

The 6152 input module has four channels of high performance signal-conditioning amplifiers for strain gages and bridge transducers. Each channel has programmable excitation with remote sensing, voltage calibration, local or remote shunt calibration, programmable gain instrumentation amplifier and four-pole low pass filter. Each channel provides a continuous, calibrated analog output.

The 6152 is used with quarter, half and full bridge transducers, potentiometers and low-level voltage signals in demanding applications such as load control. The standard filter is a four-pole or six-pole filter with programmable cutoff frequency from 4 Hz to 5 kHz.

Voltage substitution using an external voltage standard is provided for traceable gain calibration. Internal or external shunt calibration is provided for transducer calibration. Transducer balance, zero and gain calibration are automatic.



FEATURES

- Programmable input configuration ¼, ½ & full bridge
- Programmable excitation with remote sensing
- Shunt & voltage calibration
- Automatic zero & balance
- Gains 1 to 5,000 with 0.05% accuracy
- Buffered 10 Volt analog output

SPECIFICATIONS

INPUT

Configuration4 channels, 2 to 8 wire with guard shield. Bridge configuration is programmable for ¼, ½ and full bridge, 120 Ohm and 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, 2mV/V (for 350 Ohms) installed.

Impedance50 Megohms shunted by 1,000 pF.

Protection.....Instrumentation amplifier ± 50 Volts differential and Common Mode.
Bridge ± 15 Volts Common Mode.

EXCITATION / TRANSDUCER POWER

VoltageProgrammable 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.

Stability..... $\pm 0.01\%$, $\pm 0.005\%/^{\circ}\text{C}$.

Noise200 μV peak to peak.

MonitorCalibration mode applies excitation voltage to amplifier input.

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 Mode74 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.

Source Current ± 25 nA, ± 0.01 nA/ $^{\circ}\text{C}$

Noise (10 Hz)0.1 μV RMS RTI plus 0.5 mV RMS RTO.

Noise (wideband)..2 μV RMS RTI plus 0.5 mV RMS RTO.

Bandwidth.....10 kHz (-3dB) or better.

Slew Rate.....5 V/ μs .

Recovery.....800 μs to $\pm 0.1\%$ for 10X overload to ± 10 V.

Analog Output ± 10 Volt full scale, wideband or filtered. Accuracy is $\pm 0.05\%$.

FILTER

PROGRAMMABLE FILTER

TypeFour or Six pole, low pass Butterworth.

Frequency.....Continuously programmable 4Hz to 5kHz, 1.25Hz resolution, 3% accuracy.

Noise0.5 mV RMS RTO

Other.....Other filter characteristics and cut offs available.

DIGITIZER (6052)

See Model 6052 for the following Digitizing Capabilities:

Resolution16 bits, two's complement output.

Sample Rate0 to 20 kS/s per channel.

Linearity..... ± 2 LSB ($\pm 0.006\%$)

Continuity.....Monotonic to 15 bits.

AlarmsTwo alarms each with programmable upper and lower limits and persistence checked on each ADC sample.

CALIBRATION

ShuntTwo steps shunt, internal or external connection, 174k Ohm 0.1% and 357k Ohm 0.1% .

Voltage Subst.Alternate input for external calibration source. Programmable attenuator with steps of 1, 0.1 and 0.01, $\pm 0.02\%$ accuracy. Output of the attenuator is provided for calibration.

ZeroAmplifier input disconnected and shorted.

MECHANICAL

Mounting.....Occupies one slot in Series 6000 enclosures.

ConnectorsInput is 50-pin Type D output is 9-pin Type D.

Temperature0 $^{\circ}\text{C}$ to +50 $^{\circ}\text{C}$ operating.

ORDERING INFORMATION

6152-PF4/5K-BU44-Ch Strain-Bridge, PF 4Hz-5kHz 4-Pole Butterworth

6152-PF4/5K-BU64-Ch Strain-Bridge, PF 4Hz-5kHz 6-Pole Butterworth

6152B-PF4/5K-BU4.....4-Ch Strain-Bridge, PF 4Hz-5kHz 4-Pole Butterworth, 2-Step Shunt

6152B-PF4/5K-BU6.....4-Ch Strain-Bridge, PF 4Hz-5kHz 6-Pole Butterworth, 2-Step Shunt