

Allen-Bradley

DeviceNet Adapter Module

User

Manual

(Cat. No. 1794-ADN Series B)

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 TM 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 WindowsTM
	• 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."

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			
А	Specifications	Adapter specifications	

Contains

What This Manual

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	More

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:



 Image: Terminal Base
 I/O Module

 Image: Terminal Base
 Image: Terminal Base

 Image: Terminal Base
 Image: Termin

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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.

The adapter module consists of the following major components:

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





DeviceNet Adapter Components

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).



Mori

mportant: 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 indention 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.

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	LTLEAX 1/10 B44 WING ADALTUTER UT/204-ADER

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.



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

Connect	То	
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 \mathbf{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.

DeviceNet Adapter



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		
	0	This bit is set (1) when an error is detected in slot position 0.		
I/O Module Fault	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 <mark>2-6</mark>
10 Input/6 Output Module	1794-IB10XOB6	page <mark>2-6</mark>
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	Sizo
Octal Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	UILC
	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 12-1	5	۵	DT 00-1	1	Write Word 1					
Whore D - In	out Dot	o /D0 o/	arroeno	nde to i	nnut A		acnond	le to innu	it 1 oto								

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	
02	01	00	Delay Time for Inputs 00–11	Selected Delay Time
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	Sizo		
Oct. Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	3126		
	Not used																Read Word 1		
	O15 O14 O13 O12 O11 O10 O9 O8 O7 O6 O5 O4 O3 O2 O1 O0															00	Write Word 1		
								Not	used	-				-			Write Word 2		
Where O	= Outpi	ut value	(O0 co	rrespor	ids to o	utput 0,	O1 cor	respond	s to out	put 1, e	tc.)								

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	Sizo	
(Octal Bits)	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	5126	
		N	lot use	ed			19	18	17	16	15	14	13	12	11	10	Read Word 1	
		Not used O5 O4 O3 O2 O1 O0													Write Word 1			
		Not used														Write Word 2		
Where I = In O = 0	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	Sizo
Oct. Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	5126
	F7	F6	F5	F4	F3	F2	F1	F0				Read Word 1					
	Not used FR O7 O6 O5 O4 O3 O2 O1 O														00	Write Word 1	
								Res	erved								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	Sizo
Oct. Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	5126
	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				D	T 12-1	5	D.	T 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 Senso	or				
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 Se	nsor				
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	
02	01	00	Delay Time for Inputs 00–11	Selected Delay Time
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	Sizo						
Oct. Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	5126						
		Not used D7 D6 D5 D4 D3 D2														D0	Read Word 1						
		Not used															Read Word 2						
		Not used DT 00-07)7	Write Word 1						
Where D = In	put Da	ita (wh	nere D	0 corr	espon חד מ	ds to i	nput 0 orresr), D1 co	orresp	onds to	o 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
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	Bits		Description	Maximum I	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	Sizo
Oct. Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	5126
	Not used																Read Word 1
	Not used O7 O6 O5 O4 O3 O2 O1 O0															00	Write Word 1
	Not used																Write Word 2
Where O	= Outpi	ut value	(where	e O0 coi	respon	ds to ou	itput 0,	O1 corre	espond	s to outp	out 1, et	c.)					

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	Sizo
Oct. Bit	17	17 16 15 14 13 12 11 10 07 06 05 04 03 02 01 00												5126			
								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 the output) = 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, ut 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	Sizo
Oct. Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	5126
	S						An	alog V	alue C	hanne	0						Read Word 1
	S						An	alog V	alue C	hanne	1						Read Word 2
	S						An	alog V	alue C	hanne	2						Read Word 3
	S		Analog Value Channel 3 Read Word 4														
	S		Analog Value Channel 4 Read Word 5														
	S						An	alog V	alue C	hanne	5						Read Word 6
	S						An	alog V	alue C	hanne	6						Read Word 7
	S						An	alog V	alue C	hanne	7						Read Word 8
	PU		N	lot use	d – set	to zer	D		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	wer 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)

Channel No.	Chan	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	C 7	
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	

Range Selection Bits for the 1794-IE8 Analog Input Module

C = Configure select bit

F = Full range bit 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
	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.
Read Word 9	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.
Muite Mound 4	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



Dec. Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	Sizo						
Oct. Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	5120						
	PU				١	lot use	ed - se	t 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						An	alog D	ata - (Channe	el 2						Write Word 3						
	S						An	alog D	ata - (Channe	el 3						Write Word 4						
		-			Not	used -	set to	0					OE3	0E2	0E1	OE0	Write Word 5						
	N	ot used	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											

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

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.	Chan	nel O	Chan	nel 1	Chan	nel 2	Channel 3		
	F0	CO	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							
	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.							
Read	Bits 04-14	Not used – set to 0.							
Word 1	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.
	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.
Write Word 6	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	Sizo
Oct. Bit	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00	5126
	S						Anal	og Val	ue Inpu	ut Chai	nnel 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 us	ied – s	et to O				W1	W0	U3	U2	U1	U0	Read Word 5
	S						Analo	g Data	– Outj	out Ch	annel ()					Write Word 1
	S						Analo	g Data	– Out	out Ch	annel 1	l					Write Word 2
						No	t used	- set t	0 0						OE1	OE0	Write Word 3
	Not u	used C5 C4 C3 C2 C1 C0 0 0 F5 F4 F3 F2 F1												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

Channel No.	Inp Chan	Input Channel 0		Input Channel 1		Input Channel 2		out nel 3	Out Chan	put nel 0	Output Channel 1		
	F0	CO	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	

Range Selection Bits for the 1794-IE4XOE2 Analog Combo Module

 $\begin{array}{l} C = Configure \ select \ bit \\ F = Full \ range \ bit \\ ^1 \ \ When \ configured \ to \ off, \ individual \ channels \ will \ return \ either \ 0V \ or \ 0mA. \end{array}$

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.
	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.
Read Word 5	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 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	Diagn	ostic Sta	tus Bits	Pwr Up	0	0	0	
Dec. Bit	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	
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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 Hi Cal Lo	F	ilter Cuto	ff	Enh	M	MDT	
Write Word 2		RTD 3	в Туре			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 =	Enh = Enhanced																

RTD Analog Input Module (1794-IR8) Write

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	e Data T	уре									
		Bit	01	00									
			0 0 °C (default)										
			0 1 ^o F										
			1 0 Bipolar counts scaled between -32768 and +32767										
			1	1	Unipol	ar counts scaled between 0 and 65535							
	02	Ehance compar	hanced mode select – measures voltage drop across a precision resistor in the module to oppare with the unknown input.										
	03–05	A/D Fil	/D Filter First Notch Frequency										
		Bit	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	Calibra	ation Hig	gh/Low	bit – Th	is bit is set during gain calibration; reset during offset calibration.							
	07	Calibra initiate	ation clo calibrati	ock – thi on.	s bit mu	st be set to 1 to prepare for a calibration cycle; then reset to 0 to							
	08-15	Calibration mask – The channel, or channels, to be calibrated will have the correct ma 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	Channe	el 0 RTD) Туре										
		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	100 ohm Pt α = 0.00385 Euro (-200 to +870°C)										
			0	0	1	1	100 ohm Pt α = 0.003916 U.S. (–200 to +630°C)							
			0	0	200 ohm Pt α = 0.00385 (–200 to +630°C)									
			0	1	1 0 1 500 ohm Pt α = 0.00385 (-200 to +630°C)									
			0	1	1	0	Reserved							
			10 ohm Copper (-200 to +260°C)											
			1	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 -	Reserve	ed								
	04–07	Channe	el 1 RTD) Type (s	see bits (00–03)								
	08–11	Channe	el 2 RTD) Type (s	see bits (00–03)								
	12–15	Channe	el 3 RTD) Type (s	see bits (00–03)								
Write Word 3	00–03	Channe	el 4 RTD) Type (s	see write	word 2,	bits 00–03)							
	04–07	Channe	el 5 RTD) Type (s	see write	word 2,	bits 00–03)							
	08-11	Channe	el 6 RTD) Type (s	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 Inpu	t Data						
Read Word 4		Channel 2 Input Data														
Read Word 5		Channel 3 Input Data														
Read Word 6								Channel	4 Inpu	t Data						
Read Word 7								Channel	5 Inpu	t Data						
Read Word 8								Channel	6 Inpu	t 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	Dia	ignosti	ics	Pwr Up	Bad Structure	CJC over	CJC Under

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 hi Cal lo	F	ilter Cuto	ff	FDF	Data Type		
Write Word 2	Therr	nocou	ple 3 [·]	Туре	The	ermocou	uple 2 T	уре	Thermocouple 1 Type Thermocouple 0 Type						e		
Write Word 3	Therr	nocou	ple 7	Туре	Thermocouple 6 Type Thermocouple 5 Type Thermocouple 5 Type							ermocou	ole 4 Typ	e			
Where: FDF = fixed digital filter bit																	

Thermocouple Input Module (1794-IT8) Write

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	e Data T	уре												
		Bit	01	00	Definit	ion										
			0	0	°C (de	fault)										
			0	1	٩	۰F										
			1	0	Bipolar	Bipolar counts scaled between -32768 and +32767										
			1	1	Unipola	Unipolar counts scaled between 0 and 65535										
	Bit 02 (02)	Fixed I 100% c	ted Digital Filter – When this bit is set (1), a software digital filter is enabled. This filter settles to 0% of a Full Scale step input in 60 scans.													
	03-05 (03-05)	A/D Fil	/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)	Calibra	ation Hig	gh/Low	bit – Thi	is bit is set during gain calibration; reset during offset calibration.										
	07 (07)	Calibra calibrat	ation clo tion.	ock – thi	s bit mus	st be set to 1 to prepare for a calibration cycle; then reset to 0 to initiate										
	08–15 (10–17)	Calibra corresp	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)	Channe	el 0 Thei	rmocoup	le 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)	Channe	el 1 Thei	rmocoup	le Type	(see bit	s 00–03)						
	08–11 (10–13)	Channe	el 2 Thei	rmocoup	le Type	(see bit	s 00–03)						
	12–15 (14–17)	Channe	el 3 Thei	rmocoup	le Type	(see bit	s 00–03)						
Write Word 3	00-03 (00-03)	Channe	el 4 Thei	rmocoup	le Type	(see wr	write word 2, bits 00–03)						
	04-07 (04-07)	Channe	el 5 Thei	rmocoup	le Type	(see wr	ite word 2, bits 00–03)						
	08-11 (10-13)	Channe	el 6 Thei	rmocoup	le Type	(see wr	ite word 2, bits 00–03)						
	12-15 (14-17)	Channe	el 7 Thei	rmocoup	le Type	(see wr	ite 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						-	-	Res	erved							
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														
							-									
Dec. Bit	15	14	13	12	2 1	1 10	09	08	07	06	05	04	03	02	01	00
Oct. Bit	17	16	15	14	1	3 12	2 11	10	07	06	05	04	03	02	01	00
Write Word 1		(Conne	tion E	nable	Channe	el 2			(Conne	ction E	Enable (Channe	12	
Write Word 2							Logic (Comma	ind Cha	nnel 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	r:	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."

More

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

Module Description	Catalog Number	For Additiona Installation	l Information: 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	1794-6.5.2
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 Thermocouople 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

About DeviceNet Manager



Adding Your Flex I/O DeviceNet Adapter to the Network

- 1. At the Network Screen, click on the "add device" button.
- 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.
- Click on the "Add Device" button when you have selected your device. Add more devices as necessary.

In this chapter you will learn:

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

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.

To add the DeviceNet adapter to the network:

•		NETWORK.PC2
Π	Project Name: NI	ETWORK
	Network: NETWORK2 Add <u>Device</u>	Network Description: Net Data Rate: 125 k Number of Devices: 0 Config Device Define Build Stop Build
N	ode 1) ar	Product Name Node Name
		Add Device to Network
		Network: NETWORK2 Cancel Help
	Catalog Number: Major Revision: Node Description	Device Iype Analog Output Module Barcode Scanner OUC Node Addr Add Device Node Name: Node0
		Communication Adopter 2 Control Station DC Drive Discrete 1/0
		Product
		Major
		Vendor Product Name Revision
		Allen-Bradley Company 1747-SDN Scanner Module 0 Allen-Bradley Company 1747-SDN Scanner Module 1
		Allen-Bradley Company 1747-SDN Scanner Module 2 Allen Bradley Company 1770 KED 1
		Allen-Bradley Company 1771-SDN 2a ner Module 0
		Allen-Bradley Lompany 17/7-SDN Scanner Module 1 Allen-Bradley Company 1777-SDN Scanner Module 2
		Allen-Bradley Company 1794-ADN DeviceNet Flex I/O Adapter 1
		Catalog Number: 1794-ADN Device Type: Communication Adapter
		Add Device Not Listed

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

- 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.
- To return to the network screen, click on the cancel button, or click in the upper left corner of the screen.

Device Type Analog Output Module Barcode Scanner CNC Communication Adapter Control Station DC Drive Discrete 1/0		ress: 0 🔮 Add Device ne: Node0 cription:
Product Vendor	Product Name	Major Revision
Allen-Bradley Company Allen-Bradley Company Allen-Bradley Company Allen-Bradley Company Allen-Bradley Company Allen-Bradley Company Allen-Bradley Company	1747-SDN Scanner Modul 1747-SDN Scanner Modul 1747-SDN Scanner Modul 1770-KFD 1771-SDN Scanner Modul 1771-SDN Scanner Modul	e 0 e 1 e 2 1 e 0 e 1 e 2
Allen-Bradley Company	1794-ADN DeviceNet Flex	1/0 Adapter 1

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.

= 179	4-ADN Flex I/	O Configuration			
Flex I/O Adapter Node Address 0			DeviceNet Manager		
Module Configuration		Load from <u>F</u> ile	Close Clear <u>M</u> emory		
Module Type	Configure	Load from Flex I/O			
Empty	± Slot <u>0</u>	<u>S</u> ave to File	1/0 Summary		
Empty	± Slot <u>1</u>	Save to Flex I/O	Help		
Empty	+ Slot 2				
Empty		-1/O Configuration			
Empty	± Slot <u>4</u>	Run> Idle Reset 0	utputs To Zero 👤		
Empty	± Slot <u>5</u>	Run> Fault Reset 0	utputs To Zero 👤		
Empty	± Slot <u>6</u>	Idle> Fault Outputs	Remain in Idle State 👤		
Empty		Module Fault Zero Inp	uts 👤		
Type Display:	atalog No.	Ready			

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

- 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.
- Load From File... 4. Use this button to load adapter configuration data from a file (a previously saved configuration).

<u>S</u>ave To File...

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."

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.

= 1794-ADN Flex I/	O Configuration			
Flex I/O Adapter Node Address 0	GREE ALLEN-BRADLEY DeviceNet Manager			
Module Configuration	Load from <u>F</u> ile			
Module Type Configure	Load from Flex I/O Clear Memory			
Empty 2 Slot D	Save to File			
Empty <u>I</u> Slot 1	Save to Flex I/O Help			
Empty Slot 2				
Empty 🛓 Slot <u>3</u>	1/O Configuration			
Empty 🛨 Slot <u>4</u>	Run> Idle			
Empty 🛃 Slot 5	Run> Fault Reset Outputs To Zero			
Empty 🛃 Slot <u>6</u>	Idle> Fault Outputs Remain in Idle State 🛨			
Empty <u>Slot 7</u>	Module Fault Zero Inputs 🛨			
Type Display: • <u>N</u> ame O <u>C</u> atalog No.	Ready			

From the Configuration screen, you can:	То:
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:

							1794-#	DN Flex I/	O Configuration	
 Select from the a. run idle b. run fault 	list box f	st box for each configuration option:				dapter Idress O nfiguratio n Type		Configure	Load from File	ALLEN-BRADLEY DeviceNet Manager
c. idle fault	1+				Empty	Type	±	Slot <u>0</u>	Load from Flex I/L	L/O Summary
Use the J bu	it itton to sh	now the set	tinas for ea	ch	Empty		±	Slot <u>1</u>	Save to Flex I/0	<u>I_70 Summary</u> Help
option.			ango ior ou	011	Empty		<u>*</u>	Slot 2		
					Empty		<u>±</u>	Slot 3	I/O Configuration	t Outputs To Zero
					Empty		<u>±</u>	Slot 5	Run> Fau	t Outputs To Zero 🛨
					Empty			Slot <u>6</u>	Idle> Fault Outpu	uts Remain in Idle State 👤
					Empty		<u>*</u>	Slot <u>7</u>	Module Fault Zero	Inputs 👤
					Type Dis	splay: 🖲 <u>N</u>	<u>l</u> ame O <u>C</u> atal	og No.	Ready	
									1	
	-1/0 Co	onfigurat	ion							
	Bun -	-> Idle	Reach (D	T- 7					
la	man		Reset (Dutputs Dutouts	To Zer					
	Run	> Fault	Hold O	utputs i	in Last S	itate				
	Idle	> Fault	Use Sa	ife Stat	e Outpul	t Values				
				s Hema	in in Idle	e State				
	Modu	le Fault	Zero In	puts		<u>+</u>				
		110.0								
		-1/U Cor	higuratio	n						
		Run>	ldle 🛛	Reset ()utputs 1	o Zero	±			
	(1b)	Run	> Fault [Reset f)utnuts]	o Zero				
	G		E-ut	Reset C	Jutputs 1	o Zero				
		Tale>	Fault	Hold Ou	utputs in	Last State				
		Module	Fault	Use Sa Zero In	<u>re State</u> puts	Output Va				
			Ľ							
			170 Con	figuratio	Dn					
			Run>	Idle	Reset C	lutputs To	Zero	±		
			Run>	Fault	Reset C	lutputs To	Zero	±		
		(1c)	Idle>	Fault	Outputs	Remain ir	ı Idle Stat	e 生		
			Module	Fault	Outputs Outputs	Remain ir Go To Fa	n Idle Stat ault State	e		
				1/0 Co	nfigurati	on				
				Run	> Idle	Reset Ou	tputs To Z	ero	±	
				Run -	-> Fault	Reset Ou	tputs To Z	ero	Ŧ	
				Idle:	> Fault	Outputs F	lemain in I	ldle Sta	ite 生	
			(1d	Modul	e Fault	Zero Inpu	ıts		±	
						Zero Inpu	lts			
						Hold Last	Input Val	ues		

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.

ALLEN-B DeviceNe
Close
Clear <u>M</u> er
<u>1</u> /0 Summ
Help
puts To Zero
puts To Zero
emain in Idle S
s

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

Configure

Slot D

Slot 1

Slot <u>2</u>

Slot 3

Slot 4

Slot 5

Slot 6

Slot 7

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Catalog No.

1. Click on the slot number in the

the module for that slot.

column called Configure to select

Module Type		Configu
1794-IA8	±	Slot <u>(</u>
1794-IB16	±	Slot 1
1794-IB8S	<u>+</u>	Slot 2
1794-IE4X0E2	±	Slot 3
1794-IE8	±	Slot 4
1794-IR8	±	Slot <u>s</u>
1794-0A8	±	Slot <u>E</u>
1794-0B16	±	Slot 7
Type Display: O <u>N</u> ame	• Catal	og No.

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

Click on the or on the list box for slot 0. A list of modules is displayed. Use the up/dwn 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 2 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 **Spt Relay Output Module** SCANport Module Unknown

Module Configuration

8pt 120 Vac Input Module

8pt 24 Vdc Sensor Input

4/2 Analog Combo Module

8 Pt Analog Input Module

8pt RTD Analog Input Module

16pt 24 Vdc Src Output Module

• <u>N</u>ame

8pt 120 Vac Output Module

16pt 24 Vdc Sink Input Module

Module Type

Type Display:

This adapter example has all 8 slots

Example

filled with modules.

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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. Slot D

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.

- 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.
- 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	<u> </u>						
I/O Data Sizes 1	Cancel						
Input Size	ords <u>S</u> ave to Flex 1/0						
Output Size 0 w	ords Set <u>for 1/0 Only</u> 5						
	Data Description						
Delay Constant							
<u>M</u> ax Delay Time for Inputs 0	-7 0.5 • msec						
0.5 ±							
Z 4 ♥							
8	. •						
3	•						
1	6 🔺						
13							
<u>(</u>							
I/O Module Da	ta Description 2a						
8nt 120 Vac lu	nout Module						
Read Words	Write Words						
🔀 Input Data (bits 0 - 7)	Not Used						
	OK Cancel						

= 1794-IB16 - 16nt 24 Vdc Sink Input Module Config
Madule Slat Position 1
Input Size words Save to Flex 1/0
Output Size 0 words Set for 1/0 Only 4
Data Description(2)
Delay Constant
Max Delay Time for Inputs 0 - 11
Hen Delay Time for leaves 12, 15, and a second
Max Delay Time for Inputs 12 - 15 0.5 + msec
0.5 ±
1 +
16 –
1/O Module Data Description 2a
16pt 24 Vdc Sink Input Module
Kead words Write Words
Not Used
OK Cancel

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.

- 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.
- 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.

<u>o</u>k

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

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.

 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.

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

<u>0</u>K

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

= 1794-IB8S - 8pt 24 Vdc Sensor Input Module Config						
Module Slot Position 2	OK 5					
1/0 Data Sizes	Cancel					
Input Size	Save to Flex 1/0					
Output Size 0 words	Set <u>f</u> or 1/0 Only 4					
	Data Description 2					
Delay Constant <u>M</u> ax Delay Time for Inputs 0 - 7	3 0.5 <u>+</u> msec					
0.5	<u>+</u>					
32 • 64 •						
1/0 Module Data Description 2a						
8pt 24 Vdc Sensor Input Module Read Words Input Status (8 - 15), Input Data (0 - 7) Input Delay Time						

OK

Cancel

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.

- 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.
- 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.
- 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-IE4X	0E2 - 4	2 Analog (Combo Modu	le Config	juration	
	Modu 1/0 E	ule Slot F)ata Size	Position 3 es	1					-6-
	Inr	out Size	-	-de		Save to Fle	× 1/0		
	0u	tout Siz	e 2 wo	ds		Set <u>f</u> or 1/0	<u>On</u>	Can	cel
	<u>_</u>	input oil					Da <u>t</u> a Des	cription	2
	Input	t Channe	I Selection 3		Output Con	figuration	. (4)	CI 1.0	3
	Lna	nnel <u>U</u>	Not configured	<u>±</u>	O <u>u</u> tput O	Sare State	Data	Not configu	red +
	Lha	nnel <u>I</u>	Not configured	±	Output 1			Not configu	red 📕
	Chai	nnel <u>Z</u>	Not configured	<u>±</u>			0.01	C	
r	Chai	nnel <u>3</u>	Not configured	±	<u>H</u> adix:	Decimal	O Bin	O Hex	OCt
Ľ	NOCC	onrigu	ired ⊻						
	u - 20 4 - 20	imA/u ImA	J - 10 ¥ 🕇						
Ŀ	+/- 10) V	+						
			Output Con	figurat	ion				
				Saf	e State I	Data (4)	Chan	nel Sele	ction
			Output O	0			Note	onfigured	
			-	<u> </u>			0.20	ma/0 - 1	
			Uut <u>p</u> ut 1	0			4 - 20	mA	
				~ -		0.00	+/- 10	<u>v</u>	
			<u>R</u> adix:	O D	ecimal		O I	Hex (Uct
						4a)			
					1/0 Module	Data Descrir	ntion -		
					4/2 Analog	Combo Module	, (2a)	
		Read	Words			Write Word	ls .	D .	
			hannel V Analog D hannel 1 Analog D	ataj ata		× Channe	el V Analo el 1 Analo	g Data g Data	
		X CH	nannel 2 Analog D	ata		C Output	Enable bit	s (0-1)	
			hannel 3 Analog D	ata 04 (4)	5)	Full Ra	nge (0-5),	Config select	(8-13)
			nderrange (U-3), Wi	re Urr (4-:	oj	Not Us	ea ed		
						🗖 Not Us	ed		
						Not Us	ed		
						Not Us	ed		
							OK		Cancel

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.

 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.
- 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.



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.

 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.

- 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.
- 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.
- 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.
- Select the type of RTD for each channel using the list box for selection of each type. Click on the desired RTD to select.
- 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.
- 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.

a	1794-IF	8 - 8 Pt. RTD An	alog I/O Module	
A Modu 1/0 Da <u>Input</u> Configu Modu A/D 1 RTD T Chann Chann	1794-IF ule Slot Position 5 ata Sizes 1 t Size 1 words 1 ut Size 0 words 1 ut Size 0 words 3 Filter First Notch Frequency 4 ype hel 0 Resistance Hel 5 Besistance	B - 8 Pt. RTD An Save to Flex I/I Set for I/O Onl Calibration Degrees Centigrad 0 Hz Chan Chan Chan Chan	alog I/O Module	2 (7) 2 (8) 2
Resistanc	e		nel 7 Registance	
No Senso 100 ohm F 200 ohm F 500 ohm F Reserved 10 ohm c 120 ohm r 200 ohm r 500 ohm r Reserved	r Connected Pt./alpha = 0.00385 Pt./alpha = 0.003916 Pt. Pt. ppper nickel nickel nickel	4a 10 Hz 25 Hz 50 Hz 60 Hz 100 Hz 250 Hz 1000 Hz 1000 Hz 1000 Hz 1000 Hz	Degrees Centig Degrees Fahre Scaled bipolar Scaled unipola	rade anheit counts +/-32768 r counts 0 - 65535
			2	
uy :		I/O Module Da	a Descriptic.	
g	Read Words X Reserved Channel 0 Input Data X Channel 1 Input Data X Channel 2 Input Data X Channel 3 Input Data X Channel 4 Input Data X Channel 4 Input Data	8pt RTD Inpu	t Module //ite Words Calibration Mask/ Inputs 0 - 3 RTD Inputs 4 - 7 RTD Reserved	Config Гурез Гурез
ta size dule. s are ation.	 K Channel 5 Input Data K Channel 6 Input Data K Channel 7 Input Data K Over Range/Under Range I Calibration/Status Bits 	bits		
ine			OK	Cancel

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.
- 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.
- 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	OK 5				
1/O Data Sizes	Cancel				
Input Size	Save to Flex 1/0				
Output Size 1 words	Set <u>f</u> or I/O Only 4				
	Data Description 2				
Safe State Data					
D <u>a</u> ta (3) 0					
<u>R</u> adix: • Decimal O Bin	O Hex O Oct				

- I/O Module	I/O Module Data Description 2a				
8pt 120 Vac Read Words	S Output Module Write Words Woutput Data (bits 0 - 7) Not Used				
	OK Cancel				

1794-OB16 - 16pt 24 Vdc Src Output Module Config 5 **Module Slot Position** 7 OK Cancel 1/O Data Sizes $\left(1\right)$ Input Size 0 words Save to Flex I/O Set for I/O Only 4 **Output Size** 11 words Data Description... 2 Safe State Data D<u>a</u>ta n Radix: Decimal 🔿 Bin O Hex O Oct 2a I/O Module Data Description 16pt 24 Vdc Src Output Module Read Words . Write Words Not Used 🗵 Output Data Not Used OK Cancel

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.
- 4. 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.

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.

 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.
- 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.
- 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-OW8 - 8pt Relay Output Module Config					
Module Slot Position 0	OK (5)				
I/O Data Sizes	Cancel				
Input Size 🔲 words	Save to Flex I/O				
Output Size 1 words	Set <u>f</u> or I/O Only 4				
	Da <u>t</u> a Description (2)				
Safe State Data					
D <u>a</u> ta O	3				
Radix:	O Hex O Oct				

	I/O Module Data Description 2a 8pt Relay Output Module
Read Words	Write Words
Not Used	I≭ Output Data (bits 0 - 7) ☐ Not Used
	OK Cancel

Configuration for the 1794-OE4 Analog Output module

1794-OE4 - 4pt Analog Output Module Configuration Module Slot Position n 1/O Data Sizes 6 1) OK Save to Flex I/O C Set <u>for 1/0 Onl</u> 5 Input Size words Cancel 4 Output Size words Data Description Ch F

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

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

previously sent to file.

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. <u>0</u>K

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

			<u> </u>		
annel Configur	ation				
	3)afe State Data	Channe	el Selection (4)		
lutput <u>0</u>	0	Not confi	Not configured		
lutput <u>1</u>	0) - 20 mA/0 - 1			
lutput <u>2</u>	0	4 - 20 mA			
utput 3	0	Not confi			
· _ <u>R</u> adix:	Decimal 3 Bin	O Hex	O Oct		
	Apt Apples Out	ut Modulo 2a			
ead Words	4pt Analog Out	rite Words			
Not Used		Channel O Ana	og Data		
		Channel 1 Anal	og Data		
		Channel 2 Ana	og Data		
		Channel 3 Anal	og Data		
		Enable bits (U -	J Config Coloot (0 11)		
		Not Used), coning select (o - 11)		
		Not Used			
		Not Used			
		Not Used			
		Not Used			
		Not Used			
		Not Used			
		Not Used			
		OK	Cancel		

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.

 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.

- 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.
- 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.
- 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.
- Select the type of thermocouple for each channel using the list box for selection of each type. Click on the desired type to select.
- 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.
- 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.

= 1794-IR8 - 8 Pt	. RID Analog I/O Module
Module Slot Position 0	
1 Save	to Flex 1/0 0K (7)
Input Size 10 words Set fr	
Output Size O words	bration Data Description (2)
Configuration	
Module Data Type 3 Degrees	Centigrade 🛃
A/D Eilter Eirst Noteh Frequency	
AND Filter First Noten Frequency (4)	
Channel 0 Resistance	Channel 4 Resistance
Channel 1 Resistance	Channel 5 Resistance
Channel 2 Resistance	Channel <u>6</u> Resistance
Channel <u>3</u> Resistance	Channel 7 Resistance
millivolts (5a)	
B type	
E type	Degrees Centigrade
J type	Degrees Fahrenheit
K type	Scaled bipolar counts +/-32/68
S type	Scaled unipolar counts 0 - 65535
T tupe	_
	(4a)
N type	10 Hz 🛨
Reserved	25 Hz
Reserved	60 Hz
Cold Junction Temp Channels	00 - 100 Hz •
Cold Junction Temp Channels I	J4 - 250 Hz →
No Sensor Connected	1000 Hz •
No School Connected	
- I/O Modu	ule Nata Nescrintion 🚽
8nt Thermo	couple Input Module
Read Words	Write Words
Reserved	Calibration/Module Data Type
Channel O Input Data	Inputs 0 - 3 Thermocouple Types
Channel 1 Input Data	Inputs 4 - 7 Thermocouple Types
K Channel 2 Input Data	Reserved
K Channel & Input Data	
Channel 5 Input Data	
Channel 6 Input Data	
🔀 Channel 7 Input Data	
🗵 Over Range/Under Range Bits	
Calibration/Status Bits	
	OK Cancel

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

10 Input/6 Output Module. When you are off line, I/O data size comes up in a default 1794-IB10X0B6 16pt. 24 Vdc Combo I/O Module mode. The default sizes are optimal settings. If you do a "load from file," the sizes are the stored sizes previously **Module Slot Position** 0 OK 5 1/O Data Sizes Cancel Input Size 1 wor(1. To specify the number of input and output words, place the 1 Save to Flex 1/0 cursor in the box and backspace to delete. Enter the desired words Output Size 2 4 Set for I/O Only 2 Changing the number of input (read) words generates Data Description. the amount of input and status area mapped into Filter Constant adapter memory. Changing the amount of output (write 0.25 Max Filter Time for Inputs 0 - 9 ŧ words) causes the adapter to expect more or less 3)^c output/configuration words from the process. Safe State Data 3 2. The "Data Description" button brings up a screen (2a) ÷ D<u>a</u>ta 0 0.25 which shows which input and output words are being ŧ used. Clicking on the boxes will automatically select the 0.5 Decimal Radix: O Bin O Hex C number of words used. After selection, click on the OK 1 button to return to the module configuration screen. 2 4 8 16 32 settings. Filter time settings range from 0.25ms to 32ms. I/O Module Data Descript 16pt 24 Vdc Combo I/O Module Read Words ite Words 🗵 Input Data 🗵 Output Data 🗌 Input Filter Time OK Cancel

The following configuration screen is for the 1794-IB10XOB6

3. Set the filter time constant for each set of inputs by clicking on the text box 🛃 and scrolling thru the

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

sent to file.

selection.

OK

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

3–17

1/O Data Sizes		
Input Size	1	₩ords
<u>O</u> utput Size	1	words

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.

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.

- 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.
- 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-OB8EP - 8pt 24 Vdc Elect Fused Output Module					
Module Slot P	osition O			OK	5
_E I/O Data Size	:5			Cancel	
<u>I</u> nput Size	0	words	<u>S</u> ave	to Flex 1/O	
Output Size	e 1	words	Set <u>f</u>	or 170 Only	4
	I		Da <u>t</u> a I	Description	. 2
Safe State Da	ata				
D <u>a</u> ta					
<u>R</u> adix:	• Decimal	O Bin	○ Нех	O Oct	
	I/O I	Module Data I	Description	2a	

I/O Module Data Description 2a Bpt 24 Vdc Elect Fused Output Module				
Read Words	Write Words			
C Output Fault	🗵 Output Data			
	OK Cancel			

Configuration for the 1203-FM1 SCANport Module

1203-FM1 SCANport Module Configuration Module Slot Position n 1/O Data Sizes 5 OK Save to Flex I/O 1 6 Input Size Set for I/O Only 4 Cancel Output Size 5 words Data Description. 2) Safe State Data 3 0 Output 0 **Channel Enable Bits** lo Output 1 **Channel 1 Logic Command Bits** 0 Output 2 **Channel 1 Analog Reference Data** Γ Output 3 **Channel 2 Logic Command Bits** lo Output 4 **Channel 2 Analog Reference Data** Radix: Decimal O Bin O Hex O Oct I/O Module Data Description 2a] SCANport Module Read Words Write Words **X** Channel Enable Bits Reserved ▼ Channel Status Bits 🔀 Channel 1 Logic Command Bits 🔀 Channel 1 Logic Status Bits 🗵 Channel 1 Analog Reference Data 🔀 Channel 1 Analog Feedback Data 🕱 Channel 2 Logic Command Bits 🔀 Channel 2 Logic Status Bits X Channel 2 Analog Reference Data 🔀 Channel 2 Analog Feedback Data OK OK Cancel

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.
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 extension?

- 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.
- 4. 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:	Ву
Offline	save to file	clicking on "save to file"

Flex I/O Adapter Node Address 22						ALLEN-BRADLEY DeviceNet Manag
Module Configuration				Load from	<u>F</u> ile	Close
Module Type	1	Configure	ſ	Load from F	lex 1/0	Clear <u>M</u> emory
8pt 120 Vac Input Module	Ŧ	Slot <u>0</u>	ľ	Save to F		1/O Summarv
16pt 24 Vdc Sink Input Module	ŧ	Slot <u>1</u>	ľ	Save to Ele		Help
8pt 24 Vdc Sensor Input Module	Ŧ	Slot <u>2</u>	l	3d <u>4</u> e to i ie	x 170	пер
4/2 Analog Combo Module /B	ŧ	Slot <u>3</u>	- L	/O Configurati	on	
8pt Analog Input Module /B	ŧ	Slot <u>4</u>	F	lun> Idle	Reset Ou	tputs To Zero 👤
8pt RTD Input Module	ŧ	Slot 5	F	lun> Fault	Reset Ou	tputs To Zero 👤
8pt 120 Vac Output Module	±	Slot <u>6</u>	h	dle> Fault	Outputs R	łemain in Idle State 👤
16pt 24 Vdc Src Output Module	±	Slot 7	N	Iodule Fault	Zero Inpu	its 👤
Type Display: • <u>N</u> ame O <u>C</u>	atalog	g No.		/O Module Co	nfiguration	

"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.

Flex I/D Adapter ALLEN-BRADLEY DeviceNet Manager Node Address 22 1 Module Save As Module Directories: c:\\network\network2 Bpt 11 Directories: c:\\network\network2 OK Bpt 22 pi c:\\network\network2 AllEN-BRADLEY DeviceNet Manager Directories: c:\\network\network2 OK Bpt 24 Allen Directories: c:\\network\network2 OK Bpt 4 Bpt 7 PoteviceNet Manager Directories: c:\\network\network2 Cancel Save File as Type: pi Drives: E State ± Save File as Type: Drives: E E E Flex Config Files (*.prf) ± misses_6-2 ± E E	— 1794- <i>4</i>	ADN Flex I/O Configuration
Module (Save As Module (Save As Module (Directories: Ibpt 1 Directories: Ibpt 2 Cancel Module (Pretwork (Bpt A Pretwork (Bpt H Pretwork (Save File as Type: Drives: Flex Config Files (*.prf) (Cross_6-2	Flex I/O Adapter Node Address 22	ALLEN-BRADLEY
	Module Module Bpt 1 16pt 2 A/2 A Bpt A Bpt R Bpt 1 16pt 2 A/2 A Bpt A Bpt R Bpt 1 16pt 2 A/2 A Bpt A Bpt 1 Save File as Type: Flex Config Files (*.prf) ±	Save As Directories: CK nory nary c:\\network\network2 Cancel dnetmgr network network Entwork Drives: Cc: Cancel Cance

 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 to go online.

1. 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

1/O Summary

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:



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

1794-ADN Detailed Mapping Summary	
O Input Data 💿 Output Data	
Slot 3 - 4/2 Analog Combo Module /B Channel 0 Analog Data Channel 1 Analog Data Slot 6 - 8pt 120 Vac Output Module Output Data (bits 0 - 7) Slot 7 - 4pt Analog Output Module /B Channel 1 Analog Data Channel 1 Analog Data Channel 2 Analog Data Channel 3 Analog Data	
<u>Module Summary</u> <u>Print to File</u> Close	

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

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 <u>Module Summary</u> 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				
Input Status Word	1	0	words			
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	Close			
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 **Print to File** 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.

-	1794-ADN Detai	led Mapping Summary	
		Save As	
Slot 3 Fil Slot 6 Slot 7 Sa	te <u>N</u> ame: txt 2 * * * * * * * * * * * * *	Directories: c:\dnetmgr c:\ main dnetmgr dnetmgr a_proj	OK 3 Cancel <u>H</u> elp <u>R</u> ead Only Network
	ext Files (*.txt)	Close	±

- 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

About DeviceNet Manager



Configuring Your Flex I/O Adapter and System Online

In this chapter you will learn:

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

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.

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.

-	Add D	evice to Network	
Network: NETWORK2		(4)	OK Cancel
Product <u>Lype</u> All <u>Product Types</u> AC Drive Analog Input Module Analog Output Module Barcode Scanner CNC Communication Adapter	1	Node <u>A</u> d 3 2 Node <u>N</u> ame: Node <u>D</u> escription:	<u>.</u>
Product Vendor	Product Name		Major Revision
Allen-Bradley Company Allen-Bradley Company Allen-Bradley Company Allen-Bradley Company Allen-Bradley Company Allen-Bradley Company Allen-Bradley Company Allen-Bradley Company	1747-SDN Sca 1771-SDN Sca 1771-SDN Sca 1787-MGR De 1794-ADN Dev 2705T DeviceLink - c DeviceLink - c	Inner Module Inner Module ViceNet Ma ViceNet Flex ViceNet Flex Inductor to conductor	
Catalog Number: 1794-4	ADN	Product Type:	Communication Adapter
	Add New De <u>v</u>	ice to EDS Library	

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

-					De
<u>F</u> ile	⊻iew	Wh <u>o</u>	<u>U</u> tilities	<u>H</u> elp	
	ž.	fa Ca		9	१ №?
			System I	con	

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

DeviceNet Driver Selection - DeviceNet Manager				
Rockwell Automation	Available DeviceNet Drivers Allen-Bradley, Co. 1770-KFD DeviceNet RS232 Interface <u>DK</u> <u>C</u> ancel	<u>.</u>		

Click on to continue. The driver configuration screen appears.

4–2

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.

KFD16 Driver Configuration Allen-Bradley 1770-KFD Driver for WinDNet16 Driver Revision: 1.60 Copyright © 1996 Allen-Bradley Company, Incorporated Win-DNet A Division of Rockwell Automation KFD Driver Setup Serial Port Setup DeviceNet Port Setup 1 ● COM1 O COM3 Node <u>A</u>ddress 62 O COM<u>2</u> O COM<u>4</u> 2 125K Ŧ Data Rate 4 Baud Rate 19200

5

OK

Cancel

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

<u>H</u>elp

Online appears in the network area.

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

•	NETWORK.PC2	•	-
Project Name: NETWORK			1
Network:	Network Description:		
NETWOBK2 Online			
die wonke onend			
	Net Data Rate: 125 k		al III
	Number of Devices: 12	Add Network	J
	(2)		
Add Device	e Unline <u>B</u> u	ild <u>S</u> top Build	
N <u>o</u> de Vendor	Product Name	Node Name	
Allen-Bradley Company	1771-SDN Scanner Module		÷
4 Allen-Bradley Company	2705T		
07 Allen-Bradley Company	Series 9000 - Diffuse		
19 Allen-Bradley Company	Armor Block I/O 4 input		
20 Allen-Bradley Company	Armor Block I/O 2 input / 2 output		
21 Allen-Bradley Company	Armor Block 1/0 8 input		•
Catalog Number:	Device Type: Commu	nication Adapter	
Maior Bevision: 3	21	•	
Node Description:			
Node Description.			
			+

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

Transaction Success	kfd16.dll	Online	Node 62	125K	1
---------------------	-----------	--------	---------	------	---
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.

■ 1794-ADN Flex I	O Configuration
Flex 1/O Adapter Node Address 22	ALLEN-BRADLEY
Module Configuration	Load from <u>F</u> ile Close
Module Type Configure	Load from Flex 1/0 Clear Memory
Slot 0	Save to File
Empty 🛃 Slot 1	Save to Flex I/O Help
Empty Slot 2	
4pt Analog Output Module 🛃 Slot 3	1/O Configuration
8pt Analog Input Module Slot 4	Run> Idle Reset Outputs To Zero
Empty Slot 5	Run> Fault Reset Outputs To Zero
Empty Slot <u>6</u>	Idle> Fault Outputs Remain in Idle State 🛨
16pt 24 Vdc Src Output Module Slot 7	Module Fault Zero Inputs
Type Display:	Received data from Device

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 1/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.

lex I/U Adapter				ALLEN-BHADL
Node Address 22				
lodule Configuration			Load from <u>F</u> ile	Close
Module Type		Configure	Load from Flex I/	D Clear <u>M</u> emory
8pt RTD Input Module	÷	Slot <u>0</u>	Save to File	<u>1/0 Summary</u>
Empty	Ŧ	Slot <u>1</u>	Save to Elex 1/0	Help
Empty	±	Slot <u>2</u>		
4pt Analog Output Module	Ŧ	Slot <u>3</u>	1/O Configuration	
8pt Analog Input Module	±	Slot <u>4</u>	Run> Idle Rese	et Outputs To Zero
Empty	ŧ	Slot 5	Run> Fault Rese	et Outputs To Zero
Empty	ŧ	Slot <u>6</u>	Idle> Fault Outp	uts Remain in Idle State
16pt 24 Vdc Src Output Module	Ŧ	Slot <u>7</u>	Module Fault Zero	Inputs

Load from a File

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

-			1794-ADN Flex I/	O Configuratio	n	
Fle	ex 1/0	Adaptar	0505			ALLEN-BRADLEY
	Node		Disastasian			ericeitet inaliager
Me	odule	node22.prf		\network2	<u> </u>	Close
	Modu	node22.prf	E 🕞 c:\	<u>+</u>	Cancel	lear Memory
	8pt A		🗁 dnetmgr		<u>H</u> elp	O Summary
	Empt		network	2	Network	Help
	Empt					
	4pt A			÷		a 7010
	8pt A	Flex Config Files (*.prf)		6-2 +		
	Empt					in Idle State
	cmpy	,				
	16pt 2	24 Vdc Src Output Module	<u> </u>	Module Fault	Zero Inputs	<u>•</u>
	Type	Display: • <u>N</u> ame (🔿 <u>C</u> atalog No.	Beceived dat	a from Device	
				1.1000.100 000		

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

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

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 enter	ed configuration	Actual	configuration
1794-ADN Flex I/	O Configuration	T794-ADN Flex I	O Configuration
Flex I/O Adapter Node Address 22	ALLEN-BRADLEY	Flex I/O Adapter Node Address 22	ALLEN-BRADLEY DeviceNet Manager
Module Configuration Configure Bpt 24 Vdc Elect Fused Output Module \$ Siot 0 Bpt Thermocouple Input Module \$ Siot 1 Empty \$ Siot 2 4pt Analog Output Module \$ Siot 4 Empty \$ Siot 5 Topp 124 Vdc Src Output Module \$ Siot 5 Topp 124 Vdc Src Output Module \$ Siot 5 Type Display: @ Name \$ Catalog No.	Load from Ele Close Load from Flex I/O Clear Memory Save to File J/O Summary Saye to File J/O Summary Reset Outputs To Zero 1 Idle → Fault Reset Outputs To Zero Module Fault Zero Inputs 1 Beceived data from Device	Module Configuration Module Type Configure Bpt R1D Input Module * Slot 0 Empty * Slot 2 Apt Analog Output Module * Slot 3 Bpt Analog Input Module * Slot 3 Empty * Slot 5 Type Display: * No.	Load from Ele Close Load from Flex I/O Clear Memory Save to File I/O Summary Sage to File I/O Summary Sage to File I/O Summary I/O Configuration Help Run → Idle Reset Outputs To Zero Run → Fault Reset Outputs To Zero Idle → Fault Outputs Remain in Idle State Module Fault Zero Inputs Received data from Device
If you make changes to th placement, when you atte each slot, you will be pror message similar to this:	ne individual module empt to configure npted with a	DeviceNet Manager Actual Module Installed is 8pt RTD Ana This does not match the configured typ Okay to Continue with Configuration?	log Input Module. e.
		ATTENTION: Your settings power without doing a "Save Flex I/O."	will be lost if you cycle to File" or a "Save to

Entering Configuration Information into the Configuration Screen

	= 1794-ADN Flex	I/O Configuration
ach configuration option:	Flex I/O Adapter Node Address 22	ALLEN-BRADLEY
the settings for each	Module Configuration Module Type Configure Bpt RTD Input Module Image: Slot 1 Slot 1 Empty Image: Slot 2 Slot 2 4pt Analog Output Module Image: Slot 3 Slot 4 Bpt Analog Input Module Image: Slot 5 Slot 5 Empty Image: Slot 5 Slot 5 Empty Image: Slot 5 Slot 5 Topp Display: Image: Slot 7 Slot 7	Load from File Close Load from Flex 1/0 Clear Memory Save to File L/O Summary Bun -> Fault Reset Durputs To Zero Idle -> Fault Outputs Remain in Idle State Module Fault Zero Inputs Received data from Device
n Reset Outputs To Zero Reset Outputs To Zero Hold Outputs in Last State Jse Safe State Outputs To Zero Hold Outputs in Last State Jse Safe State Outputs To Zero Hold Outputs in Last State Jse Safe State Outputs To Zero Hold Outputs in Last State Jse Safe State Outputs To Zero Hold Outputs Reset Outputs To Zero Fault Reset Outputs Remain in Idle Fault Outputs Remain in Idle Fault Outputs Go To Fault S 1/O Configuration Run> Idle Reset Outputs Remain Idle> Fault Outputs Remain Module Fault Zero Inputs	Image: state State State State State State State State Image: state	
	ach configuration option: the settings for each Dutputs To Zero Dutputs To Zero Dutputs in Last State fe State Output Values s Remain in Idle State puts n Reset Outputs To Zero Reset Outputs To Zero Reset Outputs To Zero Reset Outputs To Zero Hold Outputs in Last State Use Safe State Output Values Zero Inputs figuration Idle Reset Outputs To Zero Fault Reset Outputs To Zero Fault Reset Outputs To Zero Fault Reset Outputs To Zero Fault Outputs Remain in Idle Outputs Remain in Idle Outputs Remain in Idle Outputs Go To Fault S 1/O Configuration Run> Idle Reset Outputs Run> Fault Reset Outputs Run> Fault Reset Outputs Run> Fault Reset Outputs Idle> Fault Outputs Remain Module Fault Zero Inputs Zero Inputs	ach configuration option: Image: Test //D Adapter Node Address 22 Module Configuration Configuration Module Type Stot 1 Stot 2 Stot 2 Module Type Stot 2 Stot 1 Empty Empty Stot 2 Stot 2 Stot 3 Bpt Analog Dutput Module Stot 3 Stot 2 Stot 4 Stot 5 Stot 5 Empty Stot 5 To Zero Impt Puts Stot 5 Reset Outputs To Zero Impt Reset Outputs To Zero Impt Reset Outputs To Zero Impt Fault Reset Outputs To Zero Fault Dutputs Remain in Idle State Uotputs Remain in I

Select your adapter options as shown in the following:

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.

- Click on the solution of modules is displayed. Use the up/dwn 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 C
8pt 120 Vac Input Module (2)
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

a 1794-ADN Flex I/O Configuration				
Flex I/O Adapter				
Node Address 22	U AGAE			
Module Configuration	Load from <u>F</u> ile Close			
Module Type Configure	Load from Flex 1/0 Clear <u>M</u> emory			
8pt RTD Input Module	Save to File			
Empty 1a Slot 1	Save to Flex 1/0 Help			
Empty <u>Slot 2</u>				
4pt Analog Output Module 👱 Slot 3	1/O Configuration			
8pt Analog Input Module Slot 4	Run> Idle Reset Outputs To Zero			
Empty 🛨 Slot 5	Run> Fault Reset Outputs To Zero			
Empty 🛨 Slot <u>6</u>	Idle> Fault Outputs Remain in Idle State			
16pt 24 Vdc Src Output Module 🔮 Slot <u>Z</u>	Module Fault Zero Inputs			
Type Display: • <u>N</u> ame O <u>C</u> atalog No.	Received data from Device			

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.

Module Configuration	
Module Conngulation	
Module Type	Configure
8pt RTD Input Module 1 🛨	Slot <u>0</u>
Empty 🛨	Slot <u>1</u>
Empty 🛨	Slot <u>2</u>
4pt Analog Output Module 🛨	Slot <u>3</u>
8pt Analog Input Module 🛨	Slot <u>4</u>
Empty 🛨	Slot <u>5</u>
Empty 🛨	Slot <u>6</u>
16pt 24 Vdc Src Output Module 🛨	Slot <u>7</u>
Type Display: • Name O <u>C</u> atalo	g No.

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:

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.

-1/O Data Sizes		
Input Size	0	words
<u>O</u> utput Size	4	words

- 6. 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.

n 1794-0E4 - 4pt Analo	g Output Module Configuration
Module Slot Position 3	
1/0 Data Sizes	Save to Flex 1/0 6 0K 7
Input Size	Set for 1/0 Only E Cancel
Output Size 14 words	
	Data Description 2
Channel Configuration	
Safe State Data	Channel Selection
	Not configured
Output <u>1</u> 0	Not configured
Output <u>2</u> 0	U - 20 mA/0 - 10 V ▲
Output <u>3</u>	+/- 10 V • •
Badix: Decimal 	Bin Hex Offict
(3a)	
I/O Modu	e Data Description
4pt Analo	og Output Module
Read Words	Write Words
in nor osca	Channel 1 Analog Data
	Channel 2 Analog Data
	Channel 3 Analog Data
	Full Range(0 - 3). Config Select (8 - 11)
	X Not Used
	X Not Used
	X Not Used
	X Not Used X Not Used X Not Used X Not Used
	X Not Used X Not Used X Not Used X Not Used X Not Used
	X Not Used
	X Not Used X Not Used
	X Not Used

Configure Slot 4

ties up in a delauit	1794-IE8 - 8pt Analog Input Module Configuration	
lings. Il you do a	Module Slot Position 4	
o " the sizes are	1/0 Data Sizes	
e, the sizes are	Save to Flex I OK 6	
	Input Size	าี
output words,	Qutput Size 6 words	41
kspace to delete.	Data Description(2)	
	Channel Selection	
l) words		
status area	Channel O Not configured 👱 Channel 4 Not configured 🛓	
nging the	Channel 1 Not configure	
ses the adapter	Not conligate 3	
guration words	C Not configured <u>★</u> ed <u>★</u> Channel 6 Not configured <u>★</u>	
	CI 4 - 20 mA/U - 10 V +	
s un a screen	+/- 10 V •	
utout words		
oe will		
worde ucod	I/O Module Data Description	
worus useu.	8pt Analog Input Module (2a)	
	Read Words Write Words	
	Image: Channel 0 Analog Data Image (0 - 7), Config select (8 - 15)	
onolog	Channel 1 Analog Data	
allaluy	X Channel 2 Analog Data X Not Used	
lection of	X Channel 3 Analog Data X Not Used	
	X Channel 4 Analog Data X Not Used	
- 11 112	X Channel 5 Analog Data X Not Used	
all settings to	X Channel & Analog Data	
dule. These	X Lannel / Analog Data	
sarily the	A Underrange bits (U - 7)	
8 words		
- molds		
Words		
ow by clicking on		_
u can wait until	OK Cancel	

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 set "load from file," the sizes are the stored sent to file. If you do a "load from devic the current sizes stored in the adapter.

1. To specify the number of input and place the cursor in the box and back Enter the desired selection.

Changing the number of input (read generates the amount of input and mapped into adapter memory. Char amount of output (write words) cause to expect more or less output/config from the process.

- 2. The "Data Description" button bring (2a) which shows which input and o are being used. Clicking on the box automatically select the number of After selection, click on the OK butto the module configuration screen.
- 3. Select the voltage/current for each output using the list box 重 for se each output.
- 4. The "set to I/O only" button returns real time settings for this type of mo settings are optimal, and not necess "out-of-box" settings.

Input Size	8	words
<u>O</u> utput Size	0	words

- 5. You can apply your configuration no 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. <u>0</u>K

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.
- 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.
- 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.



- 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.
- If you change the settings, when all selections are complete, click on the OK button. <u>Ωκ</u>

😑 1794-OB16 - 16pt 24 Vdc Src Output Module Config					
Module Slot Position 7	OK 6				
1/O Data Sizes	Cancel				
Input Size Swords	Save to Flex 1/0 5				
Output Size 1 words	Set <u>f</u> or 1/0 Only 4				
	Data Description 2				
Safe State Data					
D <u>a</u> ta 30					
<u>R</u> adix: • Decimal • Bin	○ Hex ○ Oct				
🚍 I/O Module Data Des	cription				
16pt 24 Vdc Src Output I	Module				
Read Words Write W	/ords				
	iput Data Used				

OK

Cancel

Applying Configuration Information to the Adapter

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

	1794-ADN Flex I/O Configuration				
	Flex I/O Adapter Node Address 22	ALLEN-BRADLEY			
	Module Configuration	Load from <u>F</u> ile Close			
the "Cause to Flave UO" hutters you	Module Type Configure	Load from Flex 1/0 Clear <u>M</u> emory			
ne Save to Flex I/O button you	8pt RTD Input Module Slot 0	<u>Save to File</u> <u>1</u> /0 Summary			
	Empty <u>Slot 1</u>	Save to Flex I/O 1 Help			
	Empty <u>Slot 2</u>	2			
	4pt Analog Output Module <u>Slot 3</u>	1/0 Configuration			
	8pt Analog Input Module Slot 4	Run> Idle Reset Outputs To Zero			
	Empty <u>+</u> Slot 5	Run> Fault Reset Outputs To Zero			
	Empty <u>Slot 6</u>	Idle> Fault Outputs Remain in Idle State 👱			
	16pt 24 Vdc Src Output Module Slot 7	Module Fault Zero Inputs			
	Type Display: <u>Name</u> <u>Catalog No.</u>	Device acknowledged receipt of data			
ine will show status when the configuration tool is communicating with the adapter.					

Note that the status



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.

a 1794-ADN Flex I/O Configuration				
Flex I/O Adapter Node Address 22	ALLEN-BRADLEY			
Module Configuration	Load from <u>File</u> Close			
Module Type Configure	Ifrom Flex 1/0 Clear Memory			
DeviceNet Manager	re to File			
Save Configuration to File Before E	xiting? to Flex I/O Help			
Yes No Cancel	iguration Idle Reset Outputs To Zero 🔮			
Empty ± Slot 5	Fault Reset Outputs To Zero			
Empty ± Slot 6	Idle> Fault Outputs Remain in Idle State 生			
16pt 24 Vdc Src Output Module 🔮 Slot 7	Module Fault Zero Inputs			
Type Display: • <u>N</u> ame O <u>C</u> atalog No.	1/0 Module Configuration			

- 1. Click on "Save to
- 2. After clicking on th are automatically configuration scre

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:

= 1794-ADN Detailed Mapping Summary	
● Input Data O <u>O</u> utput Data	
Input Status Word	+
Slot 0 - 8pt RTD 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	
Over Range/Under Range bits	
Calibration/Status Bits	
Slot 3 - 4pt Analog Output Module	
Not Used	
Slot 4 - 8pt 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. Anales Data	
Module Summary Print to File Close	

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

1794-ADN Detailed Mapping Summary	
🔿 Input Data 💿 Qutput Data	
Slot 0 - 8pt RTD Input Module	+
Lalibration Mask/Lontig	
Inputs U - 3 HID Types	
Inputs 4 - 7 RTD Types	
Reserved	
Slot 3 - 4pt Analog Output Module	
Channel 0 Analog Data	
Channel 1 Analog Data	
Channel 2 Analog Data	
Channel 3 Analog Data	
Enable bits (0 - 3)	
Full Bange(0 - 3), Config Select (8 - 11)	
Not Used	
Slot 4 - 8pt Analog Input Module	+
Eull canada (0 7) Config exploret (0 15)	
Module Summary Print to File Close	

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

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 <u>Module Summary</u> button at the bottom of the I/O summary screen.

Your module summary screen will look similar to the following:

- 1794-ADN Module Summary				
Summary Table of I/O Mapping for Node 22				
Module	Input	Output		
Input Status Word	1	0	words	
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	Close	
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

<u>N</u>etwork Who... <u>M</u>ini Who...

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 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.

You access Mini Who directly though the Who menu.

🛏 Mini Who							
Active Nodes on Network							
🗌 1	□ 9 □ 17 □ 25 □ 33 □ 41 □ 49 □ 57						
2	□ 10 □ 18 □ 26 □ 34 □ 42 □ 50 □ 58						
3	🗌 11 🕱 19 🕱 27 🗌 35 🗌 43 🗌 51 🗌 59						
× 4	□ 12 🕱 20 □ 28 □ 36 □ 44 □ 52 □ 60						
5	🗌 13 🕱 21 🔲 29 🔲 37 🔲 45 🔲 53 🔲 61						
6	☐ 14 x 22 x 30 38 46 54 x 62						
X 7	🗌 15 🕱 23 🗌 31 🗌 39 🗌 47 🗌 55 🕱 63						
100% Devices Found: 12							
<u>S</u> top <u>Hescan</u>							

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 though the Who menu.

Network Who			
Node Vendor 00: Allen-Bradley Company 04: Allen-Bradley Company 07: Allen-Bradley Company 19: Allen-Bradley Company 20: Allen-Bradley Company 21: Allen-Bradley Company 21: Allen-Bradley Company 22: Allen-Bradley Company 23: Allen-Bradley Company 23: Allen-Bradley Company	Device Type Communication Adapter Generic Photoelectric Sensor Discrete I/0 Discrete I/0 Discrete I/0 Communication Adapter Discrete I/0	Product Name 1771-SDN Scanner Module 2705T Series 9000 - Diffuse Armor Block I/O 4-in Armor Block I/O 2-in/2- Armor Block I/O 8-in 1794-ADN Flex I/O Armor Block I/O 16-in	
 Allen-Bradley Company Allen-Bradley Company Allen-Bradley Company Allen-Bradley Company Allen-Bradley Company Allen-Bradley Company 	Photoelectric Sensor Discrete 1/0 Communication Adapter Photoelectric Sensor	Armor Block 1/0 Tb-in Series 9000 - Diffuse Armor Block I/0 4-out 1770-KFD Series 9000 - Diffuse	
100% Devices Identified: 12			
Help Device Details	Config De <u>v</u> ice Print to	o File <u>S</u> top <u>Rescar</u>	

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

Product Name

Series 9000 - Diffuse

2705T

1771-SDN Scanner Module

Network Who

Device Type

Photoelectric Sensor

Generic

Discrete I/O Discrete I/O

Communication Adapter

12: Allen-Bradley Company 19: Allen-Bradley Company 20: Allen-Bradley Company 21: Allen-Bradley Company 22: Allen-Bradley Company Armor Block I/O 4-in Armor Block I/O 4-in Armor Block I/O 2-in/2-Armor Block I/O 8-in 1794-ADN Flex I/O Discrete I/O Communication Adapter (1)Allen-Bradley Company Allen-Bradley Company Allen-Bradley Company Armor Block I/O 16-in Series 9000 - Diffuse Armor Block I/O 4-out 1770-KFD Discrete I/O Photoelectric Sensor Discrete I/O 62: Allen-Bradley Company 63: Allen-Bradley Company Communication Adapter Series 9000 - Diffuse Photoelectric Sensor 100% Devices Identified: 12 Device Details Config Device (2) Print to File. Stop <u>R</u>escan 1794-ADN Flex I/O Configuration 3 Flex I/O Adapte ALLEN-BRADLEY Node Address 22 Module Configuratio Load from <u>F</u>ile. Close Module Type Configu Clear <u>M</u>emory Load from Flex 1/0 8pt RTD Input Module Slot <u>0</u> ŧ Save to File. 1/O Summary Slot <u>1</u> Empty Ŧ Sa<u>v</u>e to Flex 1/0 Help Slot <u>2</u> Empty ŧ Slot <u>3</u> 1/O Configuration 4pt Analog Output Module ŧ ± Slot 4 Run --> Idle Reset Outputs To Zero Ŧ 8pt Analog Input Module Run --> Fault Reset Outputs To Zero Slot 5 ŧ Empty Ŧ **±** Slot <u>6</u> Idle --> Fault Outputs Remain in Idle Stat **±** Empty Module Fault Zero Inputs Ŧ 16pt 24 Vdc Src Output Module • <u>N</u>ame O <u>C</u>atalog No. Type Display: Received data from Device



- 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.
- 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.

Using a "network who" to configure a device.

Node

Help

Vendor

00: Allen-Bradley Company 04: Allen-Bradley Company 07: Allen-Bradley Company

- 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.

-	Network Who	
N <u>o</u> de	Vendor Device Tune Product	Name
00: 4	Network Who - Device Details	canner Module
04: i 07: i 19: i	Devices Found: 12	- Diffuse
20: 21:	Node Address: 22 K< Prev Next >>	1/0 2-in/2- 1/0 8-in
22: 1 23: 1 27: 1	Vendor Code: 1 Allen-Bradley Company	lex I/U I/O 16-in - Diffuse
30: 4	Device Type: 12 Communication Adapter	1/0 4-out
62: i 63: i	Product Code: 1	- Diffuse
	Major Revision: 1 Minor Revision: 4	
	Serial Number: 11E7 (hex)	
	Product Name: 1794-ADN Flex I/O	
	Status Code: 0	ices Identified: 12
Hel	Close Help	top <u>R</u> escan

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

Troubleshooting With the Indicators

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

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 Indicat	tor	
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 Storage Temperature Relative Humidity Shock Operating Non-operating Vibration	0 to $55^{\circ}C$ (32 to $131^{\circ}F$) -40 to $85^{\circ}C$ (-40 to $185^{\circ}F$) 5 to 95% noncondensing 30 g peak acceleration, $11(+1)$ ms pulse width 50 g peak acceleration, $11(+1)$ ms pulse width 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 Category	12 gauge (4mm ²) stranded maximum 3/64 inch (1.2mm) insulation max. 2 ¹

Symbols

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Allen-Bradley Publication Problem Report

If you find a problem with our documentation, please complete and return this form.

Pub. Name DeviceNet A	dapter User Manual			
Cat. No. 1794-ADN/B	Pub. No 1794-6.5.5	Pub. Date October 1996 Part No	955127–27	
Check Problem(s) Type:	Describe Problem(s):		Internal Use Only	
Technical Accuracy	text	illustration		
Completeness	procedure/step	illustration definition	info in manual	
What information is missing?		guideline feature	(accessibility)	
		other	manual	
Clarity				
What is unclear?				
Sequence				
What is not in the right order?				
Other Comments				
Use back for more comments.				
Your Name		Location/Phone		
Return to: Marketing Communications, Allen-Bradley Co., 1 Allen-Bradley Drive, Mayfield Hts., OH 44124-6118 Phone: (216)646-3176 FAX: (216)646-4320				



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Support Services

At Allen-Bradley, customer service means experienced representatives at Customer Support Centers in key cities throughout the world for sales service and support. Our value-added services include:

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Allen-Bradley Headquarters, 1201 South Second Street, Milwaukee, WI 53204 USA, Tel: (1) 414 382-2000 Fax: (1) 414 382-4444