

Analog I/O Module Summary

Catalog Number	Inputs	Outputs	Terminal Base Unit	Module Type	
1794-IE8	8	—	1794-TB2, 1794-TB3, 1794-TB3S, 1794-TB3T, 1794-TB3TS, 1794-TB3K, 1794-TB3SK, 1794-TB3TK, 1794-TB3TSK	Selectable, non-isolated inputs	
1794-IE8XT				Selectable, non-isolated inputs, Extended temperatures	
1794-IE8H			1794-TB3G, 1794-TB3GS, 1794-TB3GK, 1794-TB3GSK	Single-ended, non-isolated, HART-enabled inputs	
1794-IE12	12			Single-ended inputs	
1794-IF4I	4	—	1794-TBN, 1794-TB2, 1794-TB3, 1794-TB3S, 1794-TB3T, 1794-TB3TS, 1794-TBNK, 1794-TB3K, 1794-TB3SK, 1794-TB3TK, 1794-TB3TSK	Single-ended, isolated inputs	
1794-IF4IXT				Single-ended inputs, Isolated, Extended temperatures	
1794-IF8IH	8	—	1794-TB3, 1794-TB3S, 1794-TB3K, 1794-TB3SK	Single-ended, isolated, HART-enabled inputs	
1794-IR8				1794-TB2, 1794-TB3, 1794-TB3S, 1794-TB3T, 1794-TB3TS, 1794-TBKD, 1794-TB3K, 1794-TB3SK, 1794-TB3TK, 1794-TB3TSK	Non-isolated relay inputs
1794-IRT8				1794-TB3G, 1794-TB3GS, 1794-TB3GK, 1794-TB3GSK	Non-isolated RTD/Thermocouple inputs
1794-IRT8XT					Non-isolated RTD/Thermocouple inputs, Extended temperatures
1794-IT8				1794-TB2, 1794-TB3, 1794-TB3S, 1794-TB3T, 1794-TB3TS, 1794-TB3K, 1794-TB3SK, 1794-TB3TK, 1794-TB3TSK ⁽³⁾	Non-isolated, Thermocouple, Millivolt inputs
1794-IE4XOE2	4	2		Single-ended, non-isolated I/O	
1794-IE4XOE2XT				Single-ended, non-isolated I/O, Extended temperatures	
1794-IE8XOE4	8	4	1794-TB3G, 1794-TB3GS, 1794-TB3GK, 1794-TB3GSK	Single-ended, non-isolated I/O	
1794-IF2XOF2I	2	2	1794-TBN, 1794-TB2, 1794-TB3, 1794-TB3S, 1794-TB3T, 1794-TB3TS, 1794-TBNK, 1794-TB3K, 1794-TB3SK, 1794-TB3TK, 1794-TB3TSK	Single-ended, non-isolated I/O, Extended temperatures	
1794-IF2XOF2IXT					
1794-OE4	—	4		Selectable, non-isolated outputs	
1794-OE4XT				Selectable, non-isolated outputs, Extended temperatures	
1794-OE8H ⁽¹⁾		8	1794-TB3G, 1794-TB3GS, 1794-TB3GK, 1794-TB3GSK	Single-ended, non-isolated, HART-enabled outputs	
1794-OE12 ⁽²⁾		12		Single-ended, non-isolated outputs	
1794-OF4I	—	4	1794-TBN, 1794-TB2, 1794-TB3, 1794-TB3S, 1794-TB3T, 1794-TB3TS, 1794-TBNK, 1794-TB3K, 1794-TB3SK, 1794-TB3TK, 1794-TB3TSK	Source isolated outputs	
1794-OF4IXT				Source isolated outputs, Extended temperatures	
1794-OF8IH		8	1794-TB3, 1794-TB3S, 1794-TB3K, 1794-TB3SK	Single-ended, isolated, HART-enabled outputs	

(1) Do not exceed length of 30 m (100 ft) for signal cabling.

(2) Not supported by 1747-SN or 1747-BSN for use on RIO with SLC controllers.

(3) 1794-TB2, 1794-TB3, 1794-TB3S for mV inputs only.

Modules Specifications

The following section shows more detailed module specifications in comparative groups to facilitate your selection based on your requirements.

FLEX I/O Analog Input Modules

Analog Input Comparison

Catalog Number	Input Signal Range	Accuracy Drift with Temperature	External DC Supply Current, Nom	Power Dissipation, Max	Thermal Dissipation, Max
1794-IE8 ⁽¹⁾	4...20 mA 0...20 mA ±10V 0...10V	Current Input: 0.0407% Full Scale/°C Voltage Input: 0.0428% Full Scale/°C	60 mA @ 24V DC	3 W @ 31.2V DC	10.2 BTU/hr @ 31.2V DC
1794-IE8XT					
1794-IE8H	4...20 mA	0.05%/°C of output signal range	295 mA @ 24V DC	3.9 W	13.5 BTU/hr
1794-IE12	4...20 mA (user configurable) 0...20 mA (user configurable)	Current Input: 0.004% Full Scale/°C Voltage Input: 0.004% Full Scale/°C	30 mA @ 24V DC; 45 mA @ 10.0V DC	1.2 W @ 31.2V DC; 1.1 W @ 24V DC; 0.9 W @ 10.0V DC	4.1 BTU/hr @ 31.2V DC
1794-IF4 ⁽¹⁾	4...20 mA 0...20 mA ±20 mA ±10V 0...10V ±5V 0...5V	Current Input: 0.0038% Full Scale/°C Voltage Input: 0.0028% Full Scale/°C	80 mA @ 24V DC	2.0 W @ 31.2V DC	6.9 BTU/hr @ 31.2V DC
1794-IF4IXT					6.8 BTU/hr @ 31.2V DC
1794-IF4CFXT					
1794-IF8IH	4...20 mA (user configurable) 0...20 mA (user configurable)	0.4% Full Scale for 0 °C...55 °C	190 mA @ 24V DC	4.8 W @ 31.2V DC	6.8 BTU/hr @ 31.2V DC
1794-IR8 ⁽¹⁾⁽²⁾	1...433 Ω	Normal mode: 0.05% Full Scale (max) Enhanced mode: 0.01% Full Scale (typical)	140 mA @ 24V DC	3 W @ 31.2V DC	10.2 BTU/hr @ 31.2V DC
1794-IRT8 ⁽¹⁾⁽²⁾	-40...100 mV DC for thermocouples	Hardware only in mV mode: 0.10% Full Scale mV mode with filtering: 0.05% Full Scale	85 mA @ 24V DC	3 W @ 31.2V DC	10.2 BTU/hr @ 31.2V DC
1794-IRT8XT	0...325 mV DC for RTDs		95 mA @ 24V DC		
1794-IT8 ⁽¹⁾⁽²⁾	0...500 Ω for resistance range		150 mA @ 24V DC		
1794-IE8XOE4	4...20 mA (user configurable) 0...20 mA (user configurable)	Current Input or Output: 0.004% Full Scale @ 25 °C Voltage Input or Output: 0.004% Full Scale @ 25 °C	140 mA @ 24V DC; 280 mA @ 10.0V DC	3.0 W @ 31.2V DC; 2.3 W @ 24V DC; 2.0 W @ 10.0V DC	10.3 BTU/hr @ 31.2V DC
1794-IE4XOE2 ⁽¹⁾	4...20 mA 0...20 mA ±10V 0...10V	Current Input: 0.0407% Full Scale/°C Voltage Input: 0.0428% Full Scale/°C Current Output: 0.0069% Full Scale/°C Voltage Output: 0.0045% Full Scale/°C	70 mA @ 24V DC	4.0 W @ 31.2V DC	13.6 BTU/hr @ 31.2V DC
1794-IE4XOE2XT			164 mA @ 10.5V DC		15.3 BTU/hr @ 31.2V DC
1794-IF2XOF2 ⁽¹⁾	4...20 mA 0...20 mA ±20 mA ±10V 0...10V ±5V 0...5V	Current Input: 0.0038% Full Scale/°C Voltage Input: 0.0028% Full Scale/°C Current Output: 0.0025% Full Scale/°C Voltage Output: 0.0012% Full Scale/°C	150 mA @ 24V DC	3.3 W @ 31.2V DC	11 BTU/hr @ 31.2V DC
1794-IF2XOF2IXT			2.0 W @ 31.2V DC	6.8 BTU/hr @ 31.2V DC	

(1) Each module's channel is individually selectable or as a group of four.

(2) For the accuracy calculation, refer to the module's user manual.

4 Input / 2 Output Analog Combination Modules

Specification	1794-IE4XOE2, 1794-IE4XOE2XT
Dimensions (HxWxD), approx	46 x 94 x 53 mm (1.8 x 3.7 x 2.1 in.) 94 x 94 x 69 mm (3.7 x 3.7 x 2.7 in.) installed
Temperature, operating	1794-IE4XOE2: 0...55 °C (32...131 °F) 1794-IE4XOE2XT: -20...70 °C (-4...185 °F)

(1) Includes offset, gain, non-linearity and repeatability error terms.

1794-IF2XOF2I and 1794-IF2XOF2IXT 2 Input/2 Output Isolated Analog Combination Module

The 1794-IF2XOF2I is a combination module with 2 inputs and 2 outputs with isolated, individually-configurable channels. Inputs accept signals from a variety of input sensors (2-, 3-, and 4-wire) in the range of $\pm 10V$ or ± 20 mA. Outputs produce signals in the range of $\pm 10V$ or 0...20 mA.

The 1794-IF2XOF2IXT is the extended temperature version of the 1794-IF2XOF2I module.



ATTENTION: Only connect either a voltage input or a current input per channel, not both.

2 Input/2 Output Isolated Combination Module

Specification	1794-IF2XOF2I, 1794-IF2XOF2IXT
Calibration	Factory calibration ⁽²⁾
Input conversion type	Sigma Delta
Input conversion rate	2.5/5.0/7.5 ms all channels
Input resolution	16 bit – unipolar 15 bit + sign – bipolar 0.156 mV/cnt – unipolar 0.313 mV/cnt – bipolar 0.320 μ A/cnt – unipolar 0.640 μ A/cnt – bipolar
Isolation voltage	120V continuous (when used with 1794-TB3, 1794-TB3S, 1794-TB2, 1794-TB3T, or 1794-TB3TS) 250V continuous (when used with 1794-TBN) Tested at 1500V AC for 60 s and 2550V DC for 1 s, channel to channel, I/O to system
Data format	16 bits, 2's complement 2's complement percent binary offset binary
Step response to 63% of FS, input	Current or voltage input: 1200 Hz conversion rate = 0.6 ms 600 Hz conversion rate = 6.7 ms 300 Hz conversion rate = 13.4 ms 150 Hz conversion rate = 26.7 ms

2 Input/2 Output Isolated Combination Module

Specification	1794-IF2XOF2I, 1794-IF2XOF2IXT
Normal mode rejection ratio	-3 dB @ 12 Hz (300 Hz conversion rate) -80.0 dB @ 50 Hz (300 Hz conversion rate) -3 dB @ 6 Hz (150 Hz conversion rate) -80 dB @ 60 Hz (150 Hz conversion rate)
Accuracy ⁽¹⁾	Current input or output: 0.1% Full Scale @ 25 °C Voltage input or output: 0.1% Full Scale @ 25 °C
Accuracy drift with temperature	Current input: 0.0038% Full Scale/°C Voltage input: 0.0028% Full Scale /°C Current output: 0.0025% Full Scale /°C Voltage output: 0.0012% Full Scale /°C
Input impedance	Current input: <100 Ω Voltage input: >1 MΩ ⁽³⁾
Voltage input, overload, max	30V, single channel, continuous
Output resolution	15 bit + sign 0.656 μA/cnt 0.320 mV/cnt
Output conversion type	Digital-to-analog converter
Output conversion rate	2.5/5.0 ms
Current load on voltage output, max	3 mA
Resistive load on current output	0...750 Ω
Dimensions (HxWxD), approx	1794-IF2XOF2I: 46 x 94 x 53 mm (1.8 x 3.7 x 2.1 in.) 94 x 94 x 69 mm (3.7 x 3.7 x 2.7 in.) installed 1794-IF2XOF2IXT: 46 x 94 x 75 mm (1.8 x 3.7 x 2.9 in.) 94 x 94 x 91 mm (3.7 x 3.7 x 3.6 in.) installed
Temperature, operating	1794-IF2XOF2I: 0...55 °C (32...131 °F) 1794-IF2XOF2IXT: -20...70 °C (-4...185 °F)

(1) Includes offset, gain, non-linearity and repeatability error terms.

(2) Can be calibrated in field when necessary.

(3) If 24V DC is removed from the module, input resistance = 10 KΩ.

FLEX I/O Analog Output Modules

Analog Output Comparison

Catalog Number	Output Signal Range	External DC Supply Current, Nom	Power Dissipation, Max	Thermal Dissipation, Max
1794-OE4 ⁽¹⁾	4...20 mA	70 mA @ 24V DC ⁽²⁾	4.5 W @ 31.2V DC	15.3 BTU/hr @ 31.2V DC
1794-OE4XT	0...20 mA ±10V 0...10V	180 mA @ 10.5V DC		13.6 BTU/hr @ 31.2V DC
1794-OE8H	4...20 mA (user configurable) 0...20 mA (user configurable)	255 mA @ 24V DC	6.1 W	20.8 BTU/hr
1794-OE12	0 mA output until module is configured 4...20 mA (user configurable) 0...20 mA (user configurable)	320 mA @ 24V DC; 720 mA @ 10.0V DC	40 W @ 31.2V DC; 4.3 W @ 24V DC; 10.0 W @ 10.0V DC	14.7 BTU/hr @ 24V DC

Analog Output Comparison

Catalog Number	Output Signal Range	External DC Supply Current, Nom	Power Dissipation, Max	Thermal Dissipation, Max
1794-OF4I	4...20 mA 0...20 mA ±10V 0...10V ±5V 0...5V	210 mA @ 24V DC	4.7 W @ 31.2V DC	16 BTU/hr @ 31.2V DC
1794-OF8IH	4...20 mA (user configurable) 0...20 mA (user configurable)	450 mA @ 24V DC	5.0 W @ 31.2V DC	6.8 BTU/hr @ 31.2V DC
1794-IE8XOE4 ⁽¹⁾	4...20 mA 0...20 mA ±10V 0...10V	140 mA @ 24V DC; 280 mA @ 10.0V DC	3.0 W @ 31.2V DC; 2.3 W @ 24V DC; 2.0 W @ 10.0V DC	10.3 BTU/hr @ 31.2V DC
1794-IE4XOE2 ⁽¹⁾	4...20 mA 0...20 mA ±10V 0...10V	70 mA @ 24V DC	4.0 W @ 31.2V DC	13.6 BTU/hr @ 31.2V DC
1794-IF2XOF2 ⁽¹⁾	4...20 mA 0...20 mA ±10V 0...10V ±5V 0...5V	150 mA @ 24V DC	3.3 W @ 31.2V DC	11 BTU/hr @ 31.2V DC

(1) Each module's channel is individually selectable or as a group of four.

(2) Not including outputs.

1794-OE4 and 1794-OE4XT Analog 4 Output Module

The 1794-OE4 module has 4 output, non-isolated, individually-configurable channels. Outputs are capable of driving the field devices that require a voltage of $\pm 10V$ or a current of 0... 20 mA.

Analog 4 Input Modules

Specification	1794-OE4	1794-OE4XT
Output resolution	12 bit + sign 2.56 mV/cnt 5.13 μ A/cnt	12 bits + sign 0.156 mV/cnt 0.320 μ A/cnt
Data format	16 bits, 2's complement, left-justified	
Output conversion type	Pulse width modulation	
Output conversion rate	1.024 ms all channels	Outputs: PWM
Step response to 63% of FS, output	Voltage output: 24 ms	
Current load on voltage output, max	3 mA	
Output current, resistive load	15...750 Ω	
Accuracy	Current input: 0.425% Full Scale @ 25 °C (77 °F) Voltage input: 0.133% Full Scale @ 25 °C (77 °F) ⁽¹⁾	