Section 6. Analog Input Module (High Speed)

6-1. Description

The combined Personality and Electronics Modules form the High Speed Analog Input Module. Eight sets of individually isolated input channels provide 14-bit resolution with 50 or 60 samples per second conversion rates. The input signals are conditioned and routed through the appropriate Personality Module to the Electronics Module. The Personality Module also provides surge protection to protect the input circuits of the Electronics Module. The Electronics Module performs the analog to digital conversions and provides interfacing to the Ovation Serial I/O Bus.

The 14 bit High Speed Analog Input is applicable for CE Mark certified systems.

Note

See **Section 3. I/O Modules** for environmental, installation, wiring, and fuse information.

6-2. Module Groups

6-2.1. Electronics Modules

There are four groups of Electronics modules for the High Speed Analog Input Module:

- 5X00070G01 interfaces to current signals with an input range of 4 to 20 mA.
- 5X00070G02 interfaces to voltage signals with an input range of ±1V, ±250mV, ±100mV.
- 5X00070G03 interfaces to voltage signals with an input range of ±5V, ±10V.
- 5X00070G04 interfaces to thermocouple inputs ± 20mV, ± 50Vm, ± 100mV.

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6-2.2. Personality Module

The High Speed Analog Input Module is compatible with the following Personality modules:

- 1C31227G01 interfaces to current input with an input range of 9-20 mA.
- 1C31227G02 voltage input.
- 1C31116G02 field powered current input ± 1mA
- 1C31116G03 local powered ± 1mA current only.
- 1C31116G04 voltage inputs to temperature sensor.

Table 6-1. Analog Input Subsystem (14 bit High Speed)

Range	Channels	Electronic Module	Personality Module
4 - 20mA, Field or Locally powered	8	5X00070G01	1C31227G01
± 100mV, ± 250mV, ± 1V	8	5X00070G02	1C31227G02
± 5V, ± 10V	8	5X00070G03	1C31227G02
± 1mA 2 wire local powered	8	5X00070G02	1C31116G03
± 1mA 4wire field powered	8	5X00070G02	1C31116G02
± 20mV, ± 50mV, ± 100 (with temperature sensor for cold junction thermocouple compensation) (Medium Speed)	8	5X00070G04	1C31116G04
± 20mV, ± 50mV, ± 100 (Medium Speed)	8	5X00070G04	1C31116G01

All Configurations CE Mark Certified

6-3. Module Block Diagram

The simplified block diagram for the voltage input configuration of the High Speed Analog Input module is shown below. The channel #1 input is grounded locally at the cabinet, and grounding at the field device is shown for the channel #8 input.

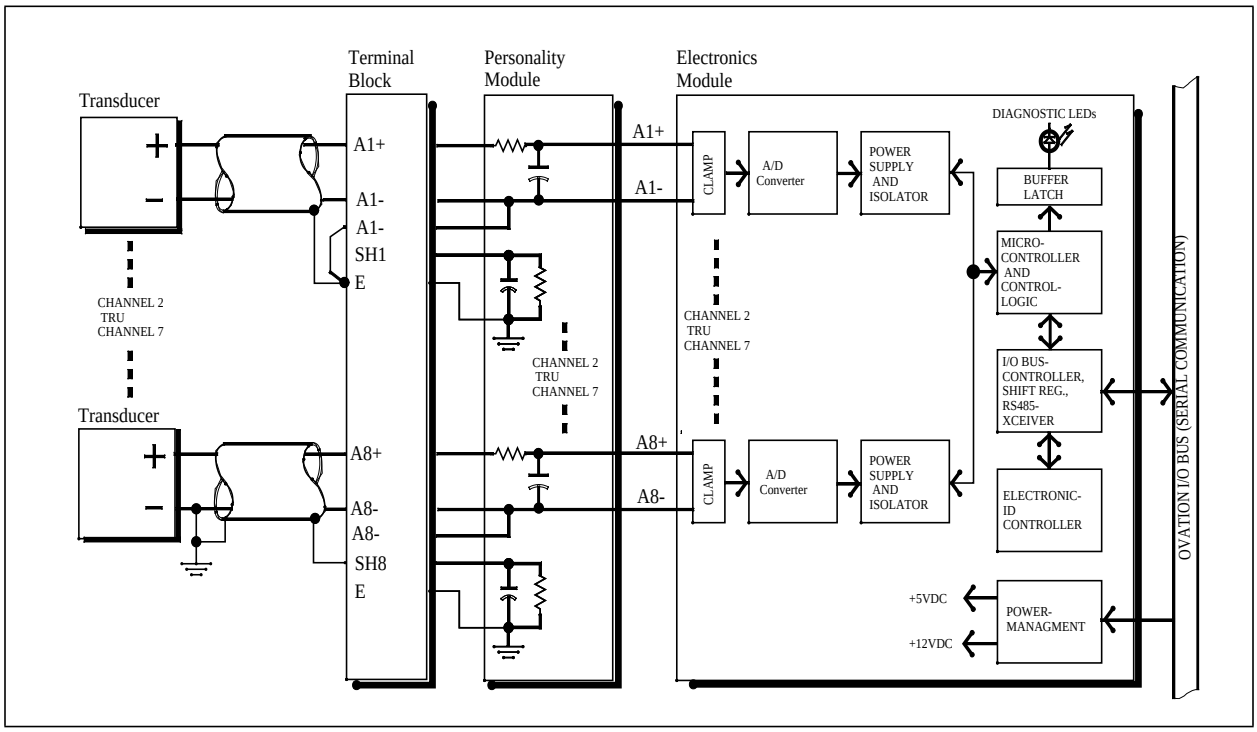


Figure 6-1. Voltage input Configuration using Pmod 1C31227G02

6-4. External Power Supplies

Note

Module power specifications (main and auxiliary) refer to the actual power drawn by the module from the 24VDC main power supply and from the auxiliary power supply (if required) and **NOT** from the AC or DC Mains.

If the High Speed Analog Input module uses the current input 1C31227G01 or 1C31116G03) Personality modules, the required voltage source may be obtained from the internal auxiliary power supply (backplane).

If it uses Pmod 1C31227G01 or 1C1116G02, field powered current loops can be used. Note that 1C31227G01 supplies both field and local power.

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6-5. Specifications

Electronics Module (5X00070)
Personality Module (1C31227, 1C31116)

Table 6-2. High Speed Analog Input Module Specifications

Description	Value
Number of channels	8
Input range	4 - 20 mA, ±1mA ±1V, ±5V, ±10V ±20mV, 50mV, ±100V, ±250mV
Resolution	14 bits (including polarity)
Guaranteed accuracy (@25°C)	±0.10% of full scale value ±1/2LSB @99.7% confidence.
Temperature coefficient	±0.24% of the full scale value over 0 to 60°C.
Input impedance:	3.3 MΩ (G02, G04) field configured; 200 MΩ (Go3) field configured; 300 MΩ @20 mA for G01 field configured
Sampling rate (per second)	16 when configured for 50 Hz 20 when configured for 60 Hz
Self-calibration	On demand by the Ovation Controller.
Diagnostics	Internal module operating faults. Out of range detection. Open loop detection for current inputs.
Dielectric isolation: Channel to channel Channel to logic	 1000 V AC/DC 1000 V AC/DC
Normal mode rejection	60 dB @50 Hz ± 1/2% or @60 Hz ± 1/2% (when properly configured) 30 dB (typical) @50 Hz ± 5% or @60 Hz ± 5% (when properly configured)
Common mode rejection	120 dB @ DC or @ the nominal (50/60 Hz) line frequency ± 1/2% and harmonics. 100 dB (typical) for nominal line frequency ± 5% and harmonics.
Module power	Main: 2.4 W typical; 3.125 W maximum Aux: When used (1C31227G01) Aux power supply voltage = 24 V DC 3.84 W typical (8 inputs @ 20mA each)
Operating temperature range	0 to 60°C (32°F to 140°F)
Storage temperature range	-40°C to 85°C (-40°F to 185°F)
Humidity (non-condensing)	0 to 95%

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