PACIFIC INSTRUMENTS
A VPG Brand

Metromatics **MODEL 6033**

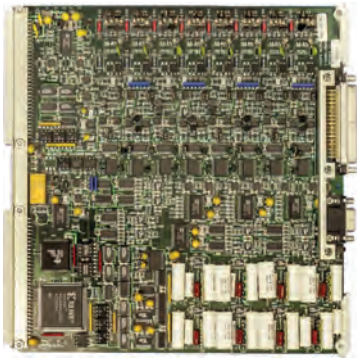
8-Channel Strain/Bridge Transducer Amplifier-Filter-Digitizer

Model 6033 may not be regularly available. Please see Model 6035, 6038 or 6039 for similar applications.

The 6033 input module has eight channels of transducer signal conditioning and digitizer. Each channel has regulated voltage excitation, programmable gain instrumentation amplifier, four-pole low pass filter and sample and hold amplifier. The high level outputs are multiplexed and digitized to 16 bits then output to the 6000 data bus. In addition to the digitized output, each channel has a wideband analog output.

The 6033 is used with ¼, ½ and full bridge transducers, potentiometers and low-level voltage signals. It is particularly suited to strain gages where remote sensing is not a requirement. A shielded four-wire input provides signal and excitation connections to the transducer. Excitation is programmable from 0 to 12 Volts for all channels on the module. An individual regulator for each channel prevents loading or a short on one channel from affecting other channels. A calibration mode is provided that measures excitation voltage or current.

Voltage substitution is provided for gain calibration using an external voltage standard. A calibration attenuator enables the voltage standard to be used on its highest accuracy ranges and has a post-attenuator output for verification and calibration. Resistive shunt is provided for transducer calibration. Two alarm with programmable upper and lower limits are provided and checked each time the output is digitized. Analog outputs provide a means to independently monitor or record each channel.



FEATURES

- **Quarter, half & full bridge conditioning**
- **Voltage excitation up to 12 Volts**
- **Shunt & voltage calibration**
- **Automatic zero & balance**
- **Gains 1 to 5,000 with 0.05% accuracy**
- **Four-pole low-pass filter**
- **Up to 10 kS/s per channel with 16-bit resolution**
- **Two alarms with programmable upper & lower limits**

SPECIFICATIONS

INPUT

Configuration .....8 channels, 2 to 4 wires plus shield for bridge and voltage. Input configured by plug-in jumpers.
Balance.....Automatic by program control. Balance accuracy ±0.05% of range, ±1 mV RTO. Stability ±0.02% for 8 hours, ±0.005%/°C. Range set by resistor up to 10 mV/V, 2 mV/V (350 Ohms) is installed.
Impedance .....50 Megohms, shunted by 1,000 pf.
Protection.....±50 Volts differential, ±30 Volts common mode.

EXCITATION / TRANSDUCER POWER

Voltage .....Programmable for 8 channels from 0 to 12 Volts with 3.3 mV resolution. Calibrated 1 Volt ±0.1% steps.
Current.....50 mA, limited to 70 mA. Short on one channel will not affect other channels.
Regulation .....±0.2% line and no-load to full-load measured at the input connector.
Stability.....±0.01%, ±0.005%/°C.
Noise .....200 µV peak-to-peak.
Monitor .....Voltage or current selected by jumper plug.

AMPLIFIER

Gain.....Programmable from 1 to 5,000 in 1, 2, 3, 5, 10 steps with ±0.05% accuracy.
Gain Stability.....±0.01%, ±0.004%/°C.
Linearity .....±0.01% for gains <1,000, ±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.
Zero .....Automatic to ±1 µV RTI, ±0.5 mV RTO.
Zero Stability.....±5 µV RTI, ±1 mV RTO; ±1 µV/°C RTI, ±0.2 mV/°C RTO. Short term: ±2 µV RTI, ±0.4 mV RTO for 8 hours.
Source Current .....±2 nA, ±0.01nA/°C.
Noise (10 Hz) .....0.5 µV peak, RTI.
Noise (1kHz) .....1.5 µV peak, RTI.
Bandwidth.....1 kHz (-3dB).
Recovery.....800 µS to ±0.1% for 10X overload to ±10 V.
Analog Output .....±3 Volts full scale, unfiltered.

FILTER

Type .....Four-pole, low-pass Butterworth.
Frequency.....Plug-in, 4 Hz to 1 kHz, 10 Hz supplied.
Noise .....2 mV peak RTO.
Other.....Other filter characteristics and cut offs available.

DIGITIZER

Sample.....Simultaneous, within ±50 nS channel-to-channel. Droop is less than ±0.005%.
Resolution .....16 bits, two's complement output.
Sample Rate .....Up to 10 kS/s per channel.
Linearity .....2 LSB (0.006%).
Continuity.....Monotonic to 15 bits.
Alarms.....Two alarms each with upper and lower limits that are programmable from negative to positive full scale. Limits checked on each ADC sample.

CALIBRATION

Shunt.....Programmable single shunt, 0.502 mV/V (350 Ohm bridge), ±1% installed.
Voltage Subst. .....Alternate amplifier input for external voltage standard. Programmable attenuator steps of 1, 0.1 and 0.01 with ±0.02% accuracy. Output of the attenuator provided on rear panel connector for calibration.
Zero .....Amplifier input disconnected and shorted.

MECHANICAL

Mounting.....Occupies one slot in Series 6000 enclosures.
Connectors .....Input connectors are 50-pin Type D. Mates are supplied
Temperature .....0°C to +50°C operating.

ORDERING INFORMATION

6033 .....8-Ch Strain-Bridge, 4-Wire Input.
6081 .....Screw Terminal Adapter (6013,18, 28, 35, 37)
6082 .....8-Ch RJ45 Adapter, 120, 350, 1K Ohm Bridge.

2017-01-19

4080 Pike Lane ■ Concord, CA 94520 ■ Tel (925) 827-9010 ■ Fax (925) 827-9023 ■ PIsales@pacificinstruments.com