 56 status
Produce 8	Reserved				Slot 1 Bit 3	Slot 1 Bit 2	Slot 1 Bit 1	Slot 1 Bit 0
Produce 9	Slot 2 Bit 7	Slot 2 Bit 6	Slot 2 Bit 5	Slot 2 Bit 4	Slot 2 Bit 3	Slot 2 Bit 2	Slot 2 Bit 1	Slot 2 Bit 0
Produce 10	Reserved						Slot 3 Bit 1	Slot 3 Bit 0
Produce 11	Reserved						Slot 4 Bit 1	Slot 4 Bit 0
Produce 12	Reserved				Slot 5 Bit 3	Slot 5 Bit 2	Slot 5 Bit 1	Slot 5 Bit 0
Produce 13	Slot 6 Bit 7	Slot 6 Bit 6	Slot 6 Bit 6	Slot 6 Bit 4	Slot 6 Bit 3	Slot 6 Bit 2	Slot 6 Bit 1	Slot 6 Bit 0
Produce 14	Slot 7 Bit 7	Slot 7 Bit 6	Slot 7 Bit 5	Slot 7 Bit 4	Slot 7 Bit 3	Slot 7 Bit 2	Slot 7 Bit 1	Slot 7 Bit 0
Produce 15	Pad							
Produce 16	Slot 8 Bit 7	Slot 8 Bit 6	Slot 8 Bit 5	Slot 8 Bit 4	Slot 8 Bit 3	Slot 8 Bit 2	Slot 8 Bit 1	Slot 8 Bit 0
Produce 17	Slot 8 Bit 15	Slot 8 Bit 14	Slot 8 Bit 13	Slot 8 Bit 12	Slot 8 Bit 11	Slot 8 Bit 10	Slot 8 Bit 9	Slot 8 Bit 8
Produce 18	Slot 9 Channel 0 - Low Byte							
Produce 19	Slot 9 Channel 0 - High Byte							
Produce 20	Slot 9 Channel 1 - Low Byte							
Produce 21	Slot 9 Channel 1 - High Byte							
Produce 22	Slot 9 Channel 0 - Status							
Produce 23	Slot 9 Channel 1 - Status							
Produce 24	Slot 10 ASCII Data 1							
Produce 25	Slot 10 ASCII Data 2							
Produce 26	Slot 10 ASCII Data 3							
Produce 27	Slot 10 ASCII Data 4							
Produce 28	Slot 10 ASCII Data 5							
Produce 29	Slot 10 ASCII Data 6							
Produce 30	Slot 10 ASCII Data 7							
Produce 31	Slot 10 ASCII Data 8							
Produce 32	Slot 10 ASCII Data End of String Delimiter							
Produce 33	Slot 11 ARM - Reserved Byte							
Produce 34	Reserved				Slot 13 Bit 3	Slot 13 Bit 2	Slot 13 Bit 1	Slot 13 Bit 0

Consumed Assembly, Word Aligned

Byte	Bit 7	Bit 6	Bit5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Consume 0	Reserved							Run/Idle
Consume 1	Reserved							
Consume 2	Reserved							
Consume 3	Reserved							
Consume 4	Reserved						Slot 4 Bit 1	Slot 4 Bit 0
Consume 5	Reserved				Slot 5 Bit 3	Slot 5 Bit 2	Slot 5 Bit 1	Slot 5 Bit 0
Consume 6	Slot 6 Bit 7	Slot 6 Bit 6	Slot 6 Bit 5	Slot 6 Bit 4	Slot 6 Bit 3	Slot 6 Bit 2	Slot 6 Bit 1	Slot 6 Bit 0
Consume 7	Pad							
Consume 8	Slot 10 ASCII Data 1							
Consume 9	Slot 10 ASCII Data 2							
Consume 10	Slot 10 ASCII Data 3							
Consume 11	Slot 10 ASCII Data 4							
Consume 12	Slot 10 ASCII Data 5							
Consume 13	Slot 10 ASCII Data End of String Delimiter							
Consume 14	Reserved				Slot 12 Bit 3	Slot 12 Bit 2	Slot 12 Bit 1	Slot 12 Bit 0

Produced Assembly, Double Word Aligned

Byte	Bit 7	Bit 6	Bit5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Produce 0	Slot 7 status	Slot 6 status	Slot 5 status	Slot 4 status	Slot 3 status	Slot 2 status	Slot1 status	Slot 0 status
Produce 1	Slot 15 status	Slot 14 status	Slot 13 status	Slot 12 status	Slot 11 status	Slot 10 status	Slot 9 status	Slot 8 status
Produce 2	Slot 23 status	Slot 22 status	Slot 21 status	Slot 20 status	Slot 19 status	Slot 18 status	Slot 17 status	Slot 16 status
Produce 3	Slot 31 status	Slot 30 status	Slot 29 status	Slot 28 status	Slot 27 status	Slot 26 status	Slot 25 status	Slot 24 status
Produce 4	Slot 39 status	Slot 38 status	Slot 37 status	Slot 36 status	Slot 35 status	Slot 34 status	Slot 33 status	Slot 32 status
Produce 5	Slot 47 status	Slot 46 status	Slot 45 status	Slot 44 status	Slot 43 status	Slot 42 status	Slot 41 status	Slot 40 status
Produce 6	Slot 55 status	Slot 54 status	Slot 53 status	Slot 52 status	Slot 51 status	Slot 50 status	Slot 49 status	Slot 48 status
Produce 7	Slot 63 status	Slot 62 status	Slot 61 status	Slot 60 status	Slot 59 status	Slot 58 status	Slot 57 status	Slot 56 status
Produce 8	Reserved				Slot 1 Bit 3	Slot 1 Bit 2	Slot 1 Bit 1	Slot 1 Bit 0
Produce 9	Slot 2 Bit 7	Slot 2 Bit 6	Slot 2 Bit 5	Slot 2 Bit 4	Slot 2 Bit 3	Slot 2 Bit 2	Slot 2 Bit 1	Slot 2 Bit 0
Produce 10	Reserved						Slot 3 Bit 1	Slot 3 Bit 0
Produce 11	Reserved						Slot 4 Bit 1	Slot 4 Bit 0
Produce 12	Reserved				Slot 5 Bit 3	Slot 5 Bit 2	Slot 5 Bit 1	Slot 5 Bit 0
Produce 13	Slot 6 Bit 7	Slot 6 Bit 6	Slot 6 Bit 6	Slot 6 Bit 4	Slot 6 Bit 3	Slot 6 Bit 2	Slot 6 Bit 1	Slot 6 Bit 0
Produce 14	Slot 7 Bit 7	Slot 7 Bit 6	Slot 7 Bit 5	Slot 7 Bit 4	Slot 7 Bit 3	Slot 7 Bit 2	Slot 7 Bit 1	Slot 7 Bit 0
Produce 15	Pad							
Produce 16	Slot 8 Bit 7	Slot 8 Bit 6	Slot 8 Bit 5	Slot 8 Bit 4	Slot 8 Bit 3	Slot 8 Bit 2	Slot 8 Bit 1	Slot 8 Bit 0

Produced Assembly, Double Word Aligned

Byte	Bit 7	Bit 6	Bit5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Produce 17	Slot 8 Bit 15	Slot 8 Bit 14	Slot 8 Bit 13	Slot 8 Bit 12	Slot 8 Bit 11	Slot 8 Bit 10	Slot 8 Bit 9	Slot 8 Bit 8
Produce 18	Pad							
Produce 19	Pad							
Produce 20	Slot 9 Channel 0 - Low Byte							
Produce 21	Slot 9 Channel 0 - High Byte							
Produce 22	Slot 9 Channel 1 - Low Byte							
Produce 23	Slot 9 Channel 1 - High Byte							
Produce 24	Slot 9 Channel 0 - Status							
Produce 25	Slot 9 Channel 1 - Status							
Produce 26	Pad							
Produce 27	Pad							
Produce 28	Slot 10 ASCII Data 1							
Produce 29	Slot 10 ASCII Data 2							
Produce 30	Slot 10 ASCII Data 3							
Produce 31	Slot 10 ASCII Data 4							
Produce 32	Slot 10 ASCII Data 5							
Produce 33	Slot 10 ASCII Data 6							
Produce 34	Slot 10 ASCII Data 7							
Produce 35	Slot 10 ASCII Data 8							
Produce 36	Slot 10 ASCII Data End of String Delimiter							
Produce 37	Slot 11 ARM - Reserved Byte							
Produce 38	Reserved				Slot 13 Bit 3	Slot 13 Bit 2	Slot 13 Bit 1	Slot 13 Bit 0

Consumed Assembly, Double Word Aligned

Byte	Bit 7	Bit 6	Bit5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Consume 0	Reserved							Run/Idle
Consume 1	Reserved							
Consume 2	Reserved							
Consume 3	Reserved							
Consume 4	Reserved						Slot 4 Bit 1	Slot 4 Bit 0
Consume 5	Reserved				Slot 5 Bit 3	Slot 5 Bit 2	Slot 5 Bit 1	Slot 5 Bit 0
Consume 6	Slot 6 Bit 7	Slot 6 Bit 6	Slot 6 Bit 5	Slot 6 Bit 4	Slot 6 Bit 3	Slot 6 Bit 2	Slot 6 Bit 1	Slot 6 Bit 0
Consume 7	Pad							
Consume 8	Slot 10 ASCII Data 1							
Consume 9	Slot 10 ASCII Data 2							
Consume 10	Slot 10 ASCII Data 3							

Consumed Assembly, Double Word Aligned

Byte	Bit 7	Bit 6	Bit5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Consume 11	Slot 10 ASCII Data 4							
Consume 12	Slot 10 ASCII Data 5							
Consume 13	Slot 10 ASCII Data End of String Delimiter							
Consume 14	Reserved				Slot 12 Bit 3	Slot 12 Bit 2	Slot 12 Bit 1	Slot 12 Bit 0

Fixed Size per Slot Alignment

The following chassis is used to demonstrate how the Fixed Size per Slot alignment option might be used. This chassis is built to show a machine that sometimes uses 5 analog modules, but usually only needs 3 modules. In order to maintain data structure consistency (and therefore the same control logic), Fixed Size per Slot alignment of 6 bytes is used and the unused slots are populated with Address Reserve Modules.

Example POINT system with unused slots

Cat #	AENT	IE2C	IE2C	IE2C	ARM	ARM	IB4	IB4	IB4
Slot #	0	1	2	3	4	5	6	7	8

Produced Assembly, Fixed Size per Slot Alignment

Byte	Bit 7	Bit 6	Bit5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Produce 0	Slot 7 status	Slot 6 status	Slot 5 status	Slot 4 status	Slot 3 status	Slot 2 status	Slot1 status	Slot 0 status
Produce 1	Slot 15 status	Slot 14 status	Slot 13 status	Slot 12 status	Slot 11 status	Slot 10 status	Slot 9 status	Slot 8 status
Produce 2	Slot 23 status	Slot 22 status	Slot 21 status	Slot 20 status	Slot 19 status	Slot 18 status	Slot 17 status	Slot 16 status
Produce 3	Slot 31 status	Slot 30 status	Slot 29 status	Slot 28 status	Slot 27 status	Slot 26 status	Slot 25 status	Slot 24 status
Produce 4	Slot 39 status	Slot 38 status	Slot 37 status	Slot 36 status	Slot 35 status	Slot 34 status	Slot 33 status	Slot 32 status
Produce 5	Slot 47 status	Slot 46 status	Slot 45 status	Slot 44 status	Slot 43 status	Slot 42 status	Slot 41 status	Slot 40 status
Produce 6	Slot 55 status	Slot 54 status	Slot 53 status	Slot 52 status	Slot 51 status	Slot 50 status	Slot 49 status	Slot 48 status
Produce 7	Slot 63 status	Slot 62 status	Slot 61 status	Slot 60 status	Slot 59 status	Slot 58 status	Slot 57 status	Slot 56 status
Produce 8	Slot 1 Channel 0 - Low Byte							
Produce 9	Slot 1 Channel 0 - High Byte							
Produce 10	Slot 1 Channel 1 - Low Byte							
Produce 11	Slot 1 Channel 1 - High Byte							
Produce 12	Slot 1 Channel 0 - Status							
Produce 13	Slot 1 Channel 1 - Status							

Produced Assembly, Fixed Size per Slot Alignment

Byte	Bit 7	Bit 6	Bit5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Produce 14	Slot 2 Channel 0 - Low Byte							
Produce 15	Slot 2 Channel 0 - High Byte							
Produce 16	Slot 2 Channel 1 - Low Byte							
Produce 17	Slot 2 Channel 1 - High Byte							
Produce 18	Slot 2 Channel 0 - Status							
Produce 19	Slot 2 Channel 1 - Status							
Produce 20	Slot 3 Channel 0 - Low Byte							
Produce 21	Slot 3 Channel 0 - High Byte							
Produce 22	Slot 3 Channel 1 - Low Byte							
Produce 23	Slot 3 Channel 1 - High Byte							
Produce 24	Slot 3 Channel 0 - Status							
Produce 25	Slot 3 Channel 1 - Status							
Produce 26	Slot 4 ARM - Reserved Byte							
Produce 27	Slot 4 ARM - Reserved Byte							
Produce 28	Slot 4 ARM - Reserved Byte							
Produce 29	Slot 4 ARM - Reserved Byte							
Produce 30	Slot 4 ARM - Reserved Byte							
Produce 31	Slot 4 ARM - Reserved Byte							
Produce 32	Slot 5 ARM - Reserved Byte							
Produce 33	Slot 5 ARM - Reserved Byte							
Produce 34	Slot 5 ARM - Reserved Byte							
Produce 35	Slot 5 ARM - Reserved Byte							
Produce 36	Slot 5 ARM - Reserved Byte							
Produce 37	Slot 5 ARM - Reserved Byte							
Produce 38	Reserved				Slot 6 Bit 3	Slot 6 Bit 2	Slot 6 Bit 1	Slot 6 Bit 0
Produce 39	Pad							
Produce 40	Pad							
Produce 41	Pad							
Produce 42	Pad							
Produce 43	Pad							
Produce 44					Slot 7 Bit 3	Slot 7 Bit 2	Slot 7 Bit 1	Slot 7 Bit 0
Produce 45	Pad							
Produce 46	Pad							
Produce 47	Pad							
Produce 48	Pad							
Produce 49	Pad							
Produce 50					Slot 8 Bit 3	Slot 8 Bit 2	Slot 8 Bit 1	Slot 8 Bit 0
Produce 51	Pad							

Produced Assembly, Fixed Size per Slot Alignment

Byte	Bit 7	Bit 6	Bit5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Produce 52	Pad							
Produce 53	Pad							
Produce 54	Pad							
Produce 55	Pad							

1734/1738 I/O Module Assembly Information

Module Assembly Information

Discrete Modules

POINT I/O and ArmorPOINT I/O Discrete I/O modules

Cat. No	Description	Configuration Assembly Instance	Configuration Size	Produced Size	Consumed Size
1734-IB2 1738-IB2	2 point DC sink input	103	8	1	0
1734-IB4 1738-IB4	4 point DC sink input	103	16	1	0
1734-IB4D 1738-IB4D	2 point DC sink input with diagnostics	103	18	2,1	0
1734-IB8 1738-IB8	8 point DC sink input	103	32	1	0
1734-IV2	2 point DC source input	103	8	1	0
1734-IV4 1738-IV4	4 point DC source input	103	16	1	0
1734-IV8 1738-IV8	8 point DC source input	103	32	1	0
1734-OB2E 1738-OB2E	2 point DC source output	123	8	1	1
1734-OB4E 1738-OB4E	4 point DC source output	123	8	1	1
1734-OB2	2 point DC source output	123	8	1[(1)]	1
1734-OB4	4 point DC source output	123	8	1	1
1734-OB8	8 point DC source output	123	8	1	1
1734-OB8E 1738-OB8E	8 point DC source output	123	8	1	1
1734-OW2	2 point relay output	103	4	0	1
1734-OW4 1738-OW4	4 point relay output	103	4	0	1
1734-OV2E	2 point 24V DC sink output	123	8	1	1
1734-OV4E 1738-OV4E	4 point 24V DC sink output	123	8	1	1
1734-OV8E	8 point 24V DC sink output	123	8	1	1
1734-OX2	2 point Form C Relay output	103	4	0	1

POINT I/O and ArmorPOINT I/O Discrete I/O modules

Cat. No	Description	Configuration Assembly Instance	Configuration Size	Produced Size	Consumed Size
1734-OB2EP 1738-OB2EP	2 point 24V DC 2A Protected output	123	8	1	1
1734-IA2 1738-IA2	2 point 120V AC input	103	8	1	0
1734-IA4	4 point 120V AC input	103	16	1	0
1734-IM2	2 point 220V AC input	103	8	1	0
1734-IM4	4 point 220V AC input	103	16	1	0
1734-OA2 1738-OA2	2 point 120V/220V AC output	103	4	0	1
1734-OA4	4-channel 120V/220V AC output	103	4	0	1
1738-IB16	16 point 24V DC sink input	103	6	2,3	0
1738-OB16	16 point 24V DC source input	123	2	1	2
1734-8CFG 1738-8CFG	8 point 24V DC configurable sink input/source output	103	8	1	1

(1) While these modules (OB2, OB4, and OB8) have no meaningful data, they return a byte of 0 to be compatible with the "E" modules. In this manner they can be interchanged. Also these modules expect the same 8-byte configuration assembly even though only the first 4 bytes are meaningful.

Analog and Specialty I/O Modules

POINT and ArmorPOINT Analog and Specialty I/O modules

Cat. No	Description	Configuration Assembly Instance	Configuration Size	Produced Size	Consumed Size
1734-VHSC5	1 point 5V, 2 out very high speed counter	108	54	6	2,2,4
1734-VHSC24 1738-VHSC24	1 point 24V, 2 out very high speed counter	108	54	6	2,2,4
1734-IJ 1738-IJ	1 point 5V counter	123	18	6	1
1734-IK	1 point 24V counter	123	18	6	1
1734-IE2C 1738-IE2C	2 point analog current input	123	38	6	0
1734-IE4C 1738-IE4C	4 point analog current input	123	74	12	0
1734-IE8C	8 point analog current input	123	146	24	0
1734-OE2C 1738-OE2C	2 point analog current output	123	36	2	4

POINT and ArmorPOINT Analog and Specialty I/O modules

Cat. No	Description	Configuration Assembly Instance	Configuration Size	Produced Size	Consumed Size
1734-OE4C 1738-OE4C	4 point analog current output	123	72	4	8
1734-IT21 1738-IT21	2 point thermocouple input	103	46	8	0
1734-IR2 1738-IR2	2 channel, 2point RTD input	123	38	6	0
1734-IR2E	2 point enhanced RTD input	123	38	6	0
1734-IE2V 1738-IE2V	2 point analog voltage input	123	38	6	0
1734-OE2V 1738-OE2V	2 point analog voltage output	123	36	2	4
1734-SSI 1738-SSI	POINT I/O synchronous serial interface	123	26	10	2
1734-232ASC 1738-232ASC	POINT I/O RS232 ASCII interface	103	18	4…132 default = 24	4…132 default = 24
1734-485ASC 1738-485ASC	POINT I/O RS485 ASCII interface	103	18	4…132 default = 24	4…132 default = 24
1734-ARM	Address reserve	N/A	0	1	0

Data Format

The POINT I/O products specify multi-byte data values in little endian format. The term little endian refers to the ordering method in which:

- The least significant byte of a data item is ordered first.
- The most significant byte of a data item is ordered last
- All bytes in between are ordered sequentially, from least significant byte to most significant byte.

Layout for 16 bit numbers:

TagName[Low Byte]
TabName[High Byte]

Layout for 32 bit numbers:

TagName[Low Byte]
TagName

TagName
TabName[High Byte]

Layout for Array data:

TagName[0]
TagName[1]
TagName[2]
: :
TabName[N]

Module Specific Details

Two-channel Discrete Input Modules

All two-channel discrete input modules use the same configuration and input assemblies. Use the tables shown below for the following modules:

- 1734-IB2 or 1738-IB2
- 1734-IV2 or 1738-IV2
- 1734-IA2 or 1738-IA2
- 1734-IM2 or 1738-IM2

Configuration Assembly Instance 103

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Input 0 Off to On Filter Low Byte							
1	Input 0 Off to On Filter High Byte							
2	Input 0 On to Off Filter Low Byte							
3	Input 0 On to Off Filter High Byte							
4	Input 1 Off to On Filter Low Byte							
5	Input 1 Off to On Filter High Byte							
6	Input 1 On to Off Filter Low Byte							
7	Input 1 On to Off Filter High Byte							

Produced Input Data Assembly 2

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved						Ch 1	Ch 0

Four-channel Discrete Input Modules

All four channel discrete input modules use the same configuration and input assemblies. Use the tables shown below for the following modules:

- 1734-IB4 or 1738-IB4
- 1734-IV4 or 1738-IV4
- 1734-IA4 or 1738-IA4
- 1734-IM4 or 1738-IM4

Configuration Assembly Instance 103

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Input 0 Off to On Filter Low Byte							
1	Input 0 Off to On Filter High Byte							
2	Input 0 On to Off Filter Low Byte							
3	Input 0 On to Off Filter High Byte							
4	Input 1 Off to On Filter Low Byte							
5	Input 1 Off to On Filter High Byte							
6	Input 1 On to Off Filter Low Byte							
7	Input 1 On to Off Filter High Byte							
8	Input 2 Off to On Filter Low Byte							
9	Input 2 Off to On Filter High Byte							
10	Input 2 On to Off Filter Low Byte							
11	Input 2 On to Off Filter High Byte							
12	Input 3 Off to On Filter Low Byte							
13	Input 3 Off to On Filter High Byte							
14	Input 3 On to Off Filter Low Byte							
15	Input 3 On to Off Filter High Byte							

Produced Input Data Assembly 3

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved				Ch 3	Ch 2	Ch 1	Ch 0

Eight-channel Discrete Input Modules

All eight-channel discrete input modules use the same configuration and input assemblies. Use the tables shown below for the following modules:

- 1734-IB8 or 1738-IB8
- 1734-IV8 or 1738-IV8

Configuration Assembly Instance 103

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Input 0 Off to On Filter Low Byte							
1	Input 0 Off to On Filter High Byte							
2	Input 0 On to Off Filter Low Byte							
3	Input 0 On to Off Filter High Byte							
4	Input 1 Off to On Filter Low Byte							
5	Input 1 Off to On Filter High Byte							
6	Input 1 On to Off Filter Low Byte							
7	Input 1 On to Off Filter High Byte							
8	Input 2 Off to On Filter Low Byte							
9	Input 2 Off to On Filter High Byte							
10	Input 2 On to Off Filter Low Byte							
11	Input 2 On to Off Filter High Byte							
12	Input 3 Off to On Filter Low Byte							
13	Input 3 Off to On Filter High Byte							
14	Input 3 On to Off Filter Low Byte							
15	Input 3 On to Off Filter High Byte							
16	Input 4 Off to On Filter Low Byte							
17	Input 4 Off to On Filter High Byte							
18	Input 4 On to Off Filter Low Byte							
19	Input 4 On to Off Filter High Byte							
20	Input 5 Off to On Filter Low Byte							
21	Input 5 Off to On Filter High Byte							
22	Input 5 On to Off Filter Low Byte							
23	Input 5 On to Off Filter High Byte							
24	Input 6 Off to On Filter Low Byte							
25	Input 6 Off to On Filter High Byte							
26	Input 6 On to Off Filter Low Byte							
27	Input 6 On to Off Filter High Byte							
28	Input 7 Off to On Filter Low Byte							
29	Input 7 Off to On Filter High Byte							
30	Input 7 On to Off Filter Low Byte							
31	Input 7 On to Off Filter High Byte							

Produced Input Data Assembly 4

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Ch 7	Ch 6	Ch 5	Ch 4	Ch 3	Ch 2	Ch 1	Ch 0

Two-channel Discrete Output Modules with Status

All two-channel "enhanced" discrete output modules use the same configuration and I/O assemblies. Use the tables shown below for the following modules:

- 1734-OB2E or 1738-OB2E
- 1734-OV2E or 1738-0V2E
- 1734-OB2EP or 1738-OB2EP

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved						Fault State 1	Fault State 0
1	Reserved						Fault Value 1	Fault Value 0
2	Reserved						Idle State 1	Idle State 0
3	Reserved						Idle Value 1	Idle Value 0
4	Reserved						Enable No Load 1	Enable No Load 0
5	Reserved						Reset mode 1	Reset mode 0
6	Reserved						Enable Latched Alarms 1	Enable Latched Alarms 0
7	Pad							

Produced Input Data Assembly 42

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved						Ch 1 Status	Ch 0 Status

Consumed Output Data Assembly 32

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved						Ch 1	Ch 0

Two-channel Discrete Output Modules

Use the tables shown below for the following modules:

- 1734-OB2 or 1738-OB2

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved						Fault State 1	Fault State 0
1	Reserved						Fault Value 1	Fault Value 0
2	Reserved						Idle State 1	Idle State 0
3	Reserved						Idle Value 1	Idle Value 0
4	Reserved (Set to 0)							
5	Reserved (Set to 0)							
6	Reserved (Set to 0)							
7	Pad							

Produced Input Data Assembly 42

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved							

Consumed Output Data Assembly 32

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved						Ch 1	Ch 0

Four-channel Discrete Output Modules with Status

All four-channel "enhanced" discrete output modules use the same configuration and I/O assemblies. Use the tables shown below for the following modules:

- 1734-OB4E or 1738-OB4E
- 1734-OV4E or 1738-0V4E

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved				Fault State 3	Fault State 2	Fault State 1	Fault State 0
1	Reserved				Fault Value 3	Fault Value 2	Fault Value 1	Fault Value 0
2	Reserved				Idle State 3	Idle State 2	Idle State 1	Idle State 0
3	Reserved				Idle Value 3	Idle Value 2	Idle Value 1	Idle Value 0
4	Reserved				Enable No Load 3	Enable No Load 2	Enable No Load 1	Enable No Load 0
5	Reserved				Reset mode 3	Reset mode 2	Reset mode 1	Reset mode 0
6	Reserved				Enable Latched Alarms 3	Enable Latched Alarms 2	Enable Latched Alarms 1	Enable Latched Alarms 0
7	Pad							

Produced Input Data Assembly 43

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved							

Consumed Output Data Assembly 33

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved				Ch 3	Ch 2	Ch 1	Ch 0

Four-channel Discrete Output Modules

Use the tables shown below for the following modules:

- 1734-OB4 or 1738-OB4

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved				Fault State 3	Fault State 2	Fault State 1	Fault State 0
1	Reserved				Fault Value 3	Fault Value 2	Fault Value 1	Fault Value 0
2	Reserved				Idle State 3	Idle State 2	Idle State 1	Idle State 0
3	Reserved				Idle Value 3	Idle Value 2	Idle Value 1	Idle Value 0
4	Reserved (Set to 0)							
5	Reserved (Set to 0)							
6	Reserved (Set to 0)							
7	Pad							

Produced Input Data Assembly 43

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved							

Consumed Output Data Assembly 33

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved				Ch 3	Ch 2	Ch 1	Ch 0

Eight-channel Discrete Output Modules with Status

All eight-channel "enhanced" discrete output modules use the same configuration and I/O assemblies. Use the tables shown below for the following modules:

- 1734-OB8E or 1738-OB8E
- 1734-OV8E or 1738-OV8E

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Fault State 7	Fault State 6	Fault State 5	Fault State 4	Fault State 3	Fault State 2	Fault State 1	Fault State 0
1	Fault Value 7	Fault Value 6	Fault Value 5	Fault Value 4	Fault Value 3	Fault Value 2	Fault Value 1	Fault Value 0
2	Idle State 7	Idle State 6	Idle State 5	Idle State 4	Idle State 3	Idle State 2	Idle State 1	Idle State 0
3	Idle Value 7	Idle Value 6	Idle Value 5	Idle Value 4	Idle Value 3	Idle Value 2	Idle Value 1	Idle Value 0
4	Enable No Load 7	Enable No Load 6	Enable No Load 5	Enable No Load 4	Enable No Load 3	Enable No Load 2	Enable No Load 1	Enable No Load 0
5	Reset Mode 7	Reset Mode 6	Reset Mode 5	Reset Mode 4	Reset Mode 3	Reset Mode 2	Reset mode 1	Reset mode 0
6	Enable Latched Alarms 7	Enable Latched Alarms 6	Enable Latched Alarms 5	Enable Latched Alarms 4	Enable Latched Alarms 3	Enable Latched Alarms 2	Enable Latched Alarms 1	Enable Latched Alarms 0
7	Pad							

Produced Input Data Assembly 44

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Ch 7 status	Ch 6 status	Ch 5 status	Ch status	Ch 3 status	Ch 2 status	Ch 1 status	Ch 0 status

Consumed Output Data Assembly 34

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Ch 7	Ch 6	Ch 5	Ch 4	Ch 3	Ch 2	Ch 1	Ch 0

Eight-channel Discrete Output Modules

Use the tables shown below for the following modules:

- 1734-OB8 or 1738-OB8

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Fault State 7	Fault State 6	Fault State 5	Fault State 4	Fault State 3	Fault State 2	Fault State 1	Fault State 0
1	Fault Value 7	Fault Value 6	Fault Value 5	Fault Value 4	Fault Value 3	Fault Value 2	Fault Value 1	Fault Value 0
2	Idle State 7	Idle State 6	Idle State 5	Idle State 4	Idle State 3	Idle State 2	Idle State 1	Idle State 0
3	Idle Value 7	Idle Value 6	Idle Value 5	Idle Value 4	Idle Value 3	Idle Value 2	Idle Value 1	Idle Value 0
4	Enable No Load 7	Enable No Load 6	Enable No Load 5	Enable No Load 4	Enable No Load 3	Enable No Load 2	Enable No Load 1	Enable No Load 0
5	Reset Mode 7	Reset Mode 6	Reset Mode 5	Reset Mode 4	Reset Mode 3	Reset Mode 2	Reset mode 1	Reset mode 0
6	Enable Latched Alarms 7	Enable Latched Alarms 6	Enable Latched Alarms 5	Enable Latched Alarms 4	Enable Latched Alarms 3	Enable Latched Alarms 2	Enable Latched Alarms 1	Enable Latched Alarms 0
7	Pad							

Produced Input Data Assembly 44

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved							

Consumed Output Data Assembly 34

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Ch 7	Ch 6	Ch 5	Ch 4	Ch 3	Ch 2	Ch 1	Ch 0

Four-channel Discrete Diagnostic Input Modules

Use the tables shown below for the following modules:

- 1734-IB4D or 1738-IB4DM12

Configuration Assembly Instance 103

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Input 0 Off to On Filter Low Byte							
1	Input 0 Off to On Filter High Byte							
2	Input 0 On to Off Filter Low Byte							
3	Input 0 On to Off Filter High Byte							
4	Input 1 Off to On Filter Low Byte							
5	Input 1 Off to On Filter High Byte							
6	Input 1 On to Off Filter Low Byte							
7	Input 1 On to Off Filter High Byte							
8	Input 2 Off to On Filter Low Byte							
9	Input 2 Off to On Filter High Byte							
10	Input 2 On to Off Filter Low Byte							
11	Input 2 On to Off Filter High Byte							
12	Input 3 Off to On Filter Low Byte							
13	Input 3 Off to On Filter High Byte							
14	Input 3 On to Off Filter Low Byte							
15	Input 3 On to Off Filter High Byte							
16	Autobaud Disable				Enable Open Wire Detect 3	Enable Open Wire Detect 2	Enable Open Wire Detect 1	Enable Open Wire Detect 0
17	Produced Assembly Instance							

This POINT I/O input module produces 1 or 2 bytes of input data based on which produced assembly is selected. The default assembly (instance 101) is 2 bytes. This module does not consume I/O data.

Produced Diagnostic Input Data Assembly 101

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Fault 3	Fault 2	Fault 1	Fault 0	Input 3	Input 2	Input 1	Input 0
1	Short Circuit 3	Short Circuit 2	Short Circuit 1	Short Circuit 0	Off Wire 3	Off Wire 2	Off Wire 1	Off Wire 0

Produced Input Data Assembly 23

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Fault 3	Fault 2	Fault 1	Fault 0	Input 3	Input 2	Input 1	Input 0

Two-channel Relay and AC Output Modules

All two-channel relay and AC output modules use the same Consumed I/O assembly. There are no Produced or Configuration assemblies for these modules. Use the table shown below for the following modules:

- 1734-OW2
- 1734-OX2
- 1734-OA2 or 1738-OA2M12AC3

Consumed Output Data Assembly 32

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved						Ch 1	Ch 0

Four-channel Relay and AC Output Modules

All four channel relay and AC output modules use the same Consumed I/O assembly. There are no Produced or Configuration assemblies for these modules. Use the table shown below for the following modules:

- 1734-OW4
- 1734-OW4M12 or 1738-OW4M12AC
- 1734-OA4

Consumed Output Data Assembly 32

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved				Ch 3	Ch 2	Ch 1	Ch 0

Sixteen-channel Discrete Diagnostic Input Modules

Use the table shown below for the following modules:

- 1738-IB16DM12

Configuration Assembly Instance 103

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Input Off to On Filter Low Byte							
1	Input Off to On Filter High Byte							
2	Input On to Off Filter Low Byte							
3	Input On to Off Filter High Byte							
4	Produced Assembly							
5	Reserved = 0							

This POINT I/O input module produces 2 or 3 bytes of input data based on which produced assembly is selected. The default assembly instance 101 is 3 bytes. This module does not consume I/O data.

Produced Diagnostic Input Data Assembly Instance 101

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Ch 7	Ch 6	Ch 5	Ch 4	Ch 3	Ch 2	Ch 1	Ch 0
1	Ch 15	Ch 14	Ch 13	Ch 12	Ch 11	Ch 10	Ch 9	Ch 8
2	Reserved			Fault LED State	SSV Fault 12…15	SSV Fault 8…11	SSV Fault 4…7	SSV Fault 0…3

Produced Input Data Assembly Instance 5

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Ch 7	Ch 6	Ch 5	Ch 4	Ch 3	Ch 2	Ch 1	Ch 0
1	Ch 15	Ch 14	Ch 13	Ch 12	Ch 11	Ch 10	Ch 9	Ch 8

Sixteen-channel Discrete Output Modules

Use the table shown below for the following modules:

- 1738-OB16E19M23
- 1738-OB16E25DS
- 1738-OB16EM12

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0				Enable Latched Faults	Idle Value	Idle Action	Fault Value	Fault Action
1	Reserved = 0							

Produced Diagnostic Data Assembly 101

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved			Fault LED State	Fault 12…15	Fault 8…11	Fault 4…7	Fault 0…3

Consumed Output Data Assembly 37

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Ch 7	Ch 6	Ch 5	Ch 4	Ch 3	Ch 2	Ch 1	Ch 0
1	Ch 15	Ch 14	Ch 13	Ch 12	Ch 11	Ch 10	Ch 9	Ch 8

Eight-channel Configurable Discrete Input/Output Modules

All eight channel "configurable" discrete I/O modules use the same configuration and I/O assemblies. Use the tables shown below for the following modules:

- 1734-8CFG
- 1738-8CFGM12
- 1738-8CFGM23
- 1738-8CFGM8

Configuration Assembly Instance 103

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Input Off to On Filter Low Byte							
1	Input Off to On Filter High Byte							
2	Input On to Off Filter Low Byte							
3	Input On to Off Filter High Byte							
4	Fault Action 7	Fault Action 6	Fault Action 5	Fault Action 4	Fault Action 3	Fault Action 2	Fault Action 1	Fault Action 0
5	Fault Action 7	Fault Action 6	Fault Action 5	Fault Action 4	Fault Action 3	Fault Action 2	Fault Action 1	Fault Action 0
6	Idle Action 7	Idle Action 6	Idle Action 5	Idle Action 4	Idle Action 3	Idle Action 2	Idle Action 1	Idle Action 0
7	Idle Value 7	Idle Value 6	Idle Value 5	Idle Value 4	Idle Value 3	Idle Value 2	Idle Value 1	Idle Value 0

Produced Input Data Assembly 4

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Ch 7	Ch 6	Ch 5	Ch 4	Ch 3	Ch 2	Ch 1	Ch 0

Consumed Output Data Assembly 34

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Ch 7	Ch 6	Ch 5	Ch 4	Ch 3	Ch 2	Ch 1	Ch 0

Very High Speed Counter Modules

Use the tables shown below for the following modules:

- 1734-VHSC5
- 1734-VHSC25 or 1738-VHSC24M23

The modules support 3 different consumed output data assemblies. The Active Output Assembly field of the Configuration assembly selects which output assembly will be used. Assembly 105 is the default. Other produced assemblies are possible but require separate configuration of the module. For more information regarding the specific fields of these assemblies, consult the product's user manual.

Produced Input Data Assembly 102

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Stored Channel Data [Low Byte]							
1	Stored Channel Data [1]							
2	Stored Channel Data [2]							
3	Stored Channel Data [High Byte]							
4	Status (Low Byte)							
5	Status (High Byte)							

Consumed Output Data Assembly 105

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Counter Control							
1	Output Control							

Consumed Output Data Assembly 106

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	PWM Value (Low Byte)							
1	PWM Value (High Byte)							

Consumed Output Data Assembly 107

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	PWM Value (Low Byte)							
1	PWM Value (High Byte)							
2	Counter Control							
3	Output Control							

Configuration Assembly Instance 108

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Counter Configuration							
1	Filter Selection							
2	Decimal Position							
3	Active Output Assembly							
4	Time Base or PWM Period (low byte)							
5	Time Base or PWM Period (high byte)							
6	Gate Interval							
7	Scalar							
8	Output 0 Ties							
9	Output 1 Ties							
10	Rollover Value [Low Byte]							
11	Rollover Value [1]							
12	Rollover Value [2]							
13	Rollover Value [High Byte]							
14	Preset Value [Low Byte]							
15	Preset Value [1]							
16	Preset Value [2]							
17	Preset Value [High Byte]							
18	ON Value # 1 [Low Byte]							
19	ON Value # 1 [1]							
20	ON Value # 1 [2]							
21	ON Value # 1 [High Byte]							
22	OFF Value #1 [Low Byte]							
23	OFF Value #1 [1]							
24	OFF Value #1 [2]							
25	OFF Value #1 [High Byte]							
26	ON Value # 2 [Low Byte]							
27	ON Value # 2 [1]							
28	ON Value # 2 [2]							

Configuration Assembly Instance 108

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
29	ON Value # 2 [High Byte]							
30	OFF Value #2 [Low Byte]							
31	OFF Value #2 [1]							
32	OFF Value #2 [2]							
33	OFF Value #2 [High Byte]							
34	ON Value # 3 [Low Byte]							
35	ON Value # 3 [1]							
36	ON Value # 3 [2]							
37	ON Value # 3 [High Byte]							
38	OFF Value #3 [Low Byte]							
39	OFF Value #3 [1]							
40	OFF Value #3 [2]							
41	OFF Value #3 [High Byte]							
42	ON Value # 4 [Low Byte]							
43	ON Value # 4 [1]							
44	ON Value # 4 [2]							
45	ON Value # 4 [High Byte]							
46	OFF Value #4 [Low Byte]							
47	OFF Value #4 [1]							
48	OFF Value #4 [2]							
49	OFF Value #4 [High Byte]							
50	PWM Safe State Value (low byte)							
51	PWM Safe State Value (high byte)							
52	Counter Control SSV							
53	Output Control SSV							

Counter Modules

Use the tables shown below for the following modules:

- 1734-IJ or 1738-IJM23
- 1734-IK

The modules support 3 different consumed input data assemblies. The produced input assembly can be set with the Requested Change of State Produce Assembly filed of the Configuration assembly. Assembly 102 is the

default produced assembly. For more information regarding the specific fields of these assemblies, consult the product's user manual.

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Counter Configuration							
1	Filter Selection							
2	Decimal Position							
3	Reserved							
4	Time Base (low byte)							
5	Time Base (high byte)							
6	Gate Interval							
7	Scalar							
8	Rollover Value [Low Byte]							
9	Rollover Value [1]							
10	Rollover Value [2]							
11	Rollover Value [High Byte]							
12	Preset Value [Low Byte]							
13	Preset Value [1]							
14	Preset Value [2]							
15	Preset Value [High Byte]							
16	Counter Control SSV							
17	Reserved (set to 0)							

Produced Input Data Assembly 102

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Stored Channel Data [Low Byte]							
1	Stored Channel Data [1]							
2	Stored Channel Data [2]							
3	Stored Channel Data [High Byte]							
4	Status (Low Byte)							
5	Status (High Byte)							

Consumed Output Data Assembly 105

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Counter Control							

Two-channel Analog Input Modules

Use the tables shown below for the following modules:

- 1734-IE2C
- 1734-IE2V
- 1738-IE2CM12 or 1738-IE2VM12

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Low Engineering Channel 0 (Low Byte)							
1	Low Engineering Channel 0 (High Byte)							
2	High Engineering Channel 0 (Low Byte)							
3	High Engineering Channel 0 (High Byte)							
4	Digital Filter Channel 0 (Low Byte)							
5	Digital Filter Channel 0 (High Byte)							
6	Low Alarm Channel 0 (Low Byte)							
7	Low Alarm Channel 0 (High Byte)							
8	High Alarm Channel 0 (Low Byte)							
9	High Alarm Channel 0 (High Byte)							
10	Low Low Alarm Channel 0 (Low Byte)							
11	Low Low Alarm Channel 0 (High Byte)							
12	High High Alarm Channel 0 (Low Byte)							
13	High High Alarm Channel 0 (High Byte)							
14	Range Channel 0							
15	Alarm Latch Channel 0							
16	Alarm Disable Channel 0							
17	Alignment (reserved = 0)							
18	Low Engineering Channel 1 (Low Byte)							
19	Low Engineering Channel 1 (High Byte)							
20	High Engineering Channel 1 (Low Byte)							
21	High Engineering Channel 1 (High Byte)							
22	Digital Filter Channel 1 (Low Byte)							
23	Digital Filter Channel 1 (High Byte)							
24	Low Alarm Channel 1 (Low Byte)							
25	Low Alarm Channel 1 (High Byte)							
26	High Alarm Channel 1 (Low Byte)							

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
27	High Alarm Channel 1 (High Byte)							
28	Low Low Alarm Channel 1 (Low Byte)							
29	Low Low Alarm Channel 1 (High Byte)							
30	High High Alarm Channel 1 (Low Byte)							
31	High High Alarm Channel 1 (High Byte)							
32	Range Channel 1							
33	Alarm Latch Channel 1							
34	Alarm Disable Channel 1							
35	Notch Filter							
36	Update Rate (Low Byte)							
37	Update Rate (High Byte)							

Produced Input Data Assembly 101

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Channel 0 Data (Low Byte)							
1	Channel 0 Data (High Byte)							
2	Channel 1 Data (Low Byte)							
3	Channel 1 Data (High Byte)							
4	Channel 0 Status							
5	Channel 1 Status							

Four-channel Analog Input Modules

Use the tables shown below for the following modules:

- 1734-IE4C
- 1738-IE4CM12 or 1738-IE4VM12

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Low Engineering Channel 0 (Low Byte)							
1	Low Engineering Channel 0 (High Byte)							
2	High Engineering Channel 0 (Low Byte)							
3	High Engineering Channel 0 (High Byte)							
4	Digital Filter Channel 0 (Low Byte)							

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
5	Digital Filter Channel 0 (High Byte)							
6	Low Alarm Channel 0 (Low Byte)							
7	Low Alarm Channel 0 (High Byte)							
8	High Alarm Channel 0 (Low Byte)							
9	High Alarm Channel 0 (High Byte)							
10	Low Low Alarm Channel 0 (Low Byte)							
11	Low Low Alarm Channel 0 (High Byte)							
12	High High Alarm Channel 0 (Low Byte)							
13	High High Alarm Channel 0 (High Byte)							
14	Range Channel 0							
15	Alarm Latch Channel 0							
16	Alarm Disable Channel 0							
17	Alignment (reserved = 0)							
18	Low Engineering Channel 1 (Low Byte)							
19	Low Engineering Channel 1 (High Byte)							
20	High Engineering Channel 1 (Low Byte)							
21	High Engineering Channel 1 (High Byte)							
22	Digital Filter Channel 1 (Low Byte)							
23	Digital Filter Channel 1 (High Byte)							
24	Low Alarm Channel 1 (Low Byte)							
25	Low Alarm Channel 1 (High Byte)							
26	High Alarm Channel 1 (Low Byte)							
27	High Alarm Channel 1 (High Byte)							
28	Low Low Alarm Channel 1 (Low Byte)							
29	Low Low Alarm Channel 1 (High Byte)							
30	High High Alarm Channel 1 (Low Byte)							
31	High High Alarm Channel 1 (High Byte)							
32	Range Channel 1							
33	Alarm Latch Channel 1							
34	Alarm Disable Channel 1							
35	Alignment (reserved = 0)							
36	Low Engineering Channel 2 (Low Byte)							
37	Low Engineering Channel 2 (High Byte)							
38	High Engineering Channel 2 (Low Byte)							
39	High Engineering Channel 2 (High Byte)							
40	Digital Filter Channel 2 (Low Byte)							

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
41	Digital Filter Channel 2 (High Byte)							
42	Low Alarm Channel 2 (Low Byte)							
43	Low Alarm Channel 2 (High Byte)							
44	High Alarm Channel 2 (Low Byte)							
45	High Alarm Channel 2 (High Byte)							
46	Low Low Alarm Channel 2 (Low Byte)							
47	Low Low Alarm Channel 2 (High Byte)							
48	High High Alarm Channel 2 (Low Byte)							
49	High High Alarm Channel 2 (High Byte)							
50	Range Channel 2							
51	Alarm Latch Channel 2							
52	Alarm Disable Channel 2							
53	Alignment (reserved = 0)							
54	Low Engineering Channel 3 (Low Byte)							
55	Low Engineering Channel 3 (High Byte)							
56	High Engineering Channel 3 (Low Byte)							
57	High Engineering Channel 3 (High Byte)							
58	Digital Filter Channel 3 (Low Byte)							
59	Digital Filter Channel 3 (High Byte)							
60	Low Alarm Channel 3 (Low Byte)							
61	Low Alarm Channel 3 (High Byte)							
62	High Alarm Channel 3 (Low Byte)							
63	High Alarm Channel 3 (High Byte)							
64	Low Low Alarm Channel 3 (Low Byte)							
65	Low Low Alarm Channel 3 (High Byte)							
66	High High Alarm Channel 3 (Low Byte)							
67	High High Alarm Channel 3 (High Byte)							
68	Range Channel 3							
69	Alarm Latch Channel 3							
70	Alarm Disable Channel 3							
71	Notch Filter							
72	Update Rate (Low Byte)							
73	Update Rate (High Byte)							

Produced Input Data Assembly 101

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Channel 0 Data (Low Byte)							
1	Channel 0 Data (High Byte)							
2	Channel 1 Data (Low Byte)							
3	Channel 1 Data (High Byte)							
4	Channel 2 Data (Low Byte)							
5	Channel 2 Data (High Byte)							
6	Channel 3 Data (Low Byte)							
7	Channel 3 Data (High Byte)							
8	Channel 0 Status							
9	Channel 1 Status							
10	Channel 2 Status							
11	Channel 3 Status							

Eight-channel Analog Input Modules

Use the tables shown below for the following modules:

- 1734-IE8C
- 1734-IE8V

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Low Engineering Channel 0 (Low Byte)							
1	Low Engineering Channel 0 (High Byte)							
2	High Engineering Channel 0 (Low Byte)							
3	High Engineering Channel 0 (High Byte)							
4	Digital Filter Channel 0 (Low Byte)							
5	Digital Filter Channel 0 (High Byte)							
6	Low Alarm Channel 0 (Low Byte)							
7	Low Alarm Channel 0 (High Byte)							
8	High Alarm Channel 0 (Low Byte)							
9	High Alarm Channel 0 (High Byte)							
10	Low Low Alarm Channel 0 (Low Byte)							
11	Low Low Alarm Channel 0 (High Byte)							

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
12	High High Alarm Channel 0 (Low Byte)							
13	High High Alarm Channel 0 (High Byte)							
14	Range Channel 0							
15	Alarm Latch Channel 0							
16	Alarm Disable Channel 0							
17	Alignment (reserved = 0)							
18	Low Engineering Channel 1 (Low Byte)							
19	Low Engineering Channel 1 (High Byte)							
20	High Engineering Channel 1 (Low Byte)							
21	High Engineering Channel 1 (High Byte)							
22	Digital Filter Channel 1 (Low Byte)							
23	Digital Filter Channel 1 (High Byte)							
24	Low Alarm Channel 1 (Low Byte)							
25	Low Alarm Channel 1 (High Byte)							
26	High Alarm Channel 1 (Low Byte)							
27	High Alarm Channel 1 (High Byte)							
28	Low Low Alarm Channel 1 (Low Byte)							
29	Low Low Alarm Channel 1 (High Byte)							
30	High High Alarm Channel 1 (Low Byte)							
31	High High Alarm Channel 1 (High Byte)							
32	Range Channel 1							
33	Alarm Latch Channel 1							
34	Alarm Disable Channel 1							
35	Alignment (reserved = 0)							
36	Low Engineering Channel 2 (Low Byte)							
37	Low Engineering Channel 2 (High Byte)							
38	High Engineering Channel 2 (Low Byte)							
39	High Engineering Channel 2 (High Byte)							
40	Digital Filter Channel 2 (Low Byte)							
41	Digital Filter Channel 2 (High Byte)							
42	Low Alarm Channel 2 (Low Byte)							
43	Low Alarm Channel 2 (High Byte)							
44	High Alarm Channel 2 (Low Byte)							
45	High Alarm Channel 2 (High Byte)							
46	Low Low Alarm Channel 2 (Low Byte)							
47	Low Low Alarm Channel 2 (High Byte)							

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
48	High High Alarm Channel 2 (Low Byte)							
49	High High Alarm Channel 2 (High Byte)							
50	Range Channel 2							
51	Alarm Latch Channel 2							
52	Alarm Disable Channel 2							
53	Alignment (reserved = 0)							
54	Low Engineering Channel 3 (Low Byte)							
55	Low Engineering Channel 3 (High Byte)							
56	High Engineering Channel 3 (Low Byte)							
57	High Engineering Channel 3 (High Byte)							
58	Digital Filter Channel 3 (Low Byte)							
59	Digital Filter Channel 3 (High Byte)							
60	Low Alarm Channel 3 (Low Byte)							
61	Low Alarm Channel 3 (High Byte)							
62	High Alarm Channel 3 (Low Byte)							
63	High Alarm Channel 3 (High Byte)							
64	Low Low Alarm Channel 3 (Low Byte)							
65	Low Low Alarm Channel 3 (High Byte)							
66	High High Alarm Channel 3 (Low Byte)							
67	High High Alarm Channel 3 (High Byte)							
68	Range Channel 3							
69	Alarm Latch Channel 3							
70	Alarm Disable Channel 3							
71	Alignment (reserved = 0)							
72	Low Engineering Channel 4 (Low Byte)							
73	Low Engineering Channel 4 (High Byte)							
74	High Engineering Channel 4 (Low Byte)							
75	High Engineering Channel 4 (High Byte)							
76	Digital Filter Channel 4 (Low Byte)							
77	Digital Filter Channel 4 (High Byte)							
78	Low Alarm Channel 4 (Low Byte)							
79	Low Alarm Channel 4 (High Byte)							
80	High Alarm Channel 4 (Low Byte)							
81	High Alarm Channel 4 (High Byte)							
82	Low Low Alarm Channel 4 (Low Byte)							
83	Low Low Alarm Channel 4 (High Byte)							

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
84	High High Alarm Channel 4 (Low Byte)							
85	High High Alarm Channel 4 (High Byte)							
86	Range Channel 4							
87	Alarm Latch Channel 4							
88	Alarm Disable Channel 4							
89	Alignment (reserved = 0)							
90	Low Engineering Channel 5 (Low Byte)							
91	Low Engineering Channel 5 (High Byte)							
92	High Engineering Channel 5 (Low Byte)							
93	High Engineering Channel 5 (High Byte)							
94	Digital Filter Channel 5 (Low Byte)							
95	Digital Filter Channel 5 (High Byte)							
96	Low Alarm Channel 5 (Low Byte)							
97	Low Alarm Channel 5 (High Byte)							
98	High Alarm Channel 5 (Low Byte)							
99	High Alarm Channel 5 (High Byte)							
100	Low Low Alarm Channel 5 (Low Byte)							
101	Low Low Alarm Channel 5 (High Byte)							
102	High High Alarm Channel 5 (Low Byte)							
103	High High Alarm Channel 5 (High Byte)							
104	Range Channel 5							
105	Alarm Latch Channel 5							
106	Alarm Disable Channel 5							
107	Alignment (reserved = 0)							
108	Low Engineering Channel 6 (Low Byte)							
109	Low Engineering Channel 6 (High Byte)							
110	High Engineering Channel 6 (Low Byte)							
111	High Engineering Channel 6 (High Byte)							
112	Digital Filter Channel 6 (Low Byte)							
113	Digital Filter Channel 6 (High Byte)							
114	Low Alarm Channel 6 (Low Byte)							
115	Low Alarm Channel 6 (High Byte)							
116	High Alarm Channel 6 (Low Byte)							
117	High Alarm Channel 6 (High Byte)							
118	Low Low Alarm Channel 6 (Low Byte)							
119	Low Low Alarm Channel 6 (High Byte)							

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
120	High High Alarm Channel 6 (Low Byte)							
121	High High Alarm Channel 6 (High Byte)							
122	Range Channel 6							
123	Alarm Latch Channel 6							
124	Alarm Disable Channel 6							
125	Alignment (reserved = 0)							
126	Low Engineering Channel 7 (Low Byte)							
127	Low Engineering Channel 7 (High Byte)							
128	High Engineering Channel 7 (Low Byte)							
129	High Engineering Channel 7 (High Byte)							
130	Digital Filter Channel 7 (Low Byte)							
131	Digital Filter Channel 7 (High Byte)							
132	Low Alarm Channel 7 (Low Byte)							
134	Low Alarm Channel 7 (High Byte)							
135	High Alarm Channel 7 (High Byte)							
136	Low Low Alarm Channel 7 (Low Byte)							
137	Low Low Alarm Channel 7 (High Byte)							
138	High High Alarm Channel 7 (Low Byte)							
139	High High Alarm Channel 7 (High Byte)							
140	Range Channel 7							
141	Alarm Latch Channel 7							
142	Alarm Disable Channel 7							
143	Notch Filter							
144	Update Rate (Low Byte)							
145	Update Rate (High Byte)							

Produced Input Data Assembly 101

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Channel 0 Data (Low Byte)							
1	Channel 0 Data (High Byte)							
2	Channel 1 Data (Low Byte)							
3	Channel 1 Data (High Byte)							
4	Channel 2 Data (Low Byte)							
5	Channel 2 Data (High Byte)							
6	Channel 3 Data (Low Byte)							
7	Channel 3 Data (High Byte)							

Produced Input Data Assembly 101

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
8	Channel 4 Data (Low Byte)							
9	Channel 4 Data (High Byte)							
10	Channel 5 Data (Low Byte)							
11	Channel 5 Data (High Byte)							
12	Channel 6 Data (Low Byte)							
13	Channel 6 Data (High Byte)							
14	Channel 7 Data (Low Byte)							
15	Channel 7 Data (High Byte)							
16	Channel 0 Status							
17	Channel 1 Status							
18	Channel 2 Status							
19	Channel 3 Status							
20	Channel 4 Status							
21	Channel 5 Status							
22	Channel 6 Status							
23	Channel 7 Status							

Two-channel Analog Output Modules

Use the tables shown below for the following modules:

- 1734-OE2C
- 1734-OE2V
- 1738-OE2CM12 or 1738-OE2VM12

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Fault Data Channel 0 (Low Byte)							
1	Fault Data Channel 0 (High Byte)							
2	Idle Data Channel 0 (Low Byte)							
3	Idle Data Channel 0 (High Byte)							
4	Low Engineering Channel 0 (Low Byte)							
5	Low Engineering Channel 0 (High Byte)							
6	High Engineering Channel 0 (Low Byte)							

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
7	High Engineering Channel 0 (High Byte)							
8	Low Clamp Channel 0 (Low Byte)							
9	Low Clamp Channel 0 (High Byte)							
10	High Clamp Channel 0 (Low Byte)							
11	High Clamp Channel 0 (High Byte)							
12	Range Channel 0							
13	Fault Action Channel 0							
14	Idle Action Channel 0							
15	Alarm Latch Channel 0							
16	Alarm Disable Channel 0							
17	Alignment (reserved = 0)							
18	Fault Data Channel 1 (Low Byte)							
19	Fault Data Channel 1 (High Byte)							
20	Idle Data Channel 1 (Low Byte)							
21	Idle Data Channel 1 (High Byte)							
22	Low Engineering Channel 1 (Low Byte)							
23	Low Engineering Channel 1 (High Byte)							
24	High Engineering Channel 1 (Low Byte)							
25	High Engineering Channel 1 (High Byte)							
26	Low Clamp Channel 1 (Low Byte)							
27	Low Clamp Channel 1 (High Byte)							
28	High Clamp Channel 1 (Low Byte)							
29	High Clamp Channel 1 (High Byte)							
30	Range Channel 1							
31	Fault Action Channel 1							
32	Idle Action Channel 1							
33	Alarm Latch Channel 1							
34	Alarm Disable Channel 1							
35	Alignment (reserved = 0)							

Produced Input Data Assembly 101

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Channel 0 Status							
1	Channel 1 Status							

Consumed Output Data Assembly 102

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Channel 0 Data (Low Byte)							
1	Channel 0 Data (High Byte)							
2	Channel 1 Data (Low Byte)							
3	Channel 1 Data (High Byte)							

Four-channel Analog Output Modules

Use the tables shown below for the following modules:

- 1734-OE4C
- 1738-OE4CM12 or 1738-OE4VM12

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Fault Data Channel 0 (Low Byte)							
1	Fault Data Channel 0 (High Byte)							
2	Idle Data Channel 0 (Low Byte)							
3	Idle Data Channel 0 (High Byte)							
4	Low Engineering Channel 0 (Low Byte)							
5	Low Engineering Channel 0 (High Byte)							
6	High Engineering Channel 0 (Low Byte)							
7	High Engineering Channel 0 (High Byte)							
8	Low Clamp Channel 0 (Low Byte)							
9	Low Clamp Channel 0 (High Byte)							
10	High Clamp Channel 0 (Low Byte)							
11	High Clamp Channel 0 (High Byte)							
12	Range Channel 0							
13	Fault Action Channel 0							
14	Idle Action Channel 0							
15	Alarm Latch Channel 0							
16	Alarm Disable Channel 0							
17	Alignment (reserved = 0)							
18	Fault Data Channel 1 (Low Byte)							
19	Fault Data Channel 1 (High Byte)							

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
20	Idle Data Channel 1 (Low Byte)							
21	Idle Data Channel 1 (High Byte)							
22	Low Engineering Channel 1 (Low Byte)							
23	Low Engineering Channel 1 (High Byte)							
24	High Engineering Channel 1 (Low Byte)							
25	High Engineering Channel 1 (High Byte)							
26	Low Clamp Channel 1 (Low Byte)							
27	Low Clamp Channel 1 (High Byte)							
28	High Clamp Channel 1 (Low Byte)							
29	High Clamp Channel 1 (High Byte)							
30	Range Channel 1							
31	Fault Action Channel 1							
32	Idle Action Channel 1							
33	Alarm Latch Channel 1							
34	Alarm Disable Channel 1							
35	Alignment (reserved = 0)							
36	Fault Data Channel 2 (Low Byte)							
37	Fault Data Channel 2 (High Byte)							
38	Idle Data Channel 2 (Low Byte)							
39	Idle Data Channel 2 (High Byte)							
40	Low Engineering Channel 2 (Low Byte)							
41	Low Engineering Channel 2 (High Byte)							
42	High Engineering Channel 2 (Low Byte)							
43	High Engineering Channel 2 (High Byte)							
44	Low Clamp Channel 2 (Low Byte)							
45	Low Clamp Channel 2 (High Byte)							
46	High Clamp Channel 2 (Low Byte)							
47	High Clamp Channel 2 (High Byte)							
48	Range Channel 2							
49	Fault Action Channel 2							
50	Idle Action Channel 2							
51	Alarm Latch Channel 2							
52	Alarm Disable Channel 2							
53	Alignment (reserved = 0)							
54	Fault Data Channel 3 (Low Byte)							
55	Fault Data Channel 3 (High Byte)							

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
56	Idle Data Channel 3 (Low Byte)							
57	Idle Data Channel 3 (High Byte)							
58	Low Engineering Channel 3 (Low Byte)							
59	Low Engineering Channel 3 (High Byte)							
60	High Engineering Channel 3 (Low Byte)							
61	High Engineering Channel 3 (High Byte)							
62	Low Clamp Channel 3 (Low Byte)							
63	Low Clamp Channel 3 (High Byte)							
64	High Clamp Channel 3 (Low Byte)							
65	High Clamp Channel 3 (High Byte)							
66	Range Channel 3							
67	Fault Action Channel 3							
68	Idle Action Channel 3							
69	Alarm Latch Channel 3							
70	Alarm Disable Channel 3							
71	Alignment (reserved = 0)							

Produced Input Data Assembly 101

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Channel 0 Status							
1	Channel 1 Status							
2	Channel 2 Status							
3	Channel 3 Status							

Produced Input Data Assembly 101

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Channel 0 Data (Low Byte)							
1	Channel 0 Data (High Byte)							
2	Channel 1 Data (Low Byte)							
3	Channel 1 Data (High Byte)							
4	Channel 2 Data (Low Byte)							
5	Channel 2 Data (High Byte)							
6	Channel 3 Data (Low Byte)							
7	Channel 3 Data (High Byte)							

Two-channel RTD Input Modules

Use the tables shown below for the following modules:

- 1734-IR2
- 1734-IR2E or 1738-IR2M12

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Low Engineering Channel 0 (Low Byte)							
1	Low Engineering Channel 0 (High Byte)							
2	High Engineering Channel 0 (Low Byte)							
3	High Engineering Channel 0 (High Byte)							
4	Digital Filter Channel 0 (Low Byte)							
5	Digital Filter Channel 0 (High Byte)							
6	Low Alarm Channel 0 (Low Byte)							
7	Low Alarm Channel 0 (High Byte)							
8	High Alarm Channel 0 (Low Byte)							
9	High Alarm Channel 0 (High Byte)							
10	Low Low Alarm Channel 0 (Low Byte)							
11	Low Low Alarm Channel 0 (High Byte)							
12	High High Alarm Channel 0 (Low Byte)							
13	High High Alarm Channel 0 (High Byte)							
14	Alarm Latch Channel 0							
15	Alarm Disable Channel 0							
16	Sensor Type Channel 0							
17	Temperature Units Channel 0							
18	Low Engineering Channel 1 (Low Byte)							
19	Low Engineering Channel 1 (High Byte)							
20	High Engineering Channel 1 (Low Byte)							
21	High Engineering Channel 1 (High Byte)							
22	Digital Filter Channel 1 (Low Byte)							
23	Digital Filter Channel 1 (High Byte)							
24	Low Alarm Channel 1 (Low Byte)							
25	Low Alarm Channel 1 (High Byte)							
26	High Alarm Channel 1 (Low Byte)							
27	High Alarm Channel 1 (High Byte)							

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
28	Low Low Alarm Channel 1 (Low Byte)							
29	Low Low Alarm Channel 1 (High Byte)							
30	High High Alarm Channel 1 (Low Byte)							
31	High High Alarm Channel 1 (High Byte)							
32	Alarm Latch Channel 1							
33	Alarm Disable Channel 1							
34	Sensor Type Channel 1							
35	Temperature Units Channel 1							
36	Notch Filter							
37	Alignment (reserved = 0)							

Produced Input Data Assembly 101

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Channel 0 Data (Low Byte)							
1	Channel 0 Data (High Byte)							
2	Channel 1 Data (Low Byte)							
3	Channel 1 Data (High Byte)							
4	Channel 0 Status							
5	Channel 1 Status							

Two-channel Thermocouple Input Modules

Use the tables shown below for the following modules:

- 1734-IR2I or 1738-IR2IM12

Configuration Assembly Instance 103

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Cold Junction Notch Filter							
1	Cold Junction Produced							
2	Low Engineering Channel 0 (Low Byte)							
3	Low Engineering Channel 0 (High Byte)							
4	High Engineering Channel 0 (Low Byte)							
5	High Engineering Channel 0 (High Byte)							
6	Alarm Disable Channel 0							

Configuration Assembly Instance 103

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
7	Alarm Latch Channel 0							
8	Notch Filter Channel 0							
9	Sensor Type Channel 0							
10	Digital Filter Channel 0 (Low Byte)							
11	Digital Filter Channel 0 (High Byte)							
12	Low Alarm Channel 0 (Low Byte)							
13	Low Alarm Channel 0 (High Byte)							
14	High Alarm Channel 0 (Low Byte)							
15	High Alarm Channel 0 (High Byte)							
16	Low Low Alarm Channel 0 (Low Byte)							
17	Low Low Alarm Channel 0 (High Byte)							
18	High High Alarm Channel 0 (Low Byte)							
19	High High Alarm Channel 0 (High Byte)							
20	Temperature Units Channel 0							
21	Cold Junction Enable Chan 0							
22	Cold Junction Offset Chan 0 (Low Byte)							
23	Cold Junction Offset Chan 0 (High Byte)							
24	Low Engineering Channel 1 (Low Byte)							
25	Low Engineering Channel 1 (High Byte)							
26	High Engineering Channel 1 (Low Byte)							
27	High Engineering Channel 1 (High Byte)							
28	Alarm Disable Channel 1							
29	Alarm Latch Channel 1							
30	Notch Filter Channel 1							
31	Sensor Type Channel 1							
32	Digital Filter Channel 1 (Low Byte)							
33	Digital Filter Channel 1 (High Byte)							
34	Low Alarm Channel 1 (Low Byte)							
35	Low Alarm Channel 1 (High Byte)							
36	High Alarm Channel 1 (Low Byte)							
37	High Alarm Channel 1 (High Byte)							
38	Low Low Alarm Channel 1 (Low Byte)							
39	Low Low Alarm Channel 1 (High Byte)							
40	High High Alarm Channel 1 (Low Byte)							
41	High High Alarm Channel 1 (High Byte)							
42	Temperature Units Channel 1							

Configuration Assembly Instance 103

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
43	Cold Junction Enable Chan 1							
44	Cold Junction Offset Chan 1 (Low Byte)							
45	Cold Junction Offset Chan 1 (High Byte)							

Produced Input Data Assembly 101

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Channel 0 Data (Low Byte)							
1	Channel 0 Data (High Byte)							
2	Channel 1 Data (Low Byte)							
3	Channel 1 Data (High Byte)							
4	Channel 0 Status							
5	Channel 1 Status							
6	CJC Data (Low Byte)							
7	CJC Data (High Byte)							

Synchronous Serial Interface Modules

Use the tables shown below for the following modules:

- 1734-SSI or 1738-SSIM12

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Run							
1	Gray/Binary							
2	SSI Word Length							
3	Data Rate							
4	Gray to Binary Conversion							
5	Standardization							
6	SSI Word Delay Time (Low Byte)							
7	SSI Word Delay Time (High Byte)							
8	Trailing bits							
9	Latch Input Control							
10	Sensor Resolution (Low Byte)							
11	Sensor Resolution (High Byte)							

Configuration Assembly Instance 123

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
12	Sensor Cycles (Low Byte)							
13	Sensor Cycles (High Byte)							
14	SSI Word Filter Control							
15	Alignment (reserved = 0)							
16	Comparator 1 Value [Low Byte]							
17	Comparator 1 Value [1]							
18	Comparator 1 Value [2]							
19	Comparator 1 Value [High Byte]							
20	Comparator 2 Value [Low Byte]							
21	Comparator 2 Value [1]							
22	Comparator 2 Value [2]							
23	Comparator 2 Value [High Byte]							
24	Comparator 1 Control							
25	Comparator 2 Control							

Produced Input Data Assembly 101

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Present SSI Word [Low Byte]							
1	Present SSI Word [1]							
2	Present SSI Word [2]							
3	Present SSI Word [High Byte]							
4	Latched SSI Word [Low Byte]							
5	Latched SSI Word [1]							
6	Latched SSI Word [2]							
7	Latched SSI Word [High Byte]							
8	Module Status (Low Byte)							
9	Module Status (High Byte)							

Consumed Output Data Assembly 102

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Master Ack Byte Output Control							
1	Reserved = 0							

Address Reserve Module

Use the table shown below for the 1734-ARM. This module has no configuration and does not consume any I/O data.

Produced Input Data Assembly 4

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved = 0							

ASCII Interface Modules

Use the tables shown below for the following modules:

- 1734-232ASC
- 1734-485ASC
- 1738-232ASCM12 or 1738-48ASCM12

Configuration Assembly Instance 103

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	ASCII Serial Character Format							
1	ASCII Serial Comm Speed							
2	ASCII Max Number of Receive Characters							
3	ASCII Receive Record Start Mode							
4	ASCII Receive Start Delimiter							
5	ASCII Receive Record End Mode							
6	ASCII Receive End Delimiter							
7	ASCII Receive String Data Type							
8	ASCII Pad Mode							
9	ASCII Pad Character							
10	ASCII Receive Swap Mode							
11	Handshake Mode							
12	ASCII Max Number of Transmit Characters							
13	ASCII Transmit End Delimiter Mode							
14	ASCII Transmit End Delimiter Character							

Configuration Assembly Instance 103

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
15	ASCII Consume String Data Type							
16	ASCII Transmit Swap Mode							
17	Transmit Handshake Mode							

The format and length of the Produced and Consumed I/O assemblies vary with the configuration of the module. For more information regarding the specific fields of these assemblies and how they are impacted by the configuration, refer to the product user manual.

Produced Input Data Assembly 101

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	RX Transaction ID							
1	Status							
2	Reserved or Length(2)							
3	Reserved or Length(2)							
4	ASCII Data (from 1 to 128 bytes)							
N(1)	<CR> Terminator							

(1) The length of the assembly depends on the amount of ASCII Data transmitted.

(2) The meaning of these fields depends on the configuration of the module.

Consumed Output Data Assembly 102

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved							
1	TX Transaction ID							
2	Reserved							
3	Length							
4	ASCII Data (from 1 to 128 bytes)							
N(1)	<CR> Terminator							

(1) The length of the assembly depends on the amount of ASCII Data transmitted.

Numerics

A

B

C

L

M

O

P

R

S

T

U

V

W

Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products.
At http://www.rockwellautomation.com/support/, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration, and troubleshooting, we offer TechConnect support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit http://www.rockwellautomation.com/support/.

Installation Assistance

If you experience a problem within the first 24 hours of installation, review the information that is contained in this manual. You can contact Customer Support for initial help in getting your product up and running.

United States or Canada	1.440.646.3434
Outside United States or Canada	Use the Worldwide Locator at http://www.rockwellautomation.com/support/americas/phone_en.html, or contact your local Rockwell Automation representative.

New Product Satisfaction Return

Rockwell Automation tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

United States	Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for the return procedure.

Documentation Feedback

Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete this form, publication RA-DU002, available at http://www.rockwellautomation.com/literature/.

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

www.rockwellautomation.com

Power, Control and Information Solutions Headquarters

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

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