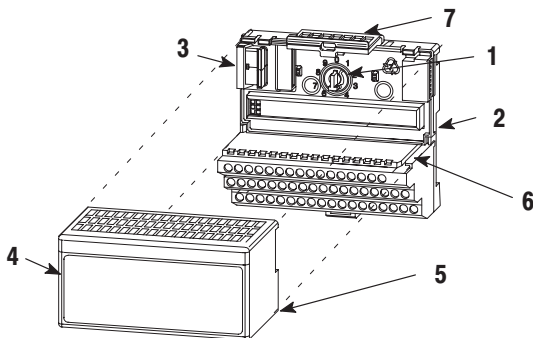




Installation Instructions

English

24V dc FLEX I/O 16 Source Input Module (Cat. No. 1794-IV16)



Module Installation

This module mounts on a 1794 terminal base unit.

1. Rotate keyswitch (1) on terminal base unit (2) clockwise to position as required for this type of module.
2. Make certain the flexbus connector (3) is pushed all the way to the left to connect with the neighboring terminal base/adaptor. **You cannot install the module unless the connector is fully extended.**
3. Make sure that the pins on the bottom of the module are straight so they will align properly with the connector in the terminal base unit.
4. Position the module (4) with its alignment bar (5) aligned with the groove (6) on the terminal base.
5. Press firmly and evenly to seat the module in the terminal base unit. The module is seated when the latching mechanism (7) is locked into the module.



ATTENTION: To use this module in a complementary I/O system, refer to your Remote I/O Adapter module documentation.



ATTENTION: Remove field-side power before removing or inserting this module. This module is designed so you can **remove and insert it under backplane power**. When you remove or insert a module with field-side power applied, an electrical arc may occur. An electrical arc can cause personal injury or property damage by:

- sending an erroneous signal to your system's field devices causing unintended machine motion
- causing an explosion in a hazardous environment

Repeated electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance.

European Union Directive Compliance

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

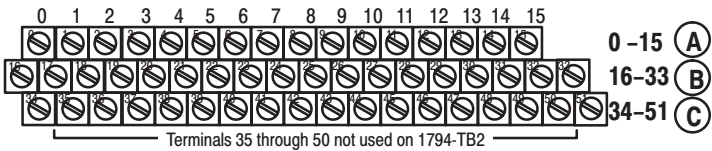
For specific information required by EN 61131-2, see the appropriate sections in this publication, as well as the following Allen-Bradley publications:

- Industrial Automation Wiring and Grounding Guidelines For Noise Immunity, publication 1770-4.1
- Automation Systems Catalog, publication B111

This equipment is classified as open equipment and must be mounted in an enclosure during operation to provide safety protection.

Wiring to a 1794-TB3 or -TB3S Terminal Base Unit

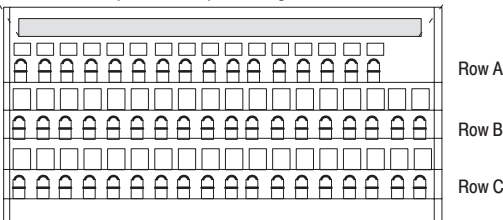
1. Connect individual wiring to numbered terminals on the **0–15** row (A) as indicated in the table on the following page.
2. Connect the associated input common to the corresponding terminal on the 16–33 row (B) for each input as indicated in the table on the following page. (Commons are internally connected together.)
3. Connect +24V dc power to terminal 34 on the **34–51** row (C).
4. Connect dc return to terminal 16 on the **16–33** row (B).
5. If continuing power to the next terminal base unit, connect a jumper from terminal 51 (+24V dc) on this base unit to terminal 34 on the next base unit.
6. If continuing common to the next terminal base unit, connect a jumper from terminal 33 (common) on this base unit to terminal 16 on the next base unit.



1794-TB2, -TB3

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Row A		
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Row B
34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	Row C

Label placed at top of wiring area.



1794-TB3S



ATTENTION: Total current draw through the terminal base unit is limited to 10A. Separate power connections to the terminal base unit may be necessary.

4 24V dc FLEX I/O 16 Source Input Module

Input	Input Terminal	Common Terminal	Input	Input Terminal	Common Terminal
Input 0	A-0	B-17	Input 8	A-8	B-25
Input 1	A-1	B-18	Input 9	A-9	B-26
Input 2	A-2	B-19	Input 10	A-10	B-27
Input 3	A-3	B-20	Input 11	A-11	B-28
Input 4	A-4	B-21	Input 12	A-12	B-29
Input 5	A-5	B-22	Input 13	A-13	B-30
Input 6	A-6	B-23	Input 14	A-14	B-31
Input 7	A-7	B-24	Input 15	A-15	B-32
Common	B-16 thru B-33		24V dc	C-34 thru C-51	

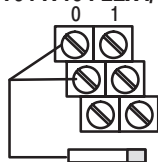
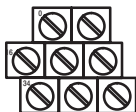
2-wire and 3-wire Inputs to the 1794-IV16 FLEX I/O Module

- 0 - 15 (A)
 16 - 33 (B)
 34 - 51 (C)

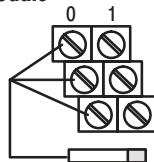
(A) = Source Input

(B) = Common

(C) = 24V dc

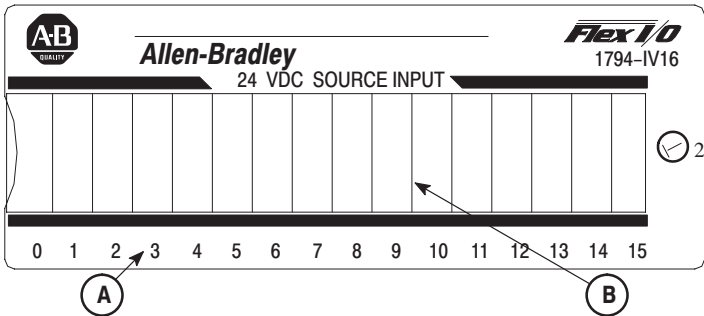


**2-Wire Device
(Sinking Output)**



**3-Wire Device
(Sinking Output)**

Indicators



A = Status indicators – yellow – show status of individual inputs.

B = Insertable label for writing individual input designations.

Memory Map

Dec.	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
Read 0	D15	D14	D13	D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	D0
Read 1	C = 16 bit Counter Value of Input 15															
Write	Not used		CF	CR	NU	FT for all channels				Not used						

Where: D = Data Input – 1 = Input on; 0 = Input Off

C = Counter value for input 15

FT = Input Filter Time

NU = Not used

CR = Counter reset

CF = Counter Fast - where 1 = Fast Input (raw) data, 0 = Standard Input filtered data

NOTE: C, CR and CF not available when used with any series 1794-ASB or 1794-ASB2 Remote I/O Adapter modules.

Setting the Input Filter Time

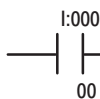
You can select the input filter time (FT) for all channels (channels 00 through 15). Select the input filter time by setting the corresponding bits in the **output** image table (complementary word) for the module.

For example, to set a filter time of 8ms for a dc input module at address rack 1, module group 0, set bits 10, 09 and 08 as shown below.

	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	Dec.
O:010						1	0	1									= 2400 Octal or 1280 Decimal

FT for channels 00 thru 15

Write Filter Time on system startup.



FLL	
Fill File	
Source	1280
Destination	#O:010
Length	1

Write FT to complement of input module.

Input Filter Times

Bits			Description	Selected Filter Time
10	09	08	Filter Time for Inputs 00–15 (00–17)	
0	0	0	Filter Time 0 (default)	256 μ s
0	0	1	Filter Time 1	512 μ s
0	1	0	Filter Time 2	1ms
0	1	1	Filter Time 3	2ms
1	0	0	Filter Time 4	4ms
1	0	1	Filter Time 5	8ms
1	1	0	Filter Time 6	16ms
1	1	1	Filter Time 7	32ms

Specifications - 24V dc Input Module Cat. No. 1794-IV16

Number of Inputs	16 (1 group of 16), non-isolated, sourcing
Module Location	Cat. No. 1794-TB3, -TB3S Terminal Base Unit
ON-state Voltage	10V dc minimum; 24V dc nominal; 31.2V dc maximum
ON-state Current	2.0mA minimum; 8.0mA nominal at 24V dc; 11.0mA maximum
OFF-state Voltage	5.0V dc maximum
OFF-state Current	1.5mA minimum
Input Impedance	4.7K ohms maximum
Isolation Voltage	100% tested at 2121V dc for 1s between user and system No isolation between individual channels
Input Delay Time	
Off to On	256 μ s, 512 μ s, 1ms, 2ms, 4ms, 8ms, 16ms, 32ms
On to Off	256 μ s, 512 μ s, 1ms, 2ms, 4ms, 8ms, 16ms, 32ms 256 μ s default - Selectable thru output image table
Flexbus Current (maximum)	30mA
Power Dissipation	Maximum 5.7W @ 31.2V dc
Thermal Dissipation	Maximum 19.4 BTU/hr @ 31.2V dc

Specifications continued on next page.

Specifications – 24V dc Input Module Cat. No. 1794-IV16

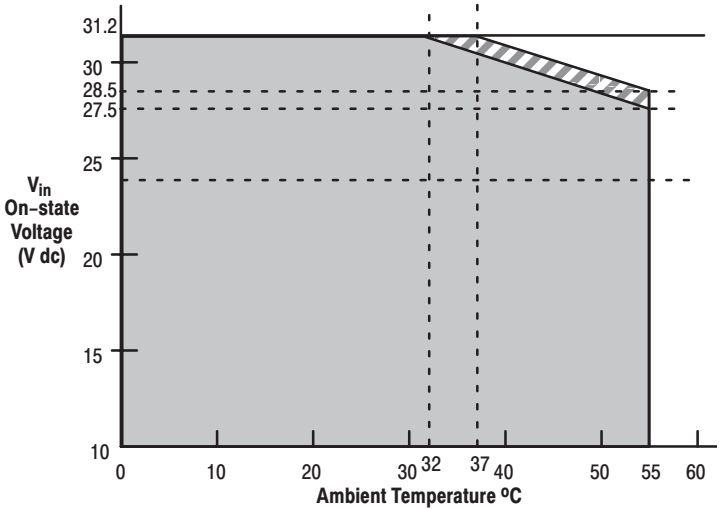
Indicators (field side indication, customer device driven)	16 yellow status indicators
Keyswitch Position	2

General Specifications

External dc Power		24V dc nominal
Supply Voltage		19.2 to 31.2V dc (includes 5% ac ripple)
Voltage Range		See derating curve
Dimensions	Inches (Millimeters)	1.8H x 3.7W x 2.1D (45.7 x 94.0 x 53.3)
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	30 g peak acceleration, 11(±1)ms pulse width
	Non-operating	50 g peak acceleration, 11(±1)ms pulse width
Vibration		Tested 5 g @ 10–500Hz per IEC 68-2-6
Conductors	Wire Size	12 gauge (4mm ²) stranded maximum
		3/64 inch (1.2mm) insulation maximum
	Category	2 ¹
Agency Certification (when product or packaging is marked)		<ul style="list-style-type: none"> • CSA certified • CSA Class I, Division 2 Groups A, B, C, D certified • UL listed • CE marked for all applicable directives

¹ You use this conductor category information for planning conductor routing as described in publication 1770-4.1, "Industrial Automation Wiring and Groundlines for Noise Immunity."

Derating Curve



The area within the curve represents the safe operating range for the module under various conditions of user supplied 24V dc supply voltages and ambient temperatures.

- = Normal mounting safe operating range, (includes).
- = Other mounting positions (including inverted horizontal) safe operating range

Voltage (max.)	Temperature (max.)		Voltage (max.)	Temperature (max.)	
	Normal	Other		Normal	Other
31.2	37	32	29.0	51	45
30.5	41	36	28.5	55	48
30.0	45	39	28.0		51
29.5	48	42	27.5		55

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