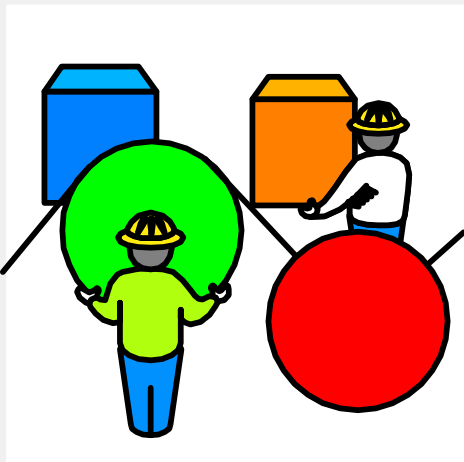




Allen-Bradley

***DeviceNet
Adapter Module***

(Cat. No. 1794-ADN Series B)



User Manual

Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of this control equipment must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards.

The illustrations, charts, sample programs and layout examples shown in this guide are intended solely for example. Since there are many variables and requirements associated with any particular installation, Allen-Bradley does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, “Safety Guidelines For The Application, Installation and Maintenance of Solid State Control” (available from your local Allen-Bradley office) describes some important differences between solid-state equipment and electromechanical devices which should be taken into consideration when applying products such as those described in this publication.

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Throughout this manual we make notes to alert you to possible injury to people or damage to equipment under specific circumstances.



ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss.

Attention helps you:

- identify a hazard
- avoid the hazard
- recognize the consequences

Important: Identifies information that is especially important for successful application and understanding of the product.

Important: We recommend you frequently backup your application programs on appropriate storage medium to avoid possible data loss.

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Summary of Changes

This publication contains new and revised information not included in the last release.

New Information

Additional Flex I/O Modules

The following modules have been added to this publication:

- 8 Electronically Fused Output Module, cat. no. 1794-OB8EP
- 10 Input/6 Output Module, cat. no. 1794-IB10XOB6
- SCANport Module, cat. no. 1203-FM1

Revised Information

All screens for selection and configuration of the Flex I/O adapter and modules have been updated. New buttons have been added to the screens for ease of movement between screens.

The “Set to Defaults” button has been changed to “Set to I/O Only.” This applies the real time values for I/O (optimal settings) to the module.

A “Memory” button has been added to the individual configuration screen for each module. If you change your mind about any settings you have made while you are on the configuration screen, clicking on the “Memory” button returns you to the original settings.

The “Save to Flex I/O” no longer both saves and exits you. You must click on the “Close” button to exit.

Change Bars

The areas in this manual which are different from previous editions are marked with change bars (as shown to the right of this paragraph) to indicate the addition of new or revised information.

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About This Manual

Purpose

Use this manual to install and configure your Flex I/O DeviceNet™ Adapter, cat. no. 1794-ADN Series B.

Audience

We assume that you have previously used an Allen-Bradley programmable controller, that you are familiar with its features, and that you are familiar with the terminology we use. If not, read the user manual for your processor before reading this manual.

In addition, you must be familiar with:

- DeviceNet Manager Software, cat. no. 1787-MGR
- Microsoft Windows™
- Flex I/O system components

Vocabulary

In this manual, we refer to:

- the individual DeviceNet adapter module as the “adapter.”
- the programmable controller as the “controller” or the “processor.”

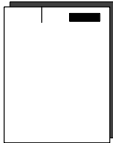

What This Manual Contains

The contents of this manual are as follows:

Chapter	Title	What's Covered
1	Overview of Flex I/O and Your DeviceNet Adapter	Describes features, capabilities, and hardware components.
2	How Communication Takes Place and I/O Mapping	Describes communication over the I/O backplane between the modules and the adapter, and how data is mapped into the image table.
3	Configuring Your DeviceNet Adapter Offline	Describes how to configure the adapter when in the offline mode.
4	Configuring Your DeviceNet Adapter Online	Describes how to configure the adapter when in the online mode.
5	Troubleshooting	Explains how to use the indicators for troubleshooting.
Appendix		
A	Specifications	Adapter specifications

Conventions

We use these conventions in this manual:

In this manual, we show:	Like this:
that there is more information about a topic in another chapter in this manual	
that there is more information about the topic in another manual	

Related Publications

For additional information on planning and installing your DeviceNet system, and Flex I/O modules, see the following publications:

Publication	Publication Number
DeviceNet Manager Software User Manual	1787-6.5.3
Scanner Configuration Manual (cat. no. 1771-SDN)	1771-6.5.118
Industrial Automation Wiring and Grounding Guidelines	1770-4.1
Flex I/O Product Data	1794-2.1
16 Source Output Module, Cat. No. 1794-OB16	1794-5.3
16 Sink Input Module, Cat. No. 1794-IB16	1794-5.4
4 Output Analog Module, Cat. No. 1794-OE4	1794-5.5
8 Input Analog Module, Cat. No. 1794-IE8	1794-5.6
8 Sensor Input Module, Cat. No. 1794-IB8S	1794-5.7
8 Input Module, Cat. No. 1794-IA8	1794-5.9
8 Output Module, Cat. No. 1794-OA8	1794-5.10
4 in/2 out Analog Combo Module, Cat. No. 1794-IE4XOE2	1794-5.15
8 Relay Output Module, Cat. No. 1794-OW8	1794-5.19
Thermocouple/mV Input Module, Cat. No. 1794-IT8	1794-5.21
10 Input/6 Output Module, Cat. No. 1794-IB10XOB6	1794-5.24
RTD 8 Input Analog Module, Cat. No. 1794-IR8	1794-5.22
SCANport Module, Cat. No. 1203-FM1	1203-5.8

Installing Your DeviceNet Adapter Module

Chapter Objectives

This chapter describes the FLEX I/O system, the DeviceNet Adapter and the procedures for installing your DeviceNet adapter module. These include:

- European Union Directives
- the FLEX I/O system
- power requirements
- mounting the remote I/O adapter
- setting the module switches
- connecting the wiring

Compliance to European Union Directives

If this product has the CE mark it is approved for installation within the European Union and EEA regions. It has been designed and tested to meet the following directives.

EMC Directive

This product is tested to meet Council Directive 89/336/EEC Electromagnetic Compatibility (EMC) and the following standards, in whole or in part, documented in a technical construction file:

- EN 50081-2EMC – Generic Emission Standard, Part 2 – Industrial Environment
- EN 50082-2EMC – Generic Immunity Standard, Part 2 – Industrial Environment

This product is intended for use in an industrial environment.

Low Voltage Directive

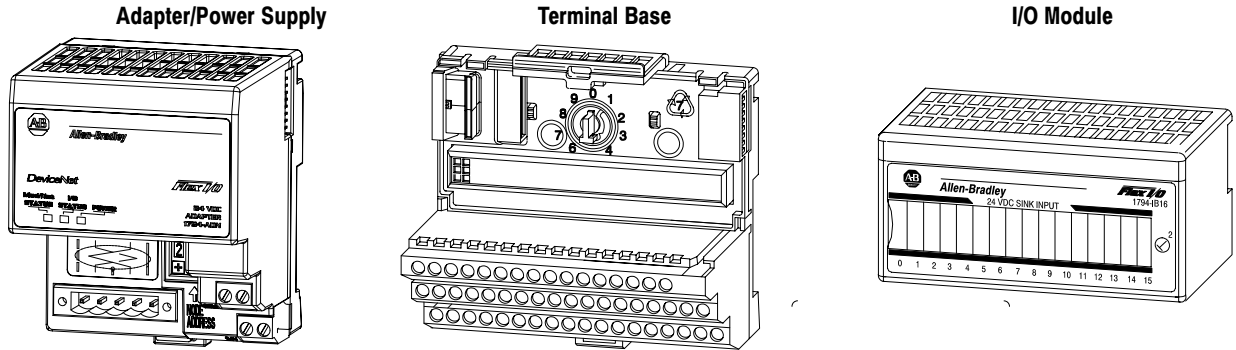
This product is tested to meet Council Directive 73/23/EEC Low Voltage, by applying the safety requirements of EN 61131-2 Programmable Controllers, Part 2 – Equipment Requirements and Tests.

For specific information required by EN 61131-2, see the appropriate sections in this publication, as well as the following Allen-Bradley publications:

- Industrial Automation Wiring and Grounding Guidelines For Noise Immunity, publication 1770-4.1
- Guidelines for Handling Lithium Batteries, publication AG-5.4
- Automation Systems Catalog, publication B111

The FLEX I/O System

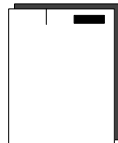
FLEX I/O is a small, modular I/O system for distributed applications that performs all of the functions of rack-based I/O. The FLEX I/O system contains the following components as shown below:



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- DeviceNet adapter/power supply – powers the internal logic for as many as eight I/O modules
- terminal base – contains a terminal strip to terminate wiring for two- or three-wire devices
- I/O module – contains the bus interface and circuitry needed to perform specific functions related to your application

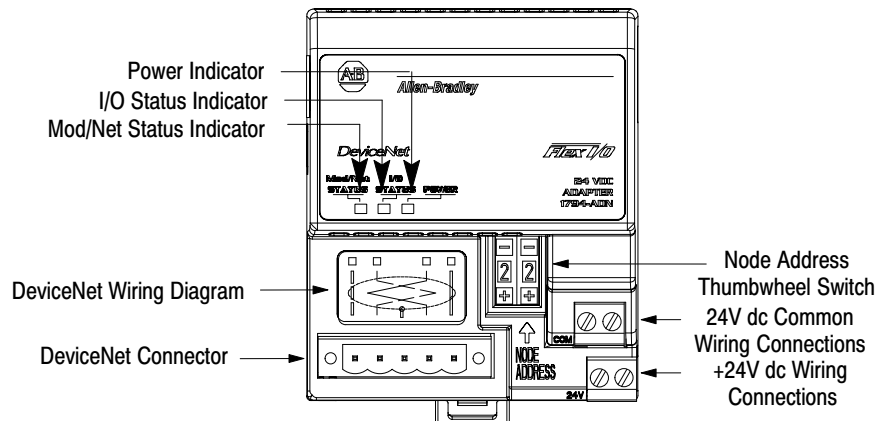
For information on how communication occurs on the Flex I/O system backplane, refer to Chapter 2.



DeviceNet Adapter Components

The adapter module consists of the following major components:

- diagnostic indicators
- DeviceNet wiring connections
- 24V dc power wiring connections
- Node address switch

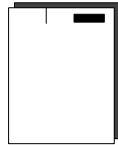


Diagnostic Indicators

Diagnostic indicators are located on the front panel of the adapter module. They show both normal operation and error conditions in your remote I/O system. The indicators are:

- Mod/Net status
- I/O status

A complete description of the diagnostic indicators and how to use them for troubleshooting is explained in Chapter 5.



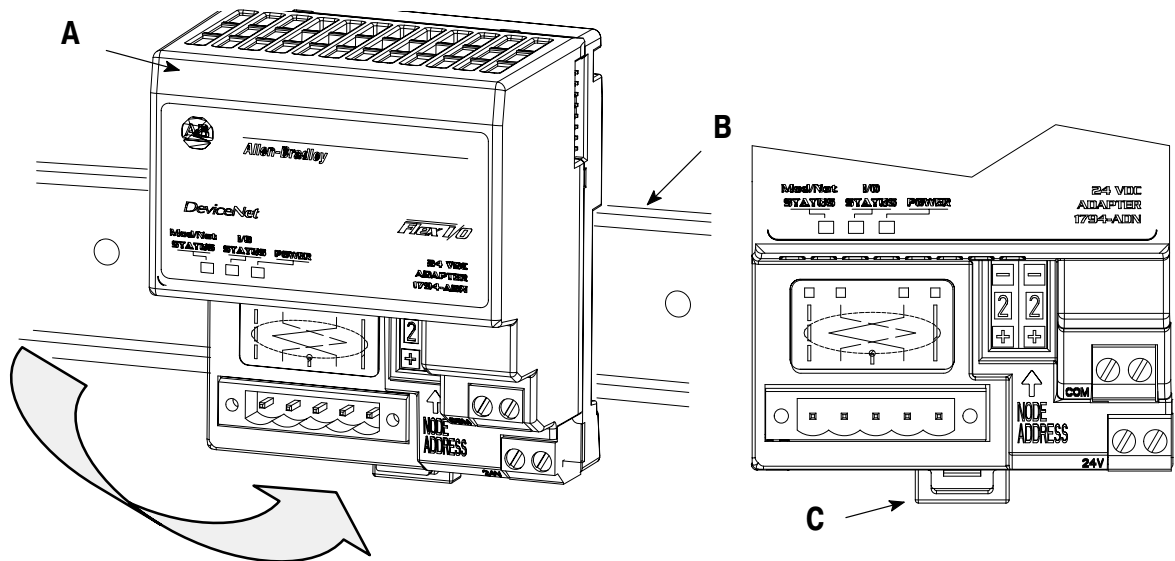
Power Requirements

The DeviceNet adapter module requires a current of 400mA at 24V dc from an external power supply for Flex bus operation. This is sufficient to support one logical rack (8 modules). Remember to add this amount to current requirements for other modules using the same 24V supply.

Mounting the DeviceNet Adapter

The DeviceNet adapter module can be DIN rail or wall/panel mounted. Refer to the specific method of mounting below.

Mounting on the DIN Rail



1. Position the adapter module **A** on a 35 x 7.5mm DIN rail **B** (A-B pt. no. 199-DR1; 46277-3; EN 50022) at a slight angle.
2. Rotate the adapter module onto the DIN rail with the top of the rail hooked under the lip on the rear of the adapter module.

3. Press the adapter module down onto the DIN rail until flush. Locking tab (C) will snap into position and lock the adapter module to the DIN rail.
4. If the adapter module does not lock in place, use a screwdriver or similar device to move the locking tab down while pressing the adapter module flush onto the DIN rail and release the locking tab to lock the adapter module in place. If necessary, push up on the locking tab to lock.
5. Connect the adapter wiring as shown under “Wiring” later in this document.



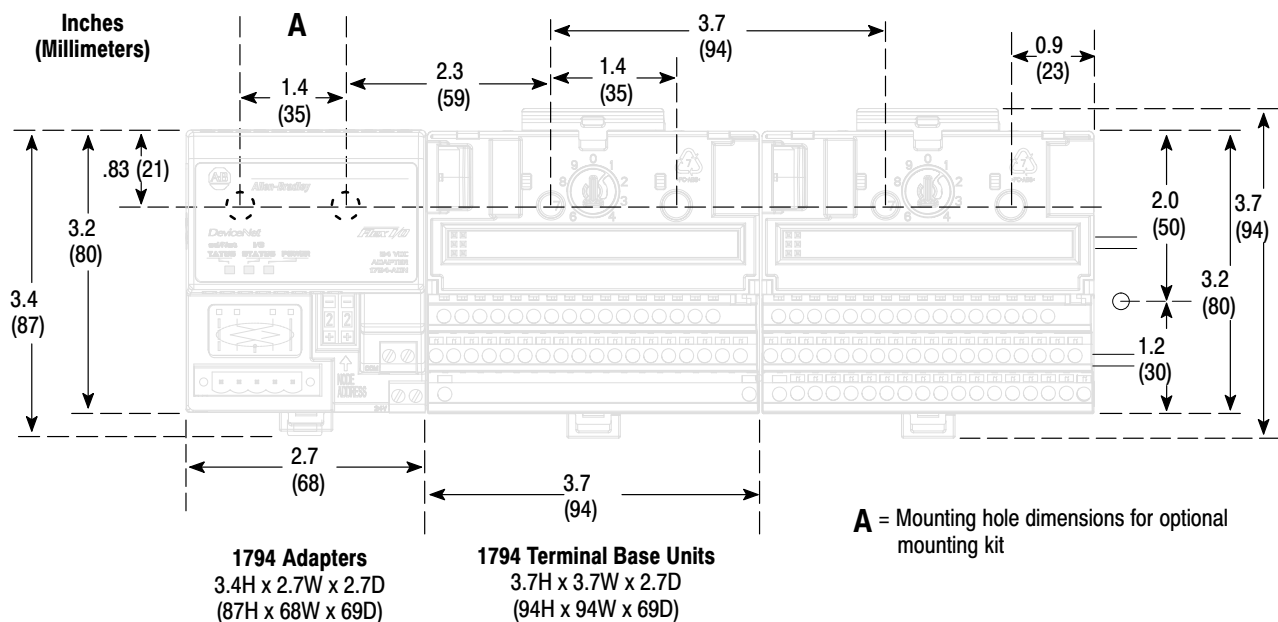
Important: Make certain that the DIN rail is properly grounded to the panel. Refer to “Industrial Automation Wiring and Grounding Guidelines,” publication 1770-4.1.

Mounting on a Wall or Panel

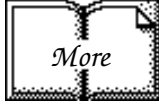
To mount the remote I/O adapter module on a wall or panel, you must have the 1794-NM1 mounting kit. The kit contains a special plate and screws necessary for wall/panel mounting. Proceed as follows:

Install the mounting plate on a wall or panel as follows:

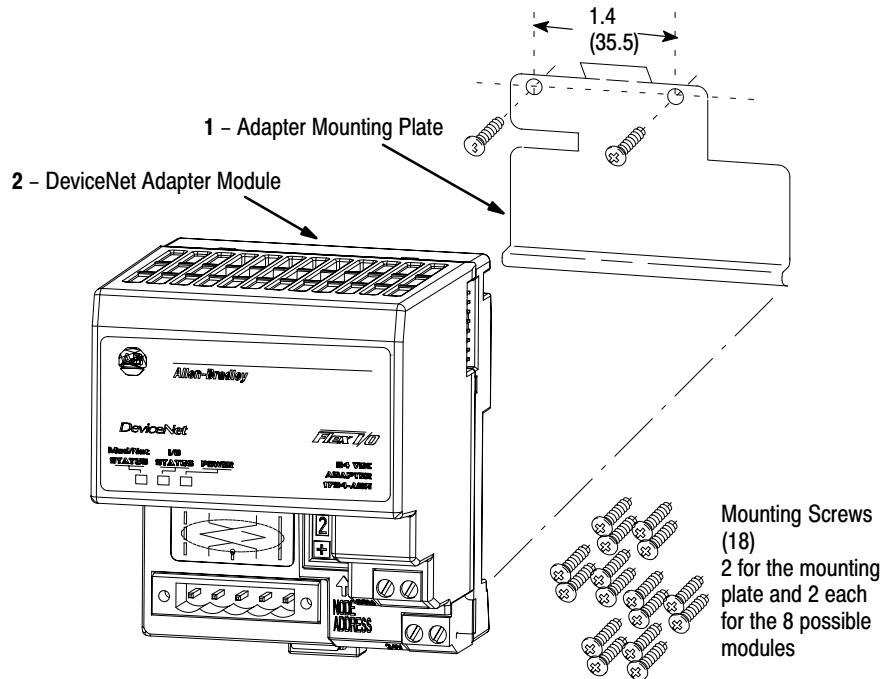
1. Lay out the required points on the wall/panel as shown in the drilling dimension drawing.



2. Drill the necessary holes for #6 self-tapping mounting screws.
3. Mount the mounting plate (1) for the adapter module using two #6 self-tapping screws (18 included).



Important: Make certain that the mounting plate is properly grounded to the panel. Refer to “Industrial Automation Wiring and Grounding Guidelines,” publication 1770-4.1.

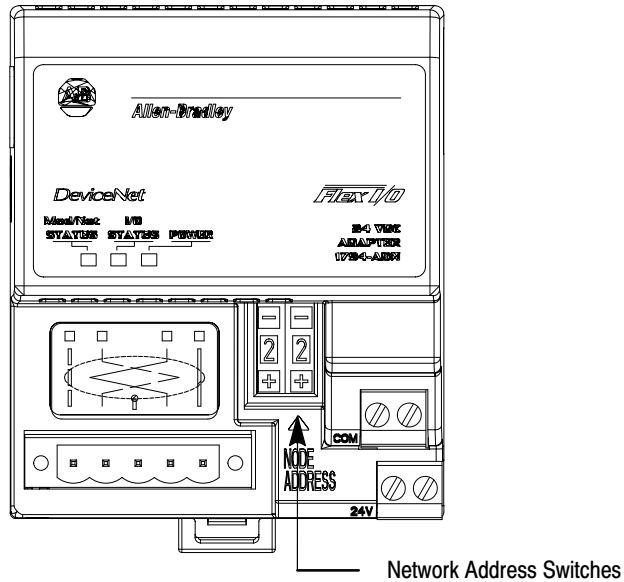


4. Hold the adapter (2) at an angle and engage the top of the mounting plate in the indentation on the rear of the adapter module.
5. Press the module down flush with the panel until the locking lever locks.
6. Position the termination base unit up against the adapter and push the female bus connector into the adapter.
7. Secure to the wall with two #6 self-tapping screws.
8. Repeat for each remaining terminal base unit.

Note: The adapter is capable of addressing eight modules. Do not exceed a maximum of eight terminal base units in your system.

Setting the Network Address Switch

Set the network address using the 2-position thumbwheel switch. Valid settings range from 00 to 63. Press either the + or – buttons to change the number.

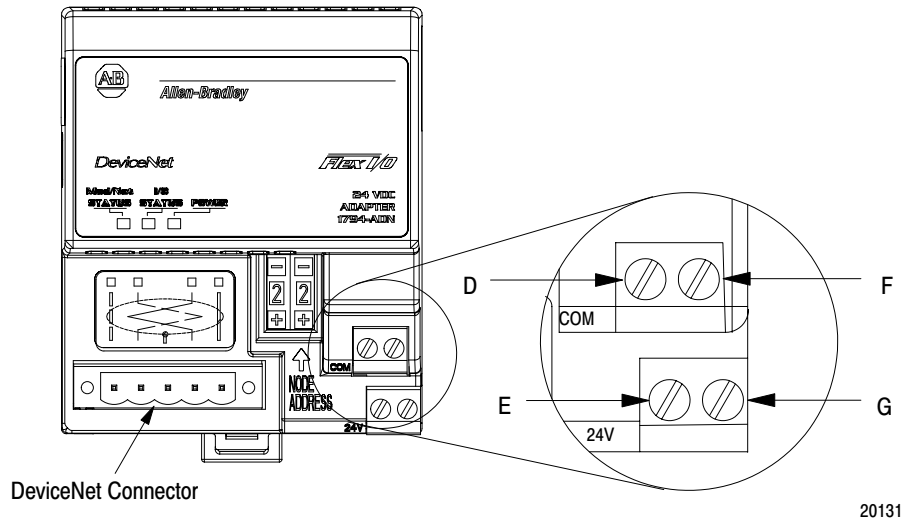


Note: The baud rate for the adapter is set by way of “baud detection” at power-up.

The setting of the network address cannot be changed using the DeviceNet configuration software (DeviceNet Manager).

Wiring

Connect external wiring to the DeviceNet adapter as shown below.



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1. Connect the DeviceNet cable to the removable connector as shown.

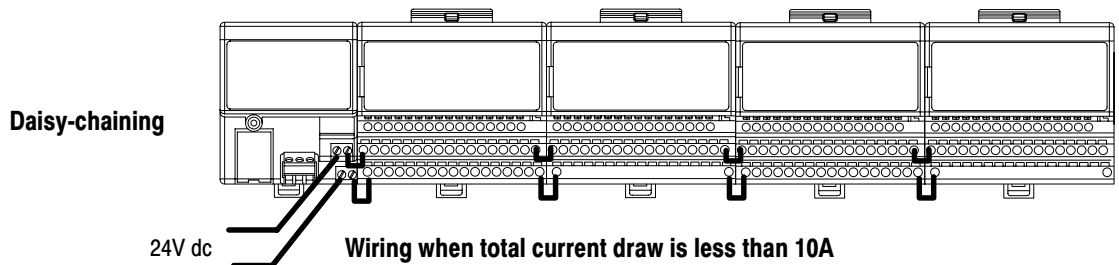
Connect	To
BLK Wire	-V
BLU Wire	CAN* Low
Bare Wire	Drain
WHT Wire	CAN High
RED Wire	+V

CAN = Controller Area Network

NOTE: Cable colors are shown on the wiring label on the front of the module.

2. Insert connector into mating connector on DeviceNet adapter module.
3. Connect +24V dc input to the left side of the lower connector **E**.
4. Connect 24V common to the left side of the upper connector **D**.
5. Connections **G** and **F** are used to pass 24V dc power (**G**) and 24V common (**F**) to the next module in the series (if required).

For example:



Chapter Summary

In this chapter you learned about the FLEX I/O system, how to install your DeviceNet adapter module and set your switches. Chapter 2 tells you how to communicate with your system.

How Communication Takes Place and I/O Image Table Mapping

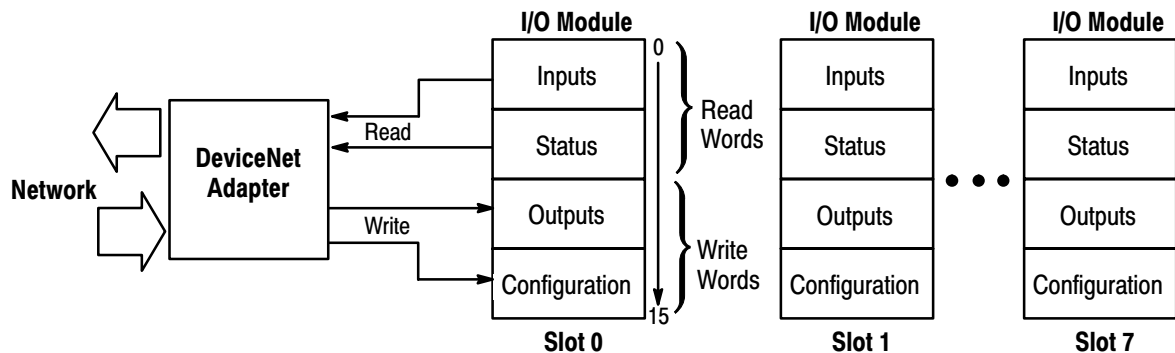
Chapter Objectives

In this chapter, you will learn about:

- communication over the Flex I/O backplane (between the DeviceNet adapter and the I/O modules)
- how data is mapped into the I/O image table

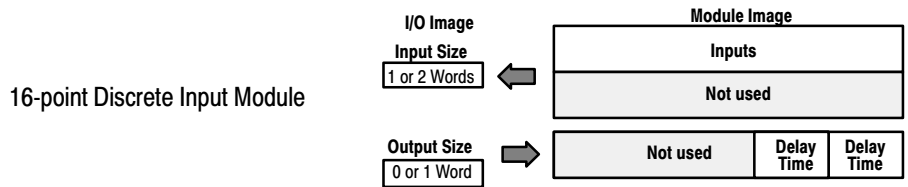
Communication Over the Flex I/O Backplane

One 1794-ADN DeviceNet adapter can interface with up to eight terminal base units with installed Flex I/O modules, forming a Flex I/O system of up to eight slots. The adapter communicates to other network system components (typically one or more controllers or scanners, and/or programming terminals) over the DeviceNet network. The adapter communicates with its I/O modules over the backplane.



The I/O map for a module is divided into read words and write words. Read words consist of input and status words, and write words consist of output and configuration words. The number of read words or write words can be 0 or more. The length of each I/O module's read words and write words vary in size depending on module complexity. Each I/O module will support at least 1 input word or 1 output word. Status and configuration are optional, depending on the module.

For example, a 16 point discrete input module will have up to 2 read words and 1 write word.

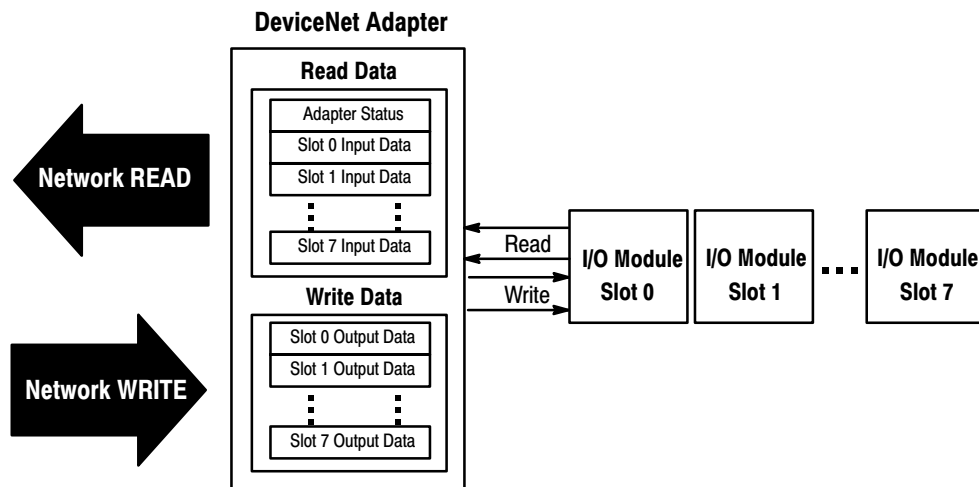


Check the I/O map for each module for the exact mapping.

I/O Structure

Output data is received by the adapter in the order of the installed I/O modules. The Output data for Slot 0 is received first, followed by the Output data for Slot 1, and so on up to slot 7.

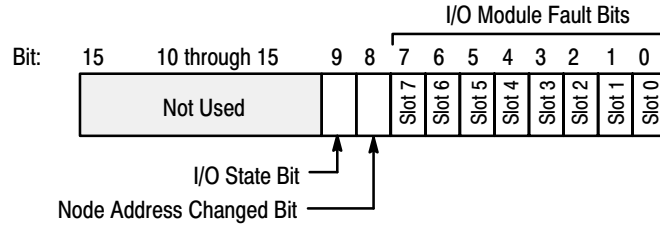
The first word of input data sent by the adapter is the Adapter Status Word. This is followed by the input data from each slot, in the order of the installed I/O modules. The Input data from Slot 0 is first after the status word, followed by Input data from Slot 2, and so on up to slot 7.



Adapter Input Status Word

The input status word consists of:

- I/O module fault bits – 1 status bit for each slot
- node address changed – 1 bit
- I/O status – 1 bit



The adapter input status word bit descriptions are shown in the following table.

Bit Description	Bit	Explanation
I/O Module Fault	0	This bit is set (1) when an error is detected in slot position 0.
	1	This bit is set (1) when an error is detected in slot position 1.
	2	This bit is set (1) when an error is detected in slot position 2.
	3	This bit is set (1) when an error is detected in slot position 3.
	4	This bit is set (1) when an error is detected in slot position 4.
	5	This bit is set (1) when an error is detected in slot position 5.
	6	This bit is set (1) when an error is detected in slot position 6.
	7	This bit is set (1) when an error is detected in slot position 7.
Node Address Changed	8	This bit is set (1) when the node address switch setting has been changed since power up.
I/O State	9	Bit = 0 - idle Bit = 1 - run
	10 thru 15	Not used - sent as zeroes.

Possible causes for an **I/O Module Fault** are:

- transmission errors on the Flex I/O backplane
- a failed module
- a module removed from its terminal base
- incorrect module inserted in a slot position
- the slot is empty

The **node address changed** bit is set when the node address switch setting has been changed since power up. The new node address does not take affect until the adapter has been powered down and then powered back up.

Communication Choices

The FLEX I/O DeviceNet adapter module supports multiple communication choices. These choices all use the default I/O structure previously described. The adapter master makes the actual communication choice. The choices are:

Polled – data is sent by the adapter in response to received data

Strobe – data is sent by the adapter in response to the strobe command. The single bit allocated to the adapter in the strobe message is not used. If the configured size of the input data (sent from the adapter) is greater than 8 bytes, the strobe connection establishment will fail. In this case, the input size must be reconfigured to 8 bytes or less.

Change of State – data is sent by the adapter based on detection of any changed value within the input data. Data is independently received based on change of state from the sender. Data in both directions can be acknowledged or unacknowledged depending on the run time configuration of the system.

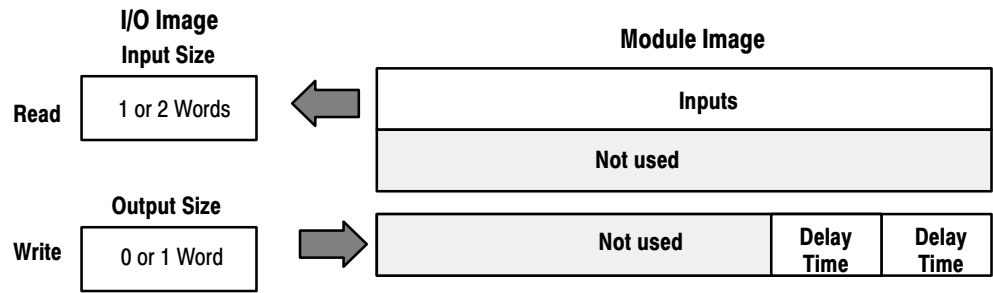
Cyclic – data is sent cyclically by the adapter based on a configured time value. Data is independently received cyclically from the sender. Data in both directions can be acknowledged or unacknowledged depending on the run time configuration of the system.

Mapping Data into the Image Table

All Flex I/O modules are supported by the DeviceNet adapter. At present, these consist of:

Module Description	Catalog Number:	For image table mapping refer to:
16 Sink Input Module	1794-IB16	page 2-5
16 Source Output Module	1794-OB16	page 2-6
10 Input/6 Output Module	1794-IB10XOB6	page 2-6
8 Electronically Fused Source Output Module	1794-OB8EP	page 2-7
8 Sensor Input Module	1794-IB8S	page 2-8
8 Input Module	1794-IA8	page 2-9
8 Output Module	1794-OA8	page 2-10
8 Relay Output Module	1794-OW8	page 2-10
8 Input Analog Module	1794-IE8	page 2-11
4 Output Analog Module	1794-OE4	page 2-13
4 in/2 out Analog Combo Module	1794-IE4XOE2	page 2-16
8 RTD Input Analog Module	1794-IR8	page 2-19
8 Thermocouple Input Module	1794-IT8	page 2-23
2 Channel SCANport Module	1203-FM1	page 2-27

16-point Discrete Input Module (1794-IB16) Image Table Mapping



Memory Map of 16-Point Discrete Input Module Image Table – 1794-IB16

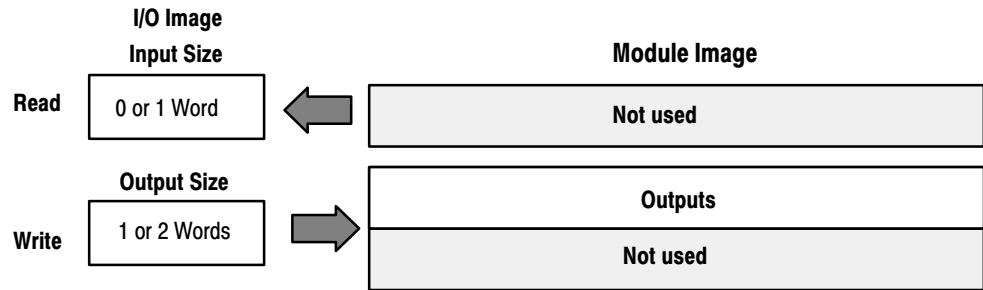
Decimal Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	Size
Octal Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	
	D15	D14	D13	D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	D0	Read Word 1
	Not used																Read Word 2
	Not used										DT 12-15			DT 00-11			Write Word 1

Where D = Input Data (D0 corresponds to input 0, D1 corresponds to input 1, etc.)
 DT = Input Delay Time (DT 00-11 corresponds to inputs 0 thru 11; DT 12-15 corresponds to inputs 12 thru 15)

Input Delay Times for the 1794-IB16 Input Module

Bits			Description	Selected Delay Time
02	01	00	Delay Time for Inputs 00-11	
05	04	03	Delay Time for Inputs 12-15	
0	0	0	Delay Time 0 (default)	512µs
0	0	1	Delay Time 1	1ms
0	1	0	Delay Time 2	2ms
0	1	1	Delay Time 3	4ms
1	0	0	Delay Time 4	8ms
1	0	1	Delay Time 5	16ms
1	1	0	Delay Time 6	32ms
1	1	1	Delay Time 7	64ms

16-point Discrete Output Module (1794-OB16) Image Table Mapping

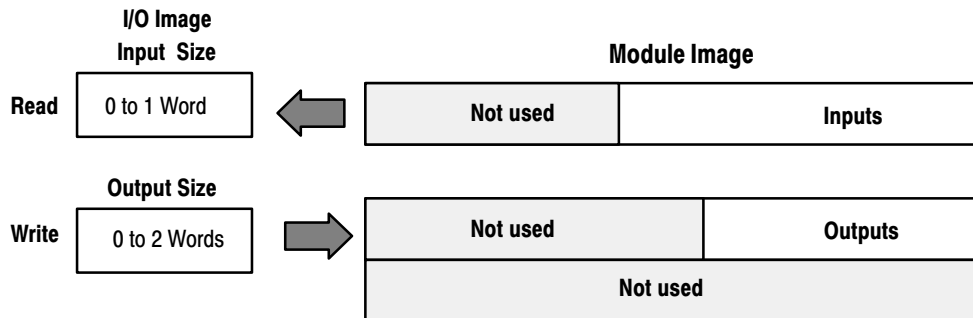


Memory Map of 16-Point Discrete Output Module Image Table – 1794-OB16

Dec. Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	Size
Oct. Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	
	Not used																Read Word 1
	O15	O14	O13	O12	O11	O10	09	08	07	06	05	04	03	02	01	00	Write Word 1
	Not used																Write Word 2

Where O = Output value (O0 corresponds to output 0, O1 corresponds to output 1, etc.)

16-point Discrete Input/Output Module Image Table Mapping – 1794-IB10XOB6

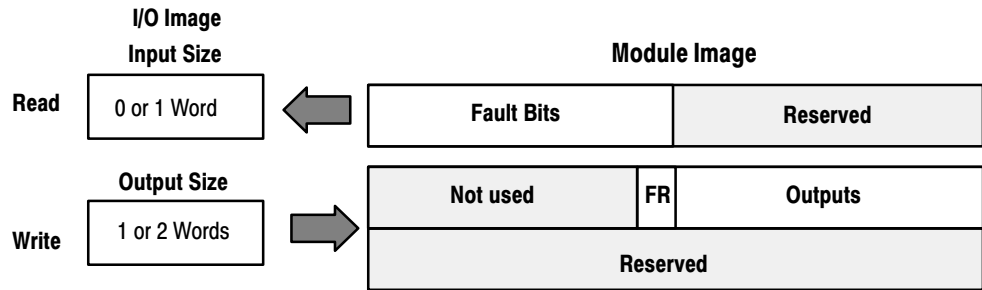


Memory Map of 16-Point Discrete Input/Output Module Image Table – 1794-IB10XOB6

Decimal Bits	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	Size
(Octal Bits)	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	
	Not used						I9	I8	I7	I6	I5	I4	I3	I2	I1	I0	Read Word 1
	Not used										O5	O4	O3	O2	O1	O0	Write Word 1
	Not used																Write Word 2

Where I = Input Channel
O = Output Channel

8-point Discrete Electronically Fused Output Module (1794-OB8EP) Image Table Mapping



Memory Map of 8-Point Discrete Electronically Fused Output Module Image Table – 1794-OB8EP

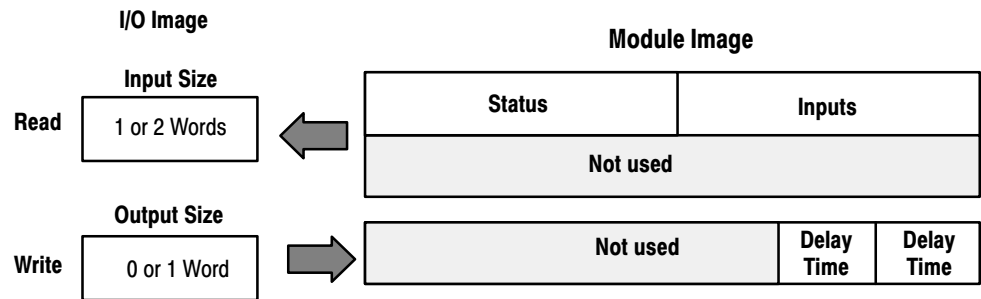
Dec. Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	Size
Oct. Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	
	F7	F6	F5	F4	F3	F2	F1	F0	Reserved								Read Word 1
	Not used							FR	O7	O6	O5	O4	O3	O2	O1	O0	Write Word 1
	Reserved																Write Word 2

Where O = Output value (O0 corresponds to output 0, O1 corresponds to output 1, etc.)

F□ = overload fault bit (1 = fault present; 0 = no fault). F0 corresponds to output 0, F1 corresponds to output 1, and so on.

FR = fault reset bit (1 = reset word; 0 = no change)

8-point Discrete Sensor Input Module (1794-IB8S) Image Table Mapping



Memory Map of 8-Point Discrete Sensor Input Module Image
Table – 1794-IB8S

Dec. Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	Size
Oct. Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	
	S7	S6	S5	S4	S3	S2	S1	S0	D7	D6	D5	D4	D3	D2	D1	D0	Read Word 1
	Not used																Read Word 2
	Not used										DT 12-15			DT 00-11			Write Word 1

Where S = Status of input (where S1 corresponds to the diagnostic bit for input 1, S2 corresponds to the diagnostic bit for input 2, etc.)

D = Input Data (where D0 corresponds to input 0, D1 corresponds to input 1, etc.)

DT = Input Delay Time (where DT 00-11 corresponds to inputs 0 thru 11; DT 12-15 corresponds to inputs 12 thru 15.)

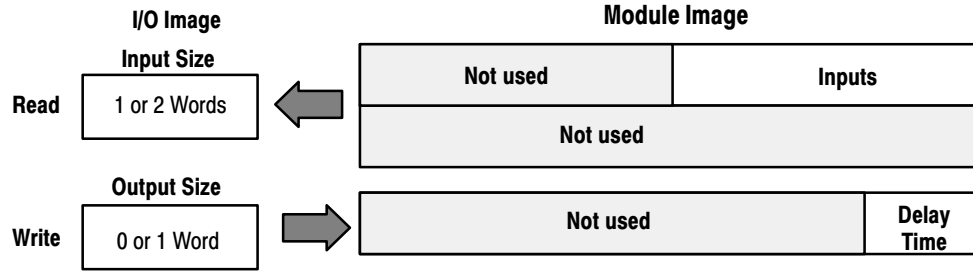
Make certain that the delay time for 00-11 is the same as the delay time for 12-15.

Smart Sensor				
Bits 08-15	S = Diagnostic data -	1 = Fault present (Smart) 0 = Normal (no errors)	Bits 00-07	D = Input data 1 = Sensor on 0 = Sensor off
Standard Sensor				
Bits 08-15	S = Diagnostic data -	1 = Diagnostics not disabled 0 = Normal (Disabled)	Bits 00-07	D = Input data 1 = Sensor on 0 = Sensor off

Input Delay Times for the 1794-IB8S Input Module

Bits			Description	Selected Delay Time
02	01	00	Delay Time for Inputs 00-11	
05	04	03	Delay Time for Inputs 12-15	
0	0	0	Delay Time 0 (default)	512µs
0	0	1	Delay Time 1	1ms
0	1	0	Delay Time 2	2ms
0	1	1	Delay Time 3	4ms
1	0	0	Delay Time 4	8ms
1	0	1	Delay Time 5	16ms
1	1	0	Delay Time 6	32ms
1	1	1	Delay Time 7	64ms

8-point Discrete Input Module (1794-IA8) Image Table Mapping



Memory Map of 8-point Discrete Input Module Image Table – 1794-IA8

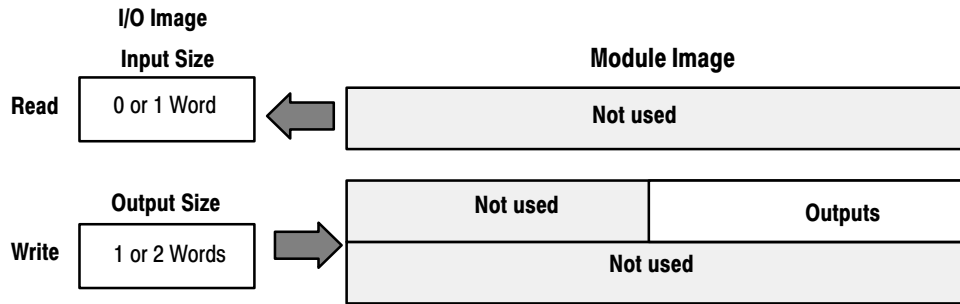
Dec. Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	Size
Oct. Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	
	Not used								D7	D6	D5	D4	D3	D2	D1	D0	Read Word 1
	Not used																Read Word 2
	Not used												DT 00-07				Write Word 1

Where D = Input Data (where D0 corresponds to input 0, D1 corresponds to input 1, etc.
 DT = Input Delay Time (where DT 00-07 corresponds to inputs 0 thru 7)

Input Delay Times for the 1794-IA8 Input Module

Bits			Description	Maximum Delay Time	
02	01	00	Delay Time for Inputs 00-07	Off to On	On to Off
0	0	0	Delay Time 0 (default)	8.6ms	26.6ms
0	0	1	Delay Time 1	9ms	27ms
0	1	0	Delay Time 2	10ms	28ms
0	1	1	Delay Time 3	12ms	30ms
1	0	0	Delay Time 4	17ms	35ms
1	0	1	Delay Time 5	26ms	44ms
1	1	0	Delay Time 6	43ms	61ms
1	1	1	Delay Time 7	78ms	96ms

8-point Discrete Output Module (1794-OA8) Image Table Mapping

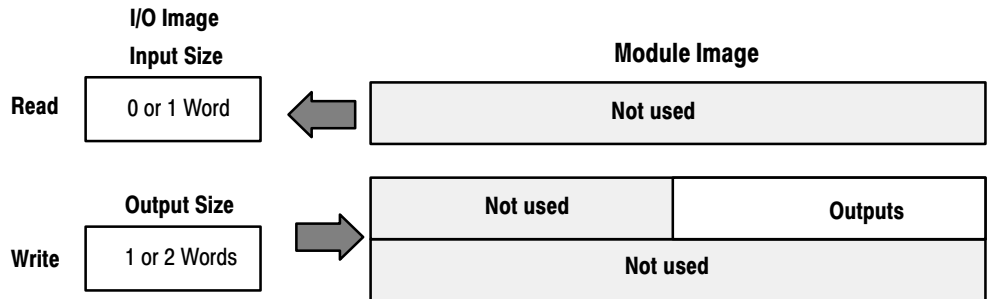


Memory Map of 8-point Discrete Output Module Image Table – 1794-OA8

Dec. Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	Size
Oct. Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	
	Not used																Read Word 1
	Not used								07	06	05	04	03	02	01	00	Write Word 1
	Not used																Write Word 2

Where O = Output value (where O0 corresponds to output 0, O1 corresponds to output 1, etc.)

8-point Discrete Relay Output Module (1794-OW8) Image Table Mapping

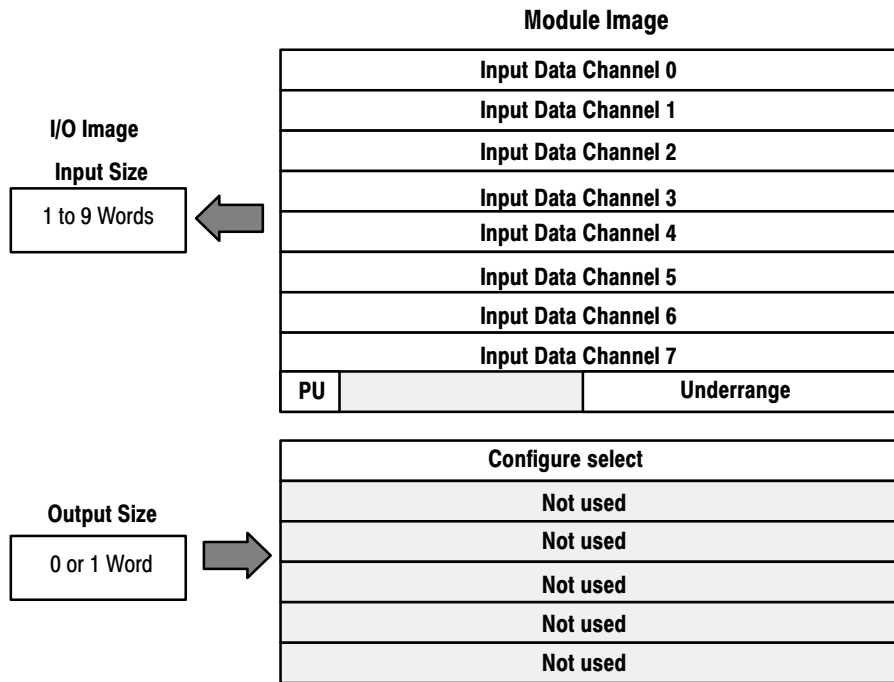


Memory Map of 8-Point Discrete Relay Output Image Table – 1794-OW8

Dec. Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	Size
Oct. Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	
	Not used																Read Word 1
	Not used								07	06	05	04	03	02	01	00	Write Word 1
	Not used																Write Word 2

Where O = Output value: where O0 corresponds to output 0, O1 corresponds to output 1, etc., and when bit = 0, the output is off; when bit = 1, the output is on.

8 Input Analog Module (Cat. No. 1794-IE8) Image Table Mapping



Memory Map of Analog Input Module Image Table – 1794-IE8

Dec. Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	Size
Oct. Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	
	S	Analog Value Channel 0															Read Word 1
	S	Analog Value Channel 1															Read Word 2
	S	Analog Value Channel 2															Read Word 3
	S	Analog Value Channel 3															Read Word 4
	S	Analog Value Channel 4															Read Word 5
	S	Analog Value Channel 5															Read Word 6
	S	Analog Value Channel 6															Read Word 7
	S	Analog Value Channel 7															Read Word 8
	PU	Not used – set to zero							U7	U6	U5	U4	U3	U2	U1	U0	Read Word 9
	C7	C6	C5	C4	C3	C2	C1	C0	F7	F6	F5	F4	F3	F2	F1	F0	Write Word 1
	Not used – set to 0																Write Word 2 thru 6

Where: PU = Power up bit – included in series B modules only.
 U = Underrange bits for 4-20mA inputs
 C = Configure select bit
 F = Full range bit
 S = sign bit (in 2's complement)

Range Selection Bits for the 1794-IE8 Analog Input Module

Channel No.	Channel 0		Channel 1		Channel 2		Channel 3		Channel 4		Channel 5		Channel 6		Channel 7	
	F0	C0	F1	C1	F2	C2	F3	C3	F4	C4	F5	C5	F6	C6	F7	C7
Decimal Bit	00	08	01	09	02	10	03	11	04	12	05	13	06	14	07	15
0-10V dc/0-20mA	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
4-20mA	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
-10 to +10V dc	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Off ¹	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

C = Configure select bit

F = Full range bit

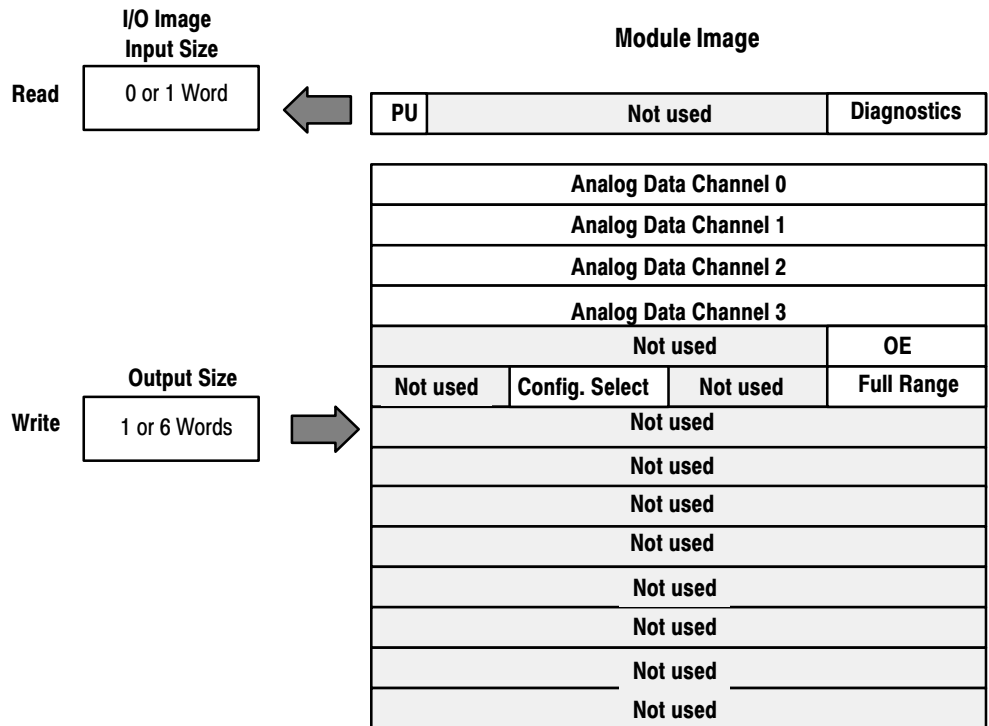
¹ When configured to off, individual channels will return 0000H.

Word/Bit Descriptions for the 1794-IE8 Analog Input Module Write

Word	Decimal Bit	Definition
Read Word 1	Bits 00-14	Channel 0 analog data - 12-bit left justified two's complement number; unused lower bits are zero; 4-20mA uses all 16 bits.
	Bits 15	Channel 0 analog data sign bit.
Read Word 2	Bits 00-14	Channel 1 analog data - 12-bit left justified two's complement number; unused lower bits are zero; 4-20mA uses all 16 bits.
	Bits 15	Channel 1 analog data sign bit.
Read Word 3	Bits 00-14	Channel 2 analog data - 12-bit left justified two's complement number; unused lower bits are zero; 4-20mA uses all 16 bits.
	Bits 15	Channel 2 analog data sign bit.
Read Word 4	Bits 00-14	Channel 3 analog data - 12-bit left justified two's complement number; unused lower bits are zero; 4-20mA uses all 16 bits.
	Bits 15	Channel 3 analog data sign bit.
Read Word 5	Bits 00-14	Channel 4 analog data - 12-bit left justified two's complement number; unused lower bits are zero; 4-20mA uses all 16 bits.
	Bits 15	Channel 4 analog data sign bit.
Read Word 6	Bits 00-14	Channel 5 analog data - 12-bit left justified two's complement number; unused lower bits are zero; 4-20mA uses all 16 bits.
	Bits 15	Channel 5 analog data sign bit.
Read Word 7	Bits 00-14	Channel 6 analog data - 12-bit left justified two's complement number; unused lower bits are zero; 4-20mA uses all 16 bits.
	Bits 15	Channel 6 analog data sign bit.
Read Word 8	Bits 00-14	Channel 7 analog data - 12-bit left justified two's complement number; unused lower bits are zero; 4-20mA uses all 16 bits.
	Bits 15	Channel 7 analog data sign bit.

Word	Decimal Bit	Definition
Read Word 9	Bits 00-07	Underrange bits (U) for individual channels (4-20mA current input only)- Bit 00 corresponds to input channel 0, bit 01 corresponds to input channel 1, and so on. When set (1), indicates either a broken or open input wire, or input current below 4-20mA.
	Bits 08-14	Not used - set to 0.
	Bit 15	Power Up bit - included in series B modules only. This bit is 0 in series A modules. This bit is set to 1 when all bits in the configuration register are 0 (unconfigured state). The configuration register can be cleared by either of the reset inputs, or by the user writing all zeroes to it.
Write Word 1	Bits 00-07	Full range bits (F) for individual channels - Bit 00 corresponds to input channel 0, bit 01 corresponds to input channel 1, and so on. Refer to range selection above.
	Bits 08-15	Configure select bits (C) for individual channels - Bit 08 corresponds to input channel 0, bit 09 corresponds to input channel 1, and so on. Refer to range selection above.
Write Word 2	Bits 00-15	Not used - set to 0.
Write Word 3	Bits 00-15	Not used - set to 0.
Write Word 4	Bits 00-15	Not used - set to 0.
Write Word 5	Bits 00-15	Not used - set to 0.
Write Word 6	Bits 00-15	Not used - set to 0.

4 Output Analog Module (1794-OE4) Image Table Mapping



Memory Map of Analog Output Module Image Table – 1794-OE4

Dec. Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	Size
Oct. Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	
	PU	Not used – set to 0											W3	W2	W1	W0	Read Word 1
	S	Analog Data – Channel 0														Write Word 1	
	S	Analog Data – Channel 1														Write Word 2	
	S	Analog Data – Channel 2														Write Word 3	
	S	Analog Data – Channel 3														Write Word 4	
	Not used – set to 0												OE3	OE2	OE1	OE0	Write Word 5
	Not used – set to 0			C3	C2	C1	C0	Not used – set to 0				F3	F2	F1	F0	Write Word 6	
	Not used – set to 0															Write Words 7 thru 14	

Where: PU = Power up bit – included in series B modules only.

W = Diagnostic bits for current output wire broken or load resistance high. (Not used on voltage outputs.)

S = Sign bit (in 2's complement)

OE = Output enable bits (bit 00 corresponds to output 0, bit 01 corresponds to output 1 and so on. **ATTENTION: These bits must be set to 1.**

C = Configure select bit

F = Full range bit

Range Selection Bits for the 1794-OE4 Analog Output Module (Write Word 6)

Channel No.	Channel 0		Channel 1		Channel 2		Channel 3	
	F0	C0	F1	C1	F2	C2	F3	C3
Decimal Bit	00	08	01	09	02	10	03	11
4–20mA	0	1	0	1	0	1	0	1
0–10V dc/0–20mA	1	0	1	0	1	0	1	0
-10 to +10V dc	1	1	1	1	1	1	1	1
Off ¹	0	0	0	0	0	0	0	0

C = Configure select bit

F = Full range bit

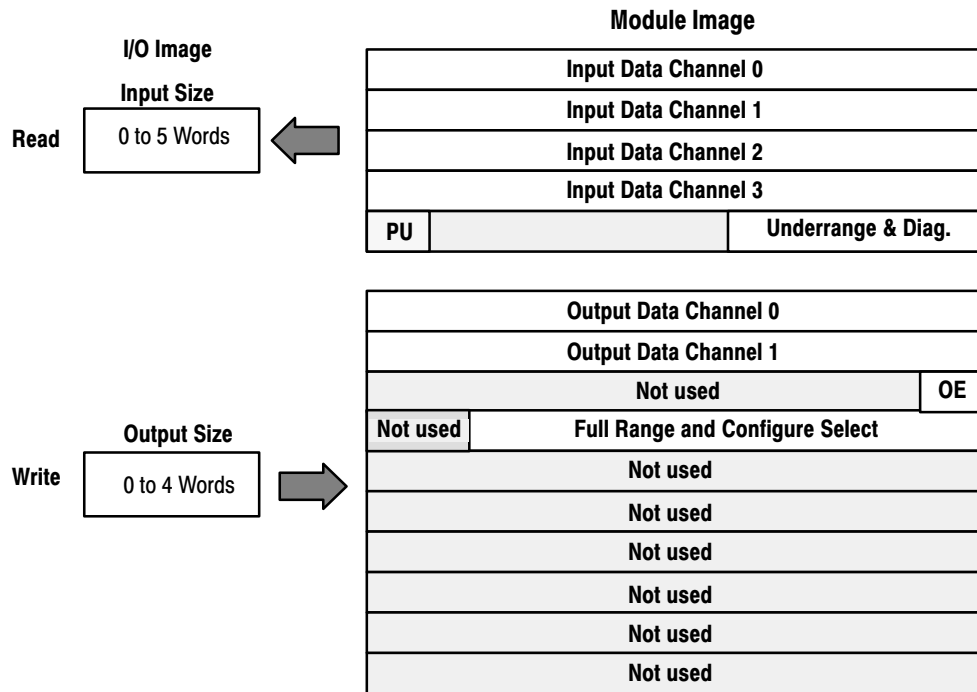
¹ When configured to off, individual channels will return 0V.

Word/Bit Descriptions for the 1794-OE4 Analog Output Module

Word	Decimal Bit	Definition
Read Word 1	Bits 00-03	Current outputs only – When set (1), the wire on the output is broken or the load resistance is too high. Bit 00 corresponds to channel 0, bit 01 corresponds to channel 2, and so on.
	Bits 04-14	Not used – set to 0.
	Bit 15	Power Up bit – included in series B modules only. This bit is 0 in series A modules. This bit is set to 1 when all bits in the configuration register are 0 (unconfigured state). The configuration register can be cleared by either of the reset inputs, or by the user writing all zeroes to it.

Word	Decimal Bit	Definition
Write Word 1	Bits 00-14	Channel 0 analog data – 12-bit left justified two's complement number; unused lower bits are zero; 4-20mA uses all 16 bits.
	Bits 15	Channel 0 analog data sign bit.
Write Word 2	Bits 00-14	Channel 1 analog data – 12-bit left justified two's complement number; unused lower bits are zero; 4-20mA uses all 16 bits.
	Bits 15	Channel 1 analog data sign bit.
Write Word 3	Bits 00-14	Channel 2 analog data – 12-bit left justified two's complement number; unused lower bits are zero; 4-20mA uses all 16 bits.
	Bits 15	Channel 2 analog data sign bit.
Write Word 4	Bits 00-14	Channel 3 analog data – 12-bit left justified two's complement number; unused lower bits are zero; 4-20mA uses all 16 bits.
	Bits 15	Channel 3 analog data sign bit.
Write Word 5	Bits 00-03	Output Enable bits. Bit 00 corresponds to input 0, bit 01 corresponds to input 1, bit 02 corresponds to input 2, and bit 03 corresponds to input 3. These bits must be set to 1.
	Bits 04-15	Not used – set to 0.
Write Word 6	Bits 00-03	Full range bits (F) for individual channels – Bit 00 corresponds to output channel 0, bit 01 corresponds to output channel 1, and so on. Refer to range selection above.
	Bits 04-07	Not used – set to 0.
	Bits 08-11	Configure select bits (C) for individual channels – Bit 08 corresponds to output channel 0, bit 09 corresponds to output channel 1, and so on. Refer to range selection above.
	Bits 12-15	Not used – set to 0.
Write Word 7	Bits 00-15	Not used – set to 0.
Write Word 8	Bits 00-15	Not used – set to 0.
Write Word 9	Bits 00-15	Not used – set to 0.
Write Word 10	Bits 00-15	Not used – set to 0.
Write Word 11	Bits 00-15	Not used – set to 0.
Write Word 12	Bits 00-15	Not used – set to 0.
Write Word 13	Bits 00-15	Not used – set to 0.
Write Word 14	Bits 00-15	Not used – set to 0.

Analog Combo Module (1794-IE4XOE2) Image Table Mapping



Memory Map of Analog Combo Module Image Table – 1794-IE4XOE2

Dec. Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	Size
Oct. Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	
	S	Analog Value Input Channel 0															Read Word 1
	S	Analog Value Input Channel 1															Read Word 2
	S	Analog Value Input Channel 2															Read Word 3
	S	Analog Value Input Channel 3															Read Word 4
	PU	Not used - set to 0									W1	W0	U3	U2	U1	U0	Read Word 5
	S	Analog Data - Output Channel 0															Write Word 1
	S	Analog Data - Output Channel 1															Write Word 2
		Not used - set to 0													OE1	OE0	Write Word 3
		Not used	C5	C4	C3	C2	C1	C0	0	0	F5	F4	F3	F2	F1	F0	Write Word 4
		Not used - set to 0															Write Word 5 thru 10

Where: PU = Power up bit - included in series B modules only.

W = Diagnostic bits for current output wire broken or load resistance high. (Not used on voltage outputs.)

U = Underrange bits for 4-20mA inputs

OE = Output enable bits (bit 00 corresponds to output 0, bit 01 corresponds to output 1). **ATTENTION: These bits must be set to 1.**

S = Sign bit (in 2's complement)

C = Configure select bit

F = Full range bit

Range Selection Bits for the 1794-IE4XOE2 Analog Combo Module

Channel No.	Input Channel 0		Input Channel 1		Input Channel 2		Input Channel 3		Output Channel 0		Output Channel 1	
	F0	C0	F1	C1	F2	C2	F3	C3	F4	C4	F5	C5
Decimal Bit	00	08	01	09	02	10	03	11	04	12	05	13
4-20mA	0	1	0	1	0	1	0	1	0	1	0	1
0-10V dc/0-20mA	1	0	1	0	1	0	1	0	1	0	1	0
-10 to +10V dc	1	1	1	1	1	1	1	1	1	1	1	1
Off ¹	0	0	0	0	0	0	0	0	0	0	0	0

C = Configure select bit

F = Full range bit

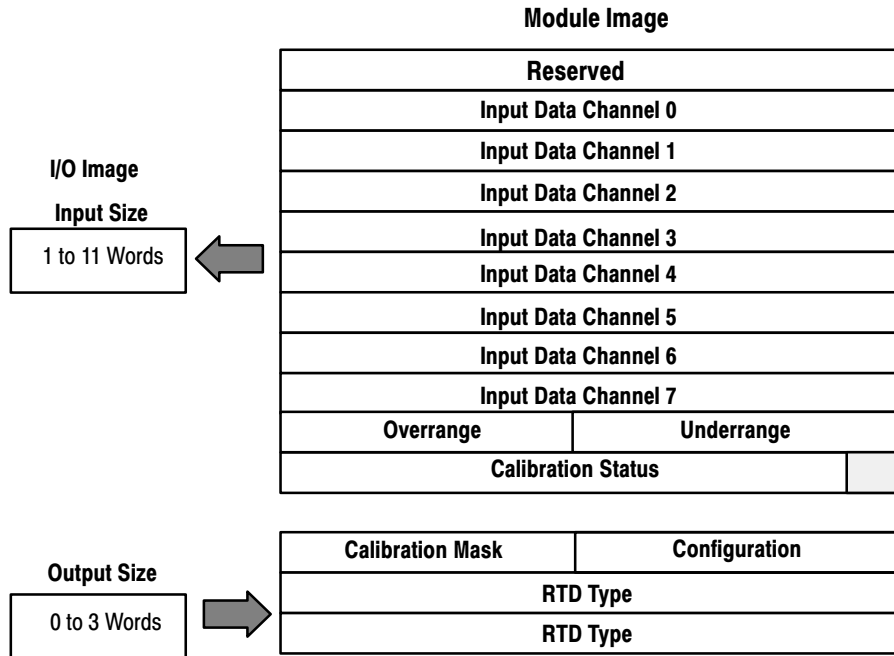
¹ When configured to off, individual channels will return either 0V or 0mA.

Word/Bit Descriptions for the 1794-IE4XOE2 Analog Combo Module

Word	Decimal Bit	Definition
Read Word 1	Bits 00-14	Channel 0 analog data - 12-bit left justified two's complement number; unused lower bits are zero; 4-20mA uses all 16 bits.
	Bits 15	Channel 0 analog data sign bit.
Read Word 2	Bits 00-14	Channel 1 analog data - 12-bit left justified two's complement number; unused lower bits are zero; 4-20mA uses all 16 bits.
	Bits 15	Channel 1 analog data sign bit.
Read Word 3	Bits 00-14	Channel 2 analog data - 12-bit left justified two's complement number; unused lower bits are zero; 4-20mA uses all 16 bits.
	Bits 15	Channel 2 analog data sign bit.
Read Word 4	Bits 00-14	Channel 3 analog data - 12-bit left justified two's complement number; unused lower bits are zero; 4-20mA uses all 16 bits.
	Bits 15	Channel 3 analog data sign bit.
Read Word 5	Bits 00-03	Underrange bits (U) for individual channels (4-20mA current inputs only) - Bit 00 corresponds to input channel 0, bit 01 corresponds to input channel 1, and so on.
	Bits 04-05	Wire Off bits (W) - Current outputs only - When set (1), the wire on the current output is broken or the load resistance is too high. Bit 00 corresponds to channel 0, bit 01 corresponds to channel 2, and so on.
	Bits 06-14	Not used - set to 0.
	Bit 15	Power Up bit - included in series B modules only. This bit is 0 in series A modules. This bit is set to 1 when all bits in the configuration register are 0 (unconfigured state). The configuration register can be cleared by either of the reset inputs, or by the user writing all zeroes to it.
Write Word 1	Bits 00-14	Channel 0 analog data - 12-bit left justified two's complement number; unused lower bits are zero; 4-20mA uses all 16 bits.
	Bits 15	Channel 0 analog data sign bit.

Word	Decimal Bit	Definition
Write Word 2	Bits 00-14	Channel 1 analog data - 12-bit left justified two's complement number; unused lower bits are zero; 4-20mA uses all 16 bits.
	Bits 15	Channel 1 analog data sign bit.
Write Word 3	Bits 00-01	Output Enable bits. Bit 00 corresponds to output 0, bit 01 corresponds to output 1. These bits must be set to 1.
	Bits 02-15	Not used - set to 0.
Write Word 4	Bits 00-05	Full range bits (F) for individual channels - Bit 00 corresponds to input channel 0, bit 01 corresponds to input channel 1, bit 02 corresponds to input channel 3, bit 03 corresponds to input channel 3, bit 04 corresponds to output channel 1, and bit 05 corresponds to output channel 2. Refer to range selection above.
	Bits 06-07	Not used - set to 0.
	Bits 08-13	Configure select bits (C) for individual channels - Bit 08 corresponds to input channel 0, bit 09 (11) corresponds to input channel 1, bit 10 (12) corresponds to input channel 2, bit 11 (13) corresponds to input channel 3, bit 12 (14) corresponds to output channel 0, and bit 13 (15) corresponds to output channel 1. Refer to range selection above.
	Bits 14-15	Not used - set to 0.
Write Word 5	Bits 00-15	Not used - set to 0.
Write Word 6	Bits 00-15	Not used - set to 0.
Write Word 7	Bits 00-15	Not used - set to 0.
Write Word 8	Bits 00-15	Not used - set to 0.
Write Word 9	Bits 00-15	Not used - set to 0.
Write Word 10	Bits 00-15	Not used - set to 0.

RTD Input Analog Module (1794-IR8) Image Table Mapping



RTD Analog Input Module (1794-IR8) Read

Dec. Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Oct. Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00
Read Word 1	Reserved															
Read Word 2	Channel 0 Input Data															
Read Word 3	Channel 1 Input Data															
Read Word 4	Channel 2 Input Data															
Read Word 5	Channel 3 Input Data															
Read Word 6	Channel 4 Input Data															
Read Word 7	Channel 5 Input Data															
Read Word 8	Channel 6 Input Data															
Read Word 9	Channel 7 Input Data															
Read Word 10	Overrange Bits								Underrange Bits							
Read Word 11	0	0	0	0	0	Bad Cal	Cal Done	Cal Range	0	Diagnostic Status Bits			Pwr Up	0	0	0

RTD Analog Input Module (1794-IR8) Write

Dec. Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Oct. Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00
Write Word 1	8-bit Calibration Mask								Cal Clk	Cal Hi Cal Lo	Filter Cutoff			Enh	MDT	
Write Word 2	RTD 3 Type				RTD 2 Type				RTD 1 Type			RTD 0 Type				
Write Word 3	RTD 7 Type				RTD 6 Type				RTD 5 Type			RTD 4 Type				

Where: Enh = Enhanced
MDT = Module Data Type

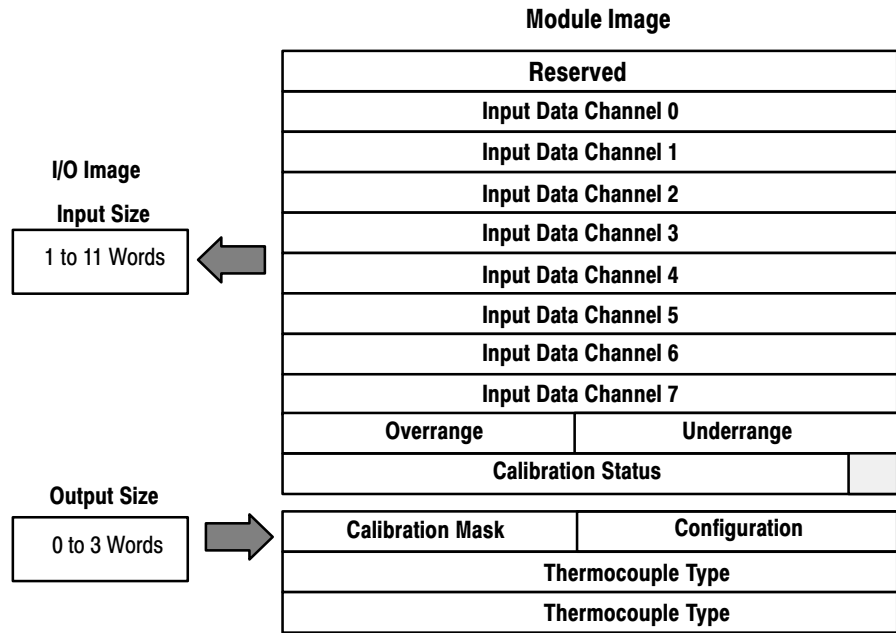
Word/Bit Descriptions for the 1794-IR8 RTD Analog Input Module

Word	Dec. Bits (Octal Bits)	Description
Read Word 1	00-15 (00-17)	Reserved
Read Word 2	00-15 (00-17)	Channel 0 Input data
Read Word 3	00-15 (00-17)	Channel 1 Input data
Read Word 4	00-15 (00-17)	Channel 2 Input data
Read Word 5	00-15 (00-17)	Channel 3 Input data
Read Word 6	00-15 (00-17)	Channel 4 Input data
Read Word 7	00-15 (00-17)	Channel 5 Input data
Read Word 8	00-15 (00-17)	Channel 6 Input data
Read Word 9	00-15 (00-17)	Channel 7 Input data
Read Word 10	00-07	Underrange bits - these bits are set if the input signal is below the input channel's minimum range.
	08-15 (10-17)	Overrange bits - these bits are set if 1), the input signal is above the input channel's maximum range, or 2), an open detector is detected.
Read Word 11	00-01	Not used - set to 0
	02	Reserved
	03	Powerup bit - this bit is set (1) until configuration data is received by the module.
	04-06	Critical Error bits - If these bits are anything other than all zeroes, return the module to the factory for repair
	07	Unused - set to 0
	08 (10)	Calibration Range bit - set to 1 if a reference signal is out of range during calibration
	09 (11)	Calibration Done bit - set to 1 after an initiated calibration cycle is complete.
	10 (12)	Calibration Bad bit - set to 1 if the channel has not had a valid calibration.
11-15 (13-17)	Unused - set to 0	

Word	Dec. Bits (Octal Bits)	Description				
Write word 1	00-01	Module Data Type				
	Bit	01	00			
		0	0	°C (default)		
		0	1	°F		
		1	0	Bipolar counts scaled between -32768 and +32767		
		1	1	Unipolar counts scaled between 0 and 65535		
	02	Enhanced mode select – measures voltage drop across a precision resistor in the module to compare with the unknown input.				
	03-05	A/D Filter First Notch Frequency				
		Bit	05	04	03	Definition
			0	0	0	10Hz (default)
			0	0	1	25Hz
			0	1	0	50Hz
			0	1	1	60Hz
			1	0	0	100Hz
			1	0	1	250Hz
			1	1	0	500Hz
			1	1	1	1000hZ
	06	Calibration High/Low bit – This bit is set during gain calibration; reset during offset calibration.				
	07	Calibration clock – this bit must be set to 1 to prepare for a calibration cycle; then reset to 0 to initiate calibration.				
	08-15	Calibration mask – The channel, or channels, to be calibrated will have the correct mask bit set. Bit 0 corresponds to channel 0, bit 1 to channel 1, and so on.				

Word	Dec. Bits (Octal Bits)	Description					
Write Word 2	00-03	Channel 0 RTD Type					
		Bit	03	02	01	00	RTD Type - Range
			0	0	0	0	Resistance (default)
			0	0	0	1	No sensor connected - do not scan
			0	0	1	0	100 ohm Pt $\alpha = 0.00385$ Euro (-200 to +870°C)
			0	0	1	1	100 ohm Pt $\alpha = 0.003916$ U.S. (-200 to +630°C)
			0	1	0	0	200 ohm Pt $\alpha = 0.00385$ (-200 to +630°C)
			0	1	0	1	500 ohm Pt $\alpha = 0.00385$ (-200 to +630°C)
			0	1	1	0	Reserved
			0	1	1	1	10 ohm Copper (-200 to +260°C)
			1	0	0	0	120 ohm Nickel (-60 to +250°C)
			1	0	0	1	100 ohm Nickel (-60 to +250°C)
			1	0	1	0	200 ohm Nickel (-60 to +250°C)
			1	0	1	1	500 ohm Nickel (-60 to +250°C)
			1	1	0	0	Module data time stamp
				1101 to 1111 - Reserved			
	04-07	Channel 1 RTD Type (see bits 00-03)					
	08-11	Channel 2 RTD Type (see bits 00-03)					
	12-15	Channel 3 RTD Type (see bits 00-03)					
Write Word 3	00-03	Channel 4 RTD Type (see write word 2, bits 00-03)					
	04-07	Channel 5 RTD Type (see write word 2, bits 00-03)					
	08-11	Channel 6 RTD Type (see write word 2, bits 00-03)					
	12-15	Channel 7 RTD Type (see write word 2, bits 00-03)					

Thermocouple Input Module (1794-IT8) Image Table Mapping



Thermocouple Input Module (1794-IT8) Read

Dec. Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Octal Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00
Read Word 1	Reserved															
Read Word 2	Channel 0 Input Data															
Read Word 3	Channel 1 Input Data															
Read Word 4	Channel 2 Input Data															
Read Word 5	Channel 3 Input Data															
Read Word 6	Channel 4 Input Data															
Read Word 7	Channel 5 Input Data															
Read Word 8	Channel 6 Input Data															
Read Word 9	Channel 7 Input Data															
Read Word 10	Ovrerrange Bits								Underrange Bits							
Read Word 11	0	0	0	0	0	Bad Cal	Cal Done	Cal Range	0	Diagnostics	Pwr Up	Bad Structure	CJC over	CJC Under		

Thermocouple Input Module (1794-IT8) Write

Dec. Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Octal Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00
Write Word 1	8-Bit Calibration Mask								Cal Clk	Cal hi Cal lo	Filter Cutoff			FDF	Data Type	
Write Word 2	Thermocouple 3 Type				Thermocouple 2 Type				Thermocouple 1 Type				Thermocouple 0 Type			
Write Word 3	Thermocouple 7 Type				Thermocouple 6 Type				Thermocouple 5 Type				Thermocouple 4 Type			

Where: FDF = fixed digital filter bit

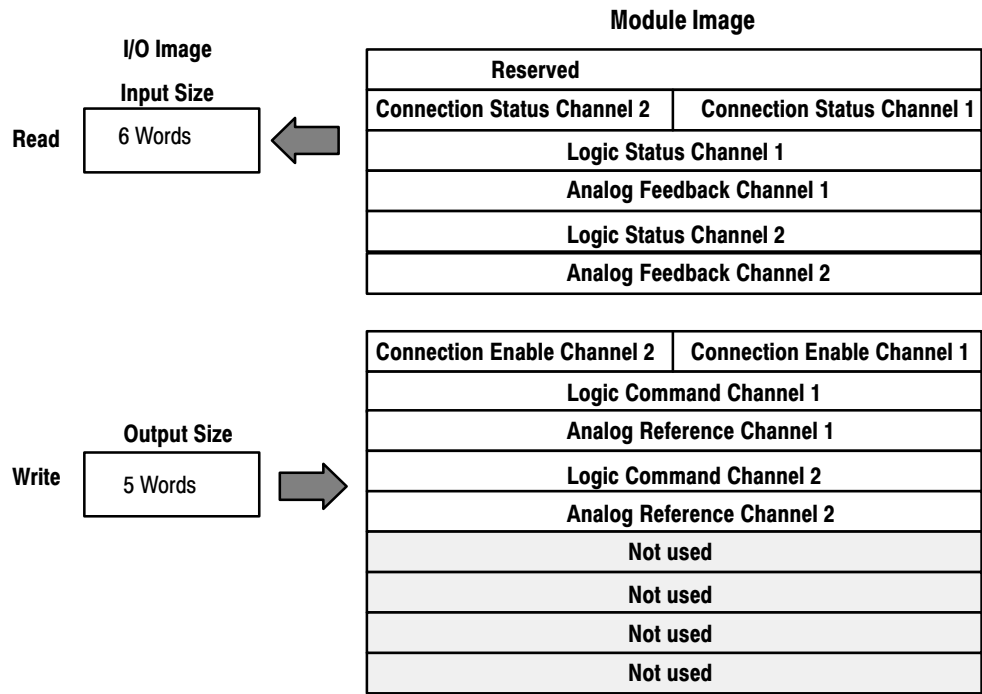
Word/Bit Descriptions for the 1794-IT8 Thermocouple Input Module

Word	Decimal Bit (Octal Bit)	Description
Read Word 1	00-15 (00-17)	Reserved
Read Word 2	00-15 (00-17)	Channel 0 Input data
Read Word 3	00-15 (00-17)	Channel 1 Input data
Read Word 4	00-15 (00-17)	Channel 2 Input data
Read Word 5	00-15 (00-17)	Channel 3 Input data
Read Word 6	00-15 (00-17)	Channel 4 Input data
Read Word 7	00-15 (00-17)	Channel 5 Input data
Read Word 8	00-15 (00-17)	Channel 6 Input data
Read Word 9	00-15 (00-17)	Channel 7 Input data
Read Word 10	00-07 (00-07)	Underrange bits - these bits are set if the input signal is below the input channel's minimum range.
	08-15 (10-17)	Overrange bits - these bits are set if 1), the input signal is above the input channel's maximum range, or 2), an open detector is detected.
Read Word 11	00 (00)	Cold Junction sensor underrange bit. - this bit is set if the cold junction temperature is below 0°C.
	01 (01)	Cold Junction sensor overrange bit. - this bit is set if the cold junction temperature is above 70°C.
	02 (02)	Bad Structure - this bit is set if there is an invalid thermocouple type selected.
	03 (03)	Powerup bit - this bit is set (1) until configuration data is received by the module.
	04-06 (04-06)	Critical Fault bits - If these bits are anything other than zero, return the module to the factory for repair.
	07 (07)	Unused - set to 0
	08 (10)	Calibration Range bit - set to 1 if a reference signal is out of range during calibration
	09 (11)	Calibration Done bit - set to 1 after an initiated calibration cycle is complete.
	10 (12)	Calibration Bad bit - set to 1 if the channel has not had a valid calibration.
11-15 (13-17)	Unused - set to 0	

Word	Decimal Bit (Octal Bit)	Description				
Write Word 1	00-01 (00-01)	Module Data Type				
		Bit	01	00	Definition	
			0	0	°C (default)	
			0	1	°F	
			1	0	Bipolar counts scaled between -32768 and +32767	
			1	1	Unipolar counts scaled between 0 and 65535	
	Bit 02 (02)	Fixed Digital Filter - When this bit is set (1), a software digital filter is enabled. This filter settles to 100% of a Full Scale step input in 60 scans.				
	03-05 (03-05)	A/D Filter First Notch Frequency				
		Bit	05	04	03	Definition
			0	0	0	10Hz (default)
			0	0	1	25Hz
			0	1	0	50Hz
			0	1	1	60Hz
			1	0	0	100Hz
			1	0	1	250Hz
			1	1	0	500Hz
			1	1	1	1000Hz
	06 (06)	Calibration High/Low bit - This bit is set during gain calibration; reset during offset calibration.				
	07 (07)	Calibration clock - this bit must be set to 1 to prepare for a calibration cycle; then reset to 0 to initiate calibration.				
	08-15 (10-17)	Calibration mask - The channel, or channels, to be calibrated will have the correct mask bit set. Bit 8 corresponds to channel 0, bit 9 to channel 1, and so on.				

Word	Decimal Bit (Octal Bit)	Description					
Write Word 2	00-03 (00-03)	Channel 0 Thermocouple Type					
		Bit	03	02	01	00	Thermocouple Type - Range
			0	0	0	0	Millivolts (default)
			0	0	0	1	B 300 to 1800°C (572 to 3272°F)
			0	0	1	0	E -270 to 1000°C (-454 to 1832°F)
			0	0	1	1	J -210 to 1200°C (-346 to 2192°F)
			0	1	0	0	K -71 to 1372°C (-95 to 2502°F)
			0	1	0	1	R -50 to 1768°C (-58 to 3214°F)
			0	1	1	0	S -50 to 1768°C (-58 to 3214°F)
			0	1	1	1	T -73 to 400°C (-99 to 752°F)
			1	0	0	0	C 0 to 2315°C (32 to 4199°F)
			1	0	0	1	N -270 to 1300°C (-450 to 2372°F)
			1	0	1	0	Reserved
			1	0	1	1	Reserved
			1	1	0	0	Module reports cold junction temperature for channels 00-03
			1	1	0	1	Module reports cold junction temperature for channels 04-07
			1	1	1	0	Reserved
		1	1	1	1	No sensor connected (do not scan)	
	04-07 (04-07)	Channel 1 Thermocouple Type (see bits 00-03)					
	08-11 (10-13)	Channel 2 Thermocouple Type (see bits 00-03)					
	12-15 (14-17)	Channel 3 Thermocouple Type (see bits 00-03)					
Write Word 3	00-03 (00-03)	Channel 4 Thermocouple Type (see write word 2, bits 00-03)					
	04-07 (04-07)	Channel 5 Thermocouple Type (see write word 2, bits 00-03)					
	08-11 (10-13)	Channel 6 Thermocouple Type (see write word 2, bits 00-03)					
	12-15 (14-17)	Channel 7 Thermocouple Type (see write word 2, bits 00-03)					

SCANport Module (1203-FM) Image Table Mapping



Memory Map of SCANport Module Image Table – 1203-FM

Dec. Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Octal Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00
Read Word 1	Reserved															
Read Word 2	Connection Status Channel 2								Connection Status Channel 1							
Read Word 3	Logic Status Channel 1															
Read Word 4	Analog Feedback Channel 1															
Read Word 5	Logic Status Channel 2															
Read Word 6	Analog Feedback Channel 2															
Write Word 1	Connection Enable Channel 2								Connection Enable Channel 1							
Write Word 2	Logic Command Channel 1															
Write Word 3	Analog Reference Channel 1															
Write Word 4	Logic Command Channel 2															
Write Word 5	Analog Reference Channel 2															

Defaults

Each I/O module has default values associated with it. At default, each module will generate inputs/status and expect outputs/configuration.

Module Defaults for:		Factory Defaults		Real Time Sizes	
Catalog Number	Description	Input Default	Output Default	Input Default	Output Default
1794-IB16	16-pt 24V dc Sink Input	1	1	1	0
1794-OB16	16-pt 24V dc Source Output	1	1	0	1
1794-IB10XOB6	10 Input/6 Output	1	1	1	1
1794-IA8	8-pt 120V ac Input	1	1	1	0
1794-OA8	8-pt 120V ac Output	1	1	0	1
1794-IB8S	8-pt 24V dc Sensor Input	1	1	1	0
1794-OW8	8-pt Relay Output	1	1	0	1
1794-IE8	8-pt Analog Input	9	6	8	0
1794-OE4	4-pt Analog Output	1	14	0	4
1794-IE4XOE2	4 in/2 out Analog Combo	5	10	4	2
1794-IR8	8-pt RTD Analog Input	11	4	10	0
1794-IT8	8-pt Thermocouple Input	11	4	10	0
1794-OB8EP	8-pt 24V dc Electrically Fused Source Output	1	1	0	1
1203-FM1	SCANport Module	6	5	6	5

Factory defaults are the values assigned by the adapter when you:

- first power up the system, and
- no previous stored settings have been applied.

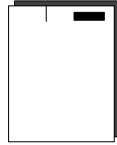
For discrete modules, these “automatic” default sizes are 1 input word/1 output word. These values are used for defaults instead of the maximum of 2 read/1 write or and 1 read/2 write.

For analog modules, the defaults reflect the maximum number of read words/write words. For example, for the 8 input analog module, you have 9 input words and 6 output words, which is a combination of inputs/status and outputs/configuration.

You can change the I/O data size for a module by reducing the number of words mapped into the adapter module, as shown in real time sizes.

Real time sizes are the settings that provide optimal real time data to and from the I/O module. You **need** a software configuration tool to change the size.

The real time settings provide the fastest network time by only mapping input data and output data for the I/O modules. If you reduce your data sizes to only include real time data, you can only change your configuration data with a software tool. If you need to change configuration information on a real time basis, your data size must be large enough to include the necessary words.



For information on using DeviceNetManager software to configure your adapter, refer to chapter 3, “Configuring Your DeviceNet Adapter Offline,” and chapter 4, “Configuring Your DeviceNet Adapter Online.”



For additional information on FLEX I/O modules, refer to the following publications.

Module Description	Catalog Number	For Additional Information: Installation User Manual	
16 Sink Input Module	1794-IB16	1794-5.4	
16 Source Output Module	1794-OB16	1794-5.3	
10 Input/6 Output Module	1794-IB10XOB6	1794-5.24	
8 Electronically Fused Output Module	1794-OB8EP	1794-5.20	
8 Sensor Input Module	1794-IB8S	1794-5.7	
8 Input Module	1794-IA8	1794-5.9	
8 Output Module	1794-OA8	1794-5.10	
8 Relay Output Module	1794-OW8	1794-5.19	
8 Input Analog Module	1794-IE8	1794-5.6	
4 Output Analog Module	1794-OE4	1794-5.5	
4 in/2 out Analog Combo Module	1794-IE4XOE2	1794-5.15	
8 RTD Input Analog Module	1794-IR8	1794-5.22	1794-6.5.4
8 Thermocouple Input Module	1794-IT8	1794-5.21	1794-6.5.7
SCANport Module	1203-FM1	1203-5.8	

Configuring Your DeviceNet Adapter Offline

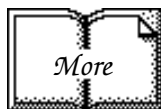
Chapter Objectives

In this chapter you will learn:

- how to use the DeviceNet Manager software to configure the adapter offline

About DeviceNet Manager

DeviceNet Manager is the software tool used to configure your Flex I/O DeviceNet adapter and its related modules. This software tool can be connected to the adapter via the DeviceNet network.



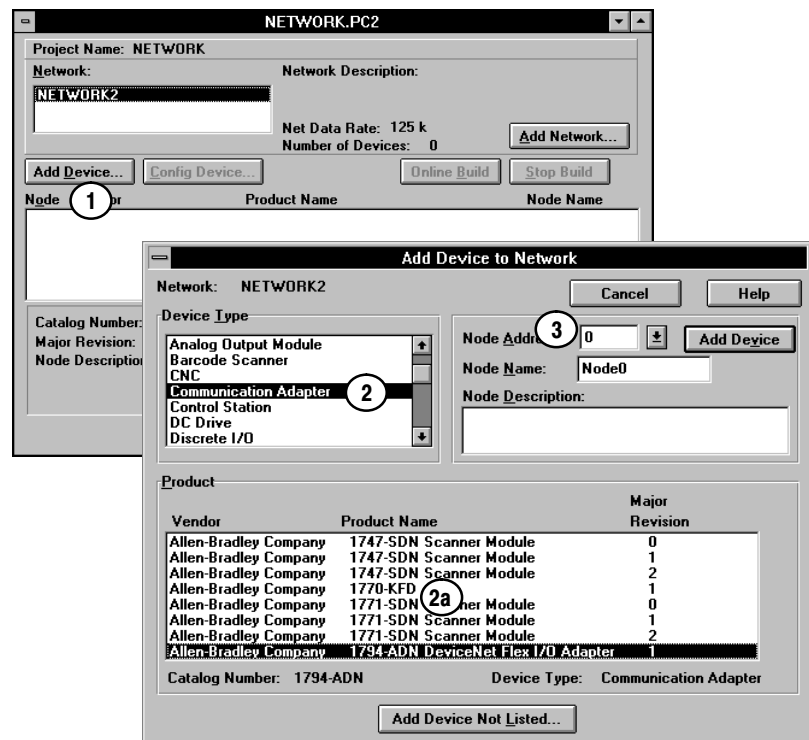
You must know and understand how DeviceNet Manager works in order to add a device to the network. Refer to the DeviceNet Manager Software User Manual, publication 1787-6.5.3.

In this chapter, we assume that you have established a network, and are adding a Flex I/O Adapter to your network.

Adding Your Flex I/O DeviceNet Adapter to the Network

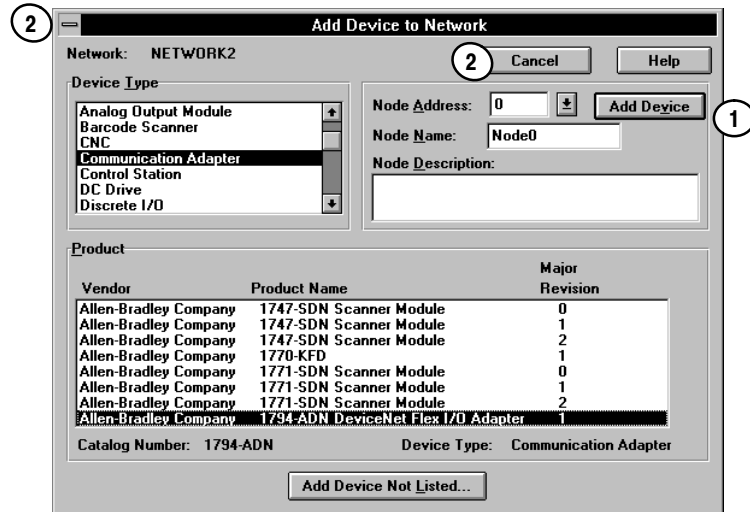
1. At the Network Screen, click on the “add device” button.
2. At the “Add Device to Network” screen, click on “communication adapter,” and then click on the 1794-ADN in the product area (2a).
3. Select the device node address.
4. Click on the “Add Device” button when you have selected your device. Add more devices as necessary.

To add the DeviceNet adapter to the network:



When you click on the “Add Device” button, you are given the opportunity to add additional devices to the network.

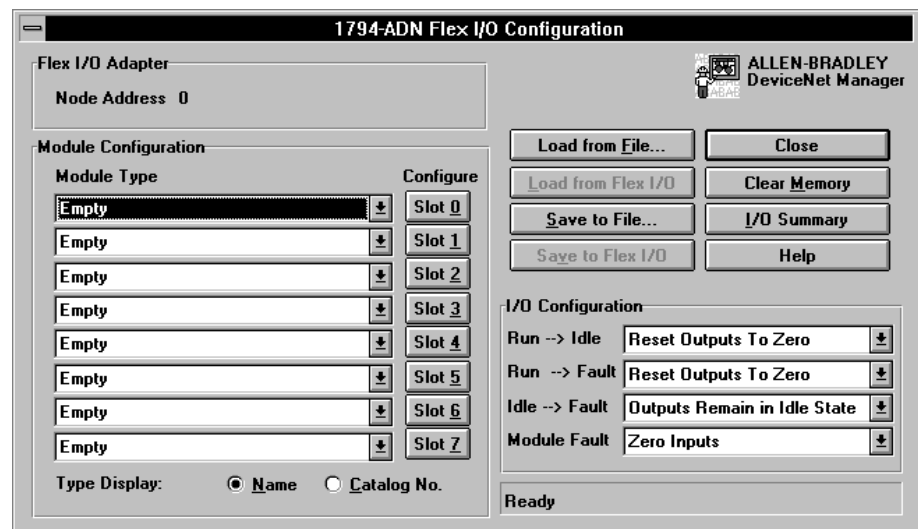
1. To add more devices to the network at this time, select a device and click on "Add Device." You can also add devices lby highlighting the device and double-clicking on it. This will automatically increment the node number for each device added.
2. To return to the network screen, click on the cancel button, or click in the upper left corner of the screen.



After adding the adapter to the network, you must configure it. Return to the network screen. You have 2 choices:

- highlight the device, and click on the "Configure Device" button, or
- double-click on the highlighted adapter to bring up the adapter configuration screen.

If a configuration file exists, the screen will be populated with the selections in that file.





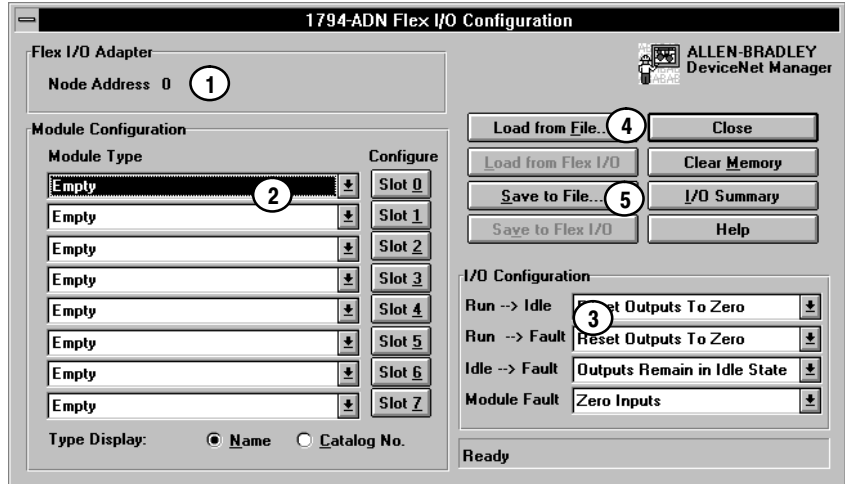
The 1794-ADN adapter configuration begins and ends on the configuration screen. This "home base" is the access point for each Flex I/O module directly connected to the adapter.

This is also where you configure adapter actions, and select process configuration information.

Configuring Your Flex I/O Adapter and System Offline


You can determine the adapter configuration and system configuration for an adapter at a specific node address. The node address is assigned at the adapter using the thumbwheel switch.

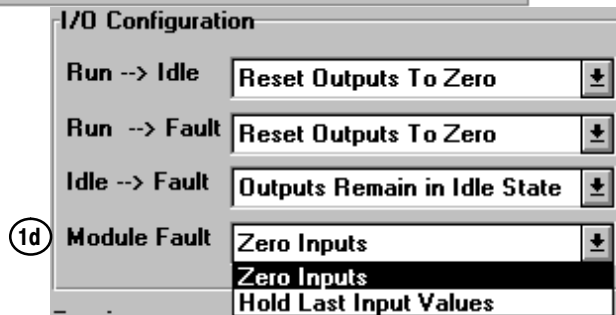
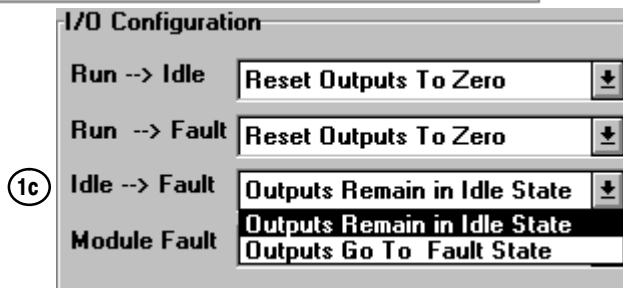
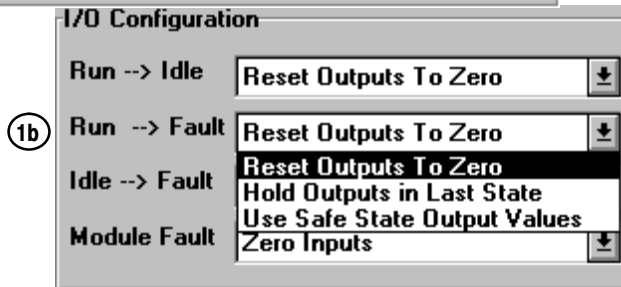
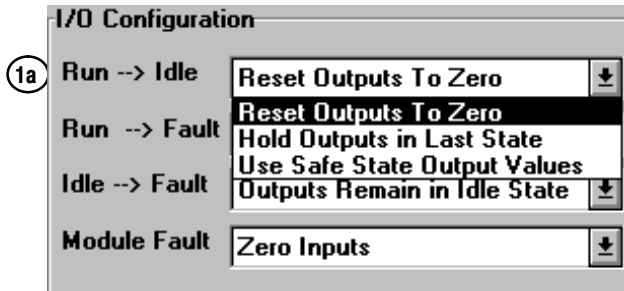
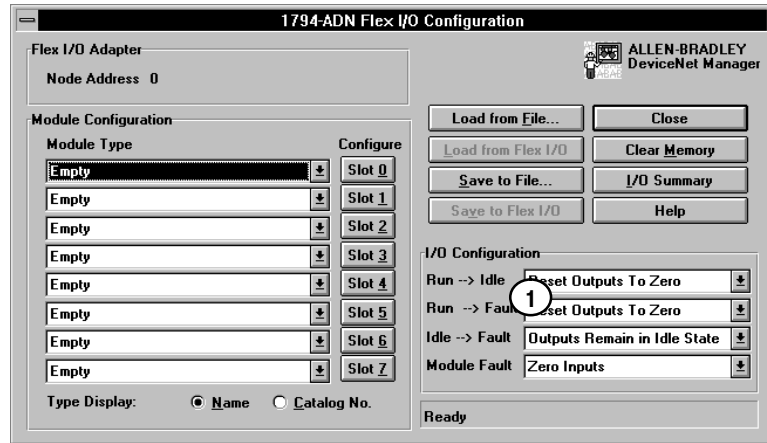
1. Verify the node address for your adapter. You can't change the address on this screen.
2. You configure each module in your Flex I/O system here.
3. You configure the adapter run idle action, run fault action, idle fault action and module fault action. These settings determine how your adapter will respond to these conditions.
4. Use this button  to load adapter configuration data from a file (a previously saved configuration).
5. The "save to file"  dialog defaults to storing the information in the project/network directory and using the user defined filename or a default name of (node address).prf."



From the Configuration screen, you can:	To:
set run fault action for the adapter	Reset outputs to zero, Hold outputs in last state, Use safe state output values
set run idle action	Reset outputs to zero, Hold outputs in last state, Use safe state output values
set idle fault action	Outputs remain in idle, Outputs go to fault state
set module fault action	Zero inputs, Hold last value
determine what module resides in each slot	select from the list provided
configure each module	safe state data current/voltage for inputs/outputs delay times I/O data sizes
load settings from a file	click on "load from file" button
save settings to a file	click on "save to file" button
view a summary of modules and read/write spaces configured	click on "adapter summary" button
clear all changes made to the screen and revert to original settings	click on "clear memory" button



Select your adapter options as shown in the following:

1. Select from the list box for each configuration option:
 - a. run idle
 - b. run fault
 - c. idle fault
 - d. module fault
 Use the  button to show the settings for each option.

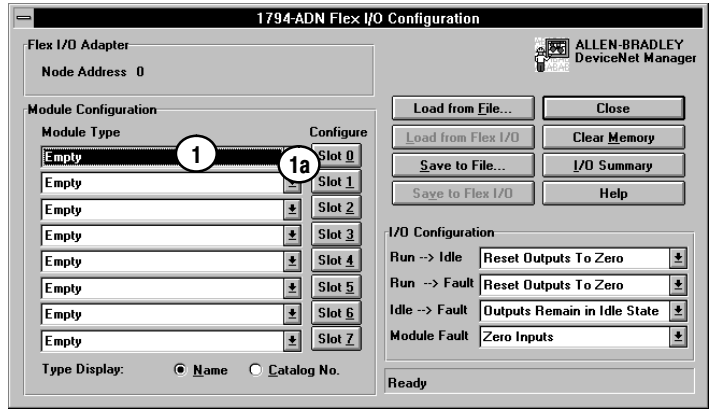


Configuring Your Adapter's Flex I/O System

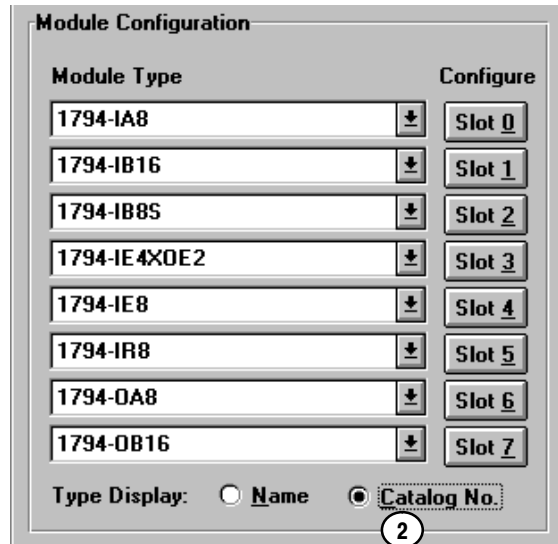
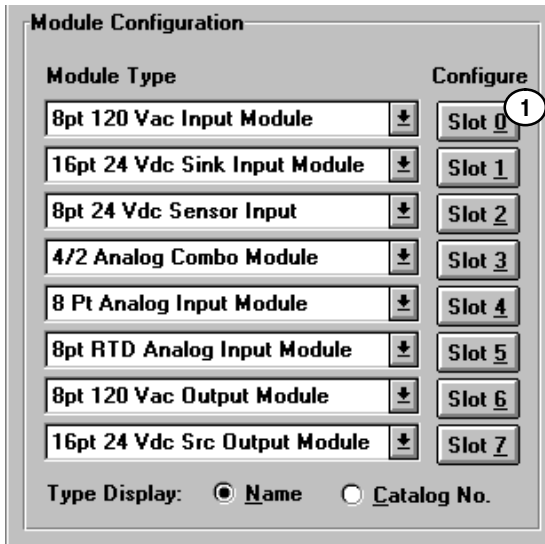
Configure your Flex I/O system by specifying the Flex I/O module that will reside in each slot. Remember, slot 0 is the closest slot to the adapter, and slot 7 is the furthest or last slot.

1. Click on the  or on the list box for slot 0. A list of modules is displayed. Use the up/down arrows to view the entire list of modules. **1a**
2. Use the up/down arrows to page thru the possible module selections. Select the desired module by clicking on that selection. 

- Empty
- 8pt 120 Vac Input Module
- 16pt 24 Vdc Combo I/O Module
- 16pt 24 Vdc Sink Input Module
- 8pt 24 Vdc Sensor Input Module
- 4/2 Analog Combo Module
- 4/2 Analog Combo Module /B
- 8pt Analog Input Module
- 8pt Analog Input Module /B
- 8pt RTD Input Module
- 8pt Thermocouple Input Module
- 8pt 120 Vac Output Module
- 8pt 24 Vdc Elect Fused Output Module
- 16pt 24 Vdc Src Output Module
- 4pt Analog Output Module
- 4pt Analog Output Module /B
- 8pt Relay Output Module
- SCANport Module
- Unknown



Select the modules you want inserted into each slot in your Flex I/O system. In the example, the following selections were made:




Example

This adapter example has all 8 slots filled with modules.

1. Click on the slot number in the column called Configure to select the module for that slot.

2. Note that you can click on the radio button to display the module selections by catalog number.

You can configure each module as you enter it, or fill the slots and go back and configure them one at a time. To configure a module, click on the slot number for that module. 



Configure Slot 0

To configure the module in slot 0 of our example, you have the following selections:

When you are off line, I/O data size comes up in a default mode. The default sizes are optimal settings. If you do a "load from file," the sizes are the stored sizes previously sent to file.

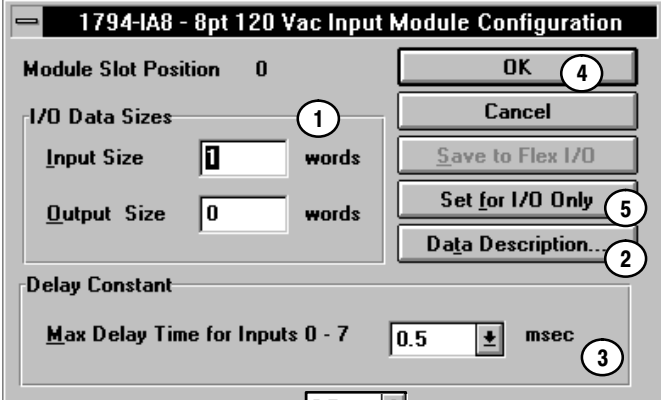
1. To specify the number of input and output words, place the cursor in the box and backspace to delete. Enter the desired selection.

Changing the number of input (read) words generates the amount of input and status area mapped into adapter memory. Changing the amount of output (write words) causes the adapter to expect more or less output/configuration words from the process.


2. The "Data Description" button brings up a screen (2a) which shows which input and output words are being used. Clicking on the boxes will automatically select the number of words used. After selection, click on the OK button to return to the module configuration screen.
3. Set the delay time constant for each set of inputs by clicking on the text box  and scrolling thru the settings. Delay settings range from 0.5ms to 64ms. 

4. Click on the OK button to save your edits. 

5. The "set for I/O only" button returns all I/O data size settings to the optimal I/O settings for this module.



1794-IA8 - 8pt 120 Vac Input Module Configuration

Module Slot Position 0  **4**

I/O Data Sizes **1**

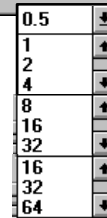
Input Size words

Output Size words

Delay Constant

Max Delay Time for Inputs 0 - 7 msec **3**

Buttons: Cancel, Save to Flex I/O, Set for I/O Only **5**, Data Description... **2**



0.5 ↓

1 ↑

2 ↓

4 ↓

8 ↑

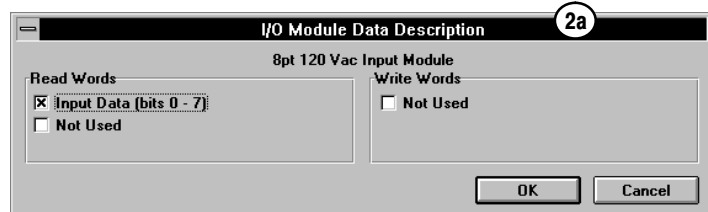
16 ↓

32 ↓

16 ↑

32 ↓

64 ↓



I/O Module Data Description **2a**

8pt 120 Vac Input Module

Read Words

Input Data (bits 0 - 7)

Not Used

Write Words

Not Used

Buttons: OK, Cancel

Configure Slot 1

The second module (slot 1) in the example is a 1794-IB16 input module. This module has the following selections:

When you are off line, I/O data size comes up in a default mode. The default sizes are optimal settings. If you do a "load from file," the sizes are the stored sizes previously sent to file.

1. To specify the number of input and output words, place the cursor in the box and backspace to delete. Enter the desired selection.

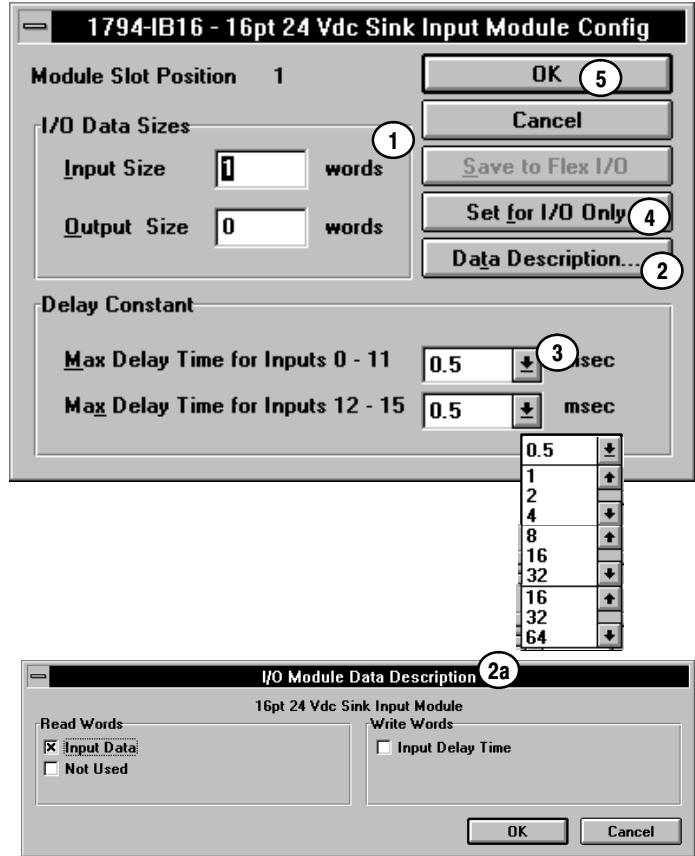
Changing the number of input (read) words generates the amount of input and status area mapped into adapter memory. Changing the amount of output (write words) causes the adapter to expect more or less output/configuration words from the process.

2. The "Data Description" button brings up a screen (2a) which shows which input and output words are being used. Clicking on the boxes will automatically select the number of words used. After selection, click on the OK button to return to the module configuration screen.

3. Set the delay time constant for each set of inputs by clicking on the text box and scrolling thru the settings. Delay settings range from 0.5ms to 64ms.

4. The "set for I/O only" button returns all I/O data size settings to the optimal I/O settings for this module.

5. Click on the OK button to save your edits.






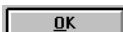
Configure Slot 2

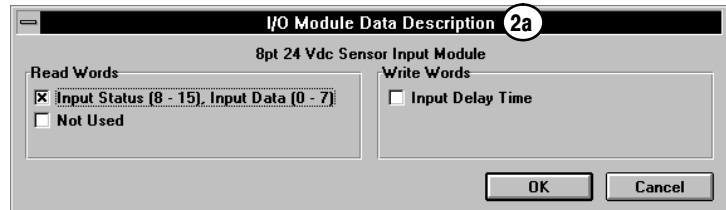
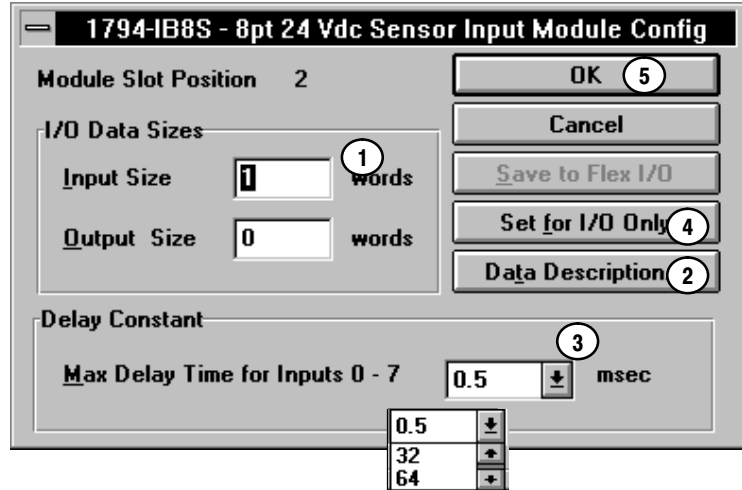
The third module (slot 2) in the example is a 1794-IB8S sensor input module. This module has the following selections:

When you are off line, I/O data size comes up in a default mode. The default sizes are optimal settings. If you do a "load from file," the sizes are the stored sizes previously sent to file.

1. To specify the number of input and output words, place the cursor in the box and backspace to delete and then enter the desired selection.

Changing the number of input (read) words generates the amount of input and status area mapped into adapter memory. Changing the amount of output (write words) causes the adapter to expect more or less output/configuration words from the process.

2. The "Data Description" button brings up a screen (2a) which shows which input and output words are being used. Clicking on the boxes will automatically select the number of words used. After selection, click on the OK button to return to the module configuration screen.
3. Set the delay time constant for the inputs by clicking on the text box  and scrolling thru the settings.   Delay settings range from 0.5ms to 64ms.
4. The "set for I/O only" button returns all I/O data size settings to the optimal I/O settings for this module.
5. Click on the OK button to save your edits. 



Configure Slot 3



The fourth module (slot 3) in the example is a 1794-IE4XOE2 analog combo module. This module has the following selections:


When you are off line, I/O data size comes up in a default mode. The default sizes are optimal settings. If you do a "load from file," the sizes are the stored sizes previously sent to file.

1. To specify the number of input and output words, place the cursor in the box and backspace to delete. Enter the desired selection.


Changing the number of input (read) words generates the amount of input and status area mapped into adapter memory. Changing the amount of output (write words) causes the adapter to expect more or less output/configuration words from the process.

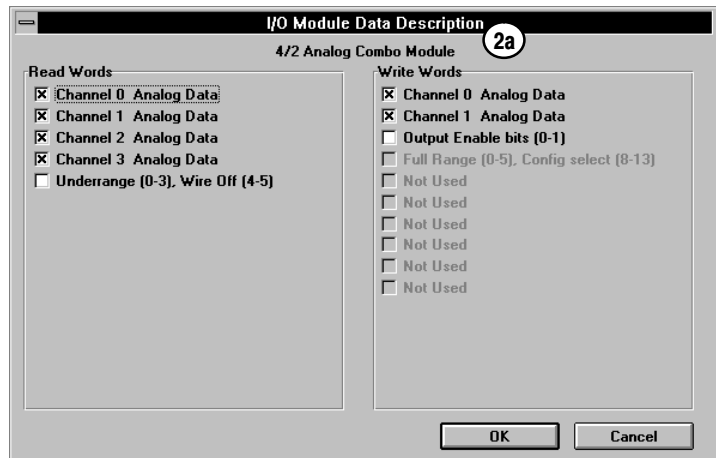
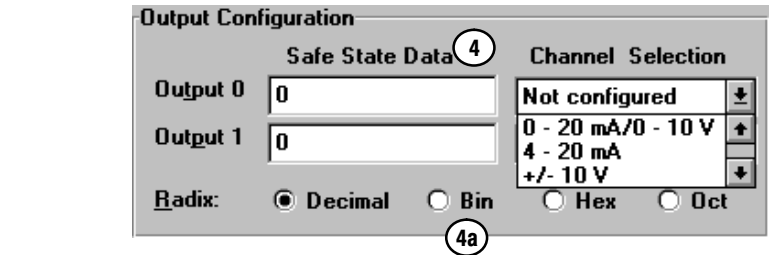
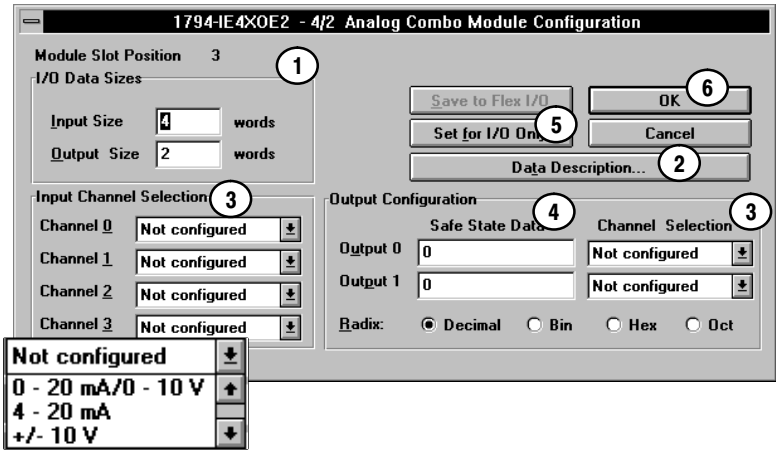
2. The "Data Description" button brings up a screen (2a) which shows which input and output words are being used. Clicking on the boxes will automatically select the number of words used. After selection, click on the OK button to return to the module configuration screen.

3. Select the voltage/current for each analog input and output using the list box  and up/down arrows for selection of each input and output. 

4. If desired, enter a value that the module outputs go to in the event of a communication failure if safe state is the action chosen in fault or idle action. You can select the radix (4a) to use for data entry by clicking on the desired radio button. 

5. The "set for I/O only" button returns all I/O data size settings to the optimal I/O settings for this module.

6. If you change the settings, when all selections are complete, click on the OK button. 





Configure Slot 4

The fifth module (slot 4) in the example is a 1794-IE8 analog input module. This module has the following selections:

When you are off-line, I/O data size comes up in a default mode. The default sizes are optimal settings. If you do a "load from file," the sizes are the stored sizes previously sent to file.

1. To specify the number of input and output words, place the cursor in the box and backspace to delete. Enter the desired selection.

Changing the number of input (read) words generates the amount of input and status area mapped into adapter memory. Changing the amount of output (write words) causes the adapter to expect more or less output/configuration words from the process.

2. The "Data Description" button brings up a screen (2a) which shows which input and output words are being used. Clicking on the boxes will automatically select the number of words used. After selection, click on the OK button to return to the module configuration screen.
3. Select the voltage/current for each analog output using the list box  for selection of each output.
4. The "set for I/O only" button returns all I/O data size settings to the optimal I/O settings for this module.
5. If you change the settings, when all selections are complete, click on the OK button. 

1794-IE8 - 8pt Analog Input Module Configuration

Module Slot Position 4

I/O Data Sizes

Input Size words

Output Size words

Buttons: Save to Flex I/O, Set for I/O Only, Data Description, OK, Cancel

Channel Selection

Channel 0	Not configured	Channel 4	Not configured
Channel 1	Not configured	Channel 5	Not configured
Channel 2	Not configured	Channel 6	Not configured
Channel 3	Not configured	Channel 7	Not configured

Channel 1 dropdown menu options: Not configured, 0 - 20 mA/0 - 10 V, 4 - 20 mA, +/- 10 V

I/O Module Data Description

8pt Analog Input Module

Read Words

- Channel 0 Analog Data
- Channel 1 Analog Data
- Channel 2 Analog Data
- Channel 3 Analog Data
- Channel 4 Analog Data
- Channel 5 Analog Data
- Channel 6 Analog Data
- Channel 7 Analog Data
- Underrange bits (0 - 7)

Write Words

- Full range (0 - 7), Config select (8 - 15)
- Not Used
- Not Used
- Not Used
- Not Used
- Not Used

Buttons: OK, Cancel


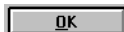
Configure Slot 5

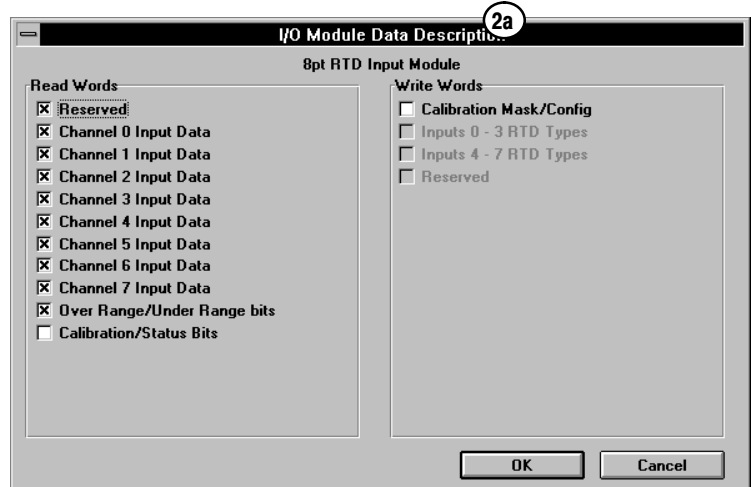
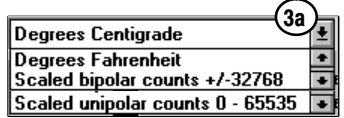
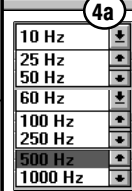
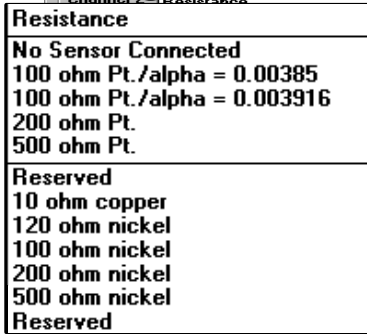
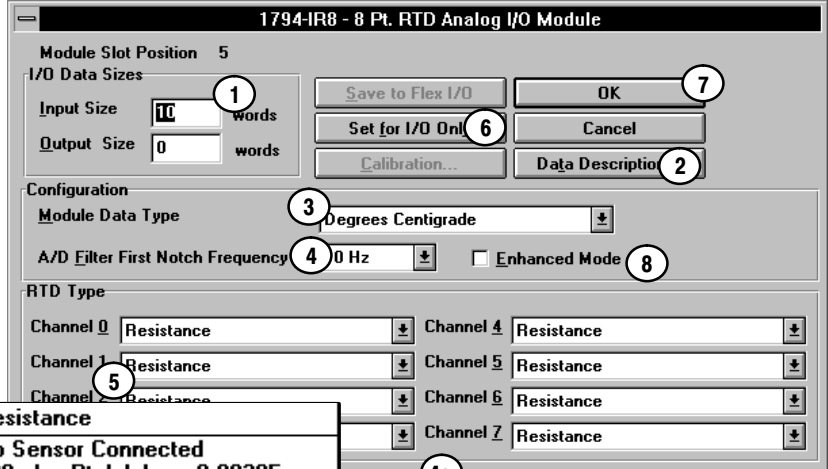
The sixth module (slot 5) in the example is a 1794-IR8 RTD analog output module. This module has the following selections:

When you are off line, I/O data size comes up in a default mode. The default sizes are optimal settings. If you do a "load from file," the sizes are the stored sizes previously sent to file.

1. To specify the number of input and output words, place the cursor in the box and backspace to delete. Enter the desired selection.

Changing the number of input (read) words generates the amount of input and status area mapped into adapter memory. Changing the amount of output (write words) causes the adapter to expect more output/configuration words from the process.

2. The "Data Description" button brings up a screen (2a) which shows which input and output words are being used. Clicking on the boxes will automatically select the number of words used. After selection, click on the OK button to return to the module configuration screen.
3. Select the module data type by clicking on the list box. A list of types is displayed (3a). Click on the desired module data type to select.
4. Select the desired filter first notch frequency by clicking on the list box. A list of frequencies is displayed (4a). Select the desired frequency by clicking on that selection.
5. Select the type of RTD for each channel using the list box  for selection of each type. Click on the desired RTD to select.
6. The "set for I/O only" button returns all I/O data size settings to the optimal I/O settings for this module.
7. If you change the settings, when all selections are complete, click on the OK button. 
8. This module has an enhanced mode of operation. In the enhanced mode, inputs are compared against a known, precision resistor to determine the value of the RTD. Since this is performed each scan, module throughput is decreased.



Configure Slot 6

The seventh module (slot 6) in the example is a 1794-OA8 output module. This module has the following selections:

When you are off line, I/O data size comes up in a default mode. The default sizes are optimal settings. If you do a "load from file," the sizes are the stored sizes previously sent to file.

- To specify the number of input and output words, place the cursor in the box and backspace to delete. Enter the desired selection.
Changing the number of input (read) words generates the amount of input and status area mapped into adapter memory. Changing the amount of output (write words) causes the adapter to expect more or less output/configuration words from the process.
- The "Data Description" button brings up a screen (2a) which shows which input and output words are being used. Clicking on the boxes will automatically select the number of words used. After selection, click on the OK button to return to the module configuration screen.
- If desired, enter a value that the module outputs would go to in the event of a communication failure if safe state is the action chosen in the fault or idle action. You can select the radix to use for data entry by clicking on the desired radio button.
- The "set for I/O only" button returns all I/O data size settings to the optimal I/O settings for this module.
- If you change the settings, when all selections are complete, click on the OK button.

1794-OA8 - 8pt 120 Vac Output Module Config

Module Slot Position: 6

I/O Data Sizes:

Input Size: 0 words

Output Size: 1 words

Safe State Data:

Data: 0

Radix: Decimal Bin Hex Oct

Buttons: OK, Cancel, Save to Flex I/O, Set for I/O Only, Data Description...

I/O Module Data Description (2a)

8pt 120 Vac Output Module

Read Words: Not Used



Write Words: Output Data (bits 0 - 7) Not Used

Buttons: OK, Cancel

Configure Slot 7

The eighth module (slot 7) in the example is a 1794-OB16 output module. This module has the following selections:

When you are off line, I/O data size comes up in a default mode. The default sizes are optimal settings. If you do a "load from file," the sizes are the stored sizes previously sent to file.

- To specify the number of input and output words, place the cursor in the box and backspace to delete. Enter the desired selection.
Changing the number of input (read) words generates the amount of input and status area mapped into adapter memory. Changing the amount of output (write words) causes the adapter to expect more or less output/configuration words from the process.
- The "Data Description" button brings up a screen (2a) which shows which input and output words are being used. Clicking on the boxes will automatically select the number of words used. After selection, click on the OK button to return to the module configuration screen.
- If desired, enter a value that the module outputs would go to in the event of a communication failure if safe state is the action chosen in the fault or idle action. You can select the radix to use for data entry by clicking on the desired radio button. 
- The "set for I/O only" button returns all I/O data size settings to the optimal I/O settings for this module.
- If you change the settings, when all selections are complete, click on the OK button. 

1794-OB16 - 16pt 24 Vdc Src Output Module Config

Module Slot Position: 7

I/O Data Sizes:

- Input Size: 0 words
- Output Size: 1 words

Safe State Data:

Data: 0

Radix: Decimal Bin Hex Oct

Buttons: OK, Cancel, Save to Flex I/O, Set for I/O Only, Data Description...

I/O Module Data Description (2a)

16pt 24 Vdc Src Output Module

Read Words: Not Used

Write Words: Output Data Not Used

Buttons: OK, Cancel

Additional modules not installed in this example, but included in your module selection, are:

- 1794-OW8 Relay Output module
- 1794-OE4 Four Output Analog module
- 1794-IT8 Eight Thermocouple Input module
- 1794-OB8EP Electronically Fused Eight Output module
- 1203-FM1 SCANport module

Configuration screens for these modules are described below.



Configuration for 1794-OW8 Relay output module

The following configuration screens are for the 1794-OW8 relay output module.

When you are off-line, I/O data size comes up in a default mode. The default sizes are optimal settings. If you do a "load from file," the sizes are the stored sizes previously sent to file.

1. To specify the number of input and output words, place the cursor in the box and backspace to delete. Enter the desired selection.

Changing the number of input (read) words generates the amount of input and status area mapped into adapter memory. Changing the amount of output (write words) causes the adapter to expect more or less output/configuration words from the process.

2. The "Data Description" button brings up a screen (2a) which shows which input and output words are being used. Clicking on the boxes will automatically select the number of words used. After selection, click on the OK button to return to the module configuration screen.
3. If desired, enter a value that the module outputs would go to in the event of a communication failure if safe state is the action chosen in the fault or idle action. You can select the radix to use for data entry by clicking on the desired radio button. 
4. The "set for I/O only" button returns all I/O data size settings to the optimal I/O settings for this module.
5. If you change the settings, when all selections are complete, click on the OK button. 

1794-OW8 - 8pt Relay Output Module Config

Module Slot Position: 0

I/O Data Sizes:

- Input Size: 0 words
- Output Size: 1 words

Safe State Data:

Data: 0

Radix: Decimal Bin Hex Oct

Buttons: OK, Cancel, Save to Flex I/O, Set for I/O Only, Data Description...

I/O Module Data Description

8pt Relay Output Module

Read Words:

- Not Used

Write Words:

- Output Data (bits 0 - 7)
- Not Used

Buttons: OK, Cancel

Configuration for the 1794-OE4 Analog Output module

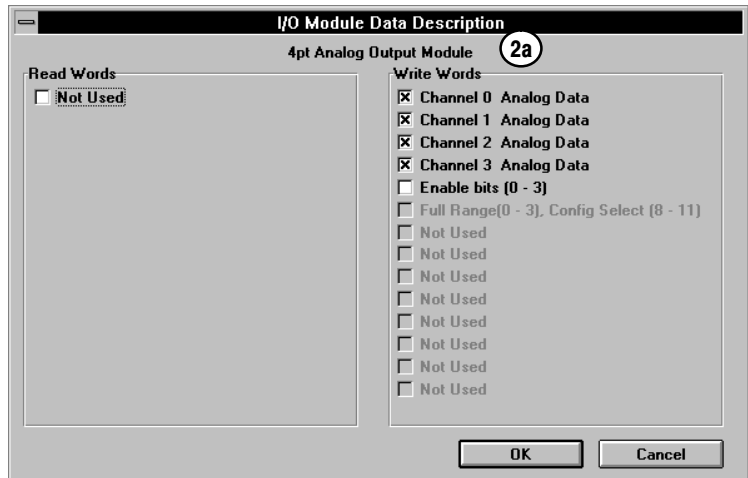
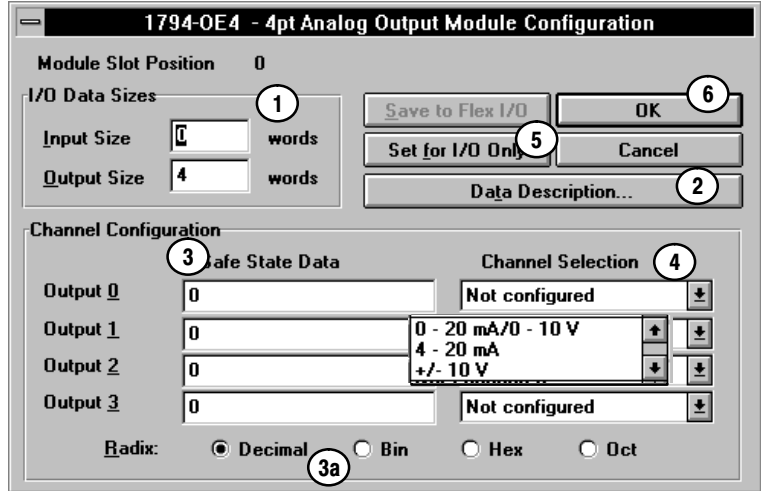
The following configuration screen is for a 1794-OE4 analog output module.

When you are off-line, I/O data size comes up in a default mode. The default sizes are optimal settings. If you do a "load from file," the sizes are the stored sizes previously sent to file.

1. To specify the number of input and output words, place the cursor in the box and backspace to delete. Enter the desired selection.

Changing the number of input (read) words generates the amount of input and status area mapped into adapter memory. Changing the amount of output (write words) causes the adapter to expect more or less output/configuration words from the process.

2. The "Data Description" button brings up a screen (2a) which shows which input and output words are being used. Clicking on the boxes will automatically select the number of words used. After selection, click on the OK button to return to the module configuration screen.
3. If desired, enter a value that the module outputs go to in the event of a communication failure if safe state is the action chosen in the fault or idle action. You can select the radix to use for data entry by clicking on the desired radio button.
4. Select the voltage/current for each analog output using the list box for selection of each output.
5. The "set to I/O only" button returns all I/O data size settings to the optimal I/O settings for this module.
6. If you change the settings, when all selections are complete, click on the OK button.



Configuration for the 1794-IT8 Thermocouple Input module

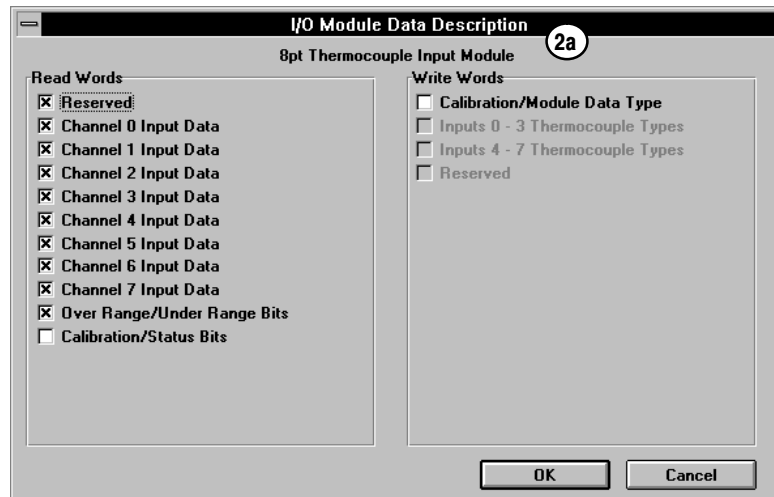
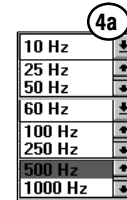
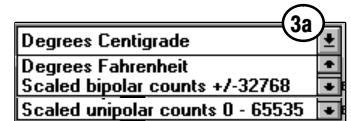
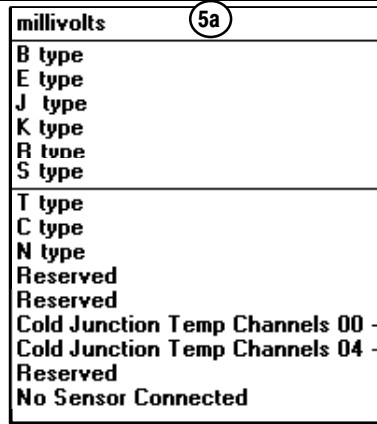
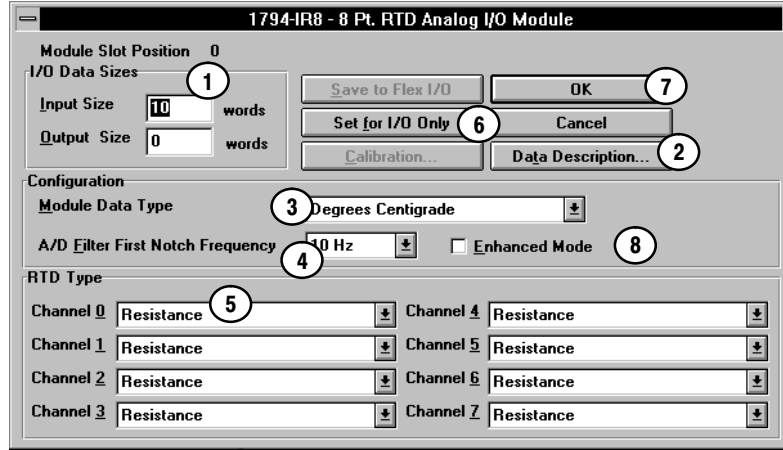
The following configuration screen is for a 1794-IT8 Thermocouple Input module.

When you are off line, I/O data size comes up in a default mode. The default sizes are optimal settings. If you do a "load from file," the sizes are the stored sizes previously sent to file.

1. To specify the number of input and output words, place the cursor in the box and backspace to delete. Enter the desired selection.

Changing the number of input (read) words generates the amount of input and status area mapped into adapter memory. Changing the amount of output (write words) causes the adapter to expect more output/configuration words from the process.

2. The "Data Description" button brings up a screen (2a) which shows which input and output words are being used. Clicking on the boxes will automatically select the number of words used. After selection, click on the OK button to return to the module configuration screen.
3. Select the module data type by clicking on the list box. A list of types is displayed (3a). Click on the desired module data type to select.
4. Select the desired filter first notch frequency by clicking on the list box. A list of frequencies is displayed (4a). Select the desired frequency by clicking on that selection.
5. Select the type of thermocouple for each channel using the list box for selection of each type. Click on the desired type to select.
6. The "set for I/O only" button returns all I/O data size settings to the optimal I/O settings for this module.
7. If you change the settings, when all selections are complete, click on the OK button.
8. This module has a fixed digital filter mode of operation. In this mode, a low pass (lag) digital filter is implemented in addition to the first notch filter.



Configuration for the 1794-IB10XOB6 10 Input/6 Output Module

The following configuration screen is for the 1794-IB10XOB6 10 Input/6 Output Module.

When you are off line, I/O data size comes up in a default mode. The default sizes are optimal settings. If you do a "load from file," the sizes are the stored sizes previously sent to file.

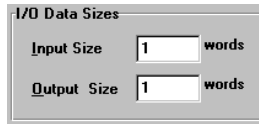
1. To specify the number of input and output words, place the cursor in the box and backspace to delete. Enter the desired selection.

Changing the number of input (read) words generates the amount of input and status area mapped into adapter memory. Changing the amount of output (write words) causes the adapter to expect more or less output/configuration words from the process.

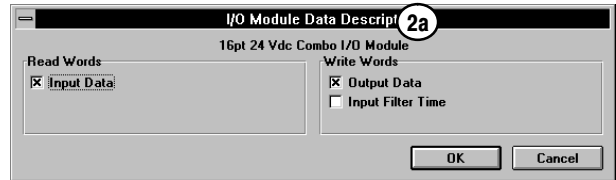
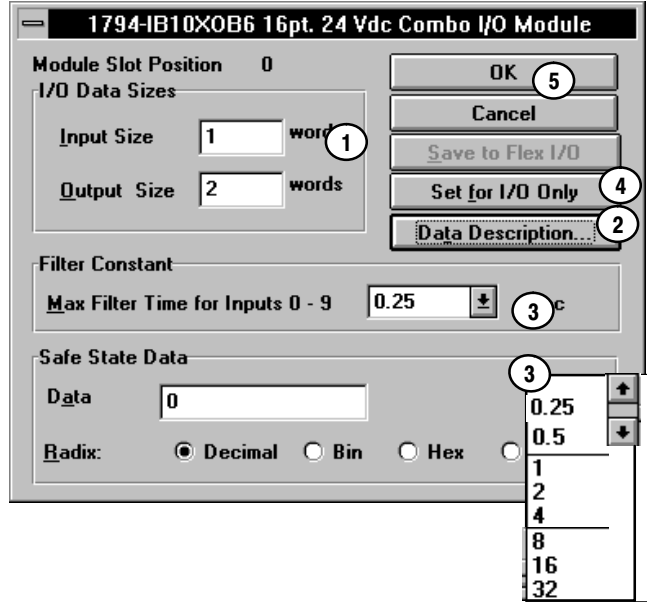
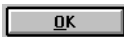
2. The "Data Description" button brings up a screen (2a) which shows which input and output words are being used. Clicking on the boxes will automatically select the number of words used. After selection, click on the OK button to return to the module configuration screen.

3. Set the filter time constant for each set of inputs by clicking on the text box and scrolling thru the settings. Filter time settings range from 0.25ms to 32ms.

4. The "set for I/O only" button returns all I/O data size settings to the optimal I/O settings for this module.





5. Click on the OK button to save your edits.

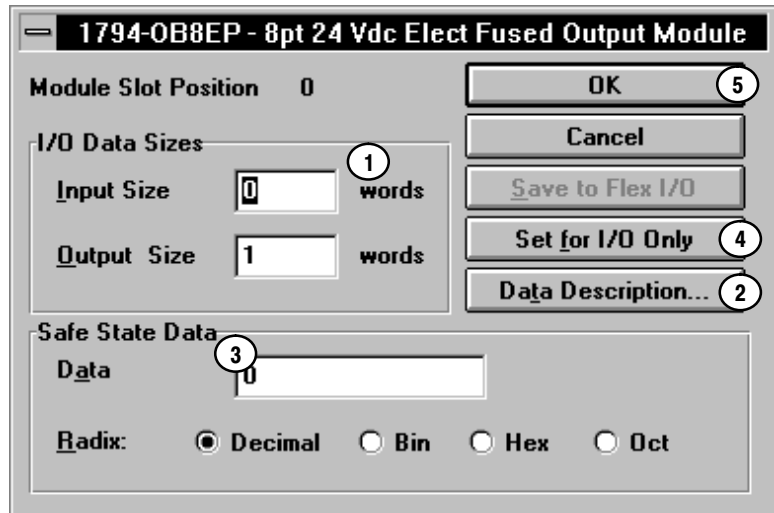
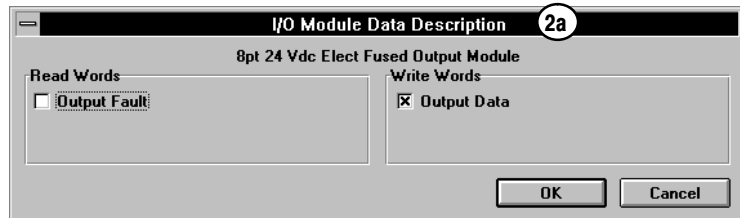


Configuration for the 1794-OB8EP Electronically Fused Output Module

The following configuration screen is for the 1794-OB8EP Electronically Fused Eight Output module.

When you are off line, I/O data size comes up in a default mode. The default sizes are optimal settings. If you do a "load from file," the sizes are the stored sizes previously sent to file.

- To specify the number of input and output words, place the cursor in the box and backspace to delete. Enter the desired selection.
Changing the number of input (read) words generates the amount of input and status area mapped into adapter memory. Changing the amount of output (write words) causes the adapter to expect more or less output/configuration words from the process.
- The "Data Description" button brings up a screen (2a) which shows which input and output words are being used. Clicking on the boxes will automatically select the number of words used. After selection, click on the OK button to return to the module configuration screen.
- If desired, enter a value that the module outputs would go to in the event of a communication failure if safe state is the action chosen in the fault or idle action. You can select the radix to use for data entry by clicking on the desired radio button. 
- The "set for I/O only" button returns all I/O data size settings to the optimal I/O settings for this module.
- If you change the settings, when all selections are complete, click on the OK button. 

Configuration for the 1203-FM1 SCANport Module

The following configuration screen is for the 1203-FM1 SCANport Module.

When you are off line, I/O data size comes up in a default mode. The default sizes are optimal settings. If you do a "load from file," the sizes are the stored sizes previously sent to file.

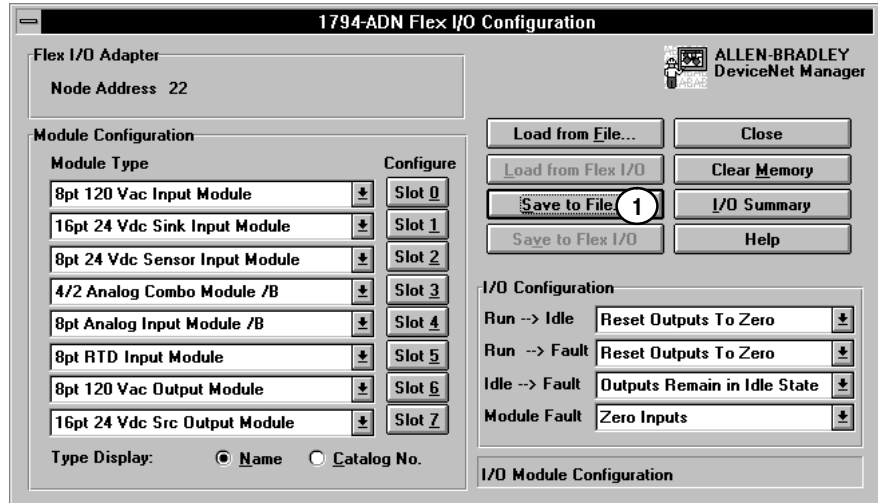
- To specify the number of input and output words, place the cursor in the box and backspace to delete. Enter the desired selection.
Changing the number of input (read) words generates the amount of input and status area mapped into adapter memory. Changing the amount of output (write words) causes the adapter to expect more or less output/configuration words from the process.
- The "Data Description" button brings up a screen (2a) which shows which input and output words are being used. Clicking on the boxes will automatically select the number of words used. After selection, click on the OK button to return to the module configuration screen.
- If desired, enter a value that the module outputs would go to in the event of a communication failure if safe state is the action chosen in the fault or idle action. You can select the radix to use for data entry by clicking on the desired radio button.
- The "set for I/O only" button returns all I/O data size settings to the optimal I/O settings for this module.
- If you change the settings, when all selections are complete, click on the OK button.

Configuring the Adapter

You cannot actually configure your DeviceNet adapter offline. You must save to a file.

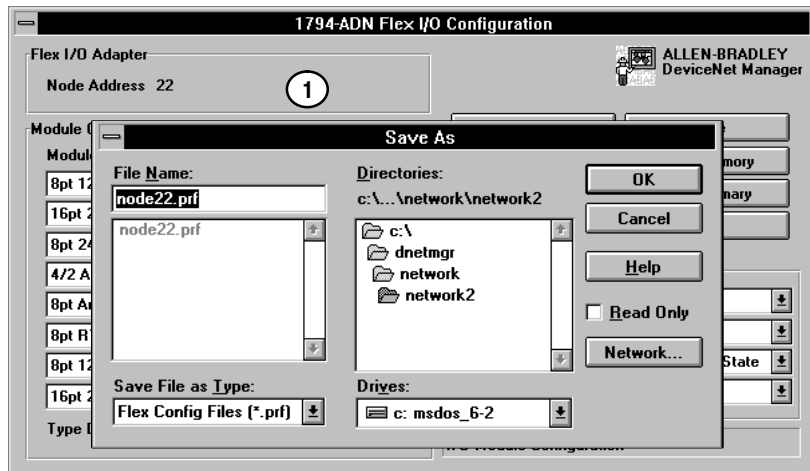
Mode	You can:	By
Offline	save to file	clicking on "save to file"

- Now that you have used slot configure for each individual module, and made your adapter settings, click on the "save to file" button and store your settings for adapter configuration when you go online.



"Save to File" prompts you for a file name. You can name the file, or use the default name of "node address" with a .prf suffix.


- This is the default file name when you save to file. The default name is the node name and a .prf suffix. You can rename the file.



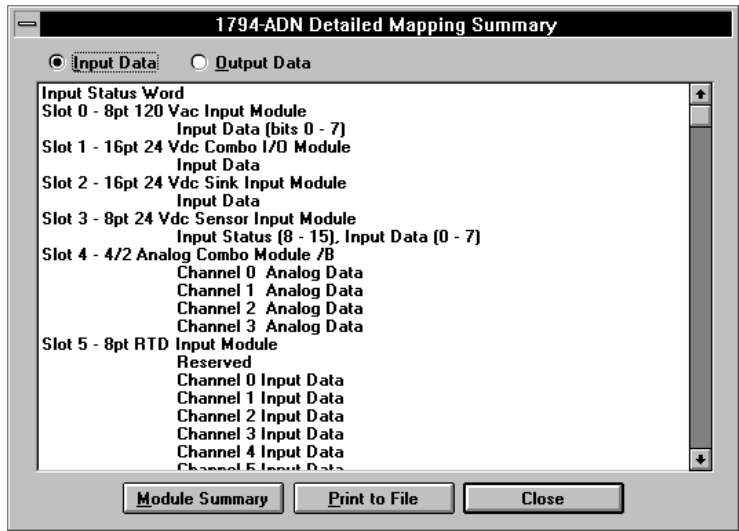


ATTENTION: Your settings will be lost if you cycle power without doing a “Save to File” or a “Save to Flex I/O.”

Viewing the Mapping Summaries

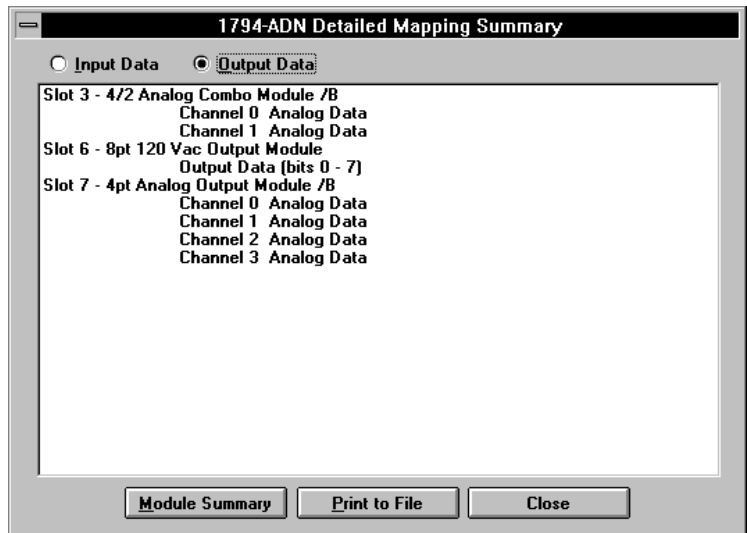
As a check, click on the I/O summary button  to see a summary of input and output image mapping for your adapter. Your screen will look similar to the following:


This screen shows the mapping for the input data as configured. Each slot, the selected module, and individual channel data is identified.



By clicking on the radio button for output data, the following screen appears:

This screen shows the mapping for the output data as configured. Each slot, the selected module, and individual channel data is identified.





A complete module summary can be viewed by clicking on the  button.

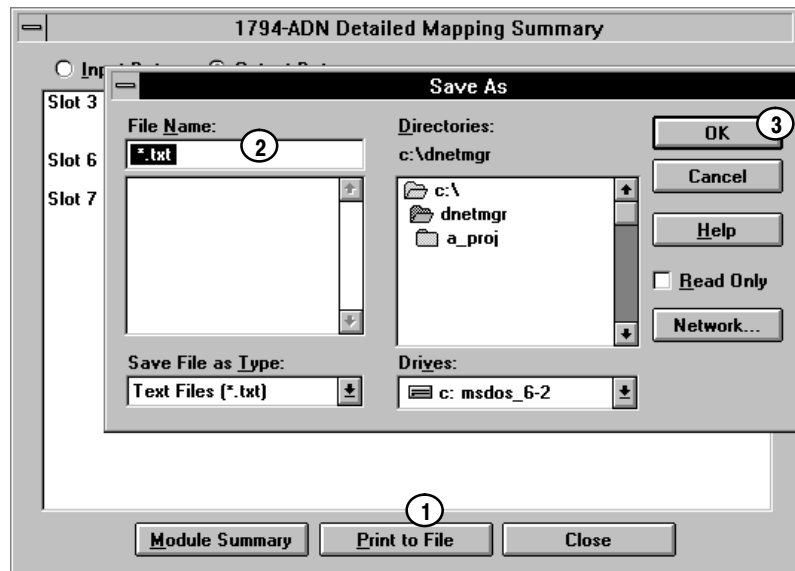
This summary shows each slot, configured module, input words used, and output words used. Input and output words are totaled.

1794-ADN I/O Mapping Summary			
Summary Table of I/O Mapping for Node 22			
Module	Input	Output	words
Input Status Word	1	0	
Slot0 - 8pt 120 Vac Input Module	1	0	
Slot1 - 16pt 24 Vdc Sink Input Module	1	0	
Slot2 - 8pt 24 Vdc Sensor Input	1	0	
Slot3 - 4/2 Analog Combo Module /B	4	2	
Slot4 - 8 Pt Analog Input Module /B	8	0	
Slot5 - 8pt RTD Analog Input Module	9	0	
Slot6 - 8pt 120 Vac Output Module	0	1	
Slot7 - 16pt 24 Vdc Src Output Module	0	1	
Total Words:		25	4
Total Bytes:		50	8

The total words indicated are used in configuring the scan list table in your 1771-SDN scanner module.

Use the  button to print the I/O detailed mapping summary to a text file. The text file will include both input and output mapping. A sample text file is shown below.

1. Click on the "print to file" button to pull up the "save as" screen.
2. Type in a name for the text file.
3. Click on  to save the file.



An example of a text file is shown below.

```

*****
1794-ADN Summary
*****

Node 2
Input Data:
                Input Status Word
Slot 1 - 8pt 120 Vac Input Module
                Input Data (bits 0 - 7)
Slot 2 - 16pt 24 Vdc Sink Input Module
                Input Data
Slot 3 - 8pt 24 Vdc Sensor Input
                Input Status (8 - 15), Input Data (0 - 7)
Slot 4 - 4/2 Analog Combo Module
                Channel 0 Analog Data
                Channel 1 Analog Data
                Channel 2 Analog Data
                Channel 3 Analog Data
Slot 5 - 8 Pt Analog Input Module
                Channel 0 Analog Data
                Channel 1 Analog Data
                Channel 2 Analog Data
                Channel 3 Analog Data
                Channel 4 Analog Data
                Channel 5 Analog Data
                Channel 6 Analog Data
                Channel 7 Analog Data
Slot 6 - 8pt RTD Analog Input Module
                Reserved
                Channel 0 Input Data
                Channel 1 Input Data
                Channel 2 Input Data
                Channel 3 Input Data
                Channel 4 Input Data
                Channel 5 Input Data
                Channel 6 Input Data
                Channel 7 Input Data

Output Data:

Slot 4 - 4/2 Analog Combo Module
                Channel 0 Analog Data
                Channel 1 Analog Data
Slot 7 - 8pt 120 Vac Output Module
                Output Data (bits 0 - 7)
Slot 8 - 16pt 24 Vdc Src Output Module
                Output Data
*****
End of summary listing

```

Configuring Your DeviceNet Adapter Online

Chapter Objectives

In this chapter you will learn:

- how to use the DeviceNet Manager software to configure the adapter online

About DeviceNet Manager



DeviceNet Manager is the software tool used to configure your Flex I/O DeviceNet adapter and its related modules. This software tool can be connected to the adapter via the DeviceNet network.

You must know and understand how DeviceNet Manager works in order to add a device to the network. Refer to the DeviceNet Manager Software User Manual, publication 1787-6.5.3.

In this chapter, we assume that you have established a network, and are adding a Flex I/O Adapter to your network.

Configuring Your Flex I/O Adapter and System Online


The procedure for online configuration is similar to the offline configuration procedure previously described. You must:

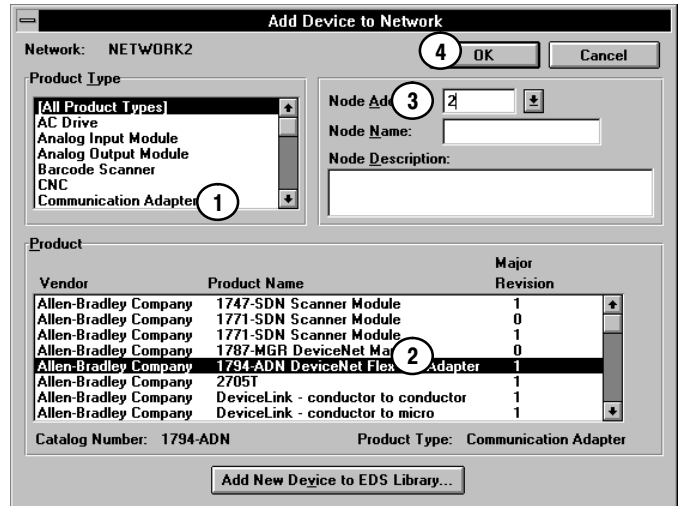
- add the device to the network from the Add Device to Network screen
- address the device
- establish the interface to the network
- get to the configuration screen

You can determine the adapter configuration and system configuration for an adapter at a specific node address. The node address is assigned either at the adapter (using the thumbwheel switch) or from the “add a device to network” screen.

Note: If addressing the adapter at the “add a device to network” screen, the address must agree with the physical address selected by thumbwheels on the adapter.

Select the “add device to network” from the pop-up menu.

1. Click on communication adapter on the list box to highlight.
2. Click on the adapter you wish to add to the network.
3. Enter the assigned node address by clicking in the box, backspace and type the number.
4. Click on the OK button to accept your additions. 

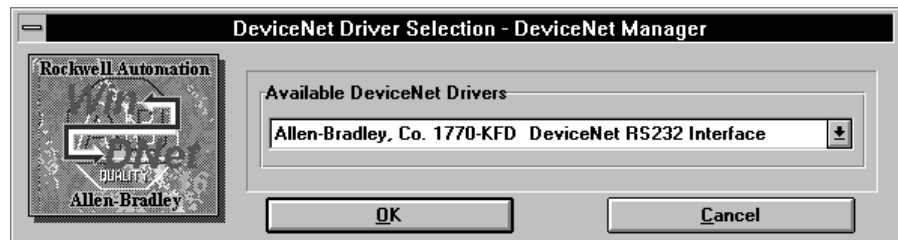



Check to make sure the interface is correct by clicking on the system icon in the tool bar.



System Icon

The following screen appears. You can select the interface adapter you want to use.




Click on  to continue. The driver configuration screen appears.

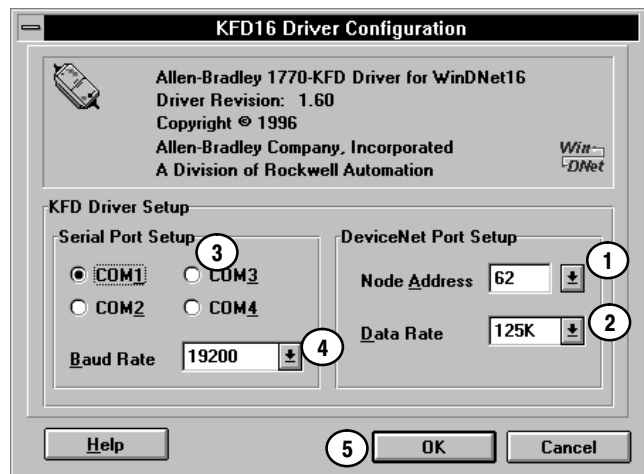
Use this screen to set serial port and DeviceNet setups, such as node address, data rate, communication port, and baud rates.

Network Setup

1. To set the node address, click on the list box and make a choice.
2. To set the data rate, click on the list box and click on your selection.

Driver Setup

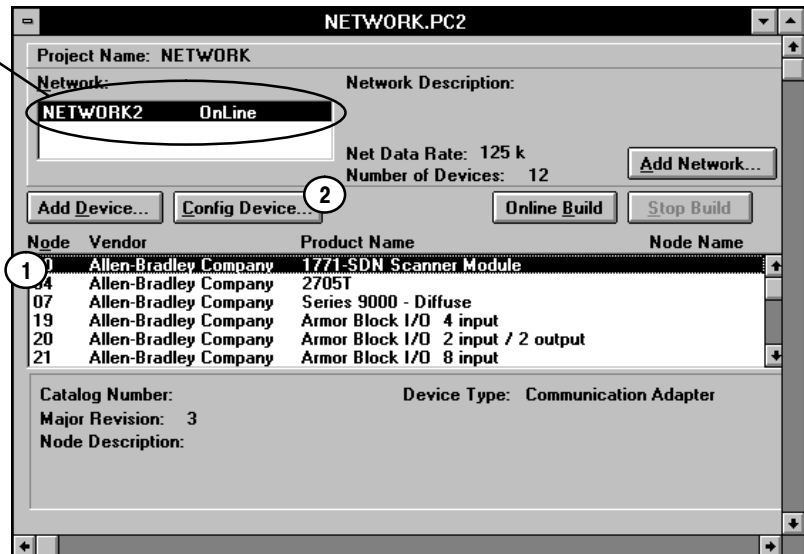
3. Click on the radio button to select the desired communication port.
4. To set the baud rate, click on the list box and select the desired rate.
5. Click on  to continue.



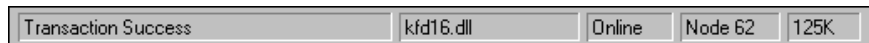
After clicking on the “OK” button, you automatically return to the project screen.

Online appears in the network area.

1. Highlight the device (the adapter) you want to configure.
2. Click twice on the selected adapter, or click on “Configure Device” to go to the adapter configuration screen in the online mode.



Online notification, including driver type, is also given in the status line at the bottom of the screen.

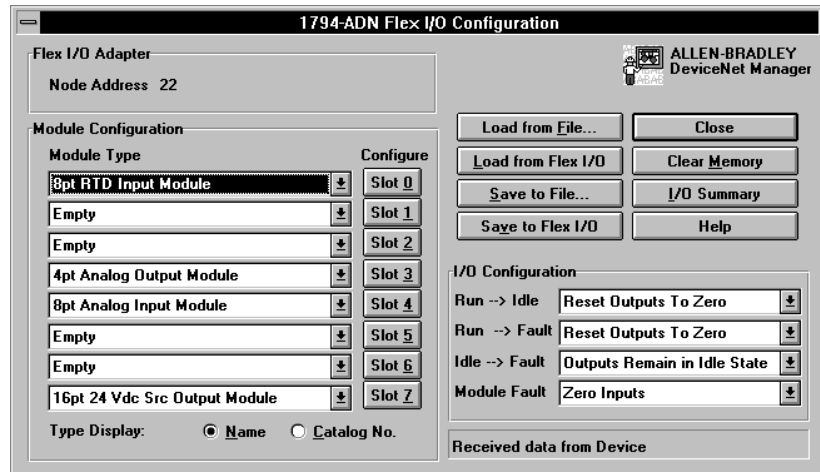


The adapter configuration screen appears.

From this screen, you can:

- load from device
- load from file
- configure the adapter

This screen will be automatically populated with the values residing in the adapter module.



The Configuration Screen

At the adapter configuration screen, you can choose from various ways to load your screen with configuration information for your adapter. This does not actually configure your adapter.

Load from Flex I/O

Load From File...

- Load from Flex I/O – the adapter populates the screen with its system settings. These settings can be the settings previously setup in the adapter and each individual module, or out-of-box settings.
- Load from file – populates screen with settings previously set up in a separate file created offline.

The configuration screen will be automatically populated with the settings stored in the adapter when you highlight the adapter and click on “configure device” on the project screen.

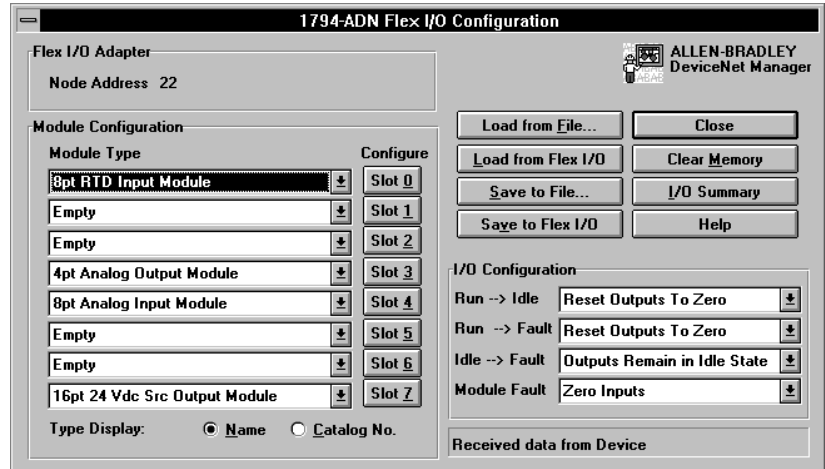
Or you can manually make your selections for adapter responses, and module placements and attributes.

Load from Device

If you use “Load from Flex I/O”, your screen will reflect the information stored in the adapter. This information is not necessarily the physical setup of the actual system.

This is what the screen looks when a “load from device” was used. All information stored in the adapter, including module setups, is used to populate the screen.

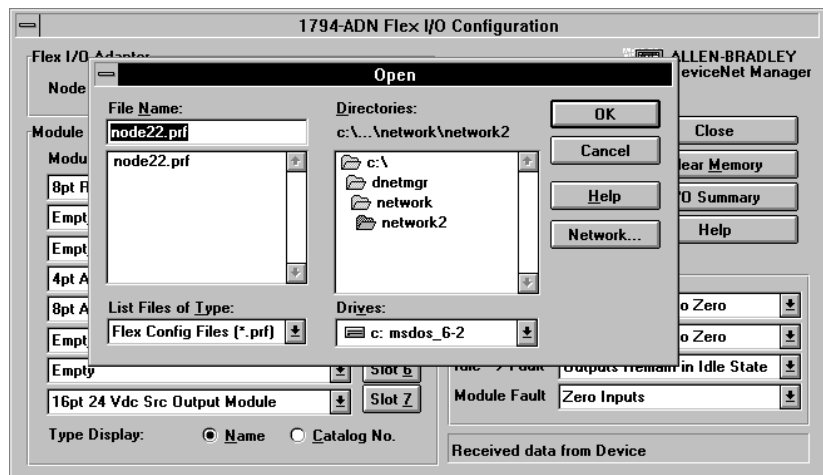
1. To apply changes to the adapter, you must do a “Save to Flex I/O.”
2. Any changes you do here are done the same as offline changes until a configuration button is activated.



Load from a File

If you choose to load from a previously saved file, a selection screen will appear.

When you load from file the screen will look like this.



If you load from a file, the file can contain settings that differ from the actual physical system setup.

When you attempt to configure a slot, if the configured module type does not match the configuration information, you will be prompted with an error message.

Your manually entered configuration

The screenshot shows the '1794-ADN Flex I/O Configuration' window. The 'Module Configuration' section lists the following module types for each slot:

Module Type	Configure
8pt 24 Vdc Elect Fused Output Module	Slot 0
8pt Thermocouple Input Module	Slot 1
Empty	Slot 2
4pt Analog Output Module	Slot 3
8pt Analog Input Module	Slot 4
Empty	Slot 5
Empty	Slot 6
16pt 24 Vdc Src Output Module	Slot 7

The 'I/O Configuration' section shows: Run -> Idle, Run -> Fault, Idle -> Fault, and Module Fault.

Actual configuration

The screenshot shows the '1794-ADN Flex I/O Configuration' window. The 'Module Configuration' section lists the following module types for each slot:

Module Type	Configure
8pt RTD Input Module	Slot 0
Empty	Slot 1
Empty	Slot 2
4pt Analog Output Module	Slot 3
8pt Analog Input Module	Slot 4
Empty	Slot 5
Empty	Slot 6
16pt 24 Vdc Src Output Module	Slot 7

The 'I/O Configuration' section shows: Run -> Idle, Run -> Fault, Idle -> Fault, and Module Fault.


If you make changes to the individual module placement, when you attempt to configure each slot, you will be prompted with a message similar to this:

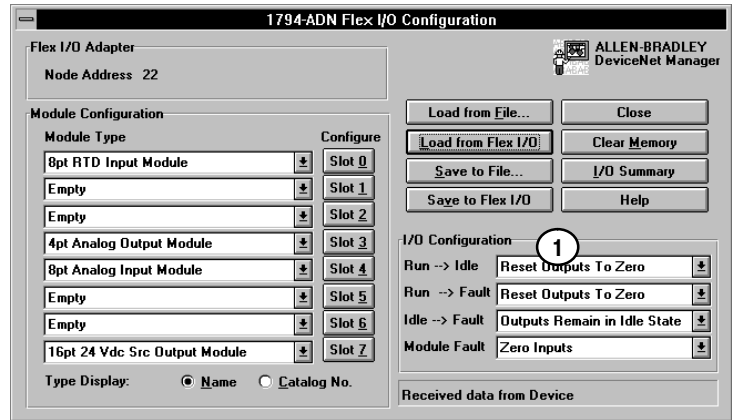
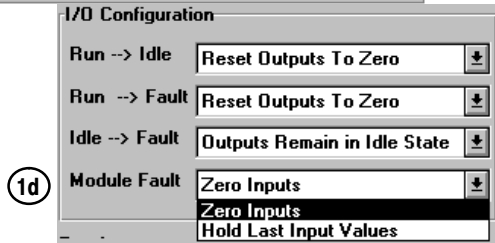
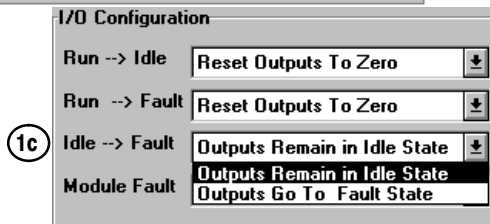
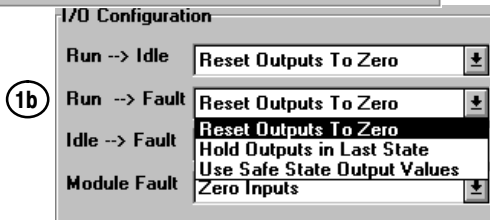
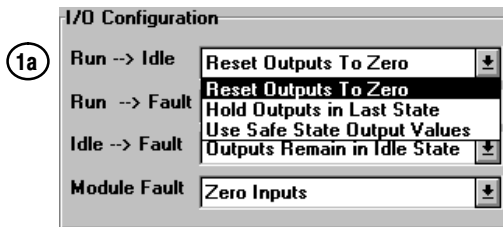


ATTENTION: Your settings will be lost if you cycle power without doing a “Save to File” or a “Save to Flex I/O.”

Entering Configuration Information into the Configuration Screen


Select your adapter options as shown in the following:

1. Select from the list box for each configuration option:
 - a. run idle
 - b. run fault
 - c. idle fault
 - d. module fault.
 Use the  button to show the settings for each option.



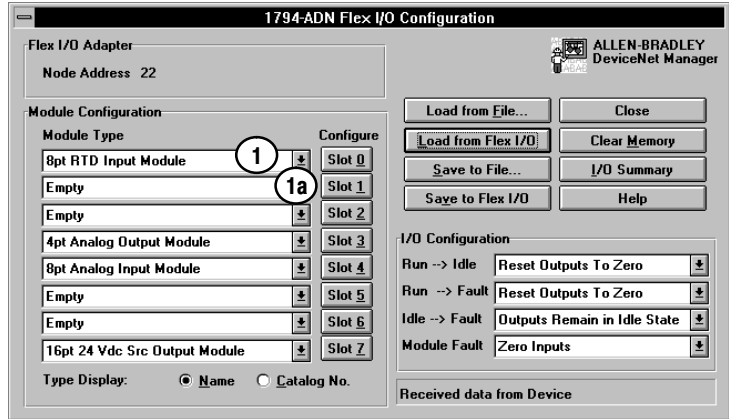
Configuring Your Adapter's Flex I/O System

Configure your Flex I/O system by specifying the Flex I/O module that will reside in each slot. Remember, slot 0 is the closest slot to the adapter, and slot 7 is the furthest or last slot.

1. Click on the  or on the list box for slot 0. A list of modules is displayed. Use the up/down arrows to view the entire list of modules. **1a**
2. Use the up/down arrows to page thru the possible module selections. Select the desired module by clicking on that selection.



- Empty **2**
 - 8pt 120 Vac Input Module
 - 16pt 24 Vdc Combo I/O Module
 - 16pt 24 Vdc Sink Input Module
 - 8pt 24 Vdc Sensor Input Module
 - 4/2 Analog Combo Module
 - 4/2 Analog Combo Module /B
 - 8pt Analog Input Module
 - 8pt Analog Input Module /B
 - 8pt RTD Input Module
 - 8pt Thermocouple Input Module
 - 8pt 120 Vac Output Module
 - 8pt 24 Vdc Elect Fused Output Module
 - 16pt 24 Vdc Src Output Module
 - 4pt Analog Output Module
 - 4pt Analog Output Module /B
 - 8pt Relay Output Module
 - SCANport Module
 - Unknown

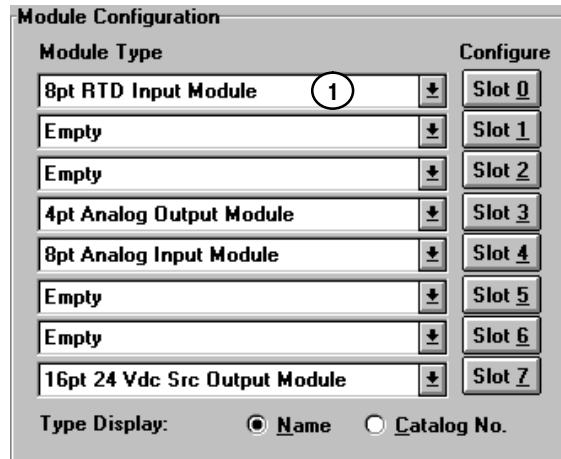


Select the modules you want inserted into each slot in your Flex I/O system. In the example, the following selections were made:

Example

This adapter example has 4 of 8 slots filled with modules.

1. Click in the list box to select the module for that slot.



You can configure each module:

- as you enter it, by clicking on the slot number in the configure column
- or fill all the slots with your selections and go back and configure them all at one time using "Save to Flex I/O."

Configure Slot 0


The first module (slot 0) in the example is a 1794-IR8 RTD analog output module. This module has the following selections:

When you are off line, I/O data size comes up in a default mode. The default sizes are optimal settings. If you do a "load from file," the sizes are the stored sizes previously sent to file.

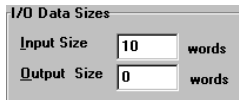
1. To specify the number of input and output words, place the cursor in the box and backspace to delete. Enter the desired selection.

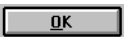
Changing the number of input (read) words generates the amount of input and status area mapped into adapter memory. Changing the amount of output (write words) causes the adapter to expect more output/configuration words from the process.

2. The "Data Description" button brings up a screen (2a) which shows which input and output words are being used. Clicking on the boxes will automatically select the number of words used. After selection, click on the OK button to return to the module configuration screen.
3. Select the module data type by clicking on the list box. A list of types is displayed (3a). Click on the desired module data type to select.

4. Select the desired filter first notch frequency by clicking on the list box. A list of frequencies is displayed (4a). Select the desired frequency by clicking on that selection.
5. Select the type of RTD for each channel using the list box  for selection of each type. Click on the desired RTD to select.

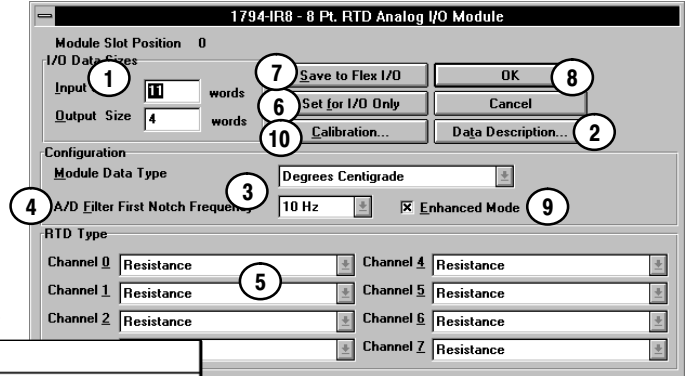
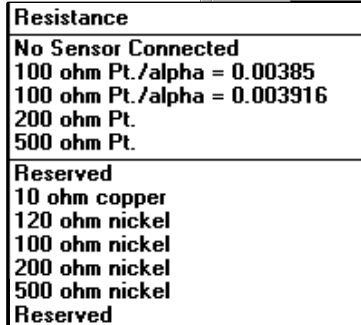
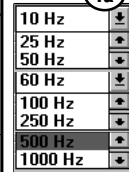
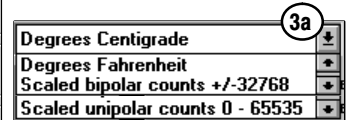
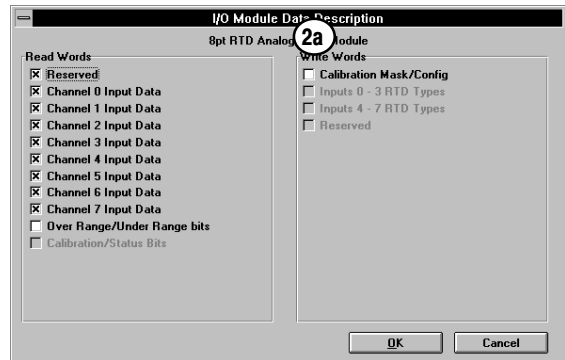
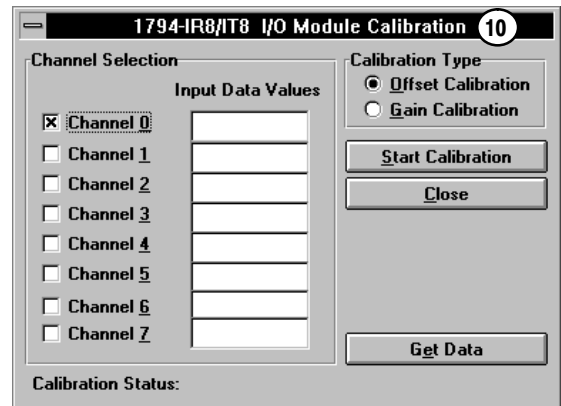
6. The "set to I/O only" button returns all settings to real time settings for this type of module. These settings are optimal, and not necessarily the "out-of-box" settings.



7. When all settings are correct, click on "Save to Flex I/O" to save the settings to the adapter.
8. If you change the settings, when all selections are complete, click on the OK button. 

9. This module has an enhanced mode of operation. In the enhanced mode, inputs are compared against a known, precision resistor to determine the value of the RTD. Since this is performed each scan, module throughput is decreased.

10. Clicking on the calibration button brings up the calibration screen. In order to calibrate the module, you must physically attach reference sources to the module. Refer to the user manual for calibration instructions.

Configure Slot 1 and 2

Slots 1 and 2 are empty. No selection is necessary.

Configure Slot 3

Slot 3 is a 1794-OE4 analog output module. This module has the following selections:

When you are on line, I/O data size comes up in a default mode. The default sizes are optimal settings. If you do a "load from file," the sizes are the stored sizes previously sent to file. If you do a "load from device," the sizes are the current sizes stored in the adapter.

- To specify the number of input and output words, place the cursor in the box and backspace to delete. Enter the desired selection.
Changing the number of input (read) words generates the amount of input and status area mapped into adapter memory. Changing the amount of output (write words) causes the adapter to expect more or less output/configuration words from the process.
- The "Data Description" button brings up a screen (2a) which shows which input and output words are being used. Clicking on the boxes will automatically select the number of words used. After selection, click on the OK button to return to the module configuration screen.
- If desired, enter a value that the module outputs go to in the event of a communication failure if safe state is the action chosen in the fault or idle action. You can select the radix to use for data entry by clicking on the desired radio button.
- Select the voltage/current for each analog output using the list box for selection of each output.
- The "set to I/O only" button returns all settings to real time settings for this type of module. These settings are optimal, and not necessarily the "out-of-box" settings.

I/O Data Sizes

Input Size words

Output Size words

1794-OE4 - 4pt Analog Output Module Configuration

Module Slot Position 3

I/O Data Sizes

Input Size words

Output Size words

Save to Flex I/O OK

Set for I/O Only Cancel

Data Description...

Channel Configuration

Safe State Data Channel Selection

Output 0 Not configured

Output 1 Not configured

Output 2 0 - 20 mA/0 - 10 V

Output 3 4 - 20 mA

+/- 10 V

Radix: Decimal Bin Hex Oct

I/O Module Data Description

4pt Analog Output Module

Read Words

Not Used

Write Words

Channel 0 Analog Data

Channel 1 Analog Data

Channel 2 Analog Data

Channel 3 Analog Data

Enable bits (0 - 3)

Full Range(0 - 3). Config Select (8 - 11)

Not Used

Not Used

Not Used

Not Used

Not Used

Not Used

Not Used

Not Used

Not Used

OK Cancel

- You can apply your configuration now by clicking on the "Save to Flex I/O" button. Or you can wait until you have configured all slots and apply the configuration using the "Save to Flex I/O" button on the 1794-ADN configuration screen.
- If you change the settings, when all selections are complete, click on the OK button.


Configure Slot 4

The fifth module (slot 4) in the example is a 1794-IE8 analog input module. This module has the following selections:


When you are on line, I/O data size comes up in a default mode. The default sizes are optimal settings. If you do a "load from file," the sizes are the stored sizes previously sent to file. If you do a "load from device," the sizes are the current sizes stored in the adapter.

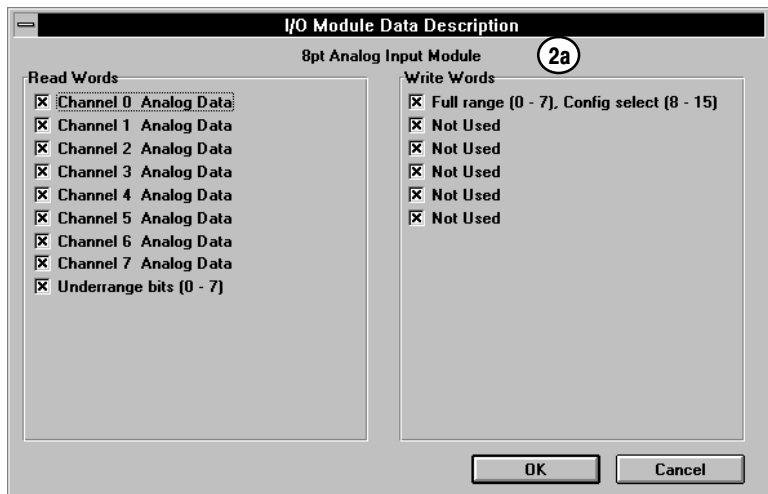
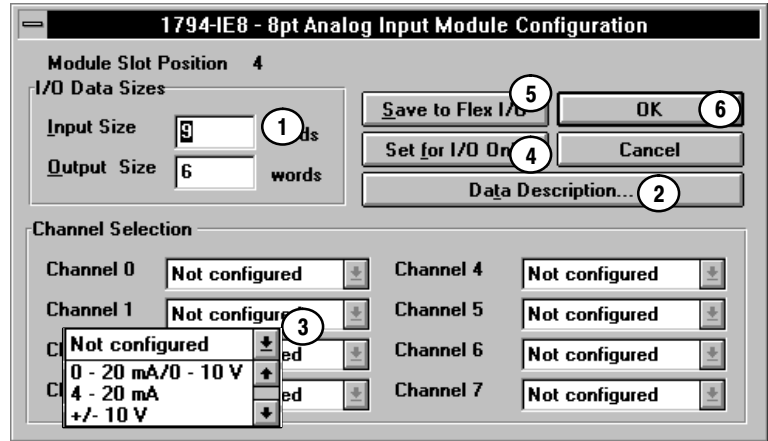
1. To specify the number of input and output words, place the cursor in the box and backspace to delete. Enter the desired selection.

Changing the number of input (read) words generates the amount of input and status area mapped into adapter memory. Changing the amount of output (write words) causes the adapter to expect more or less output/configuration words from the process.

2. The "Data Description" button brings up a screen (2a) which shows which input and output words are being used. Clicking on the boxes will automatically select the number of words used. After selection, click on the OK button to return to the module configuration screen.
3. Select the voltage/current for each analog output using the list box  for selection of each output.
4. The "set to I/O only" button returns all settings to real time settings for this type of module. These settings are optimal, and not necessarily the "out-of-box" settings.

Input Size words
 Output Size words

5. You can apply your configuration now by clicking on the "Save to Flex I/O" button. Or you can wait until you have configured all slots and apply the configuration using the "Save to Flex I/O" button on the 1794-ADN configuration screen.
6. If you change the settings, when all selections are complete, click on the OK button. 



Configure Slots 5 and 6

Slots 5 and 6 are empty.

Configure Slot 7

The eighth module (slot 7) is a 1794-OB16 input module. This module has the following selections:

When you are on line, I/O data size comes up in a default mode. The default sizes are optimal settings. If you do a "load from file," the sizes are the stored sizes previously sent to file. If you do a "load from device," the sizes are the current sizes stored in the adapter.

- To specify the number of input and output words, place the cursor in the box and backspace to delete. Enter the desired selection.
Changing the number of input (read) words generates the amount of input and status area mapped into adapter memory. Changing the amount of output (write words) causes the adapter to expect more or less output/configuration words from the process.
- The "Data Description" button brings up a screen (2a) which shows which input and output words are being used. Clicking on the boxes will automatically select the number of words used. After selection, click on the OK button to return to the module configuration screen.
- If desired, enter a value that the module outputs would go to in the event of a communication failure if safe state is the action chosen in the fault or idle action. You can select the radix to use for data entry by clicking on the desired radio button.
- The "set to I/O only" button returns all settings to real time settings for this type of module. These settings are optimal, and not necessarily the "out-of-box" settings.

I/O Data Sizes

Input Size: 0 words

Output Size: 1 words

- You can apply your configuration now by clicking on the "Save to Flex I/O" button. Or you can wait until you have configured all slots and apply the configuration using the "Save to Flex I/O" button on the 1794-ADN configuration screen.
- If you change the settings, when all selections are complete, click on the OK button.

1794-OB16 - 16pt 24 Vdc Src Output Module Config

Module Slot Position: 7

I/O Data Sizes:

Input Size: 1 words

Output Size: 1 words

Safe State Data:

Data: 0

Radix: Decimal Bin Hex Oct

Buttons: OK, Cancel, Save to Flex I/O, Set for I/O Only, Data Description...

I/O Module Data Description (2a)

16pt 24 Vdc Src Output Module


Read Words: Not Used

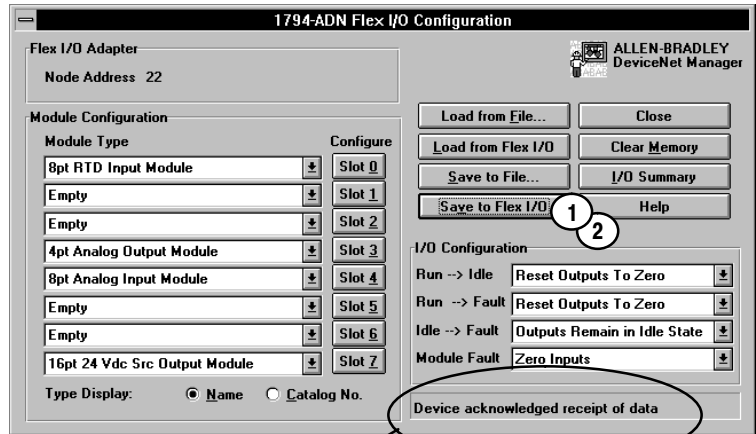
Write Words: Output Data Not Used

Buttons: OK, Cancel

Applying Configuration Information to the Adapter

In order to actually configure the adapter, you must do the following:

1. Click on "Save to Flex I/O." 
2. After clicking on the "Save to Flex I/O" button you are automatically returned to the adapter configuration screen.

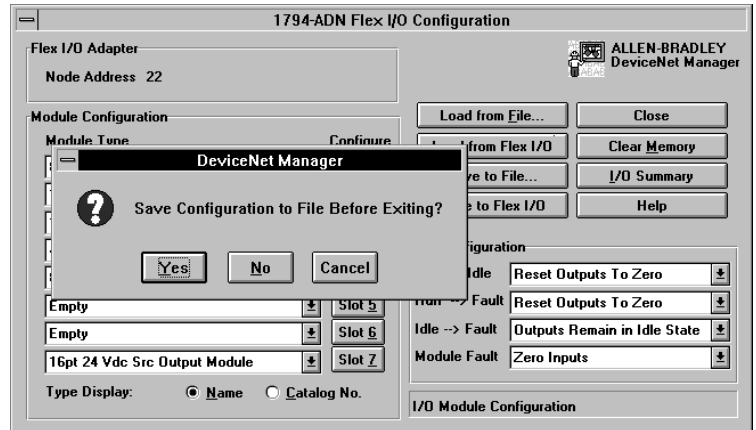


Note that the status line will show status when the configuration tool is communicating with the adapter.




ATTENTION: Your settings will be lost if you cycle power without doing a "Save to File" or a "Save to Flex I/O."

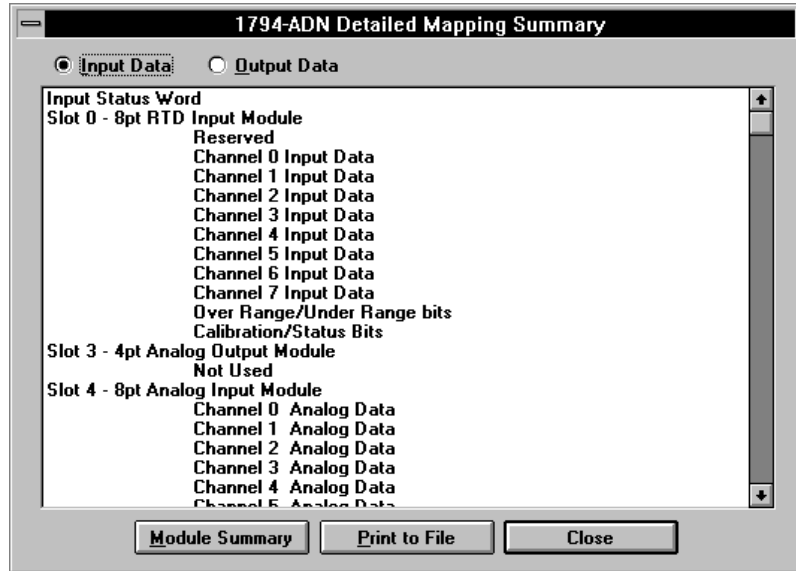
If you attempt to close, the system will prompt you to save either to a file or to Flex I/O.



Viewing the Mapping Summaries

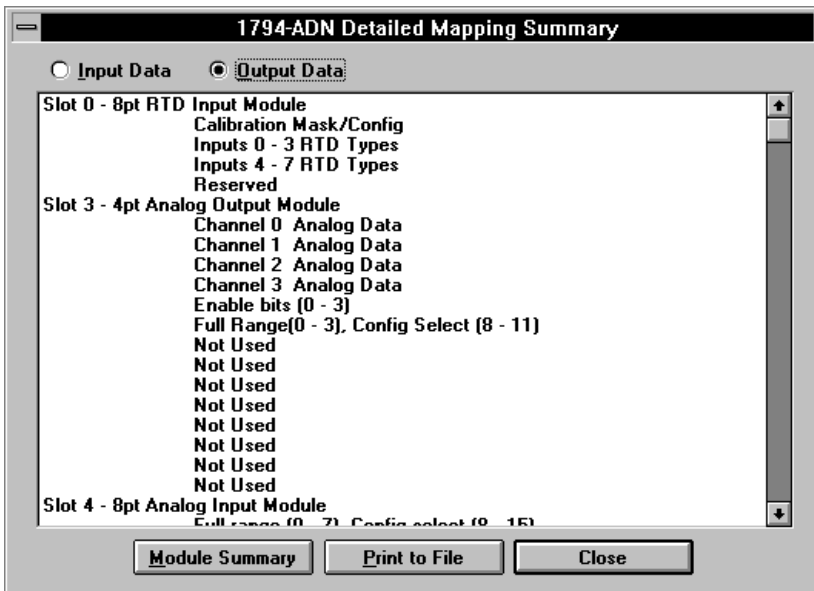
Click on the I/O summary button  to see a summary of input and output image mapping for your adapter. This summary corresponds to whatever is on your configuration screen when launched. Your screen will look similar to the following:


This screen shows the mapping for the input data as configured. Each slot, the selected module, and individual channel data is identified.



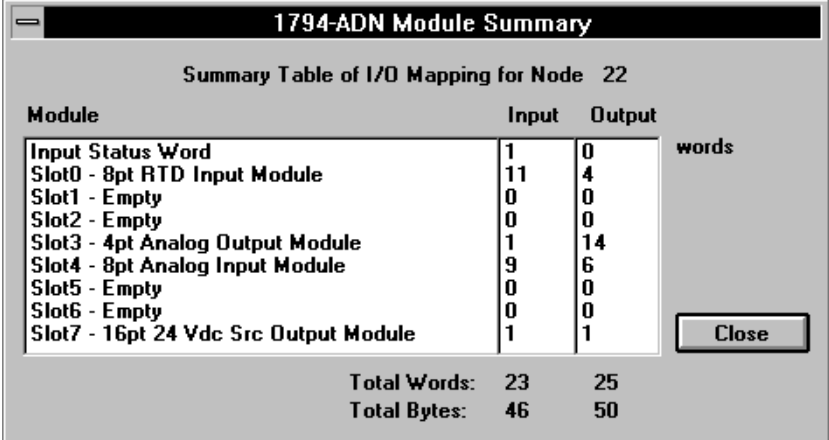
By clicking on the radio button for output data, the following screen appears:

This screen shows the mapping for the output data as configured. Each slot, the selected module, and individual channel data is identified.



A complete module summary can be viewed by clicking on the  button at the bottom of the I/O summary screen.

Your module summary screen will look similar to the following:



The screenshot shows a window titled "1794-ADN Module Summary" with a subtitle "Summary Table of I/O Mapping for Node 22". The table lists various modules and their corresponding input and output word counts. A "Close" button is located at the bottom right of the table area.

Module	Input	Output	words
Input Status Word	1	0	
Slot0 - 8pt RTD Input Module	11	4	
Slot1 - Empty	0	0	
Slot2 - Empty	0	0	
Slot3 - 4pt Analog Output Module	1	14	
Slot4 - 8pt Analog Input Module	9	6	
Slot5 - Empty	0	0	
Slot6 - Empty	0	0	
Slot7 - 16pt 24 Vdc Src Output Module	1	1	
Total Words:	23	25	
Total Bytes:	46	50	

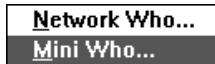
The total words indicated are used in configuring the scan list table in your 1771-SDN scanner module.

Using Mini Who and Network Who

You have a pulldown menu called “Who.” You can use the Who’s to see what devices are on the network, and information about them. You also have direct access to configuration screens for these devices. This includes your DeviceNet adapter.

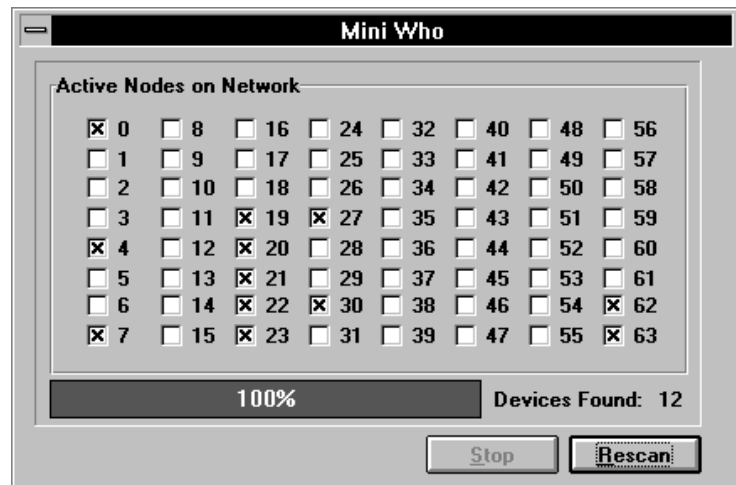
Using Mini Who

Mini Who shows you the devices on the network by node number, and indicates the total number of devices found. An “X” appears in the box at the address where a device is located.



The “mini who” displays a matrix of possible node addresses and merely indicates which ones are in use. For a detailed description of what each node consists of, you must use a “network who.”

You access Mini Who directly through the *Who* menu.



Using Network Who

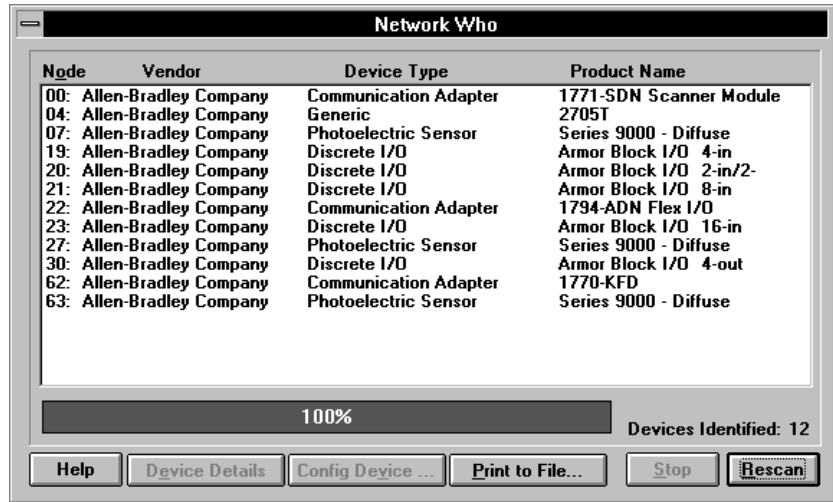
Network Who shows you the node address, the vendor ID, the device type, and device name for each device on the network, plus the total number of devices found.

You access Network Who directly through the *Who* menu.

Network Who...

Mini Who...

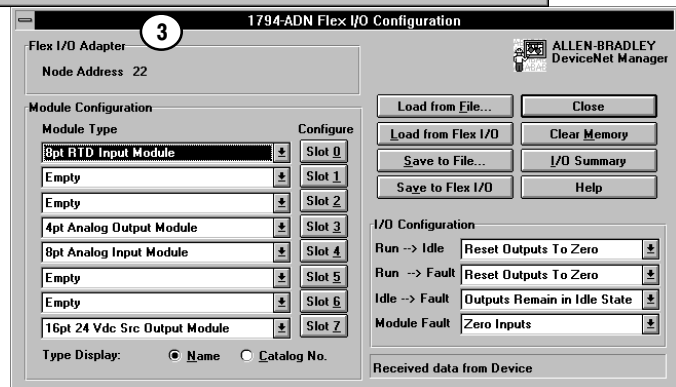
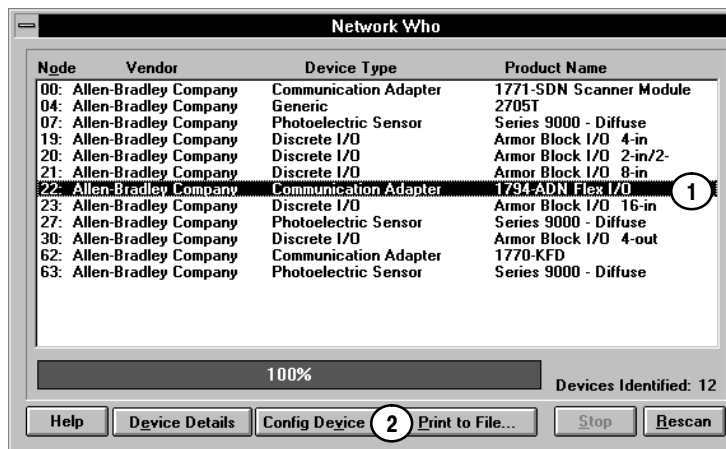
1. When you do a "network who", the network is examined for all devices connected to it. They are listed on the screen by node address.
2. To go to the online configure screen, select the device and click on the "configure device" button to bring up the configuration screen.
3. To display details about each device, by click on the "display details" button.
4. When the build is complete, or the stop button is used, the "rescan" button becomes active.



You can go directly to the "configure adapter" screen from the "network who" screen.

Using a "network who" to configure a device.

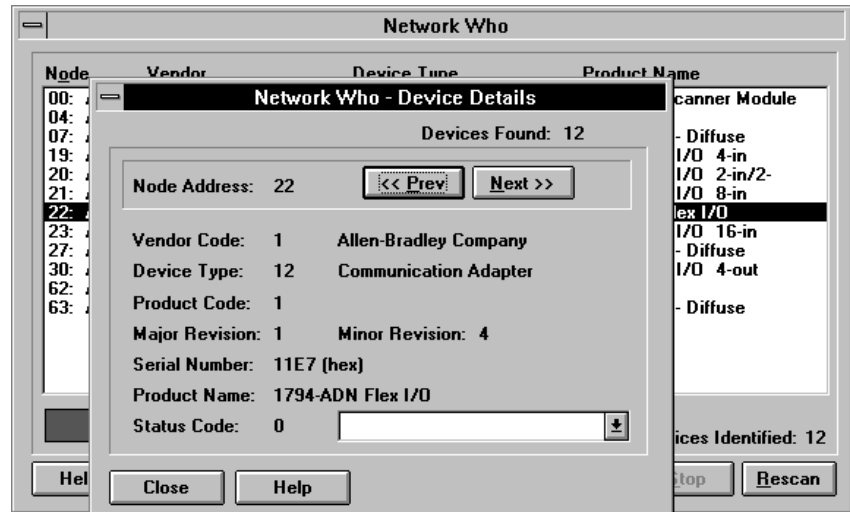
1. Highlight the device on the list.
2. Click on the "configure device" button.
3. The configuration screen for that device appears.



You can display device details from the network who screen.

Using a network who to display device details.

1. Highlight the device on the network screen.
2. Click on the "display details" button.



Troubleshooting

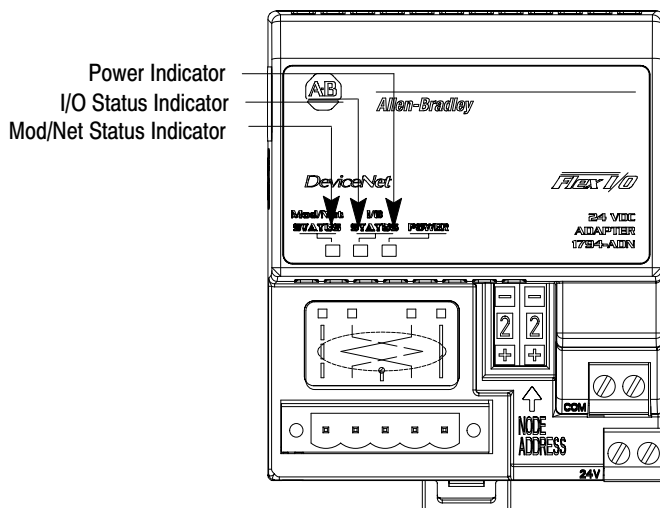
Chapter Objectives

In this chapter, you will learn how to use the indicators on the module frontplate for troubleshooting the module.

Troubleshooting With the Indicators

Diagnostic indicators are located on the front panel of the adapter module. They show both normal operation and error conditions in your remote I/O system. The indicators are:

- ModNet status
- I/O status
- Power indicator
- The table below provides the indicator conditions and status.



Power Indicator

Indication	Status
ON	Power applied to module
OFF	No power applied to module. Check power wiring to adapter module.

Mod/Net Status Indicator

Indication	Status
OFF	No power, or no network access
Flashing Green/OFF	On-line but not connected
Solid Green	On-line, link okay, connected
Flashing Red	Recoverable fault
Solid Red	Critical adapter failure

I/O Status Indicator

Indication	Status
OFF	No power or outputs off
Flashing Red/OFF	Recoverable fault – outputs in fault
Flashing Green/OFF	Idle/program mode – outputs in idle
Solid Green	Device operational – outputs live – run
Solid Red	Critical adapter fault – unrecoverable

Specifications

1794-ADN Specifications	
I/O Capacity	8 modules
Input Voltage Rating	24V dc nominal
Input Voltage Range	19.2V to 31.2V dc (includes 5% ac ripple)
Communication Rate	125KB 250KB 500KB
Indicators	Mod/Net Status – red/grn I/O Status – red/grn
Flexbus Output Current	640mA maximum @ 5V dc
Isolation Voltage	100% tested at 850V dc for 1s between user power and flexbus
Power Consumption	400mA maximum from external 24V supply
Power Dissipation	7.6W maximum @ 19.2V dc
Thermal Dissipation	26 BTU/hr @ 19.2V dc
DeviceNet Power Requirements	24V dc (+4%) @ 90mA maximum
Environmental Conditions	
Operational Temperature	0 to 55°C (32 to 131°F)
Storage Temperature	–40 to 85°C (–40 to 185°F)
Relative Humidity	5 to 95% noncondensing
Shock	30 g peak acceleration, 11 (+1)ms pulse width
Operating	50 g peak acceleration, 11 (±1)ms pulse width
Non-operating	
Vibration	Tested 5 g @ 10–500Hz per IEC 68-2-6
DeviceNet Cable	Belden YR-29832 or equivalent as specified in publication ICCG-2.2
Power Conductors	
Wire Size	12 gauge (4mm ²) stranded maximum 3/64 inch (1.2mm) insulation max.
Category	2 ¹

¹ Use this conductor category information for planning conductor routing. Refer to publication 1770-4.1, "Industrial Automation Wiring and Grounding Guidelines."

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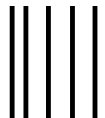
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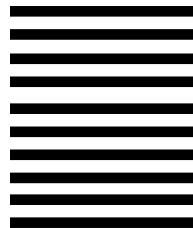
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