Analog Modules

Choose analog I/O modules when you need:

- **Configurable channels** allow the module to be used with a variety of sensors.
- **On-board scaling** eliminates the need to scale the data in the controller. Controller processing time and power are preserved for more important tasks, such as I/O control, communications, or other user-driven functions.
- **On-line configuration**. Modules can be configured in RUN mode using the programming software or the control program. This allows you to change configuration while the system is operating. For example, the input filter for a particular channel could be changed, or a channel could be disabled based on a batch condition.
- **Over- and under-range detections and indications** eliminates the need to test values in the control program, saving valuable processing power of the controller. In addition, since alarms are handled by the module, the response is faster and only a single bit needs to be monitored to determine if an error condition has occurred.
- **Ability to direct output device operation during an abnormal condition**. Each channel of the output module can be individually configured to hold its last value or assume a user-defined value on either a run-to-program or run-to-fault condition. This feature allows you to set the condition of your analog devices, and therefore your control process, which may help to ensure a reliable shutdown.
- **Selectable input filters** allows you to select from several different filter frequencies for each channel that best meets the performance needs of your application based on environmental limitations. Lower filter settings provide greater noise rejection and resolution. Higher filter settings provide faster performance.
- **Selectable response to broken input sensor**. This feature provides feedback to the controller that a field device is not connected or operating properly. This allows you to specify corrective action based on the bit or channel condition.

Analog I/O Module Summary

Catalog Number	Inputs	Outputs	Terminal Base Unit	Signal Range	Module Type
Input Modules					
1797-IE8	8	—	1797-TB3, 1797-TB3S	0…20 mA	16-bit single-ended, nonisolated inputs
1797-IE8H					16-bit single-ended, nonisolated inputs with HART capability
1797-IE8NF					16-bit single-ended, nonisolated inputs with noise filter
1797-IRT8				0…500 Ω -40…100 mV TC RTD	16-bit, nonisolated RTD thermocouple/mV inputs

Analog I/O Module Summary

Catalog Number	Inputs	Outputs	Terminal Base Unit	Signal Range	Module Type
Output Modules					
1797-OE8	—	8	1797-TB3, 1797-TB3S	0…20 mA 4…20 mA	16-bit single-ended, nonisolated outputs
1797-OE8H					16-bit single-ended, nonisolated outputs with HART capability

Module Specifications

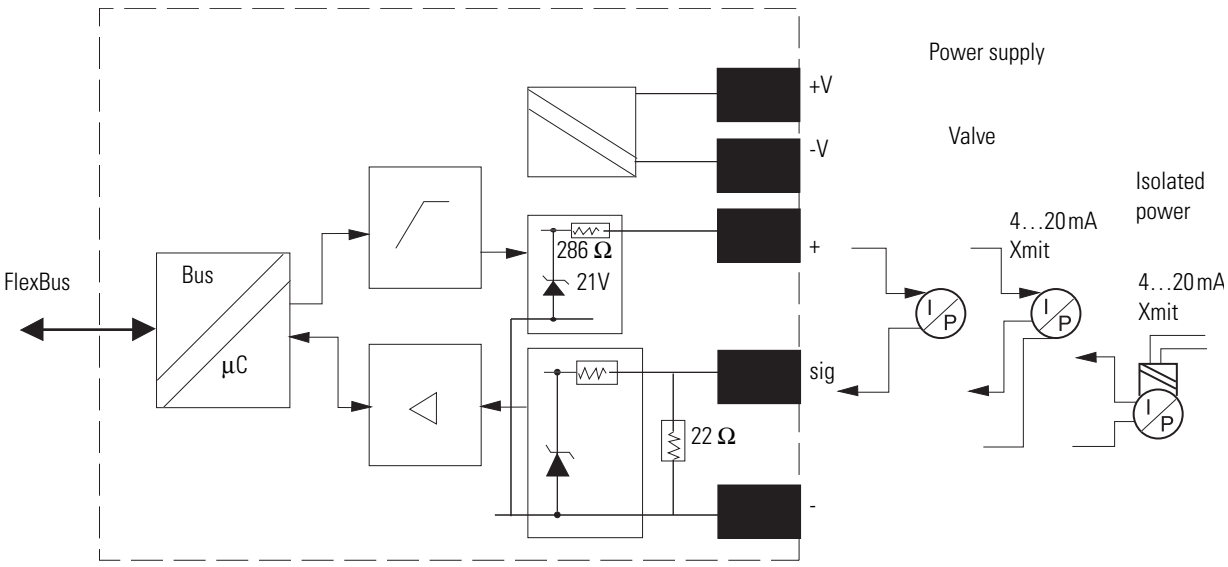
The following section shows more detailed module specifications in comparative groups to facilitate your selection based on your requirements.

1797-IE8, 1797-IE8H (HART), and 1797-IE8NF (with Noise Filter) 8 Point 16-bit Single-ended Non-isolated Analog Input Modules

Eight single-ended input channels referenced to a single common

- 3-wire input for 2- and 3-wire transmitters
- Functional data: normal input
  input current = 4...20 mA, full-current range
  0...22 mA to allow for over and underrange indication
- Wire-off detection, signal to the backplane and LED (per channel) blinking red for fault
- Wire-off detection on per channel basis via module data bits
- Input filter cutoff programmable
- Resolution: 16 bits
- Accuracy: 0.1%
- The 1797-IE8 is typically used to act on change-of-state and high-speed applications. It is not compatible with HART handheld devices.
- The 1797-IE8NF has additional hardware filtering that damps out spurious signals and can be used for slower changing, steady-state processes. It has slower step response than the 1797-IE8 (100 ms versus 4 ms). It is compatible with HART handheld devices.
- The 1797-IE8H is similar to the 1797-IE8NF with real time data table updates. It also supports pass-through of HART commands as unscheduled ControlNet messages. It is compatible with FDT software packages.

Schematic Drawing of the 1797-IE8 Module



FLEX Ex Analog Input Comparison

Specification	1797-IE8	1797-IE8NF	1797-IE8H
Input resolution	16 bits		
Input signal range	0…22 mA		
Transfer characteristics, temperature drift	0.1% of output signal range at 20 °C (68 °F)		
Functional data range	> 15V @ 22 mA > 21.5V @ 0 mA		> 17V @ 22 mA > 23V @ 0 mA
Data format	Configurable		
Step response to 99% of Full Scale	4 ms	80 ms	100 ms
Update time, module to adapter	200…1600 µs		
Noxious gas exposure	Tested to severity level G3, ISA-S71.04-1985		
FLEX Ex power consumption	7.5 W @ 9V		7.1 W @ 9V
Power dissipation, max	5.2 W		
Thermal dissipation, max	17.75 BTU/hr		13.5 BTU/hr
Instrinsically safe input type	$U_0 \leq$ 23.7V $I_0 \leq$ 93.5 mA $P_0 \leq$ 555 mW		$U_0 \leq$ 24.4V $I_0 \leq$ 92.5 mA $P_0 \leq$ 565 mW
	II (1)2G Ex ib[ia] IIC T4 Class I, Div. 1, Groups A-D and Class I, Zone 1, AEx ib [ia] IIC		
Dimensions (HxWxD), approx.	46.0 x 94.0 x 75.0 mm (1.8 x 3.7 x 2.95 in.)		