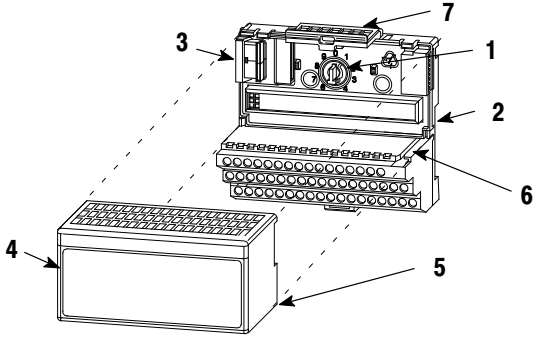
ALLEN-BRADLEY

English

120V ac FLEX I/O 8 Input Module (Cat. No. 1794-IA8) Installation Instructions



Module Installation

This module mounts on a 1794 terminal base unit.

1. Rotate keyswitch (1) on terminal base unit (2) clockwise to position 8 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/adapter. **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.
6. Repeat the above steps to install the next module in its terminal base unit.

ATTENTION: This module does not support complementary I/O. It uses both the input and output image tables since it is a combination input and output module.

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 50081-2EMC – 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.

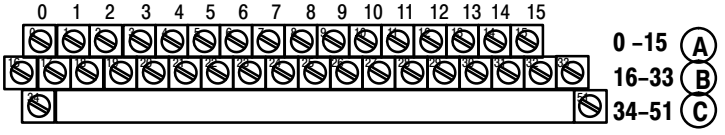
For specific information required by EN 61131-2, see the appropriate sections in this publication, as well as the following Allen-Bradley publications:

- 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

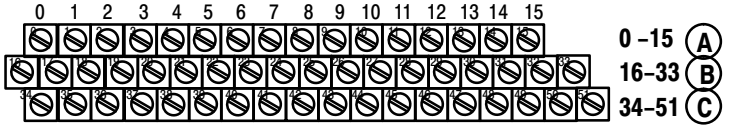
Wiring to a 1794-TB2 or -TB3 Terminal Base Unit

1. Connect individual input wiring to numbered terminals on the **0–15** row **(A)** as indicated in the table below.

1. Connect the associated input wiring to the corresponding odd numbered terminal on row **(A)** (1794-TB2) or the associated terminal on row **(C)** (1794-TB3) for each input as indicated in the table below. (Odd numbered terminals on row A and terminals C-34 thru C-51 are internally connected together.)
2. Connect 120V ac L1 to terminal 34 on the **34–51** row **(C)**.
3. Connect 120V ac common L2 to terminal 16 on the **16–33** row **(B)**.
4. If continuing power to the next terminal base unit, connect a jumper from terminal 51 (120V ac L1) on this base unit to terminal 34 on the next base unit.
5. If continuing common to the next terminal base unit, connect a jumper from terminal 33 (120V ac common L2) on this base unit to terminal 16 on the next base unit.



1794-TB2



1794-TB3

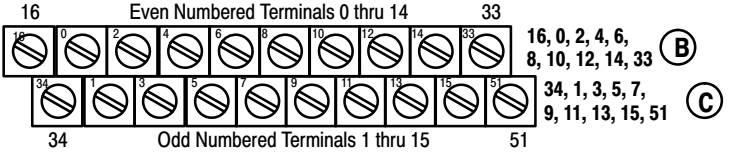
ATTENTION: Total current draw through the terminal base unit is limited to 10A. Separate power connections to the terminal base unit may be necessary.

Wiring to a 1794-TBN or -TBNF Terminal Base Unit

1. Connect individual input wiring to the even numbered terminals on row **(B)** as indicated in the table below.
2. Connect the associated input wiring to the corresponding odd numbered terminal on row (C) for each input as indicated in the table below.
6. Connect 120V ac (L1) to terminal 34 on row **(C)**.
7. Connect 120V ac common (L2) to terminal 16 on row **(B)**.

8. If continuing power to the next terminal base unit, connect a jumper from terminal 51 (120V ac L1) on this base unit to terminal 34 on the next base unit.

9. If continuing common to the next terminal base unit, connect a jumper from terminal 33 (120V ac common L2) on this base unit to terminal 16 on the next base unit.

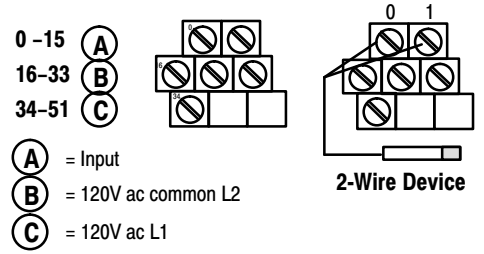


1794-TBN, -TBNF

Channel	1794-TB2, 1794-TB3		1794-TBN	
	Input Terminals	120V ac Supply	Input Terminals	120V ac Supply
0	A-0	A-1[1]/C-35	B-0	C-1[2]
1	A-2	A-3[1]/C-37	B-2	C-3[2]
2	A-4	A-5[1]/C-39	B-4	C-5[2]
3	A-6	A-7[1]/C-41	B-6	C-7[2]
4	A-8	A-9[1]/C-43	B-8	C-9[2]
5	A-10	A-11[1]/C-45	B-10	C-11[2]
6	A-12	A-13[1]/C-47	B-12	C-13[2]
7	A-14	A-15[1]/C-49	B-14	C-15[2]
A = Input terminals B = Common terminals C = Power terminals (C-34 and 51 on -TB2; C34 thru 51 on -TB3)			B = even numbered terminals 0 thru 14, ac common terminals 16 and 33 C = Power terminals C-34 and 51, and odd numbered input terminals 1 thru 15	

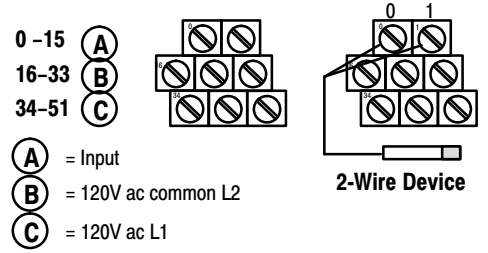
[1] A-1, 3, 5, 7, 9, 11, 13, and 15 on the 1794-TB2 and -TB3 are internally connected in the module to 120V ac L1.
[2] C-1, 3, 5, 7, 9, 11, 13 and 15 on the 1794-TBN are internally connected in the module to 120V ac L1.

Connecting 2-wire Inputs to the 1794-IA8 Block I/O Module using 1794-TB2 terminal Base Units



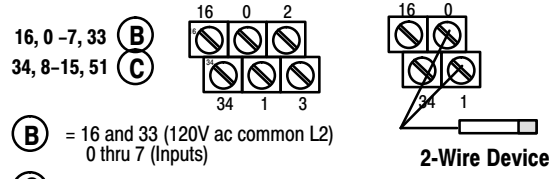
(A) = Input
(B) = 120V ac common L2
(C) = 120V ac L1

Connecting 2-wire Inputs to the 1794-IA8 Block I/O Module using 1794-TB3 terminal Base Units



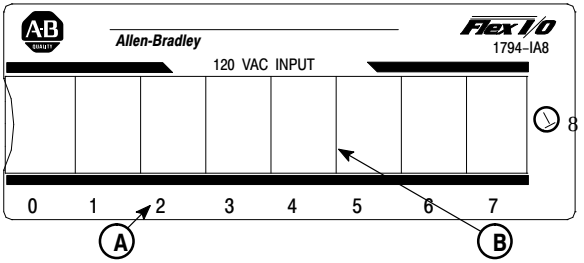
(A) = Input
(B) = 120V ac common L2
(C) = 120V ac L1

Connecting 2-wire Inputs to the 1794-IA8 Block I/O Module using a 1794-TBN terminal Base Unit



(B) = 16 and 33 (120V ac common L2)
0 thru 7 (Inputs)
(C) = 120V ac L1

Indicators



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

B = Insertable label for writing individual input designations.

Image Table Memory Map

Image Table	Dec. Bits (Oct. Bits)	Description	Format
Input	00–07	Status of input data	0–7
	08–15 (10–17)	Not used	
Output	00–02	Delay time for Inputs 0 to 7	
	03–15 (3–17)	Not used	

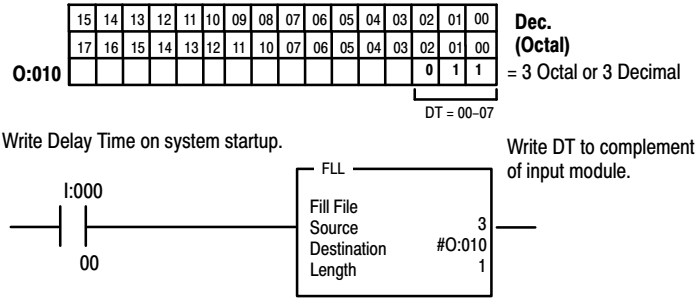
Dec.	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
(Oct.)	17	16	15	14	13	12	11	10	07	06	05	04	03	02	01	00
read	**Not used – set to 0**								**I7**	**I6**	**I5**	**I4**	**I3**	**I2**	**I1**	**I0**
write	**Not used – set to 0**													**D**	**D**	**D**

Where: **I = Input number**
D = Delay time bit – see below

Increasing the Input Delay Time

You can increase the input delay time (DT) for channels 00 through 07. Select the input delay time by setting the corresponding bits in the **output** image table (complementary word) for the module.

For example, to increase the off-to-on delay time to 12ms for an ac input module at address rack 1, module group 0, set bits 02, 01, and 00 as shown below.



Delay Times

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

Specifications – 120V ac Input Module Cat. No. 1794-IA8	
Number of Inputs	8 (1 group of 8), non-isolated, sinking
Module Location	Cat. No. 1794-TB2, -TB3 or -TBN Terminal Base Unit
Minimum ON–state Voltage	65V ac
Minimum ON-state Current	7.1mA
Maximum OFF-state Voltage	43V ac
Maximum OFF-state Current	2.9mA
Nominal Input Impedance	10.6K ohms
Isolation Channel to channel Customer power to input channels Customer power to block	 None required None 1250V ac
Input DelayTime (maximum) **Off to On** (time from a valid input signal to recognition by block) **On to Off** (time from input dropping below valid level to recognition by block)	 8.6ms, 9ms, 10ms, 12ms,17ms, 26ms, 43ms, 78ms 26.6ms, 27ms, 28ms, 30ms, 35ms, 44ms, 61ms, 96ms Delay time selectable thru output image table Default is 8.6ms off to on/26.6ms on to off
Flexbus Current (maximum)	30mA

Specifications continued on next page.

Specifications – 120V ac Input Module Cat. No. 1794-IA8		
Power Dissipation		Maximum 3.5W @ 132V ac
Thermal Dissipation		Maximum 11.9 BTU/hr @ 132V ac
Indicators (field side indication, customer device driven)		8 yellow status indicators
Keyswitch Position		8
General Specifications		
External ac Power		
	Supply Voltage	120V ac nominal
	Voltage Range	85 to 132V ac, 47-63Hz
Dimensions	Inches	1.8H x 3.7W x 2.1D
	(Millimeters)	(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	1[1]
Agency Certification (when product or packaging is marked)		• 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 Grounding Guidelines."

Rockwell Automation
Allen-Bradley

With major offices worldwide.

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

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