

The 6125 contains two-channels of high-performance, programmable differential instrumentation amplifier and filter with dual outputs. It installs in a 32-channel Mainframe enclosure with IEEE-488, RS-232 or Ethernet programming interface. Slave enclosures, also 32-channel, may be used to expand the system up to 512 channels.

Each amplifier has two inputs. One input is DC coupled. The other input is AC coupled and has 1 to 20 mA constant current excitation for voltage-mode charge and similar transducers. Gain is programmable from 1 to 5,000 in sixteen steps or variable with 0.05% resolution over the entire range. Bandwidth is 50 kHz for the 6125 and 100 kHz for the 6125HF for gains through 1,000. The standard filter is an 8-pole low-pass with four programmable frequencies and wideband. An optional 4-pole, low-pass filter has continuous bandwidth selection.

Voltage substitution using an external traceable standard is provided for gain calibration. Facilities are provided for automatic gain and zerocalibration by software. Each channel has two, independent ± 10 Volt outputs that can be individually selected for wideband or filtered response. The output and all programmed settings may be read by software.

The 6125 is programmed by text strings written to the interface. PI660 is a Window's based application program for Series 6100 products It comes ready-to-run or may be used as an Application Programmers Interface for designing custom applications.



FEATURES

- Dual inputs, voltage and voltage mode charge
- Gains 1 to 5,000 with 0.05% accuracy
- Automatic zero and gain calibration
- 50 kHz or 100 kHz bandwidth
- 4 or 8-pole, low-pass filter
- Dual, buffered ± 10 Volt outputs
- IEEE-488, RS-232 and Ethernet interfaces

SPECIFICATIONS

INPUT

Configuration	Two-wire with shield.
Input Impedance	50 Megohms, shunted by 500 pF.
Input Protection	± 50 Volts, differential ± 30 Volts common mode without damage.
Auxiliary	AC-coupled -3 dB < 1 Hz, input impedance is 100K Ohms. 1-20 mA current source (6 mA supplied) requires PS1 option for the enclosure.

AMPLIFIER

Input Range	± 2 mV to ± 10 Volts full scale.
Gain	Programmable from 1 to 5,000 with 0.05% resolution.
Gain Steps	Sixteen calibrated gain steps are provided: 1, 2, 3, 5, 10, 20, 30, 50, 100, 200, 300, 500, 1,000, 2,000, 3,000 and 5,000 with $\pm 0.1\%$ accuracy.
Gain Stability	$\pm 0.02\%$ for 30 days, $\pm 0.005\%/^{\circ}\text{C}$.
Linearity	$\pm 0.01\%$ for gains to 1,000, $\pm 0.02\%$ above 1,000.
Voltage Calibration	Alternate input for external calibration source. Programmable 1, 0.1 and 0.01, attenuation with $\pm 0.02\%$ accuracy.
Common Mode	60 dB plus gain in dB to 120 dB for balanced input and 110 dB for a 350 Ohm source unbalance, DC to 60 Hz.
CM Voltage	± 10 Volts.
Zero	Automatic zero to ± 2 μV RTI or ± 1.0 mV RTO whichever is greater.
Zero Stability	± 5 μV RTI, ± 1 mV RTO at constant temperature, ± 1 μV RTI, ± 0.2 mV RTO/ $^{\circ}\text{C}$.
Source Current	± 25 nA, ± 0.05 nA/ $^{\circ}\text{C}$.
Noise (10 kHz)	2.0 μV RTI plus 0.3 mV RTO, RMS.
Bandwidth	50 kHz (-3 dB) for gains 1 to 1,000, 20kHz (-3 dB) for gains above 1,000.
Bandwidth (HF)	100 kHz (-3 dB) for gains 1 to 1,000, 50 kHz (-3 dB) for gains above 1,000.
Slew Rate	5 V/ μs .
Overload Recovery	120 μs to within $\pm 0.1\%$ for a 10 times overload to ± 10 Volts.
Monitor	Output is read by a program instruction. Resolution is $\pm 0.003\%$.
Output	Two ± 10 Volt full scale buffered outputs may be program selected for filtered or wideband response.

FILTER (STANDARD)

Type	Eight-pole, low-pass Bessel (48dB/octave).
Frequency	Four programmable filter bandwidths, 150 Hz, 625 Hz, 2.5 kHz, 10 kHz and wideband.
Frequency (HF)	Four programmable filter bandwidths, 300 Hz, 1.25 kHz, 5 kHz, 20 kHz and wideband.

FILTER (OPTION PF, PHF)

Type	Four-pole, low-pass Bessel (24 dB/octave)
Frequency (PF)	4 Hz to 1 kHz, 1 Hz resolution, 1 kHz to 10 kHz, 5 Hz resolution, $\pm 2\%$ accuracy.
Frequency (PHF)	10 Hz to 1 kHz, 1 Hz resolution, 1 kHz to 20 kHz, 5 Hz resolution, $\pm 2\%$ accuracy.
Gain	With this option, specified gain accuracy is for the filtered output. Accuracy of the wideband output is $\pm 1\%$.

INTERFACE CONNECTORS

Transducer	Each channel has a 15-pin Type D input connector, mate supplied
Output	One output on individual 3.5 mm audio jack, both outputs of both channels in a 9-pin Type D. Type D mate supplied.

ORDERING INFORMATION

6125	Two-channel instrumentation amplifier, 50 kHz bandwidth.
6125HF	Two-channel instrumentation amplifier, 100 kHz bandwidth.

OPTIONS

6000-PF	Programmable filter option, 4 Hz to 10 kHz.
6000-PHF	Programmable filter option, 10 Hz to 20 kHz

ENCLOSURES

6100	Mainframe enclosure, 16 slot, IEEE-488 and RS232 interfaces.
6100E	Mainframe enclosure, 16-slot, Ethernet interface.
6001	Slave enclosure, 16-slot.
PS1	Power supply, 28V, 1A.

SOFTWARE

PI610	Operating software for Windows 98/NT/2000/XP. Supplied as a turnkey application and DLL.
PANEL60	Maintenance and calibration software for Windows