

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	—	1794-TBN, 1794-TB2, 1794-TB3, 1794-TB3S, 1794-TB3T, 1794-TB3TS, 1794-TBNK, 1794-TB3K, 1794-TB3SK, 1794-TB3TK, 1794-TB3TSK	Single-ended inputs
1794-IF4I	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				Single-ended, non-isolated I/O, Extended temperatures
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

(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	85 mA @ 24V DC		
1794-IRT8XT	0...325 mV DC for RTDs 0...500 Ω for resistance range	mV mode with filtering: 0.05% Full Scale	95 mA @ 24V DC		
1794-IT8 ⁽¹⁾⁽²⁾	±76.5 mV		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.

1794-IE8H HART Enabled Analog 8 Input Module

The 1794-IE8H is a HART enabled analog input module that works with HART enabled input sensors with input current in the 0...20 mA range. Use the 1794-IE8H with 2 or 3 wire transmitters. This module provides wire-off detection on a per-channel basis. The HART analog module can only be used on ControlNet or EtherNet/IP networks with one HART field device per channel.

HART Enabled Analog 8 Input Module

Specification	1794-IE8H
Voltage, input, max overload	—
Current, input, max overload	—
Isolation voltage	50V (continuous), Basic Insulation Type No isolation between individual channels
Input resolution	16 bits
Input resistance	—
Data format	Configurable
Input conversion type	—
Input conversion rate	10 ms (50 Hz) 8.33 ms (60 Hz)
Normal mode rejection ratio	—
Step response to 99% of FS, input	80 ms
Calibration	—
Dimensions (HxWxD), approx	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
Resolution	16 bit
Accuracy	Current input: 0.1% Full Scale @ 20 °C (68 °F)

1794-IE12 Analog 12 Input Module

The 1794-IE12 is a voltage or current measurement module that measures input voltage in a $\pm 10V$ range or current in the 0...20 mA range. Each channel is individually configurable and the out-of-range notification is by channel.

Analog 12 Input Module

Specification	1794-IE12
Voltage, input, max overload	30 continuous, single channel
Current, input, max overload	32 mA continuous, single channel
Isolation voltage	50 (continuous), Basic Insulation Type Type tested at 850V DC for 60 s, between field side and system No isolation between individual channels
Input resolution	320 μV /cnt 0.641 μA /cnt

Analog 12 Input Module

Specification	1794-IE12
Input resistance	Current input: <100 Ω Voltage input: >1 M Ω
Data format	16 bits, 2's complement
Input conversion type	Successive approximation
Input conversion rate	8.0 ms all channels
Normal mode rejection ratio	Voltage/current terminal: -3 dB @ 0.05 Hz -20 dB/decade -52 dB @ 50 Hz -54 dB @ 60 Hz Voltage/current terminal with Quick Step: -3 dB @ 1.5 Hz; -20 dB/decade -29 dB @ 50 Hz -31 dB @ 60 Hz
Step response to 63% of FS, input	Current or voltage input: 1.3 s (0.09 s with Quick Step)
Calibration	None required
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
Resolution	16 bit unipolar 15 bit + bipolar
Accuracy	Current input: 0.1% Full Scale @ 25 °C (77 °F) Voltage input: 0.1% Full Scale @ 25 °C (77 °F) ⁽¹⁾

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

1794-IF4I and 1794-IF4IXT Isolated Analog 4 Input Module

The 1794-IF4I and 1794-IF4IXT are input modules with channel-to-channel isolation that work with a variety of input sensors to measure input voltage in $\pm 10\text{V}$ range or input current in the 0...20 mA range. Each channel is individually configurable for the desired input range. Use the 1794-IF4I or 1794-IF4IXT with 2-, 3-, and 4-wire input sensor field devices.

The 1794-IF4IXT is the extended temperature version of the 1794-IF4I module.

Settings to these parameters affect all inputs set to 150 Hz, 300 Hz, or 600 Hz. The parameters do not affect channels set at 1200 Hz.

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

Isolated Analog Input Modules

Specification	1794-IF4I, 1794-IF4IXT
Voltage, input, max overload	30V, single channel, continuous
Current, input, max overload	32 mA, single channel, continuous