

# Specifications

## Overview

This Appendix lists all input, output, general and environment specifications, as well as certifications for the following FLEX I/O Analog Modules: 1794-IE8, 1794-IE8XT, 1794-IE12, 1794-OE4, 1794-OE4XT, 1794-OE12, 1794-IE4XOE2, 1794-IE4XOE2XT, 1794-IE8XOE4.

## Input Specifications

The following are input specifications for the FLEX I/O analog input and combination modules.

### Input Specifications – 1794-IE8, 1794-IE8XT, 1794-IE12, 1794-IE4XOE2, 1794-IE4XOE2XT, 1794-IE8XOE4 Analog Input Modules

Specification	1794-IE12	1794-IE8XOE4	1794-IE8, 1794-IE8XT	1794-IE4XOE2, 1794-IE4XOE2XT
Number of inputs	12 single-ended, non-isolated	8 single-ended, non-isolated		4 single-ended, non-isolated
Resolution Voltage Current	320 $\mu$ V/cnt 0.641 $\mu$ A/cnt		2.56 mV/cnt unipolar; 5.13 mV/cnt bipolar 5.13 $\mu$ A/cnt	
Conversion type	Successive approx			
Conversion rate, all channels	8.0 ms		256 $\mu$ s	
Input current terminal (user configurable)	4...20 mA 0...20 mA			
Input voltage terminal (user configurable)	$\pm$ 10V 0...10V			
Normal mode rejection ratio voltage terminal current terminal	-3 db @ 0.05 Hz; -20 db/decade -52 db @ 50 Hz; -54 db @ 60 Hz -3 db @ 1.5 Hz; -20 db/decade -29 db @ 50 H		-3 db @ 17 Hz; -20 db/decade -10.0 dB @ 50 Hz, -11.4 dB @ 60 Hz -3 db @ 9 Hz; -20 db/decade -15.3 dB @ 50 Hz, -16.8 dB @ 60 Hz	
Step response to 63% voltage terminal current terminal	1.3 s 0.09 s		9.4 ms 18.2 ms	

**Input Specifications – 1794-IE8, 1794-IE8XT, 1794-IE12, 1794-IE4XOE2, 1794-IE4XOE2XT, 1794-IE8XOE4 Analog Input Modules**

Specification	1794-IE12	1794-IE8XOE4	1794-IE8, 1794-IE8XT	1794-IE4XOE2, 1794-IE4XOE2XT
Input Impedance Voltage Terminal Current Terminal	> 1 M $\Omega$ < 100 $\Omega$ <sup>(1)</sup>		100 k $\Omega$ 238 $\Omega$	
Absolute accuracy Voltage Terminal Current Terminal	0.1% Full scale @ 25 °C 0.1% Full scale @ 25 °C		0.29% Full scale @ 25 °C 0.29% Full scale @ 25 °C	
Accuracy Drift with Temperature Voltage Terminal Current Terminal	0.00428% Full scale/°C 0.00407% Full scale/°C			
Max overload	30V continuous or 32 mA continuous, one channel at a time			

<sup>(1)</sup> If 24V DC is removed from the module, input resistance is <100  $\Omega$ . This is also true at 0 mA current input, even if there is 24V DC. If there is an input current applied, input resistance is >1 M $\Omega$ .

**Output Specifications**

The following are output specifications for the FLEX I/O analog output and combination modules.

**Output Specifications – 1794-OE4, 1794-OE4XT, 1794-OE12, 1794-IE4XOE2, 1794-IE4XOE2XT, 1794-IE8XOE4**

Specification	1794-OE12	1794-IE8XOE4	1794-OE4, 1794-OE4XT	1794-IE4XOE2, 1794-IE4XOE2XT
Number of outputs	12 single-ended, non-isolated	4 single-ended, non-isolated		2 single-ended, non-isolated
Output voltage range, nom	$\pm 10V$			
Output current, max	0...20 mA			
Voltage output current load, max	3 mA			
Voltage resolution	320 $\mu V$ /cnt		2.56 $\mu V$ /cnt	
Current resolution	0.641 $\mu A$ /cnt		5.13 $\mu A$ /cnt	
Absolute accuracy Voltage Terminal Current Terminal	0.1% Full scale @ 25% 0.1% Full scale @ 25%		0.133% Full scale @ 25% 0.425% Full scale @ 25%	
Accuracy Drift with Temperature Voltage Terminal Current Terminal	0.004% Full scale/° C 0.004% Full scale/° C		0.0045% Full scale/° C 0.0069% Full scale/° C	
Resistive load, mA output	0...750 $\Omega$ @ 24V DC		15...750 $\Omega$ @ 24V DC	

## General Specifications

The following are general specifications common to all the FLEX I/O analog modules in this publication.

### Output Specifications – 1794-OE4, 1794-OE4XT, 1794-OE12, 1794-IE4XOE2, 1794-IE4XOE2XT, 1794-IE8XOE4

Specification	1794-IE12, 1794-OE12, 1794-IE8XOE4	1794-IE8, 1794-IE8XT, 1794-OE4, 1794-OE4XT, 1794-IE4XOE2, 1794-IE4XOE2XT	
Module location	1794-TB3G 1794-TB3GS	1794-TB2 1794-TB3 1794-TB3S 1794-TB3T 1794-TB3TS <b>For 1794-OE4, 1794-OE4XT only</b> 1794-TBN	
Keyswitch position	<b>1794-IE12</b> 3 <b>1794-OE12</b> 4 <b>1794-IE8XOE4</b> 5	<b>1794-IE8, 1794-IE8XT</b> 3 <b>1794-OE4, 1794-OE4XT</b> 4 <b>1794-IE4XOE2, 1794-IE4XOE2XT</b> 5	
Dimensions, approx. (HxWxD)	94.0 x 94.0 x 53.3 mm (3.7 x 3.7 x 2.1 in.)	45.7 x 94.0 x 53.3 mm (1.8 x 3.7 x 2.1 in.)	
Calibration	None required		
Indicators	1 green/red power/status indicator	1 green power indicator	
Data format	16 bit 2's complement, left justified		
External DC power supply, nom	24V DC		
External DC power supply, voltage range	10.0...31.2V DC (includes 5% AC ripple)	19.2...31.2V DC (includes 5% AC ripple)	
External DC power supply, current	<b>1794-IE12</b> 30 mA @ 24V DC; 45 mA @ 10V DC <b>1794-OE12</b> 320 mA @ 24V DC; 720 mA @ 10V DC <b>1794-IE8XOE4</b> 140 mA @ 24V DC; 280 mA @ 10V DC	70 mA @ 24V DC <b>1794-IE8, 1794-IE8XT</b> 60 mA @ 24V DC	150 mA @ 12V DC
FlexBus current	80 mA	70 mA 60 mA – <b>For 1794-IE8, 1794-IE8XT only</b>	
Isolation voltage	50V continuous Tested at 850V DC for 60 s between user power to system No isolation between individual channels	50V continuous Tested @ 850V DC for 1 s between user power to system No isolation between individual channels	

**Output Specifications – 1794-OE4, 1794-OE4XT, 1794-OE12, 1794-IE4XOE2, 1794-IE4XOE2XT, 1794-IE8XOE4**

<b>Specification</b>	<b>1794-IE12, 1794-OE12, 1794-IE8XOE4</b>	<b>1794-IE8, 1794-IE8XT, 1794-OE4, 1794-OE4XT, 1794-IE4XOE2, 1794-IE4XOE2XT</b>	
Power dissipation, max.	<b>1794-IE12</b> 1.2 W @ 31.2V DC <b>1.1 W @ 24V DC</b> 0.9 W @ 10.0V DC <b>1794-OE12</b> 4.0 W @ 31.2V DC 4.3 W @ 24V DC 4.0 W @ 10.0V DC <b>1794-IE8XOE4</b> 3.0 W @ 31.2V DC 2.3 W @ 24V DC 2.0 W @ 10.0V DC	<b>1794-IE8</b> 3.0 W @ 31.2V DC <b>1794-OE8</b> 4.5 W @ 31.2V DC	4.0 W @ 31.2V DC
Thermal dissipation, max.	<b>1794-IE12</b> 4.1 BTU/hr @ 31.2V DC <b>1794-OE12</b> 4.7 BTU/hr @ 24V DC <b>1794-IE8XOE4</b> 10.3 BTU/hr @ 31.2V DC	<b>1794-IE8</b> 10.2 BTU/hr @ 31.2V DC <b>1794-OE8</b> 15.3 BTU/hr @ 31.2V DC	13.6 BTU/hr @ 31.2V DC
Wire size – Power	0.34...2.5 mm <sup>2</sup> (22...12 AWG) stranded copper wire rated at 75° C 167° F) or higher 4 mm <sup>2</sup> (12 gauge) stranded, max – <b>For 1794-IE8 and 1794-IE8XT only</b> 1.2 mm (3/64 in.) insulation, max.		
Wire category <sup>(1)</sup>	2 – on signal port 2 – on power ports		
Terminal base screw torque	<b>1794-TB3G and 1794-TB3GS</b> 0379...1.02 N•m (7...9 lb-in.)	0.8 N•m (7 lb-in.) <b>1794-TBN</b> 1.0 N•m (9 lb-in.)	
Enclosure type rating	None (open-style)		

<sup>(1)</sup> Use this Conductor Category information for planning conductor routing. Refer to Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).