

Terminal Base Wiring for the 1794-IE8

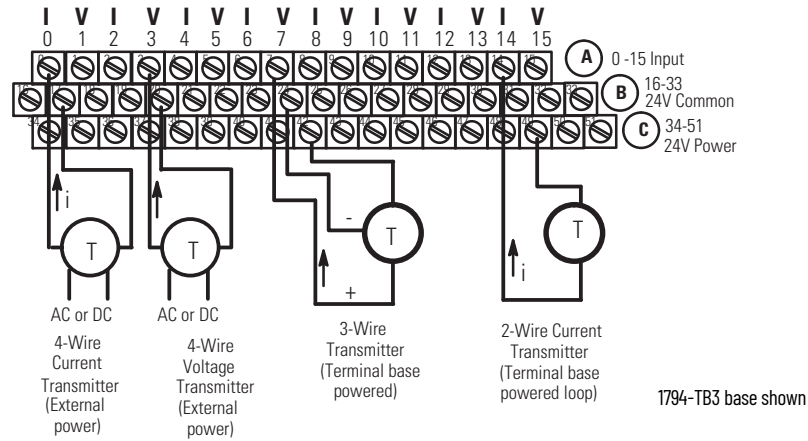


Table 2 - Wiring Connections for the 1794-0E4 Output Modules

Channel	Signal Type	Label Marking	1794-TB2, 1794-TB3, 1794-TB3S, 1794-TB3T, 1794-TB3TS		1794-TBN
			Output Terminal ⁽¹⁾	Shield (1794-TB3T, 1794-TB3TS)	Output Terminal ⁽²⁾
Output 0	Current	I0	A-0	C-39	B-0
	Current	I0 Ret	A-1		C-1
	Voltage	V0	A-2	C-40	B-2
	Voltage	V0 Ret	A-3		C-3
Output 1	Current	I1	A-4	C-41	B-4
	Current	I1 Ret	A-5		C-5
	Voltage	V1	A-6	C-42	B-6
	Voltage	V1 Ret	A-7		C-7
Output 2	Current	I2	A-8	C-43	B-8
	Current	I2 Ret	A-9		C-9
	Voltage	V2	A-10	C-44	B-10
	Voltage	V2 Ret	A-11		C-11
Output 3	Current	I3	A-12	C-45	B-12
	Current	I3 Ret	A-13		C-13
	Voltage	V3	A-14	C-46	B-14
	Voltage	V3 Ret	A-15		C-15
-V DC Common	1794-TB3 and 1794-TB3S - Terminals 16...33 are internally connected in the terminal base unit. 1794-TB3T and 1794-TB3TS - Terminals 16, 17, 19, 21, 23, 25, 27, 29, 31, and 33 are internally connected in the terminal base unit. 1794-TB2 - Terminals 16 and 33 are internally connected in the terminal base unit				
+V DC Power	1794-TB3 and 1794-TB3S - Terminals 34...51 are internally connected in the terminal base unit. 1794-TB3T and 1794-TB3TS - Terminals 34, 35, 50, and 51 are internally connected in the terminal base unit. 1794-TB2 - Terminals 34 and 51 are internally connected in the terminal base unit.				
Chassis ground (Shield)	1794-TB3T, 1794-TB3TS - Terminals 39...46 are internally connected to chassis ground.				

(1) 1, 3, 5, 7, 9, 11, 13, and 15 are internally connected in the module to 24V DC common.
(2) 1, 3, 5, 7, 9, 11, 13, and 15 are internally connected in the module to 24V DC common.

Terminal Base Wiring for the 1794-0E4

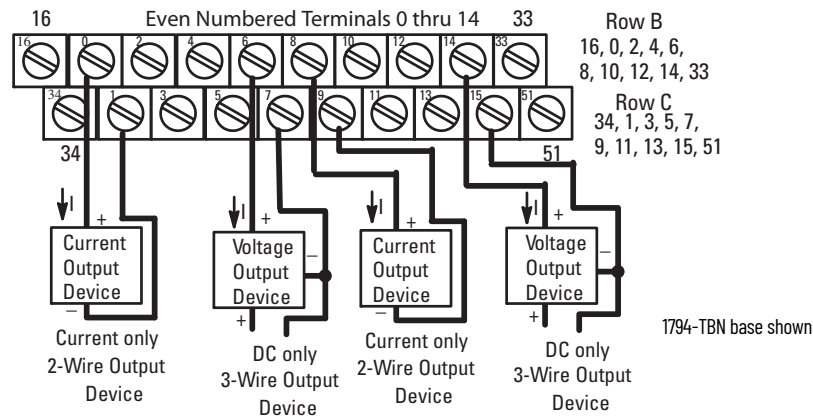


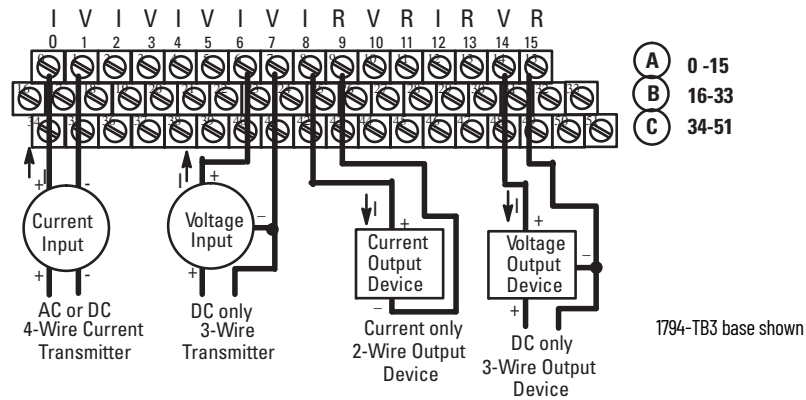
Table 3 - Wiring Connections for the 1794-IE4X0E2 4-Input 2-Output Analog Module

Channel	Signal Type	Label Marking	1794-TB2, 1794-TB3, 1794-TB3S, 1794-TB3T, 1794-TB3TS	1794-TB3, 1794-TB3S	1794-TB2, 1794-TB3, 1794-TB3S	1794-TB3T, 1794-TB3TS	
			Input/Output Terminal ⁽¹⁾	Power Terminal ⁽²⁾	Common Terminal		Shield
Input 0	Current	I0	A-0	C-35	B-17	B-17	C-39
	Voltage	V0	A-1	C-36	B-18	B-17	
Input 1	Current	I1	A-2	C-37	B-19	B-19	C-40
	Voltage	V1	A-3	C-38	B-20	B-19	
Input 2	Current	I2	A-4	C-39	B-21	B-21	C-41
	Voltage	V2	A-5	C-40	B-22	B-21	
Input 3	Current	I3	A-6	C-41	B-23	B-23	C-42
	Voltage	V3	A-7	C-42	B-24	B-23	
Output 0	Current	I0	A-8				C-43
	Current	RET	A-9				
	Voltage	V0	A-10				C-44
	Voltage	RET	A-11				
Output 1	Current	I1	A-12				C-45
	Current	RET	A-13				
	Voltage	V1	A-14				C-46
	Voltage	RET	A-15				
-V DC Common	1794-TB2, 1794-TB3, and 1794-TB3S - Terminals 16...33 are internally connected in the terminal base unit. 1794-TB3T and 1794-TB3TS - Terminals 16, 17, 19, 21, 23, 25, 27, 29, 31, and 33 are internally connected in the terminal base unit.						
+V DC Power	1794-TB3 and 1794-TB3S - Terminals 34...51 are internally connected in the terminal base unit. 1794-TB3T and 1794-TB3TS - Terminals 34, 35, 50, and 51 are internally connected in the terminal base unit. 1794-TB2 - Terminals 34 and 51 are internally connected in the terminal base unit.						
Chassis ground (Shield)	1794-TB3T and 1794-TB3TS - Terminals 39...46 are internally connected to chassis ground.						

(1) A-9, I1, I3 and 15 are internally connected in the module to 24V DC common.

(2) Use when transmitter requires terminal base power.

Terminal Base Wiring for the 1794-IE4X0E2



Input Map (Read) - 1794-IE8

Dec.	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Oct.	17	16	15	14	13	12	11	10	7	6	5	4	3	2	1	0
Word 0	S	Analog input value for Channel 0														
Word 1	S	Analog input value for Channel 1														
Word 2	S	Analog input value for Channel 2														
Word 3	S	Analog input value for Channel 3														
Word 4	S	Analog input value for Channel 4														
Word 5	S	Analog input value for Channel 5														
Word 6	S	Analog input value for Channel 6														
Word 7	S	Analog input value for Channel 7														
Word 8	PU	Not used - set to zero							U7	U6	U5	U4	U3	U2	U1	U0

Where:

PU = Power up inconfigured

S = Sign bit in 2's complement

U = Underrange for specified channel

Output Map (Write) - 1794-IE8

Dec.	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Oct.	17	16	15	14	13	12	11	10	7	6	5	4	3	2	1	0
Word 3	C7	C6	C5	C4	C3	C2	C1	C0	F7	F6	F5	F4	F3	F2	F1	F0

Where:

C = Configure select bit

F = Full range bit

Input Map (Read) - 1794-IE4X0E2

Dec.	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Oct.	17	16	15	14	13	12	11	10	7	6	5	4	3	2	1	0
Word 0	S	Analog input value for Channel 0														
Word 1	S	Analog input value for Channel 1														
Word 2	S	Analog input value for Channel 2														
Word 3	S	Analog input value for Channel 3														
Word 4	PU	Not used - set to zero							W1	W0	U3	U2	U1	U0		

Where:

PU = Power up inconfigured

S = Sign bit in 2's complement

W1 and W0 = Diagnostic bits for current output. Wire off current loop status for output channels 0 and 1.

U = Underrange for specified channel

Output Map (Write) - 1794-IE4X0E2

Dec.	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Oct.	17	16	15	14	13	12	11	10	7	6	5	4	3	2	1	0
Word 0	S	Analog output data - Channel 0														
Word 1	S	Analog output data - Channel 1														
Word 2	Not used - set to 0															
Word 3	0	0	C5	C4	C3	C2	C1	C0	0	0	F5	F4	F3	F2	F1	F0
Words 4 and 5	Not used - set to 0															
Word 6		Safe state value for Channel 0														
Word 7		Safe state value for Channel 1														

Where:

PU = Power up inconfigured

CF = In configuration mode

DN = Calibration accepted

U = Underrange for specified channel

P0 and P1 = Outputs holding in response to Q0 and Q1

FP = Field power off

BD = Bad calibration

W1 and W0 = Wire off current loop status for output channels 0 and 1

V = Overrange for specified channel

Range Selection Bits - 1794-IE8 and 1794-IE4X0E2

1794-IE8	In Ch. 0		In Ch. 1		In Ch. 2		In Ch. 3		In Ch. 4		In Ch. 5		In Ch. 6		In Ch. 7	
1794-IE4X0E2	In Ch. 0		In Ch.1		In Ch. 2		In Ch. 3		Out Ch. 0		Out Ch. 1					
	F0	C0	F1	C1	F2	C2	F3	C3	F4	C4	F5	C5	F6	C6	F7	C7
Dec. Bits	00	08	01	09	02	10	03	11	04	12	05	13	06	14	07	15
0...10V DC/0...20 mA	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
4...20 mA	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
-10...+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

Where:

C = Configure Select bit

F = Full range

(1) When configured to Off, individual input channels will return 0000H; Output channels will drive 0V/0 mA.

Input Map (Read) - 1794-0E4

Dec.	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Oct.	17	16	15	14	13	12	11	10	7	6	5	4	3	2	1	0
Word 0	PU	Not used - set to 0											W3	W2	W1	W0

Where:

PU = Power up bit

W...W3 = Wire off current loop status for output channels

Output Map (Write) - 1794-0E4

Dec.	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Oct.	17	16	15	14	13	12	11	10	7	6	5	4	3	2	1	0
Word 0	S	Output Data Channel 0														
Word 1	S	Output Data Channel 1														
Word 2	S	Output Data Channel 2														
Word 3	S	Output Data Channel 3														
Word 4		Not used - set to 0											M3	M2	M1	M0
Word 5	Not used - set to 0				C3	C2	C1	C0	Not used - set to 0				F3	F2	F1	F0
Word 6...9	Not used - set to 0															
Word 10	S	Safe state value for Channel 0														
Word 11	S	Safe state value for Channel 1														
Word 12	S	Safe state value for Channel 2														
Word 13	S	Safe state value for Channel 3														

Where:

S = Sign bit in 2's complement

M = Multiplex control bit

C = Configure select bit

F = Full range bit

Range Selection Bits - 1794-0E4

Channel No.	In Ch. 0		In Ch.1		In Ch. 2		In Ch. 3	
	F0	C0	F1	C1	F2	C2	F3	C3
Dec. Bits	00	08	01	09	02	10	03	11
0...10V DC/0...20 mA	1	0	1	0	1	0	1	0
4...20 mA	0	1	0	1	0	1	0	1
-10...+10V DC	1	1	1	1	1	1	1	1
Off ⁽¹⁾	0	0	0	0	0	0	0	0

Where:

C = Configure select bit

F = Full range

(1) When configured to Off, individual output channels will drive 0V/0 mA.

Specifications

Input Specifications

Attribute	Value
Number of inputs, nonisolated	1794-IE8 - 8 single-ended 1794-IE4XOE2 - 4 single-ended
Resolution Voltage Current	12 bits unipolar; 11 bits plus sign bipolar 2.56mV/cnt unipolar; 5.13mV/cnt bipolar 5.13µA/cnt
Data format	Left justified, 16 bit 2's complement
Conversion type	Successive approximation
Conversion rate	256µs all channels
Input current terminal, user configurable	4...20 mA 0...20 mA
Input voltage terminal, user configurable	±10V 0...10V
Normal mode rejection ratio - Voltage terminal Current terminal	3 dB @ 17 Hz; -20 dB/decade -10 dB @ 50 Hz; -11.4 dB @ 60 Hz -3 dB @ 9 Hz; -20 dB/decade -15.3 dB @ 50 Hz; -16.8 dB @ 60Hz
Step response to 63% -	Voltage terminal - 9.4 ms Current terminal - 18.2 ms
Input impedance	Voltage terminal - 100 kΩ Current terminal - 238 Ω
Input resistance voltage	Voltage terminal - 200 kΩ Current terminal - 238 Ω
Absolute accuracy ⁽¹⁾	0.20% full scale @ 25 °C
Accuracy drift with temperature	Voltage terminal - 0.00428% full scale/ °C Current terminal - 0.00407% full scale/ °C
Calibration required	None required
Maximum overload, one channel at a time	30V continuous or 32 mA continuous
Indicators	1 green power indicator

(1) Includes offset, gain, nonlinearity, and repeatability error terms.

Output Specifications

Attribute	Value
Number of outputs, nonisolated	1794-OE4 - 4 single-ended, nonisolated 1794-IE4XOE2 - 2 single-ended
Resolution Voltage Current	12 bits plus sign 0.156mV/cnt 0.320 µA/cnt
Data format	Left justified, 16 bit 2's complement
Conversion type	Pulse width modulation
Output current terminal, user configurable	0 mA output until module is configured 4...20 mA 0...20 mA
Output voltage terminal, user configurable	0V output until module is configured ±10V 0...10V
Step response to 63% - voltage or current terminal	24 ms
Current load on voltage output, max	3 mA
Absolute accuracy ⁽¹⁾ Voltage terminal Current terminal	0.133% full scale @ 25 °C 0.425% full scale @ 25 °C
Accuracy drift with temperature Voltage terminal Current terminal	0.0045% full scale/ °C 0.0069% full scale/ °C
Resistive load on mA output	15...750Ω @ 24V DC

(1) Includes offset, gain, nonlinearity, and repeatability error terms.

General Specifications for 1794-IE8, 1794-0E4, and 1794-IE4X0E2

Module location	1794-IE8 and 1794-IE4X0E2 - 1794-TB2, 1794-TB3, 1794-TB3S, 1794-TB3T, and 1794-TB3TS terminal base units 1794-0E4 - 1794-TB2, 1794-TB3, 1794-TB3S, 1794-TB3T, 1794-TB3TS, and 1794-TBN terminal base units
Terminal base screw torque	7 lb•in (0.8 N•m) 1794-TBN - 9 lb•in (1.0 N•m)
Isolation voltage	Tested at 850V DC for 1 s between user power to system No isolation between individual channels
External DC power supply Voltage range	24V DC nominal 10.5...31.2V DC (includes 5% AC ripple)
Supply current	1794-IE8 - 60 mA @ 24V DC 1794-0E4 - 150 mA @ 24V DC 1794-IE4X0E2 - 165 mA @ 24V DC
Dimensions, with module installed	31.8 H x 3.7 W x 2.1 D inches 45.7 H x 94 W x 53.3 D mm
Flexbus current	15 mA
Power dissipation, max	1794-IE8 - 3.0 W @ 31.2V DC 1794-0E4 - 4.5 W @ 31.2V DC 1794-IE4X0E2 - 4.0 W @ 31.2V DC
Thermal dissipation, max	1794-IE8 - 10.2 BTU/hr @ 31.2V dc 1794-0E4 - 13.6 BTU/hr @ 31.2V dc 1794-IE4X0E2 - 15.3 BTU/hr @ 31.2V d
Keyswitch position	1794-IE8 - 3 1794-0E4 - 4 1794-IE4X0E2 - 5
North American temp code	1794-IE4X0E2 - T4A 1794-IE8 - T5 1794-0E4 - T4
UKEX/ATEX temp code	T4
IECEX temp code	1794-IE8 - T4

Environmental Specifications

Attribute	Value
Temperature, operating	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): 0...55 °C (32...131 °F)
Temperature, surrounding air, max	55 °C (131 °F)
Temperature, storage	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 nonoperating damp heat): 5...95% non-condensing
Vibration	IEC60068-2-6 (Test Fc, operating): 5g @ 10...500Hz
Shock, operating	IEC60068-2-27 (Test Ea, unpackaged shock): 30g
Shock, nonoperating	IEC60068-2-27 (Test Ea, unpackaged shock): 50g
Emissions	IEC 61000-6-4
ESD immunity	EC 61000-4-2: 4kV contact discharges 8kV air discharges
Radiated RF immunity	IEC 61000-4-3: 10V/m with 1 kHz sine-wave 80% AM from 80...6000 MHz
Conducted RF immunity	IEC 61000-4-6: 10V rms with 1 kHz sine-wave 80%AM from 150 kHz...30 MHz
EFT/B immunity	IEC 61000-4-4: ±2 kV at 5 kHz on signal ports
Surge transient immunity	IEC 61000-4-5: ±2 kV line-earth (CM) on shielded ports
Enclosure type rating	None
Conductors Wire size	22...12AWG (0.34 mm ² ...2.5 mm ²) stranded copper wire rated at 75 °C or higher 3/64 inch (1.2 mm) insulation maximum
Category ⁽¹⁾	2

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