

The 6017 has thirty-two input channels organized in four eight-channel groups. The eight inputs in each group are multiplexed to a programmable gain differential amplifier and digitized with 16-bit resolution then output to the Series 6000 data bus. Each channel is capable of digitizing at up to 2,000 samples per second. The differential inputs have 50 Megohm input impedance and are protected to ± 25 Volts.

The 6017 is used to digitize low and high-level signals such as thermocouples or the output of signal conditioning amplifiers. The architecture, which limits the multiplexer to eight channels per amplifier, provides low channel-to-channel crosstalk and high accuracy.

A voltage calibration input is provided in each group of channels for gain calibration of the differential amplifier and analog to digital converter. Both gain and zero calibration employ digital-to-analog converters with the calibration DAC settings stored in non-volatile memory on the module. Zero calibration is automatic and gain calibration is automatic when using PI660 software and a traceable calibration reference.

Upper and lower programmable alarm limits are provided and checked each time the output is digitized. In conjunction with a digital I/O module, the alarms may be used to control external equipment.



FEATURES

- Voltage & thermocouple inputs
- Optional thermocouple reference junction box
- Gains 1 to 5,000 with 0.05% accuracy
- Automatic zero & gain calibration
- Low-pass filter
- Up to 2 kS/s per channel with 16-bit resolution
- Two alarms with programmable upper & lower limits

SPECIFICATIONS

INPUT

Configuration32 channels differential, 2-wire with shield.
 Range..... ± 2 millivolts to ± 10 Volts full scale.
 Impedance50 Megohms, shunted by 1,000 pf.
 Protection ± 25 Volts differential and common mode.

THERMOCOUPLE INPUTS

TypeB, C, E, J, K, N, R, S, and T.
 ConfigurationDifferential, 2 wire with shield.

AMPLIFIER

GainProgrammable 1-5000, in 1, 2, 3, 5 steps, with $\pm 0.05\%$ accuracy.
 Gain Stability $\pm 0.01\%$, $\pm 0.005\%/^{\circ}\text{C}$.
 Linearity $\pm 0.02\%$.
 Common Mode75 dB plus gain in dB to 110 dB, DC to 60Hz.
 CM Voltage ± 10 Volts.
 Source Current ± 25 nA, ± 0.1 nA/ $^{\circ}\text{C}$.
 ZeroAutomatic to ± 1 μV RTI, ± 0.5 mV RTO.
 Zero Stability ± 5 μV RTI, ± 1 mV RTO, ± 1 $\mu\text{V}/^{\circ}\text{C}$ RTI, ± 0.2 mV/ $^{\circ}\text{C}$ RTO. Short term: ± 2 μV RTI, ± 0.4 mV RTO for 8 hours.
 Noise (1kHz)2 μV rms RTI plus 0.5 mV rms RTO.
 Crosstalk.....-86 dB for full scale signal on adjacent channels.
 BandwidthDetermined by input filter, 1 kHz (-3dB) maximum.

FILTER

TypeTwo-pole, low-pass, RC Filter with 10 Hz or 100 Hz (-3 dB frequency) or wideband.
 OtherOther filter frequencies are available.

DIGITIZER

Resolution16-bits, two's complement output.
 Sample Rate.....Programmable up to 2K samples per second per channel.
 Linearity ± 2 LSB ($\pm 0.006\%$).
 Continuity.....Monotonic to 15 bits.
 AlarmsTwo alarms each with upper and lower limits that are programmable from negative to positive full scale. Limits checked on each ADC sample.

CALIBRATION

Voltage Subst.....Alternate input for external calibration reference. Programmable attenuation steps of 1, 0.1, and 0.01 with $\pm 0.01\%$ accuracy. Output of the attenuator is provided on a rear panel connector for calibration.
 ZeroAmplifier input disconnected and shorted for zero calibration.

MECHANICAL

MountingOccupies one slot in Series 6000 enclosures.
 ConnectorsTwo 50-pin, Type D input connectors. Connectors are mounted on the front and mates are supplied.
 Temperature 0°C to $+50^{\circ}\text{C}$.

ACCESSORIES

THERMOCOUPLE REFERENCE JUNCTION (6084-32)

Junction $\pm 0.25^{\circ}\text{C}$ over the range of 10 to 50°C . Includes junction temperature sensor.
 Termination.....32 channels, screw terminals, #18 to #28 wire.
 Cable2 meter cable is standard, other lengths available.

ORDERING INFORMATION

6017-F10.....32-Ch Voltage, Thermocouple w/ 10Hz Filter.
 6017-F10032-Ch Voltage, Thermocouple w/ 100Hz Filter.
 6017-FWB32-Ch Voltage, Thermocouple w/ WB Filter.
 6017B-F10-RTD....32-Ch Thermocouple, RTD Ref, 10Hz Filter.
 6017B-F100-RTD..32-Ch Thermocouple, RTD Ref, 100Hz Filter.
 6017B-FWB-RTD ..32-Ch Thermocouple, RTD Ref, WB Filter.
 6084-3232-Channel Thermocouple Reference Junction.