

Installation Instructions

Original Instructions



Allen-Bradley

by ROCKWELL AUTOMATION

FLEX I/O AC Digital Output Modules

Catalog Numbers 1794-OA8, 1794-OA8I, 1794-OA16, 1794-OA16K

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Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

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2. Make sure the Flexbus connector (1) 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 the pins on the bottom of the module are straight so they align properly with the connector in the terminal base.
4. Position the module (7) with its alignment bar (6) aligned with the groove (5) on the terminal base.
5. Press firmly and evenly to seat the module in the terminal base. The module is seated when the latching mechanism (2) is locked into the module.

Wire Your Module

Connect Wiring for the 1794-OA8

1. Connect wiring to the different terminal bases as follows:
For 1794-TB2, 1794-TB3, or 1794-TB3S – Connect individual output wiring to even-numbered terminals on the 0...15 row (A) as indicated in [Table 1](#).
For 1794-TBN or 1794-TBNF – Connect individual output wiring to even-numbered terminals on the 16...33 row (B) as indicated in [Table 1](#).
For 1794-TB2, 1794-TB3, or 1794-TB3S – Connect the associated V AC common (L2) lead of the output device to the corresponding odd-numbered terminal on the 0...15 row (A) for each output as indicated in [Table 1](#); or to the corresponding terminal on the 16...33 row (B). The V AC common (L2) terminals of row (B) and the odd-numbered terminals of row (A) are internally connected together.
For 1794-TBN or 1794-TBNF – Connect the associated V AC common (L2) lead of the output device to the corresponding odd-numbered terminal on the 34...51 row (C) for each output as indicated in [Table 1](#). The odd-numbered terminals of row (C) are internally connected together to V AC L2 common.
2. Connect V AC power L1 to terminal 34 on the 34...51 row (C).
3. Connect V AC common L2 to terminal 16 on the 16...33 row (B).
4. If daisy chaining V AC power (L1) to the next terminal base, connect a jumper from terminal 51 (V AC L1) on this terminal base to terminal 34 on the next terminal base.
5. If continuing V AC common (L2) to the next terminal base, connect a jumper from terminal 33 (V common L2) on this terminal base to terminal 16 on the next terminal base.

IMPORTANT

Total current draw through terminal base connection is limited to 10 A. Separate power connections to each terminal base may be necessary.



ATTENTION: If multiple power sources are used for 1794-OA8I, do not exceed the specified isolation voltage.

Table 1 - Wiring Connections for 1794-OA8

Output ⁽¹⁾	1794-TB2, 1794-TB3, 1794-TB3S		1794-TBN, 1794-TBNF	
	Output Terminal	Common Terminal (L2) ⁽¹⁾	Output Terminal	Common Terminal (L2) ⁽²⁾
0	A-0	A-1/B-17	B-0	C-1
1	A-2	A-3/B-19	B-2	C-3
2	A-4	A-5/B-21	B-4	C-5
3	A-6	A-7/B-23	B-6	C-7
4	A-8	A-9/B-25	B-8	C-9
5	A-10	A-11/B-27	B-10	C-11
6	A-12	A-13/B-29	B-12	C-13
7	A-14	A-15/B-31	B-14	C-15
A = Output terminals (Even-numbered terminals 0...14) B = Common terminals C = Power terminals (C-34 and C-51 on 1794-TB2; C-34...C-51 on 1794-TB3 and 1794-TB3S)			B = Even-numbered output terminals 0...14, AC common terminals 16 and 33 C = Power terminals C-34 and C-51, and odd-numbered output terminals 1...15	

(1) A-1, 3, 5, 7, 9, 11, 13, and 15 on the 1794-TB2, 1794-TB3, and 1794-TB3S are internally connected in the module to 120V AC common (L2).

(2) C-1, 3, 5, 7, 9, 11, 13, and 15 on the 1794-TBN and 1794-TBNF are internally connected in the module to 120V AC common (L2).

Specifications

Specifications – 1794-0A8, 1794-0A8I

Attribute	1794-0A8	1794-0A8I
Number of outputs	8, nonisolated	8, isolated
Recommended terminal base	1794-TBN ⁽¹⁾ , 1794-TBNF, 1794-TB2, 1794-TB3, 1794-TB3S, 1794-TBKD, 1794-TBNK, 1794-TBNFK, 1794-TB3K, 1794-TB3SK	
Output voltage, min	85V AC	
Output voltage, nom	120V AC	
Output voltage, max	132V AC	
Output current rating	4.0 A (8 outputs @ 500 mA)	
On-state current, min	5.0 mA per output	
On-state current, max ⁽²⁾	500 mA per output @ 55 °C (131 °F) – Sufficient to operate an Allen-Bradley® Bulletin 500 NEMA size 3 motor starter 750 mA per output @ 35 °C (95 °F) 1.0 A on 4 non-adjacent outputs, 500 mA on the remaining 4 outputs @ 30 °C (86 °F)	
On-state voltage drop, max	1.0V @ 0.5 A	
Surge current	7 A for 40 ms, repeatable every 8 seconds	
Off-state leakage current, max	2.25 mA	
Isolation voltage	120V (continuous), field to backplane Tested @ 1250V AC for 60 s No isolation between individual channels.	120V (continuous), field to backplane, channel to channel Tested @ 1250V AC for 60 s Isolation between individual channels.
Output signal delays ⁽³⁾ Off to On On to Off	1/2 cycle max 1/2 cycle max	
Flexbus current	80 mA @ 5V DC	
Power dissipation, max	4.1 W @ 0.5 A 6.3 W @ 0.75 A 6.3 W @ 1.0 A	
Thermal dissipation, max	14.0 BTU/hr @ 0.5 A 21.2 BTU/hr @ 0.75 A 21.4 BTU/hr @ 1.0 A	
Fusing ⁽⁴⁾	1.6 A, 250V AC slow-blow, Littelfuse 23901.6; San-O SD6-1.6 (1.6 A fuses come installed in 1794-TBNF terminal bases)	

(1) Auxiliary terminal strips are required when using the 1794-TBN terminal base.

(2) Below 50 mA the voltage drop across the module will be higher and the voltage waveform may have some small oscillation (less than 5V).

(3) Output signal delay is the time from receipt of an output on or off command to the output actually turning on or off.

(4) Module outputs are not fused. Fusing is recommended. If fusing is desired, you must supply external fusing or use the 1794-TBNF terminal base, if recommended.

Specifications – 1794-0A16 and 1794-0A16K

Attribute	Value
Number of outputs	16, nonisolated
Recommended terminal base	1794-TBN ⁽¹⁾ , 1794-TBNF, 1794-TB2, 1794-TB3, 1794-TB3S, 1794-TBKD, 1794-TBNK, 1794-TBNFK, 1794-TB3K, 1794-TB3SK
Mounting	See derating curve
Output voltage range, min	74V AC
Output voltage range, nom	120V AC
Output voltage range, max	132V AC
Output current rating ⁽²⁾	4.0 A (16 outputs @ 250 mA)
On-state current, min	5.0 mA per output
On-state current, max ⁽³⁾	500 mA per output @ 55 °C (131 °F)
On-state voltage drop, max	1.5V @ 0.5 A
Surge current	7 A for 40 ms, repeatable every 8 seconds
Off-state leakage current, max	2.25 mA
Isolation voltage	120V (continuous), field to backplane Tested @ 1250V AC for 60 s No isolation between individual channels.
Output signal delays ⁽⁴⁾ Off to On On to Off	1/2 cycle max 1/2 cycle max
Flexbus current	80 mA @ 5V DC
Power dissipation, max	4.7 W @ 0.5 A
Thermal dissipation, max	16.1 BTU/hr @ 0.5 A
Fusing ⁽⁵⁾	2.5 A, 150V AC normal blow, MQ2

(1) Auxiliary terminal strips are required when using the 1794-TBN terminal base.

(2) If using 0.5 A outputs, alternate wiring so that no two 0.5 A outputs are next to each other.

(3) Below 50 mA the voltage drop across the module will be higher and the voltage waveform may have some small oscillation (less than 5V).

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- (4) Output signal delay is the time from receipt of an output on or off command to the output actually turning on or off.
 (5) Module outputs are not fused. Fusing is recommended. If fusing is desired, you must supply external fusing or use the 1794-TBNF terminal base, if recommended.

General Specifications

Attribute	Value
Terminal base screw torque	Determined by the installed terminal base
Dimensions, approx. (H x W x D)	94 x 94 x 69 mm (3.7 x 3.7 x 2.7 in.)
Weight, approx.	109 g (3.84 oz.) - 1794-0A8 107 g (3.77 oz.) - 1794-0A8I 96 g (3.38 oz.) - 1794-0A16, 1794-0A16K
Indicators (field side indication)	8 yellow status indicators - 1794-0A8, 1794-0A8I 16 yellow status indicators - 1794-0A16, 1794-0A16K
External AC power supply voltage	120V AC
External AC power voltage range	85...132V AC - 1794-0A8, 1794-0A8I 74...132V AC - 1794-0A16, 1794-0A16K
Keyswitch position	8
Pilot duty rating	5 A Inrush
North American temp code	T4A - 1794-0A8, 1794-0A8I T4 - 1794-0A16, 1794-0A16K
Enclosure type rating	None (open-style)
Wire size	Determined by the installed terminal base
Wiring category ⁽¹⁾	2 - on signal ports

(1) Use this conductor category information for planning conductor routing as described in Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

Environmental Specifications

Attribute	Value
Operating temperature	IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock): -20...+55 °C (-4...+131 °F) - 1794-0A8, 1794-0A8I 0 °C < Ta < +55 °C (+32 °F < Ta < +131 °F) - 1794-0A16, 1794-0A16K
Temperature, surrounding air, max	55 °C (131 °F)
Temperature, nonoperating	IEC 60068-2-1 (Test Ab, Unpackaged nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged nonoperating Thermal Shock): -40...+85 °C (-40...+185 °F)
Relative humidity	IEC 60068-2-30 (Test Db, Unpackaged Damp Heat): 5...95% noncondensing
Vibration	IEC60068-2-6 (Test Fc, Operating): 5 g @ 10...500 Hz
Shock, operating	IEC60068-2-27 (Test Ea, Unpackaged shock): 30 g
Shock, nonoperating	IEC60068-2-27 (Test Ea, Unpackaged shock): 50 g
Emissions	IEC 61000-6-4
ESD immunity	IEC 61000-4-2: 6 kV contact discharges 8 kV air discharges
Radiated RF immunity	IEC 61000-4-3: 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz 1V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz
EFT/B immunity	IEC 61000-4-4: ±2 kV @ 5 kHz on power ports ±2 kV @ 5 kHz on signal ports
Surge transient immunity	IEC 61000-4-5: ±1 kV line-line(DM) and ±2 kV line-earth(CM) on signal ports
Conducted RF immunity	IEC 61000-4-6: 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz