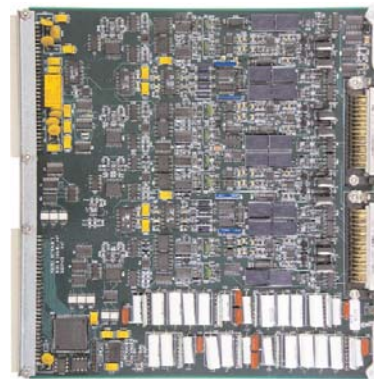


The 6038 input module has eight channels of programmable transducer signal conditioning amplifiers, filters and digitizer. Each channel has programmable voltage excitation, bridge completion and balance, programmable gain instrumentation amplifier and four-pole low pass filter. Channel outputs are multiplexed and digitized to 16 bits then provided to the 6000 data bus.

The 6038 is used with $\frac{1}{4}$, $\frac{1}{2}$ and full bridge transducers, potentiometers and low-level voltage signals. It is particularly suited to strain gages and bridge transducers. A shielded eight-wire input provides excitation, calibration and signal connections to the transducer. Excitation is programmable from 0 to 12 Volts for each channel. Remote sensing regulates excitation at the transducer eliminating line losses. The effect of loading or a short on any other channel is less than 0.01%. A calibration mode is provided to measure the excitation voltage applied to the transducer.

Gain calibration may be done by voltage substitution using an external traceable voltage standard. A calibration attenuator enables the voltage standard to be used on its highest accuracy ranges and has a post-attenuator output for accuracy verification. Internal and external shunt is provided for transducer calibration. Calibration and gain and zero correction can be automated using Pacific's PI660 software. Two alarms with programmable upper and lower limits are provided.



FEATURES

- Programmable excitation with remote sensing
- Programmable input configuration
- Shunt and voltage calibration
- Automatic zero and balance
- Gains 1 to 5,000 with 0.05% accuracy
- 10K Samples per second with 16-bit resolution

SPECIFICATIONS

VOLTAGE EXCITATION

Output.....Programmable from 0-12 Volts in 1 Volt $\pm 0.1\%$ steps, with 3.3 mV resolution adjustment.
 Current.....50 mA limited to 70 mA.
 Regulation..... $\pm 0.01\%$ for $\pm 10\%$ line and no-load to full-load using remote sensing. Operation reverts to local sense if sense leads are not connected.
 Stability..... $\pm 0.01\%$, $\pm 0.005\%/^{\circ}\text{C}$.
 Noise200 μV peak to peak.
 MonitorCalibration mode applies excitation voltage to the amplifier input.

INPUT

Configuration2 to 8 wire with guard shield. Bridge configuration is programmable for $\frac{1}{4}$, $\frac{1}{2}$ and full bridge, 120 Ohm or 350 Ohm.
 Balance.....Automatic by program control. Balance accuracy $\pm 0.05\%$ of range, ± 1 mV RTO. Stability $\pm 0.02\%$ for 8 hours, $\pm 0.005\%/^{\circ}\text{C}$. Range set by resistor up to 10 mV/V, ± 5 mV/V (350 Ohms) installed.
 Impedance50 Megohms shunted by 1000 pF.
 Protection..... ± 50 Volts differential, ± 50 Volts common mode.

CALIBRATION

ShuntSingle step shunt, either polarity, internal or external connection, 0.502 mV/V, $\pm 0.1\%$ installed.
 Voltage.....Alternate input for external calibration source. Programmable attenuator with steps of 1, 0.1 and 0.01, $\pm 0.01\%$ accuracy. Output of the attenuator is provided for calibration.
 ZeroAmplifier input disconnected and shorted.

AMPLIFIER

Gain.....Programmable from 1 to 5,000 in 1, 2, 3, 5 steps with $\pm 0.05\%$ accuracy
 Gain Stability..... $\pm 0.01\%$, $\pm 0.004\%/^{\circ}\text{C}$.
 Linearity..... $\pm 0.01\%$ for gains $< 1,000$, $\pm 0.02\%$ for gains 1,000 and higher.
 Common Mode.....60 dB plus gain in dB up to 106 dB, DC to 60Hz for ± 10 Volts.

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.
 Source Current ± 2 nA, ± 0.01 nA/ $^{\circ}\text{C}$
 Noise (10 Hz)0.5 μV peak, RTI.
 Noise (1 kHz).....1.5 μV peak, RTI.
 Bandwidth.....1 kHz (-3dB).
 Recovery.....800 μs to $\pm 0.1\%$ for 10X overload to ± 10 V.

FILTER (STANDARD)

Type.....Four pole, low pass Butterworth. Other filter response characteristics are available.
 Frequency.....Plug-in, 4 Hz to 1 kHz, 10 Hz supplied unless otherwise specified by the customer.
 Noise1 mV peak, RTO.

ANALOG-TO-DIGITAL CONVERTER

Resolution16 bits, two's complement output.
 Sample Rate0 to 10 kS/s per channel.
 Linearity ± 2 LSB ($\pm 0.006\%$)
 Continuity.....Monotonic to 15 bits.

GENERAL

Mounting.....Occupies one slot in Series 6000 enclosures.
 ConnectorsInputs are on two 50-pin, Type D. connectors.
 Temperature 0°C to $+50^{\circ}\text{C}$ operating.

ORDERING INFORMATION

6038-120Eight-channel transducer amplifier-digitizer with completion for 120 Ohm strain gages.
 6038-350Eight-channel transducer amplifier-digitizer with completion for 350 Ohm strain gages.
 6038-xxx.....Eight-channel transducer amplifier-digitizer with completion for customer specified strain gages.