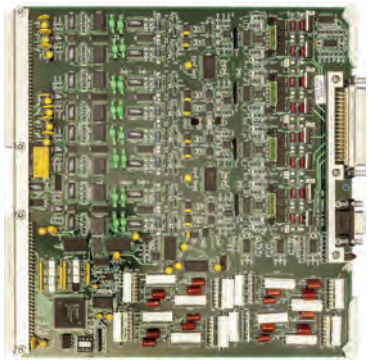
MODEL 6035

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



The 6035 input module has eight channels of programmable transducer signal conditioning amplifiers and digitizer. Each channel has programmable voltage excitation, bridge completion and balance, programmable gain instrumentation amplifier, four-pole low pass filter and sample and hold amplifier. Channel outputs are multiplexed and digitized to 16 bits then provided to the 6000 data bus. In addition to the digitized output, each channel has an analog output providing a means to monitor or record each channel.

The 6035 is used with ¼, ½ and full bridge transducers, potentiometers and low-level voltage signals. It is particularly suited to strain gages. A shielded four-wire input provides signal and excitation connections to the transducer. Excitation is programmable from 0 to 12 Volts for each channel. Individual excitation regulators and careful routing of power traces and grounds results in less than 0.01% effect due to loading or a short on another channel. A calibration mode is provided to measure the excitation voltage.

Gain calibration may be done by voltage substitution 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 accuracy verification. Bipolar shunt is provided for transducer calibration. Calibration and gain and zero correction can be automated using software such as Pacific's PI660. Two alarms with programmable upper and lower limits are provided.

FEATURES

- **Programmable input configuration, ¼, ½ & full bridge**
- **Voltage excitation programmable / regulated for each channel**
- **Shunt & voltage calibration**
- **Automatic balance & zero**
- **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. Programmable completion for 1/4, 1/2 and full bridge.

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 each channel from 0 to 12 Volts in 1 Volt ±0.1% steps and 3.3 mV resolution fine adjustment.

Current .....50 mA, limited to 70 mA. Short on one channel has less than ±0.01% affect on 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 monitor, ADC and analog output.

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 .....80 dB plus gain in dB up to 110 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, ±0.2mV/°C RTO. Short term: ±2 µV RTI, ±0.4 mV RTO for 8 hours.

Source Current .....±5 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.

FILTER

Type .....Four pole, low pass Butterworth with programmable bypass.

Frequency.....Plug-in, 4Hz to 1kHz, 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.

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 bipolar shunt. Installed resistor provides 0.502 mV/V ±1% for 350 Ohm bridge.

Voltage Subst.....Alternate amplifier input for external voltage calibrator. Programmable attenuator steps of 1, 0.1 and 0.01 with ±0.02% accuracy. Output of the attenuator provided on rear panel connector for accuracy verification.

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.

ACCESSORIES

6081 .....8-Ch Screw Terminal Adapter, (6013,18, 28, 35, 37).

6082 .....8-Ch RJ45 Adapter, 120, 350, 1K Ohm Bridge.

6085 .....Connector Interface Panel for 6005 Enclosures

ORDERING INFORMATION

6035 .....8-Ch Strain-Bridge, 4-Wire Input

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