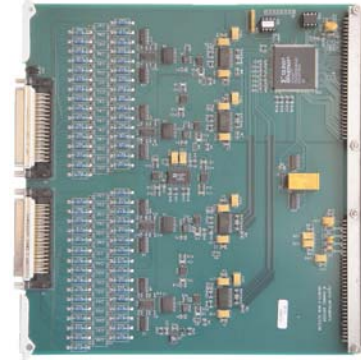


The 6017 has thirty-two input channels organized in four eight-channel groups. The eight inputs in each group are multiplexed to a programmable gain differential amplifier and digitized with 16-bit resolution then output to the Series 6000 data bus. Each channel is capable of digitizing at up to 2,000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

- Differential input,  $\pm 2$  millivolts to  $\pm 10$  Volts
- 50 Megohms input impedance
- 2 kS/s per channel
- Gain calibration by voltage substitution
- Automatic zero
- Programmable alarms

### SPECIFICATIONS

#### INPUTS

Number .....32 Channels.  
 Configuration .....Differential, 2-wire with shield.  
 Range..... $\pm 2$  millivolts to  $\pm 10$  Volts full scale.  
 Impedance .....50 Megohms, shunted by 1,000 pf.  
 Filter .....Two-pole, low-pass, RC Filter with 10 Hz or 100 Hz (-3 dB) cutoff frequency. Other cutoff frequencies can be supplied.  
 Protection ..... $\pm 25$  Volts differential and common mode.

#### 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.  
 Zero Calibration ....Amplifier input disconnected and shorted for zero calibration.

#### AMPLIFIER

Gain .....Programmable steps are 1, 2, 3, 5, 10, 20, 30, 50, 100, 200, 300, 500, 1000, 2000, and 5000 with  $\pm 0.05\%$  accuracy.  
 Gain Stability ..... $\pm 0.01\%$ ,  $\pm 0.005\%/^{\circ}\text{C}$ .  
 Linearity ..... $\pm 0.01\%$  for gains <1,000,  $\pm 0.02\%$  for gains 1,000 and higher.  
 Common Mode .....75 dB plus gain in dB to 110 dB, DC to 60Hz.  
 CM Voltage ..... $\pm 10$  Volts.  
 Source Current ..... $\pm 25$  nA,  $\pm 0.1$  nA/ $^{\circ}\text{C}$ .  
 Zero .....Automatic to  $\pm 1$  uV RTI,  $\pm 0.5$  mV RTO.  
 Zero Stability ..... $\pm 5$  uV RTI,  $\pm 1$  mV RTO,  $\pm 1$  uV/ $^{\circ}\text{C}$  RTI,  $\pm 0.2$  mV/ $^{\circ}\text{C}$  RTO. Short term:  $\pm 2$  uV RTI,  $\pm 0.4$  mV RTO for 8 hours.  
 Noise (1kHz).....2 uV RTI plus 0.55 mV RTO, RMS.  
 Crosstalk.....Below -86 dB for full scale signal on adjacent channels.  
 Bandwidth .....Determined by input filter, 1 kHz (-3dB) maximum.

#### ANALOG-TO-DIGITAL CONVERTER

Resolution .....16-bits, two's complement output.  
 Sample Rate.....Programmable up to 2K samples per second per channel.  
 Linearity ..... $\pm 2$  LSB ( $\pm 0.006\%$ ).  
 Continuity.....Monotonic to 15 bits.

#### ALARMS

Function .....Alarm levels are checked for each ADC conversion and if the limits are exceeded an output is sent to the alarm bus. Used in conjunction with the 6040 Digital I/O module the alarm bus can generate a discrete output for control of external equipment.  
 Levels.....High and low limits are programmable for each channel from negative to positive full scale.

#### GENERAL

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

#### ORDERING INFORMATION

6017-1.....32-Channel Multiplexed Amplifier-Digitizer, 10 Hz Filter, 16-bit, 2kS/s.  
 6017-2.....32-Channel Multiplexed Amplifier-Digitizer, 100 Hz Filter, 16-bit, 2 kS/s.