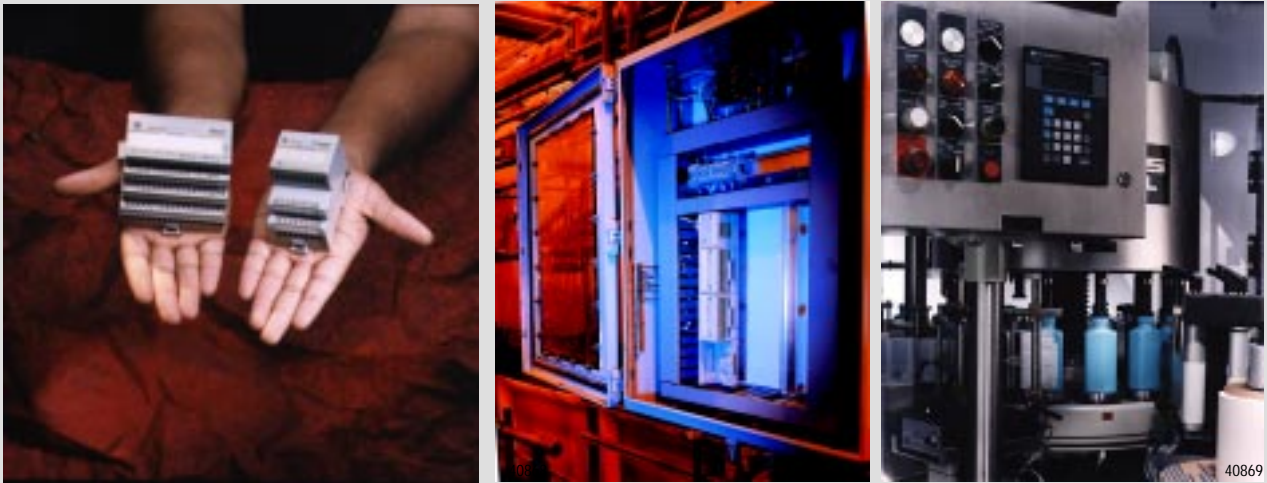




FLEX Integra I/O

(Catalog Number 1793)

Product Data



Flexible, inexpensive, and compact.

FLEX Integra™ is a flexible, low-cost, small increment, modular I/O system for distributed applications that offers all the functions of larger, rack-based I/O without the space requirements. With FLEX Integra, you can independently select the I/O type to meet your application needs.

Additional savings for larger systems. FLEX Integra requires only one adapter for as many as eight terminal bases. When you need more I/O or use a combination of different I/O types, you can meet system requirements without buying additional power supplies and communication adapters.

Low installation, wiring, and maintenance costs.

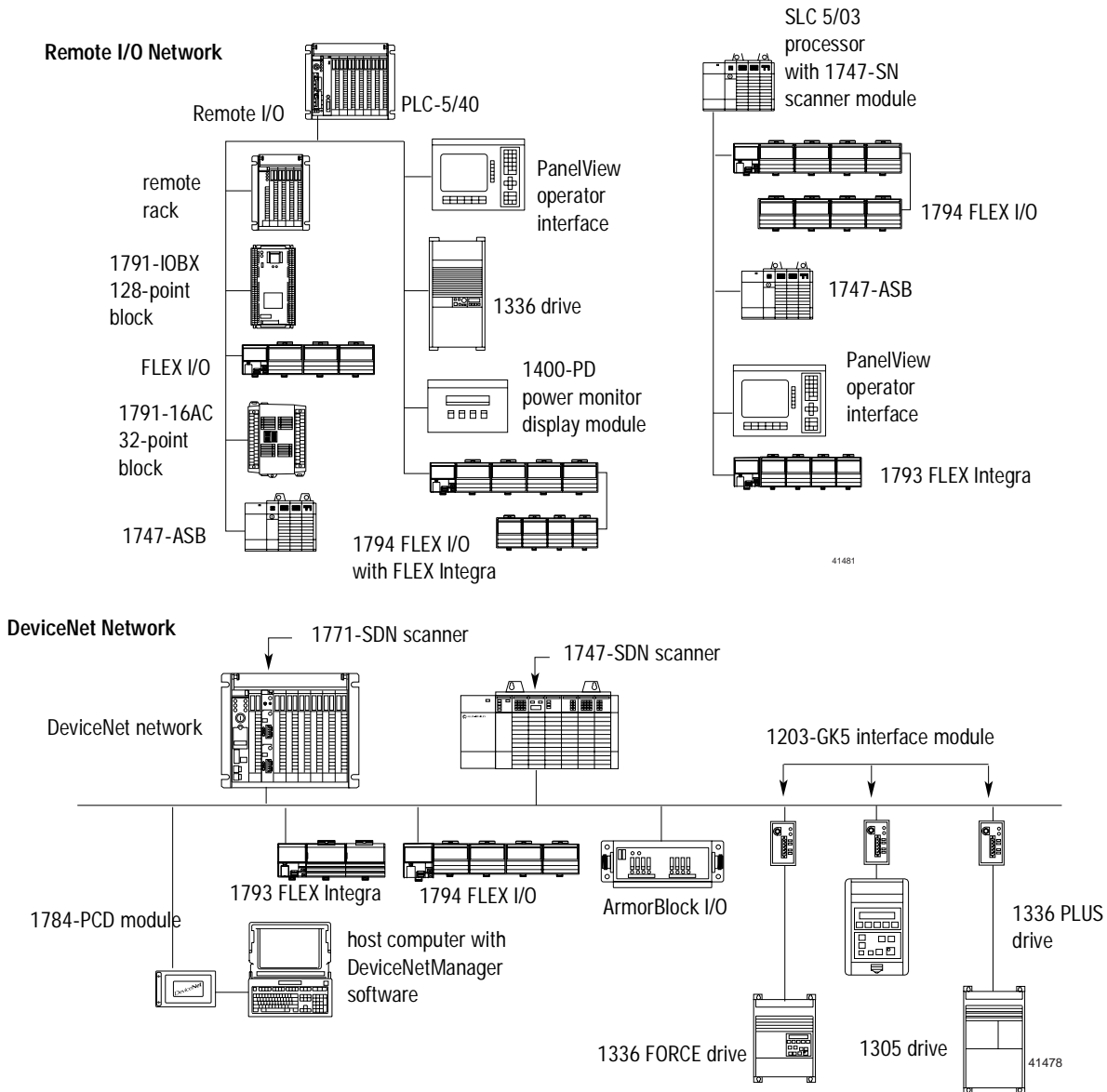
FLEX Integra combines a terminal strip and I/O interface into one small module. Wire your field devices directly to the module. Wiring directly saves you:

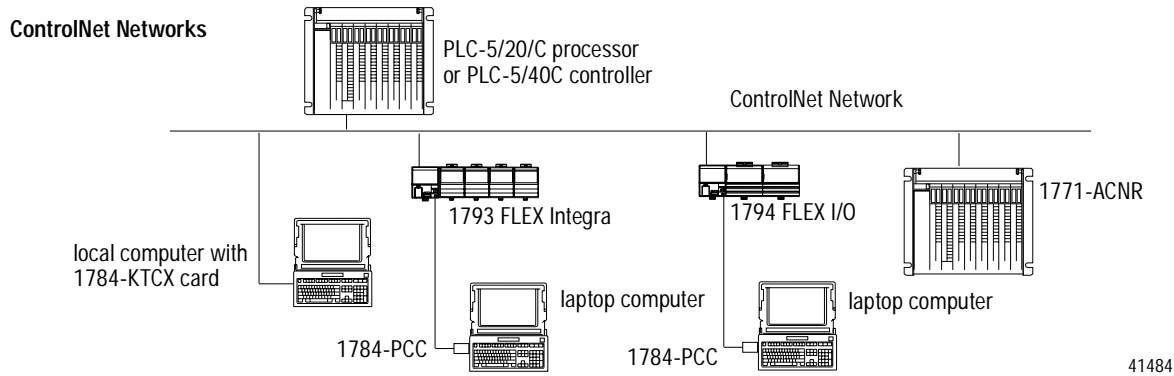
- installation and testing time
- additional wiring and external terminal blocks
- control marshalling panel space

Overview

FLEX Integra I/O, a part of the FLEX I/O family, provides additional savings if system problems develop. Combining your field-wiring terminations and the I/O interface into the same location saves you time and money and makes your system easier to maintain and troubleshoot.

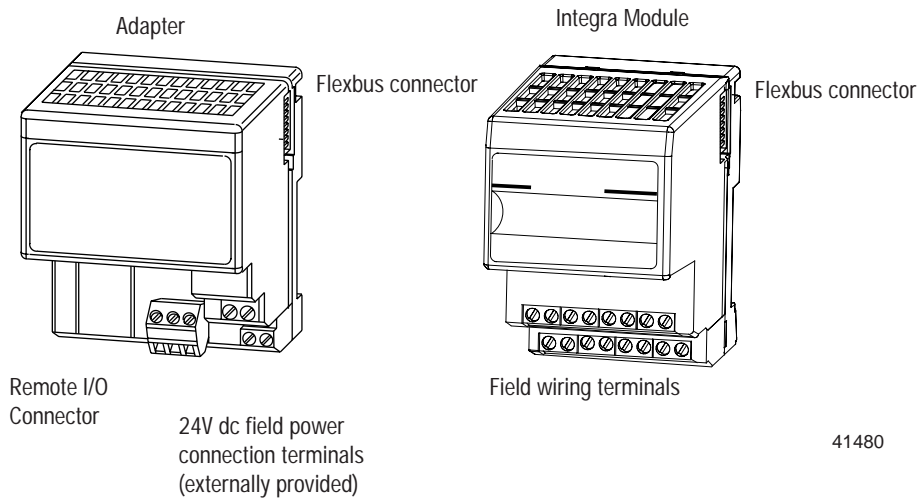
Compatibility now and in the future. With the proper adapter, your FLEX Integra I/O system can communicate over the Remote I/O network, DeviceNet™ network, and ControlNet™ network. You can add components as your system requirements change.





About the FLEX Integra I/O System

FLEX Integra I/O consists of four digital and three analog modules, all capable of use with 1794 FLEX I/O adapters. Each module is available with either screw-cage or spring-clamp wire terminations.



Use the **adapter** to power the internal logic for as many as eight I/O modules and transfer the I/O data back to a PLC™ processor or a SLC™ processor via one of several available networks.

Two separate connection terminals for field power let you daisy-chain power connections to adjacent terminal bases.

Insert the **module** into your system using the positive-locking flexbus connectors.

Terminate all of your wiring on the module with no need for terminal blocks.

Use the terminals to daisy-chain power connections to adjacent terminal bases, or connect individual power supplies to each base to isolate modules.



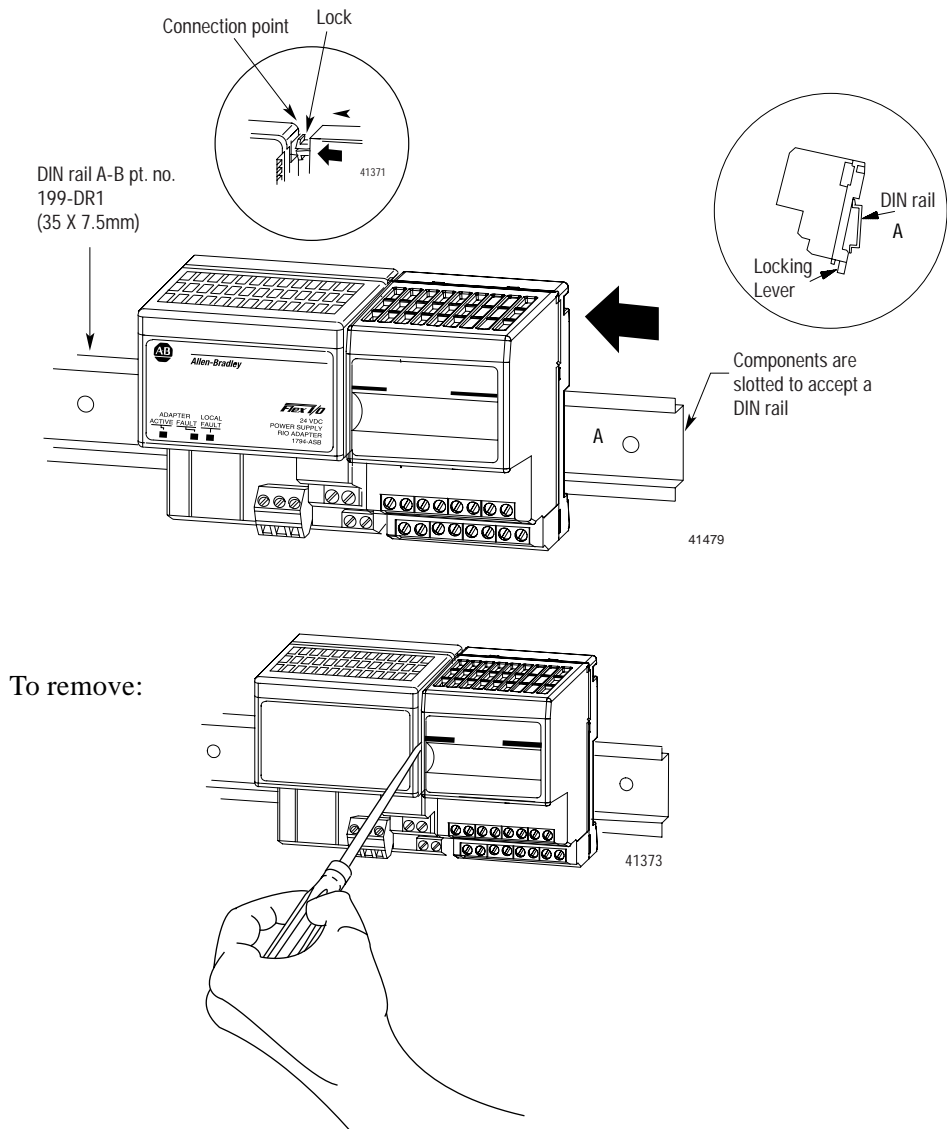
ATTENTION: Do not remove an Integra module under power. Removing the module under power will break the electrical backplane (flexbus) connections. This can cause personal injury or property damage by:

- send an erroneous signal to your system's field devices causing unintended machine motion
- cause an explosion in a hazardous environment
- breaking communications beyond this module.

Mount and Remove Your System Easily

You can horizontally or vertically mount the FLEX I/O system and FLEX Integra modules on a standard 35mm DIN rail. The adapter and FLEX I/O terminal base or Integra module easily snap on the DIN rail by hand. Use a flat-blade screwdriver to remove components from the DIN rail.

When mounting FLEX Integra modules, mount on the DIN rail, and then firmly push the Integra module into the adjacent module to complete the backplane connection. When removing an Integra module, insert a flat-bladed screwdriver between the modules, and twist 1/4 turn. Then release the locking lever and remove the module.

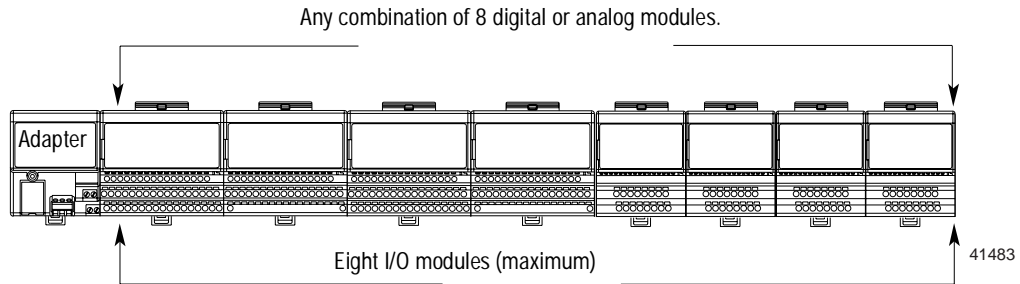


ATTENTION: The hook (on the side of the module) and adjacent connection point (on the adapter) keep the modules tight together.

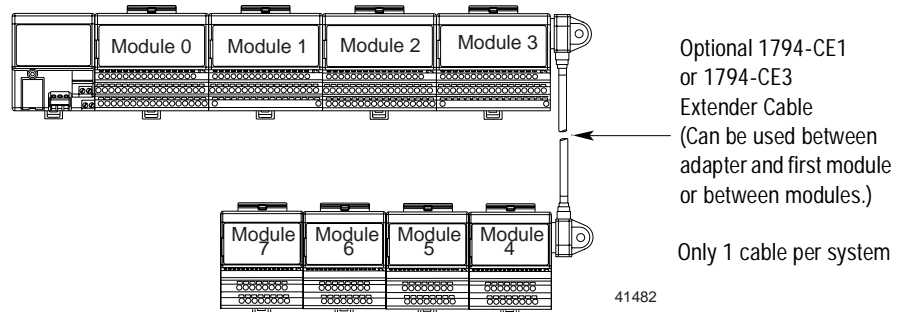
Your Configuration

You can use as many as eight modules per adapter. This flexibility allows a wide range of digital and analog I/O points per adapter. Mix and match digital and analog I/O to meet your application needs

FLEX Integra modules can be used with FLEX I/O modules. Place Integra modules to the right of your FLEX I/O modules when designing the system.



The number of I/O groups depends upon the adapter used.



Optional 1794-CE1 or 1794-CE3 Extender Cable (Can be used between adapter and first module or between modules.)

Only 1 cable per system

When using the optional extender cable, module groups are numbered sequentially along the length of the system.

What this Product Data Contains

Use the following table to find additional information in this product data.

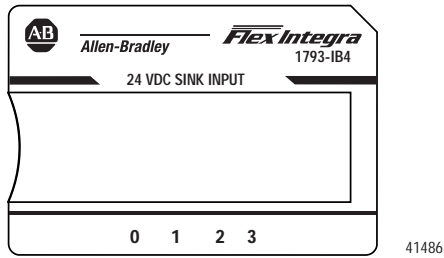
	For Information On	Catalog Number	Description	See Page
<i>DC</i>	24V dc Modules	1793-IB4 and -IB4S	24V dc 4 Sink Input Module	7
		1793-OB4P and -OB4PS	24V dc 4 Source Output (Protected) Module	9
		1793-IB2XOB2P and -IB2XOB2PS	24V dc 2 Input/2 Protected Output Combo Module	11
<i>Analog</i>	24V dc Modules	1793-IE4 and -IE4S	24V dc 4 Input Analog Module	15
		1793-OE2 and -OE2S	24V dc 2 Output Analog Module	17
		1793-IE2XOE1 and -IE2XOE1S	24V dc 2 Input/1 Output Analog Combo Module	19
<i>Relay</i>	Relay Module	1793-OW4 and -OW4S	4 Relay Sink/Source Output Module	23

DC Module's Table of Contents

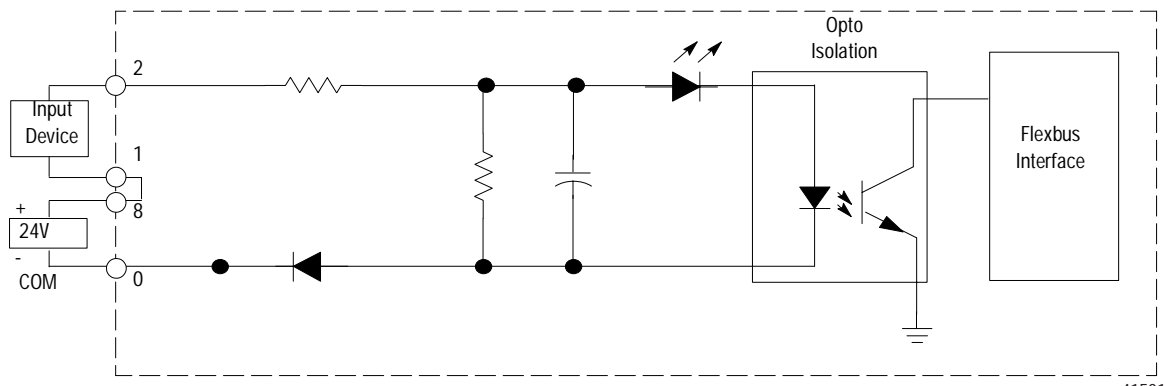
Use the following table to determine which dc module will meet your application needs.

DC Module	Purpose	See Page
<i>1793-IB4 and -IB4S</i>	24V dc 4 sink input module. 1794-IB4 has screw-cage terminations; 1793-IB4S has spring-clamp terminations.	7
<i>1793-OB4P and -OB4PS</i>	24V dc 4 protected source output module. 1794-OB4P has screw-cage terminations; 1793-OB4S has spring-clamp terminations.	9
<i>1793-IB2XOB2P and -IB2XOB2PS</i>	24V dc sensor 2 input/2 protected output combo module. 1794-IB2XOB2P has screw-cage terminations; 1793-IB2XOB2PS has spring-clamp terminations.	11

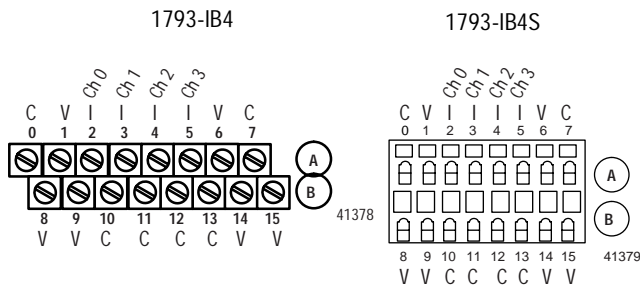
24V dc 4 Sink Input Module Cat. No. 1794-IB4 and -IB4S



Typical Simplified Schematic for Input 0



Wiring



Where: C = common, V = +24V dc power, I = input

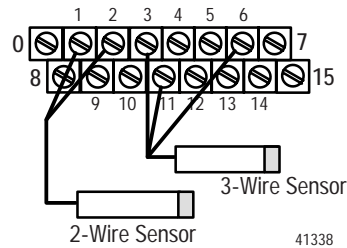
Channel	Input Terminal ¹	Supply Terminal
Input 0	2	1
Input 1	3	6
Input 2	4	9
Input 3	5	14
+24V dc	Terminals 1, 6, 8, 9, 14, 15 are internally connected together in the module	
Common	Terminals 0, 7, 10 thru 13 are internally connected together in the module	

¹ 2-wire sensors use input and supply terminals; 3-wire sensors use input, supply and common terminals.



ATTENTION: Total current draw through the module terminals is limited to 10A. Separate power connections may be necessary.

Example of 2-wire and 3-wire Sensors

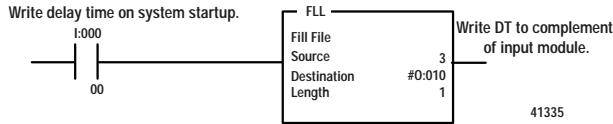
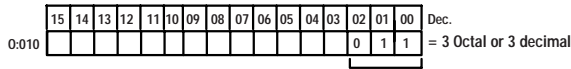


24V dc 4 Sink Input Module Cat. No. 1794-IB4 and -IB4S

Setting Input Delay Times (Standard Mode Addressing Only)

You can select the input delay time (DT) for channels 00 thru 03. Select the input delay time by setting the corresponding bits in the output image table (complementary word) for the module.

For example, to set a delay time of 4ms for an input module at address rack 1, module group 0, set bits 02, 01 and 00 as shown below.



Input Delay Times

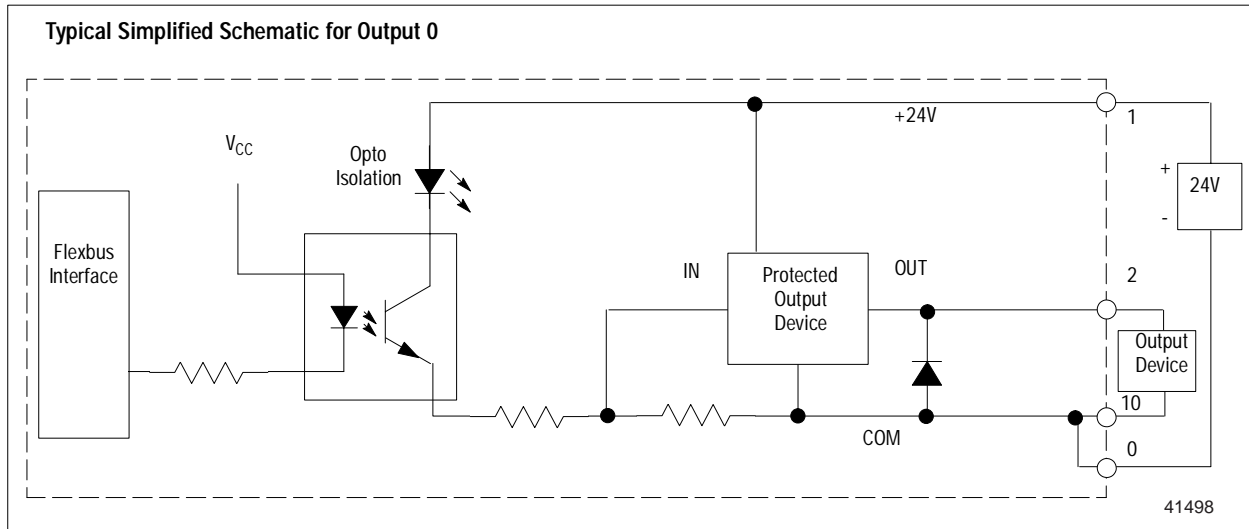
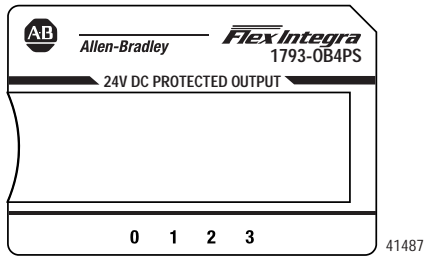
Bits			Description	Selected Filter Time
02	01	00	Filter Time for Inputs 00-07	
0	0	0	Filter Time 0 (default)	512µs
0	0	1	Filter Time 1	1ms
0	1	0	Filter Time 2	2ms
0	1	1	Filter Time 3	4ms
1	0	0	Filter Time 4	8ms
1	0	1	Filter Time 5	16ms
1	1	0	Filter Time 6	32ms
1	1	1	Filter Time 7	64ms

Specifications - 4 Input Module Cat. No. 1793-IB4 and -IB4S

Module Type	4 digital input - sinking 1793-IB4 - screw-cage terminations 1793-IB4S - spring-clamp terminations
Module Location	DIN rail mounted
Number of Channels	1 group of 4, nonisolated
On-state Voltage	10-31.2V dc; 24V dc nominal
On-state Current	2-12 mA; 8mA @ 24V dc
Off-state Voltage	5V dc maximum
Off-state Current	1.5mA minimum
Channel Impedance	4.6KΩ
Isolation Voltage	Channel to system - 850V dc for 1s Channel to channel - None
Input Delay - selectable	Off to On On to Off
	512µs, 1, 2, 8, 16, 32 or 64ms 512µs, 1, 2, 8, 16, 32 or 64ms Default = 512µs
Flexbus Current	10mA maximum
Power Dissipation	1.5W @ 31.2V dc
Thermal Dissipation	5.1 BTU/hr @ 31.2V dc
Indicators	4 yellow channel status indicators
External dc Power Voltage	19.2-31.2V dc (5% ac ripple)
Dimensions	in (mm) 2.72H x 3.15D x 2.17W (69H x 80D x 55W)
Environmental Conditions	
Operational Temperature	0 to +55°C (32 to +131°F)
Storage Temperature	-40 to +85°C (-40 to +185°F)
Relative Humidity	5 to 95% noncondensing
Shock	Operating Tested to 30g peak acceleration, 11(±1)ms pulse width
	Nonoperating Tested to 50g peak acceleration, 11(±1)ms pulse width
Vibration	Tested 5g @ 10-500Hz per IEC68-2-6
Conductors	
Wire Size	12 gauge (4mm ²) stranded wire 3/64 in (1.2mm) maximum insulation
Category	2
Agency Certification (when product is marked)	<ul style="list-style-type: none"> • CSA certified • CSA Class 1, Division 2 Groups A, B, C and D certified • UL listed • CE marked for all applicable directives

¹ Use this category information for planning conductor routing as described in publication 1770-4.1, "Wiring and Grounding Guidelines for Noise Immunity."

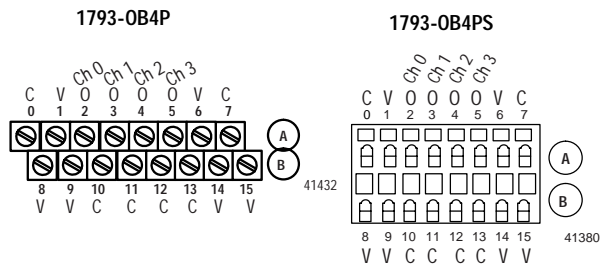
24V dc 4 Source Output Module Cat. No. 1794-OB4P and -OB4PS



ATTENTION: Total current draw through the module terminals is limited to 10A. Separate power connections may be necessary.

Output	1794-TB3 and -TB3S	
	Output Terminal	Common Terminal1
Output 0	2	10
Output 1	3	11
Output 2	4	12
Output 3	5	13
+24V dc	Terminals 1, 6, 8, 9, 14, 15 are internally connected together in the module	
Common	Terminals 0, 7, 10 thru 13 are internally connected together in the module	

Wiring

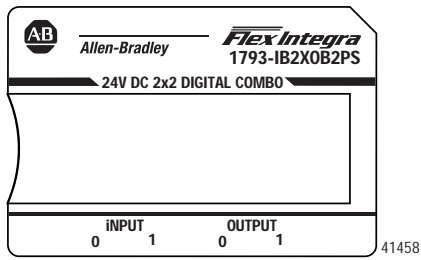


Where C = common, V = +24V dc power, O = output

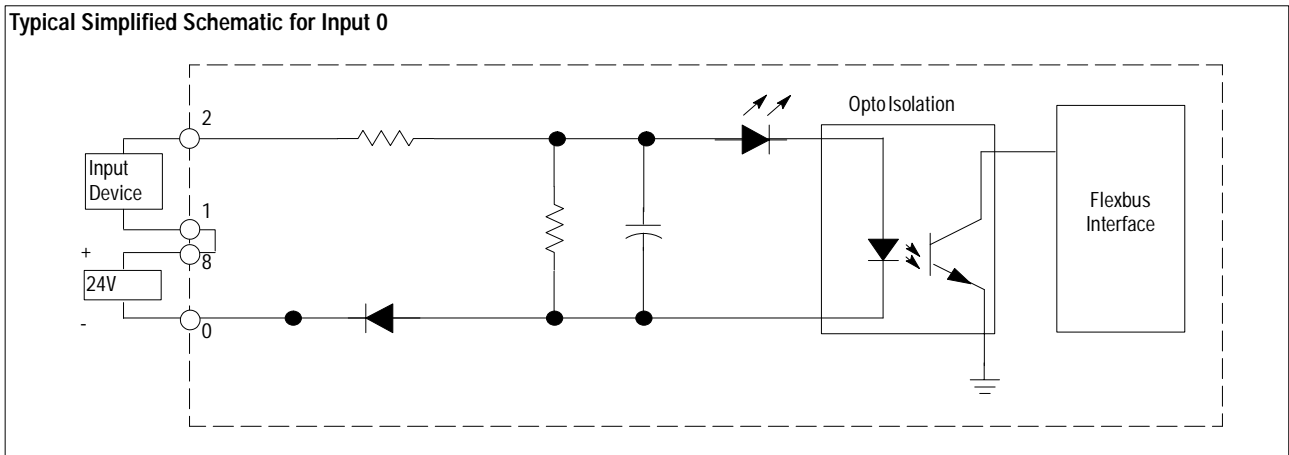
24V dc 4 Source Output Module Cat. No. 1794-OB4P and -OB4PS

Specifications - 4 Protected Output Module Cat. No. 1793-OB4P and -OB4PS		
Module Type	4 digital output - sourcing, protected 1793-OB4P - screw-cage terminations 1793-OB4PS - spring-clamp terminations	
Module Location	DIN rail mounting	
Number of Channels	1 group of 4, nonisolated	
On-state Voltage	10-31.2V dc; 24V dc nominal	
On-state Current	1-500mA per channel	
Off-state Voltage	31.2V dc maximum	
Off-state Current	0.5mA maximum leakage	
Channel Impedance	1.0Ω (0.5V dc maximum drop)	
Surge Current	1.5A for 50ms, repeatable every 2s	
Isolation Voltage	Channel to system - 850V dc for 1s Channel to channel - None	
Delay Time	Off to On	0.5ms maximum
	On to Off	1.0ms maximum
Flexbus Current	20mA maximum	
Power Dissipation	1.3W @ 31.2V dc	
Thermal Dissipation	4.4 BTU/hr @ 31.2V dc	
Indicators	4 yellow channel status indicators	
External dc Power	Voltage	19.2-31.2V dc (5% ac ripple)
	Current	80mA
Dimensions	in	2.72H x 3.15D x 2.17W
	(mm)	(69H x 80D x 55W)
Environmental Conditions		
Operational Temperature	0 to +55°C (32 to +131°F)	
Storage Temperature	-40 to +85°C (-40 to +185°F)	
Relative Humidity	5 to 95% noncondensing	
Shock	Operating	Tested to 30g peak acceleration, 11(±1)ms pulse width
	Nonoperating	Tested to 50g peak acceleration, 11(±1)ms pulse width
Vibration	Tested 5g @ 10-500Hz per IEC68-2-6	
Conductors	Wire Size	12 gauge (4mm ²) stranded wire 3/64 in (1.2mm) maximum insulation
	Category	2
Agency Certification (when product is marked)	<ul style="list-style-type: none"> • CSA certified • CSA Class 1, Division 2 Groups A, B, C and D certified • UL listed • CE marked for all applicable directives 	
1	Use this category information for planning conductor routing as described in publication 1770-4.1, "Wiring and Grounding Guidelines for Noise Immunity."	

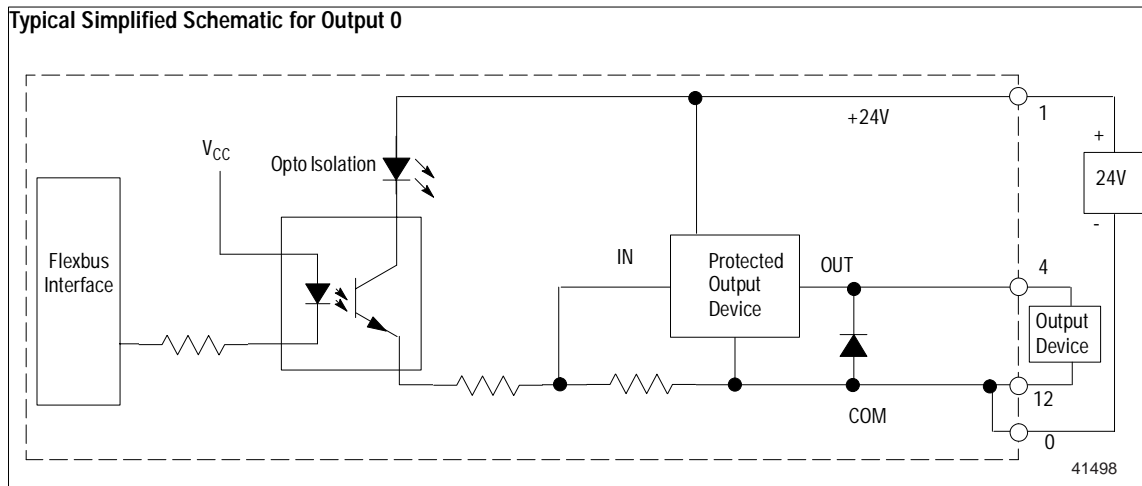
24V dc 2 Input/2 Output Combo Module Cat. No. 1794-IB2XOB2P and -IB2XOB2PS



Typical Simplified Schematic for Input 0



Typical Simplified Schematic for Output 0

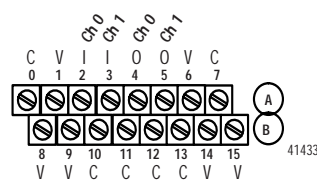


Wiring

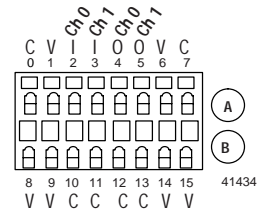


ATTENTION: Total current draw through the module terminals is limited to 10A. Separate power connections may be necessary.

1793-IB2XOB2P



1793-IB2XOB2PS



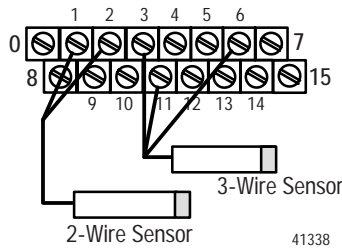
Where: C = common, V = +24V dc power, I = input, O = output

24V dc 2 Input/2 Output Combo Module Cat. No. 1794-IB2XOB2P and -IB2XOB2PS

Input ¹	Input Type	Input Terminal	Supply Terminal
0	Sink Input	2	1
1	Sink Input	3	6
Output	Output Type	Output Terminal	Common
0	Source Output	4	12
1	Source Output	5	13
+24V dc	Terminals 1, 6, 8, 9, 14, 15 are internally connected together in the module.		
24V dc common	Terminals 0, 7, 10 thru 13 are internally connected together in the module		

1 Two wire devices use input, supply terminals, 3-wire devices use input, supply and common.

Example of 2-wire and 3-wire Sensors



Setting Input Filter Time (Standard Addressing Mode Only)

(Not available when used with the 1794-ASB adapter)

You can select the input delay time (DT) for channels 00 thru 03. Select the input delay time by setting the corresponding bits in the configuration word (word 3) for the module.

For example, to set a delay time of 4ms for an input module at address rack 1, module group 0, set bits 02, 01 and 00 as shown below.

02	01	00	Filter Time for Inputs 00-03	Selected Filter Time
0	0	0	Filter Time 0 (default)	512µs
0	0	1	Filter Time 1	1ms
0	1	0	Filter Time 2	2ms
0	1	1	Filter Time 3	4ms
1	0	0	Filter Time 4	8ms
1	0	1	Filter Time 5	16ms
1	1	0	Filter Time 6	32ms
1	1	1	Filter Time 7	64ms

Specifications - 2 Input/2 Protected Output Module Cat. No. 1793-IB2XOB2P and -IB2XOB2PS

Module Type	2 input/2 output digital combination w/ electronic fusing 1793-IB2XOB2P - screw-cage terminations 1793-IB2XOB2PS - spring-clamp terminations
-------------	--

Specifications - 2 Input/2 Protected Output Module Cat. No. 1793-IB2XOB2P and -IB2XOB2PS

Module Location	DIN rail mounting
Number of Channels	2 digital input - sinking/2 digital output - sourcing, protected

Input	
On-state Voltage	10-31.2V dc; 24V dc nominal
On-state Current	2-12 mA; 8mA @ 24V dc
Off-state Voltage	5V dc maximum
Off-state Current	1.5mA minimum
Channel Impedance	4.6KΩ
Isolation Voltage	Channel to system - 850V dc for 1s Channel to channel - None
Input Delay - selectable	
Off to On	512µs, 1, 2, 8, 16, 32 or 64ms
On to Off	512µs, 1, 2, 8, 16, 32 or 64ms
	Default = 512µs

Output	
On-state Voltage	10-31.2V dc; 24V dc nominal
On-state Current	1-500mA per channel
Off-state Voltage	31.2V dc maximum
Off-state Current	0.5mA maximum leakage
Channel Impedance	1.0Ω (0.5V dc maximum drop)
Surge Current	1.5A for 50ms, repeatable every 2s
Isolation Voltage	Channel to system - 850V dc for 1s Channel to channel - None
Delay Time	
Off to On	0.5ms maximum
On to Off	1.0ms maximum

General	
Flexbus Current	20mA maximum
Power Dissipation	1.4W @ 31.2V dc
Thermal Dissipation	4.8 BTU/hr @ 31.2V dc
Indicators	4 yellow channel status indicators
External dc Power	Voltage 19.2-31.2V dc (5% ac ripple) Current 40mA maximum
Dimensions	in 2.72H x 3.15D x 2.17W (mm) (69H x 80D x 55W)
Fusing	Outputs electronically fused
Environmental Conditions	
Operational Temperature	0 to +55°C (32 to +131°F)
Storage Temperature	-40 to +85°C (-40 to +185°F)
Relative Humidity	5 to 95% noncondensing
Shock	Operating Tested to 30g peak acceleration, 11(±1)ms pulse width
	Nonoperating Tested to 50g peak acceleration, 11(±1)ms pulse width
Vibration	Tested 5g @ 10-500Hz per IEC68-2-6
Conductors	Wire Size 12 gauge (4mm ²) stranded wire 3/64 in (1.2mm) maximum insulation
	Category 2
Agency Certification (when product is marked)	<ul style="list-style-type: none"> • CSA certified • CSA Class 1, Division 2 Groups A, B, C and D certified • UL listed • CE marked for all applicable directives

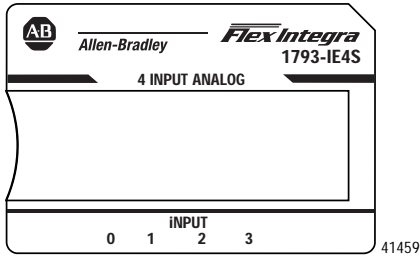
1 Use this category information for planning conductor routing as described in publication 1770-4.1, "Wiring and Grounding Guidelines for Noise Immunity."

Analog Module's Table of Contents

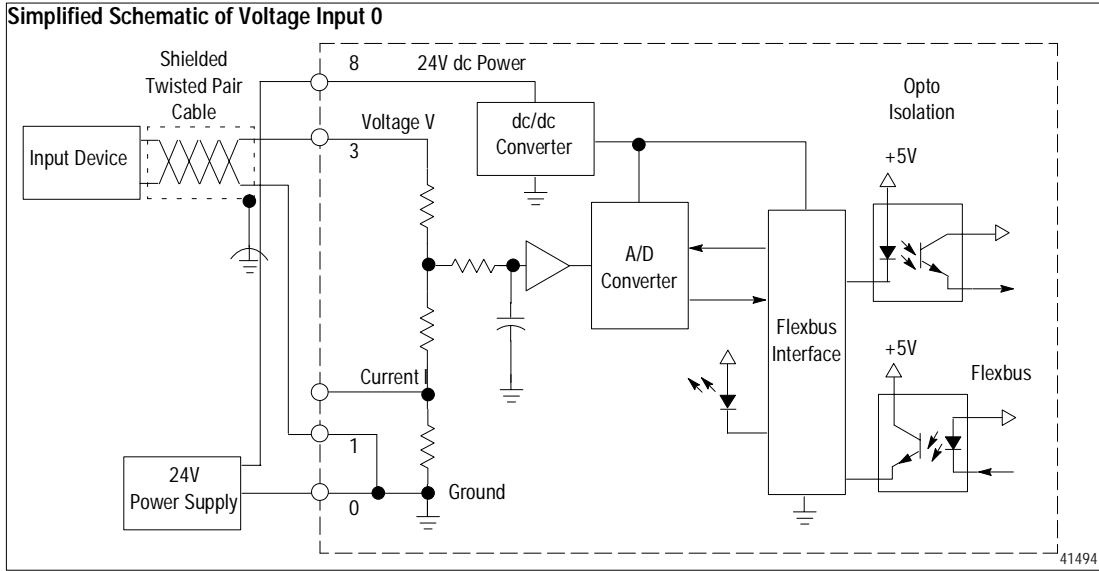
Use the following table to determine which analog module will meet your application needs.

Analog Module	Purpose	See Page
<i>1793-IE4 and -E4S</i>	24V dc selectable analog 4 input module. The 1793-IE4 has screw terminations; the 1793-IE4S has spring-clamp terminations.	14
<i>1793-OE2 and -OE2S</i>	24V dc selectable analog 2 output module. The 1793-OE2 has screw terminations; the 1793-OE2S has spring-clamp terminations.	16
<i>1793-IE2XOE1 and -IE2XOE1S</i>	24V dc 4 input/2 output analog combo module. The 1794-IE2XOE1 has screw terminations; the 1793-IE2XOE1S has spring-clamp terminations.	18

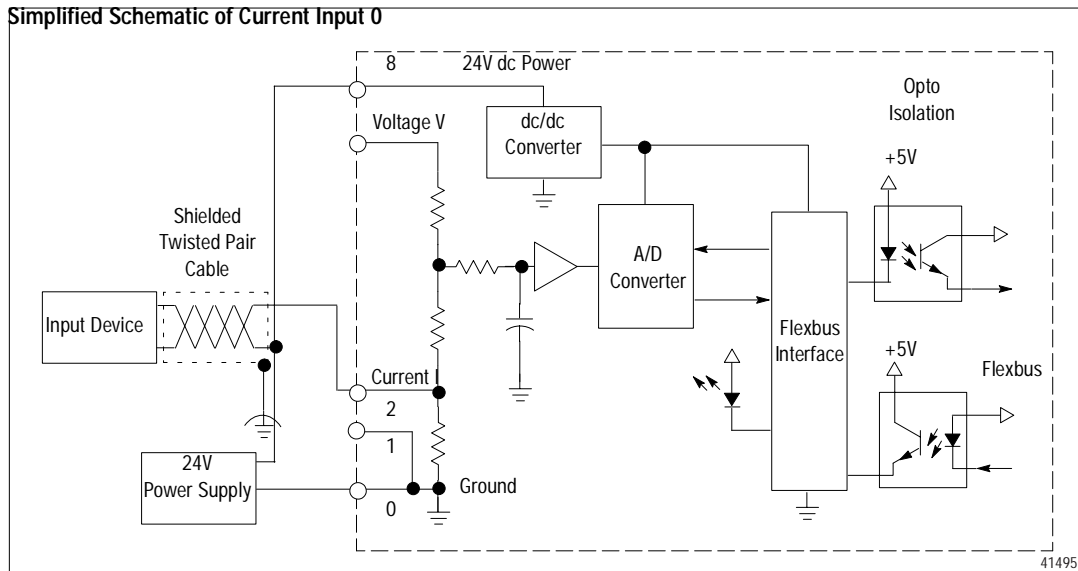
24V dc Selectable Analog 4 Input Module Cat. No. 1793-IE4 and -IE4S



Simplified Schematic of Voltage Input 0

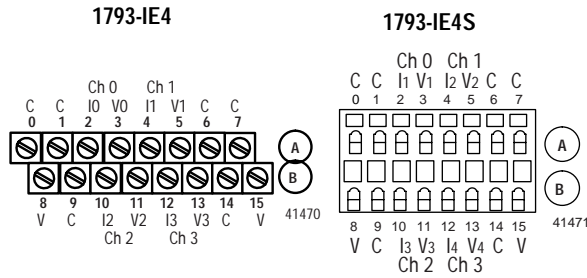


Simplified Schematic of Current Input 0



24V dc Selectable Analog 4 Input Module Cat. No. 1793-IE4 and -IE4S

Wiring



Where: V = 24V dc; C = 24V dc common;
In = current in; Vn = voltage in

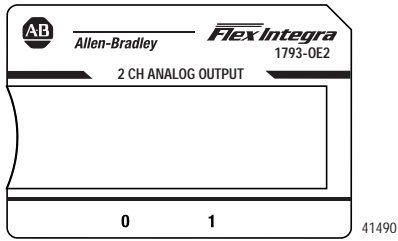
Channel	Signal Type	Label Markings	Input Terminal	Common Terminal
0	Current	I	2	1
	Voltage	V	3	
1	Current	I	4	6
	Voltage	V	5	
2	Current	I	10	9
	Voltage	V	11	
3	Current	I	12	14
	Voltage	V	13	
24V dc	Terminals 8 and 15 are internally connected together in the module			
24V dc common	Terminals 0, 1, 6, 7, 9 and 14 are internally connected together in the module			

Specifications - 4 Input Analog Module, Cat. No. 1793-IE4 and -IE4S	
Impedance	
Voltage Terminal	100K Ω; 200K Ω @ dc
Current Terminal	238Ω
Absolute Accuracy	
Voltage Terminal	0.20% FS @ 25°C
Current Terminal	0.20% FS @ 25°C
Accuracy Drift	
Voltage Terminal	0.00428% FS per °C
Current Terminal	0.00407% FS per °C
Maximum Overload	Single channel, continuous
Voltage Terminal	30V
Current Terminal	32mA
Isolation Voltage	Channel to system - 850V dc for 1s Channel to channel - None
Flexbus Current	20mA maximum
Power Dissipation	1.0W @ 31.2V dc
Thermal Dissipation	3.4 BTU/hr @ 31.2V dc
Indicators	1 green power indicators
External dc Power	Voltage 19.2-31.2V dc (5% ac ripple) Current 60mA maximum
Dimensions	in 2.72H x 3.15D x 2.17W (mm) (69H x 80D x 55W)
Environmental Conditions	
Operational Temperature	0 to +55°C (32 to +131°F)
Storage Temperature	-40 to +85°C (-40 to +185°F)
Relative Humidity	5 to 95% noncondensing
Shock	Operating: Tested to 30g peak acceleration, 11(+1)ms pulse width Nonoperating: Tested to 50g peak acceleration, 11(+1)ms pulse width
Vibration	Tested 5g @ 10-500Hz per IEC68-2-6
Conductors	Wire Size 12 gauge (4mm ²) stranded wire Category 3/64 in (1.2mm) maximum insulation
Agency Certification (when product is marked)	<ul style="list-style-type: none"> CSA certified CSA Class 1, Division 2 Groups A, B, C and D certified UL listed CE marked for all applicable directives

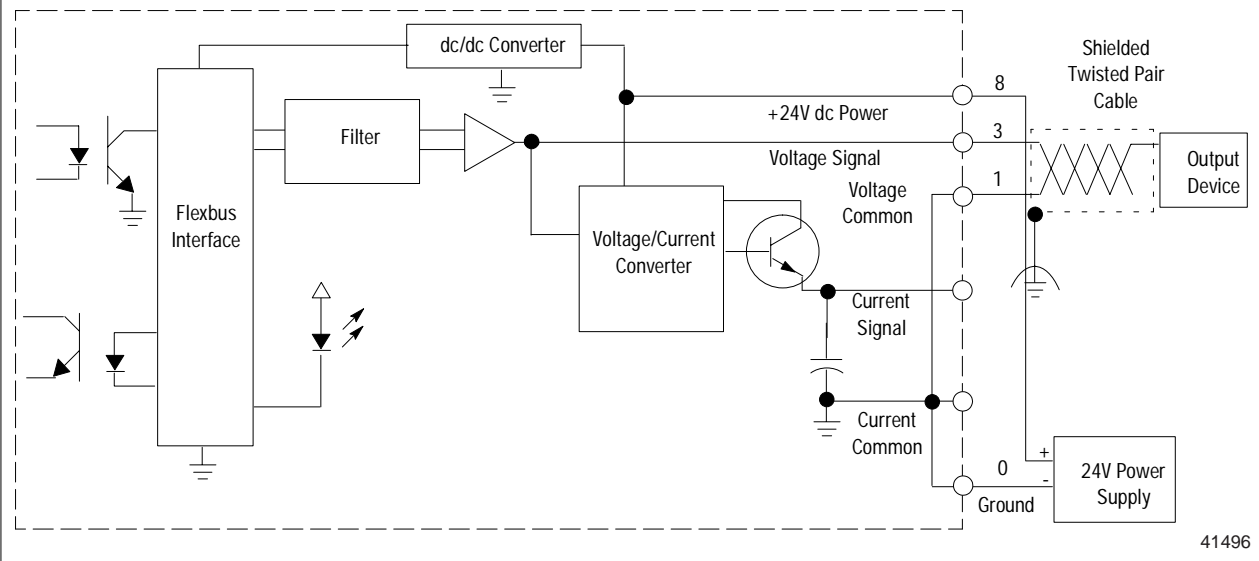
1 Use this category information for planning conductor routing as described in publication 1770-4.1, "Wiring and Grounding Guidelines for Noise Immunity."

Specifications - 4 Input Analog Module, Cat. No. 1793-IE4 and -IE4S	
Module Type	4 analog inputs 1793-IE4 - 16 screw-cage terminals 1793-IE4S - 16 spring-clamp terminals
Module Location	DIN rail mounting
Number of Channels	4
Data Format	16-bit 2's complement, left-justified
Conversion Type	Successive approximation
Conversion Rate	256μs all channels
Resolution	12-bits - unipolar; 11-bit plus sign - bipolar
Voltage	2.56mV/cnt unipolar; 5.13mV/cnt bipolar
Current	5.13μA/cnt
Input Current Terminal	4-20mA (user configurable) 0-20mA (user configurable)
Input Voltage Terminal	±10V (user configurable) 0-10V (user configurable)
Normal Mode Rejection Ratio	
Voltage Terminal	-3db @ 17Hz; -20db/decade -10db @ 50Hz; -11.4db @ 60Hz
Current Terminal	-3db @ 17Hz; -20db/decade -15.3db @ 50Hz; -16.8db @ 60Hz
Step Response to 63%	
Voltage Terminal	9.4ms
Current Terminal	18.2ms

24V dc Selectable Analog 2 Output Module Cat. No. 1793-0E2 and -0E2S

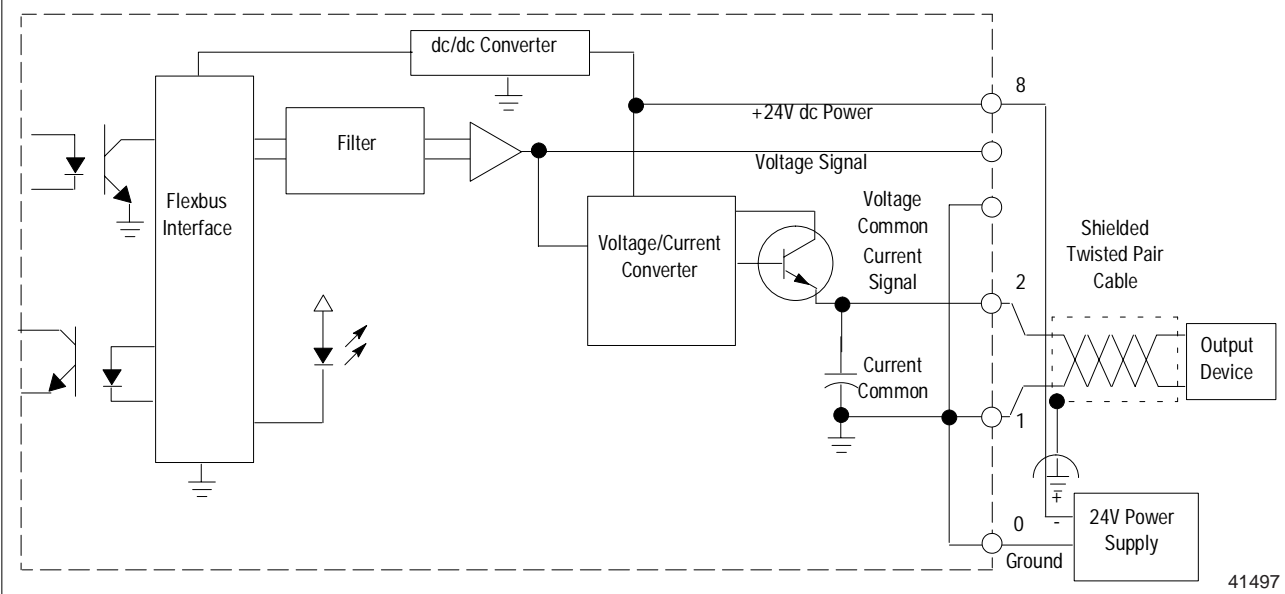


Simplified Schematic of Voltage Output 0



41496

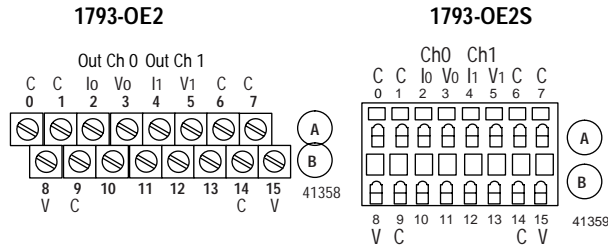
Simplified Schematic of Current Output 0



41497

24V dc Selectable Analog 2 Output Module Cat. No. 1793-OE2 and -OE2S

Wiring



Where: C = common; V = +24V dc power;
I = current output; V = voltage output

Channel	Type	Label Markings	Signal	Return
0	Current Signal	I	2	
	Current Common	RET		1
	Voltage Signal	I	3	
	Voltage Common	RET		1
1	Current Signal	I	4	
	Current Common	RET		6
	Voltage Signal	I	5	
	Voltage Common	RET		6
24V dc	Terminals 8 and 15			
24V dc Common	Terminals 0, 1, 6, 7, 9 and 14.			

Specifications - 2 Output Analog Module, Cat. No. 1793-OE2 and -OE2S

Module Type	2 analog output 1793-OE2 - 16 screw-cage terminals 1793-OE2S - 16 spring-clamp terminals
Module Location	DIN rail mounting
Number of Channels	2 out - nonisolated
Output	
Resolution	12-bits plus sign
Voltage	2.56mV/cnt
Current	5.13µA/cnt
Data Format	left justified 16-bit 2's complement
Conversion Type	Pulse width modulation
Conversion Rate	1.024ms all channels
Current Terminal	4-20mA (user configurable) 0-20mA (user configurable)
Voltage Terminal	±10V (user configurable) 0-10V (user configurable) 3A maximum
Step Response to 63%	
Voltage Terminal	24ms
Current Terminal	24ms
Impedance	
Voltage Terminal	15-750 Ω resistive
Current Terminal	15-750 Ω resistive

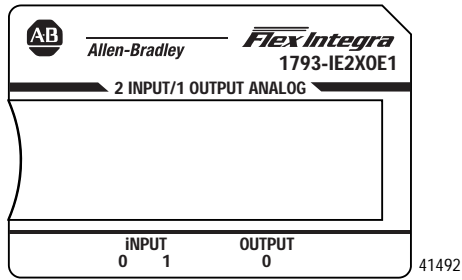
Specifications - 2 Output Analog Module, Cat. No. 1793-OE2 and -OE2S

Absolute Accuracy	
Voltage Terminal	0.133% FS @ 25°C
Current Terminal	0.425% FS @ 25°C
Accuracy Drift	
Voltage Terminal	0.0045% FS per °C
Current Terminal	0.0069% FS per °C
Isolation Voltage	Channel to system - 850V dc for 1s Channel to channel - None
General	
Flexbus Current	20mA maximum
Power Dissipation	2.5W @ 31.2V dc
Thermal Dissipation	8.5 BTU/hr @ 31.2V dc
Indicators	1 green power indicators
External dc Power	Voltage 19.2-31.2V dc (5% ac ripple) Current 70mA maximum
Dimensions	in 2.72H x 3.15D x 2.17W (mm) (69H x 80D x 55W)
Environmental Conditions	
Operational Temperature	0 to +55°C (32 to +131°F)
Storage Temperature	-40 to +85°C (-40 to +185°F)
Relative Humidity	5 to 95% noncondensing
Shock	Operating Tested to 30g peak acceleration, 11(+1)ms pulse width
	Nonoperating Tested to 50g peak acceleration, 11(+1)ms pulse width
Vibration	Tested 5g @ 10-500Hz per IEC68-2-6
Conductors	Wire Size 12 gauge (4mm ²) stranded wire 3/64 in (1.2mm) maximum insulation
	Category 2
Agency Certification (when product is marked)	<ul style="list-style-type: none"> • CSA certified • CSA Class 1, Division 2 Groups A, B, C and D certified • UL listed • CE marked for all applicable directives
<p>¹ Use this category information for planning conductor routing as described in publication 1770-4.1, "Wiring and Grounding Guidelines for Noise Immunity."</p>	

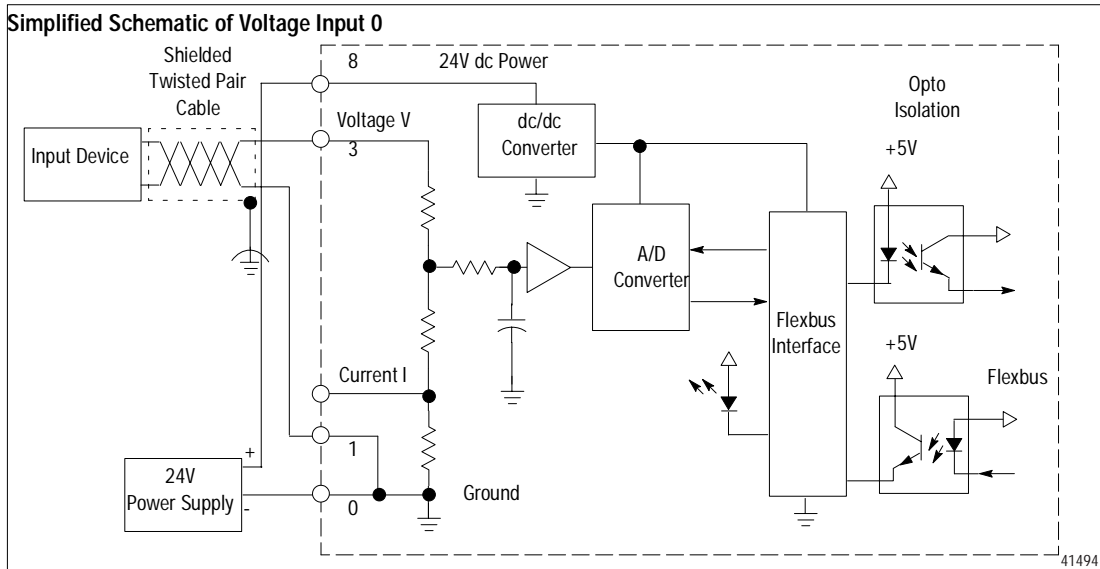


ATTENTION: Use a 100Ω, 25W or greater, resistor when connecting to a low-impedance device, i.e., panel meter. Failure to do so can result in damage to output circuitry.

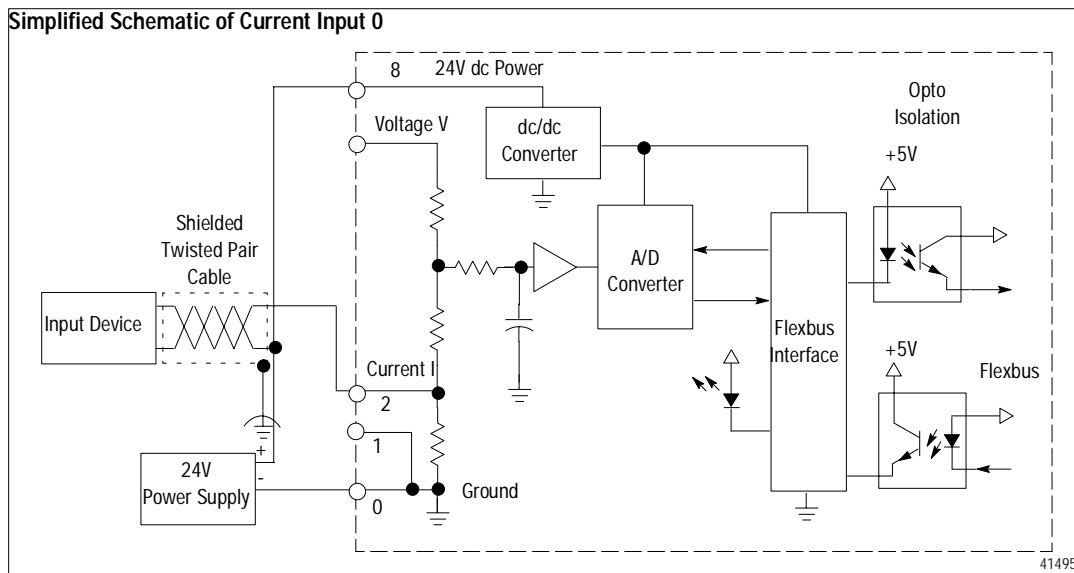
24V dc 2 Input/1 Output Analog Combo Module Cat No. 1793-IE2X0E1 and -IE2X0E1S



Simplified Schematic of Voltage Input 0

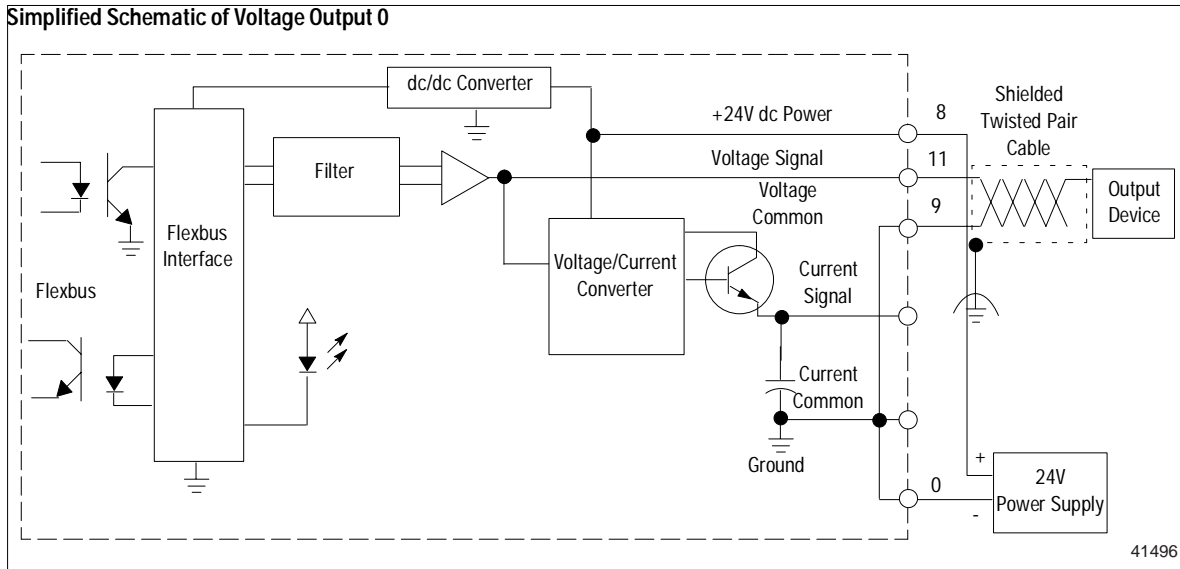


Simplified Schematic of Current Input 0



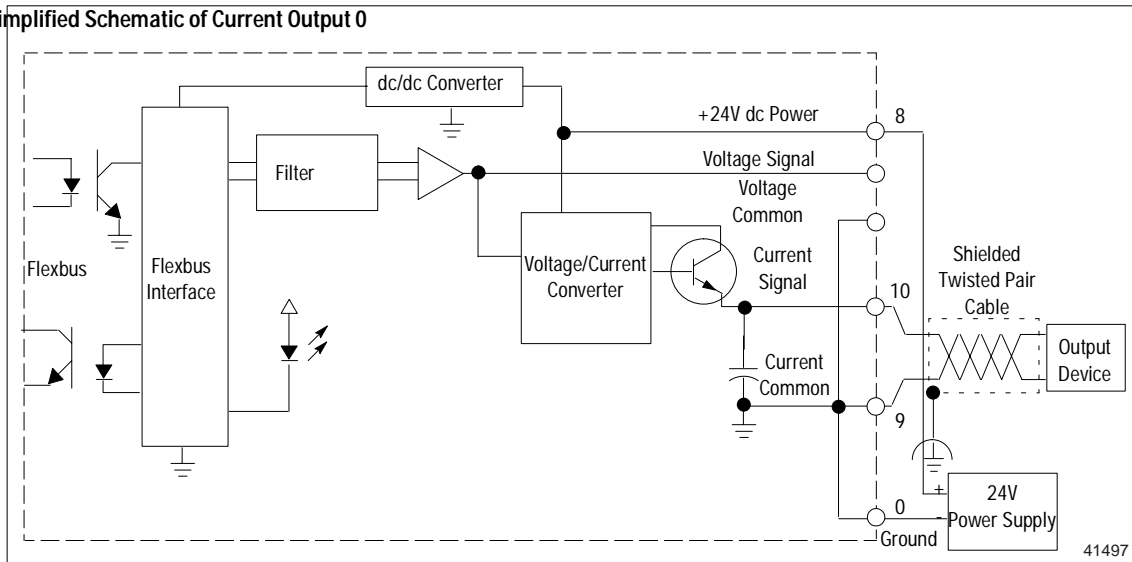
24V dc 2 Input/1 Output Analog Combo Module Cat No. 1793-IE2XOE1 and -IE2XOE1S

Simplified Schematic of Voltage Output 0



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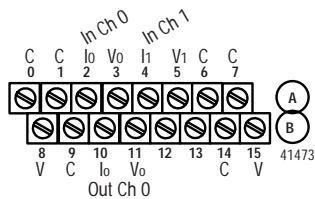
Simplified Schematic of Current Output 0



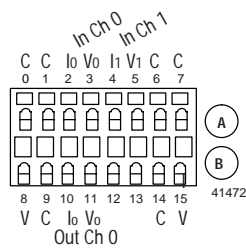
41497

Wiring

1793-IE2XOE1



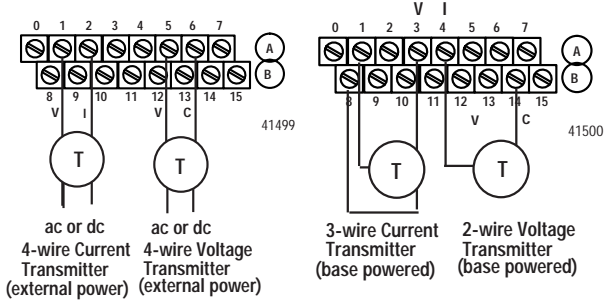
1793-IE2XOE1S



Where: C = common; V = +24V dc power; I_{0,1} = current in; V_{0,1} = voltage in; I₀ = current out; V₀ = voltage out

Channel	Signal Type	Label Markings	Signal	Return
Input				
0	Current	I	2	1
	Voltage	V	3	
1	Current	I	4	6
	Voltage	V	5	
Output				
0	Current	I	10	9
	Voltage	V	11	
+24V dc	Terminals 8 and 15 are internally connected to +V.			
24V dc common	Terminals 0, 1, 6, 7, 9, 14 are internally connected together in the module.			

24V dc 2 Input/1 Output Analog Combo Module Cat No. 1793-IE2XOE1 and -IE2XOE1S



ATTENTION: Use a 100Ω, 25W or greater, resistor when connecting to a low-impedence device, i.e., panel meter. Failure to do so can result in damage to output circuitry.

Specifications - 2 Input/1 Output Analog Module, Cat. No. 1793-IE2XOE1 and -IE2XOE1S

Module Type	2 analog inputs, 1 analog output 1793-IE2XOE1 - 16 screw-cage terminals 1793-IE2XOE1S - 16 spring-clamp terminals
Module Location	DIN rail mounting
Number of Channels	3 - 2 in, 1 out - nonisolated
Input	
Resolution	12-bits - unipolar; 11-bit plus sign - bipolar
Voltage	2.56mV/cnt unipolar; 5.13mV/cnt bipolar
Current	5.13μA/cnt
Data Type	left justified 16-bit 2's complement
Conversion Type	Successive approximation
Conversion Rate	256μs all channels
Input Current Terminal	4-20mA (user configurable) 0-20mA (user configurable)
Input Voltage Terminal	±10V (user configurable) 0-10V (user configurable)
Normal Mode Rejection Ratio	
Voltage Terminal	-3db @ 17Hz; -20db/decade -10db @ 50Hz; -11.4db @ 60Hz
Current Terminal	-3db @ 17Hz; -20db/decade -15.3db @ 50Hz; -16.8db @ 60Hz
Step Response to 63%	
Voltage Terminal	9.4ms
Current Terminal	18.2ms
Impedance	
Voltage Terminal	9.4ms100K Ω; 200K Ω @ dc
Current Terminal	238Ω
Absolute Accuracy	
Voltage Terminal	0.20% FS @ 25°C
Current Terminal	0.20% FS @ 25°C
Accuracy Drift	
Voltage Terminal	0.00428% FS per °C
Current Terminal	0.00407% FS per °C
Maximum Overload	Single channel, continuous
Voltage Terminal	30V
Current Terminal	32mA

Specifications - 2 Input/1 Output Analog Module, Cat. No. 1793-IE2XOE1 and -IE2XOE1S

Output	
Resolution	12-bits plus sign
Voltage	2.56mV/cnt
Current	5.13μA/cnt
Data Type	left justified 16-bit 2's complement
Conversion Type	Pulse width modulation
Conversion Rate	1.024ms all channels
Current Terminal	4-20mA (user configurable) 0-20mA (user configurable)
Voltage Terminal	±10V (user configurable) 0-10V (user configurable) 3A maximum
Step Response to 63%	
Voltage Terminal	24ms
Current Terminal	24ms
Impedance	
Voltage Terminal	15-750 Ω resistive
Current Terminal	15-750 Ω resistive
Absolute Accuracy	
Voltage Terminal	0.133% FS @ 25°C
Current Terminal	0.425% FS @ 25°C
Accuracy Drift	
Voltage Terminal	0.0045% FS per °C
Current Terminal	0.0069% FS per °C
Isolation Voltage	Channel to system - 850V dc for 1s Channel to channel - None
General	
Flexbus Current	20mA maximum
Power Dissipation	2.5W @ 31.2V dc
Thermal Dissipation	8.5 BTU/hr @ 31.2V dc
Indicators	1 green power indicators
External dc Power	
Voltage	19.2-31.2V dc (5% ac ripple)
Current	100mA maximum
Dimensions	
in	2.72H x 3.15D x 2.17W
(mm)	(69H x 80D x 55W)
Environmental Conditions	
Operational Temperature	0 to +55°C (32 to +131°F)
Storage Temperature	-40 to +85°C (-40 to +185°F)
Relative Humidity	5 to 95% noncondensing
Shock	Operating
	Tested to 30g peak acceleration, 11(+1)ms pulse width
	Nonoperating
	Tested to 50g peak acceleration, 11(+1)ms pulse width
Vibration	Tested 5g @ 10-500Hz per IEC68-2-6
Conductors	
Wire Size	12 gauge (4mm ²) stranded wire 3/64 in (1.2mm) maximum insulation
Category	2
Agency Certification	
(when product is marked)	<ul style="list-style-type: none"> • CSA certified • CSA Class 1, Division 2 Groups A, B, C and D certified • UL listed • CE marked for all applicable directives

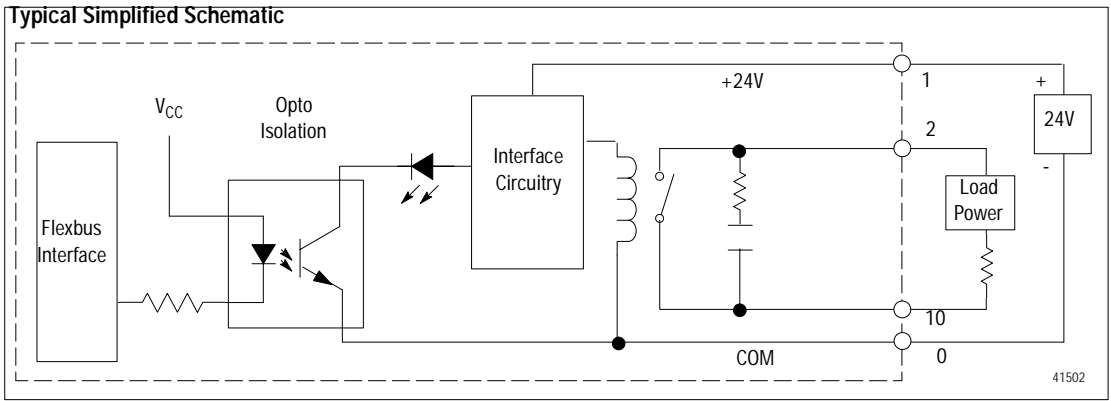
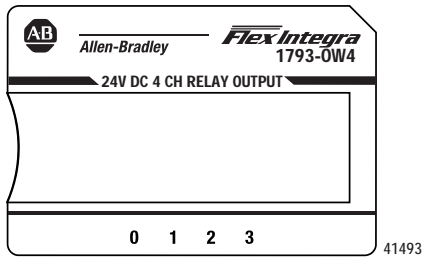
¹ Use this category information for planning conductor routing as described in publication 1770-4.1, "Wiring and Grounding Guidelines for Noise Immunity."

Relay Module's Table of Contents

The following table describes the relay module.

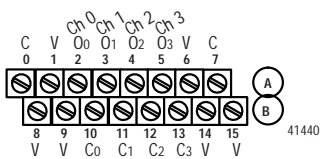
Relay Module	Purpose	See Page
<i>1793-OW4 and OW4S</i>	24V dc, 120V ac, and 240V ac 4 relay sink/source output module. The 1793-OW4 has screw terminals; the 1793-OW4S has spring-clamp terminations.	22

24V dc 4 Relay Sink/Source Output Module Cat. No. 1793-OW4 and -OW4S

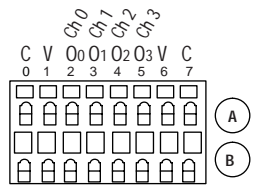


ATTENTION: Do not attempt to increase load current or wattage capability beyond the maximum rating by connecting 2 or more outputs in parallel. The slightest variation in relay switching time may cause one relay to momentarily switch the total load current.

1793-OW4



1793-OW4S

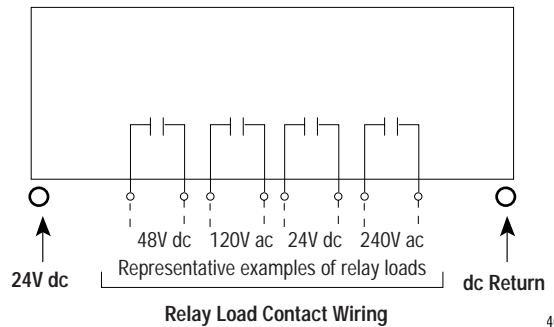


Where: C = common; V = +24V dc power; O = relay load; Cn = relay common

Wiring

Output Channel	Output Terminal	Common
0	2	10
1	3	11
2	4	12
3	5	13
+24V dc	Terminals 1, 6, 8, 9, 14 and 15 are internally connected together in the module	
24V dc common	Terminals 0 and 7 are internally connected together in the module.	

Simplified Schematic of Relay Module



Load power can be obtained from a variety of sources, and can range from +5V dc to 240V ac. Make certain that only 24V dc is applied to the module power terminals on the module terminal base



ATTENTION: Apply only +24V dc power to the power terminals on the module. Make certain that all relay wiring is properly connected before applying any power to the module.



ATTENTION: Total current draw through the module terminals is limited to 10A. Separate power connections to the module may be necessary.

24V dc 4 Relay Sink/Source Output Module Cat. No. 1793-OW4 and -OW4S

Specifications - 4 Relay Output Module Cat. No. 1793-OW4 and -OW4S		Specifications - 4 Relay Output Module Cat. No. 1793-OW4 and -OW4S	
Module Type	Form A relay output 1793-OW4 - screw-cage terminations 1793-OW4S - spring-clamp terminations		
Mounting Location	DIN rail mounting		
Number of Channels	1 group of 4		
Output Range (at rated power)	Resistive 5-30V dc @ 2.0A 48V dc @ 0.5A 125V dc @ 0.25A 125V ac @ 2.0A 240V dc @ 2.0A	Inductive 5-30V dc @ 2.0A; L/R = 7ms 48V dc @ 0.5A; L/R = 7ms 125V dc @ 0.25A; L/R = 7ms 125V ac @ 2.0A; 15A make; PF = cos θ = 0.4 240V ac @ 2.0A; 15A make; PF = cos θ = 0.4	
Maximum Power Ratings (steady state)	Resistive 60W @ 30V dc 24W @ 48V dc 31W @ 125V dc 250W @ 125V ac 480W @ 240V ac	Inductive 60VA @ 30V dc 24VA @ 48V dc 31VA @ 125V dc 250VA @ 125V ac 480VA @ 240V ac	
Minimum Contact Load	100 μ A @ 100mV dc		
Off-state Leakage Current	1mA @ 240V ac (through a snubber)		
Initial Contact Resistance	30m Ω		
Expected Contact Life	100,000 operations minimum at rated loads		
Switching Frequency	0.3Hz maximum at rated load		
Operate/Release Time	10ms maximum		
Bounce Time	1.2ms (mean)		
Delay Times	Off to On	8ms maximum (from valid output ON signal to relay coil activation)	
	On to Off	26ms (from valid output OFF signal to relay coil deactivation)	
Isolation Voltage	Between any 2 contacts	2550V dc for 1s	
	Customer load to logic	2550V dc for 1s	
	Customer load to 24V dc	2550V dc for 1s	
	Customer 24V dc to logic	850V dc for 1s	
Fuse Recommendations	3.0A, 250V ac slow blow fuse (Littelfuse part number 239003)		
Flexbus Current	70mA maximum		
Power Dissipation	5.0W @ 31.2V dc		
Thermal Dissipation	17.1 BTU/hr @ 31.2V dc		
Indicators	4 yellow channel status indicators		
External dc Power	Voltage	19.2-31.2V dc (5% ac ripple)	
	Current	125mA maximum	
Dimensions	in (mm)	2.72H x 3.15D x 2.17W (69H x 80D x 55W)	
Environmental Conditions	Operational Temperature	0 to +55 $^{\circ}$ C (32 to +131 $^{\circ}$ F)	
	Storage Temperature	-40 to +85 $^{\circ}$ C (-40 to +185 $^{\circ}$ F)	
	Relative Humidity	5 to 95% noncondensing	
	Shock	Operating	
		Tested to 12g peak acceleration, 11(+1)ms pulse width	
	Nonoperating	Tested to 50g peak acceleration, 11(+1)ms pulse width	
	Vibration	Tested 2g @ 10-500Hz per IEC68-2-6	
Conductors	Wire Size	12 gauge (4mm ²) stranded wire 3/64 in (1.2mm) maximum insulation	
	Category	2	
Agency Certification (when product is marked)	<ul style="list-style-type: none"> • CSA certified • CSA Class 1, Division 2 Groups A, B, C and D certified • UL listed • CE marked for all applicable directives 		
¹ Use this category information for planning conductor routing as described in publication 1770-4.1, "Wiring and Grounding Guidelines for Noise Immunity."			

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