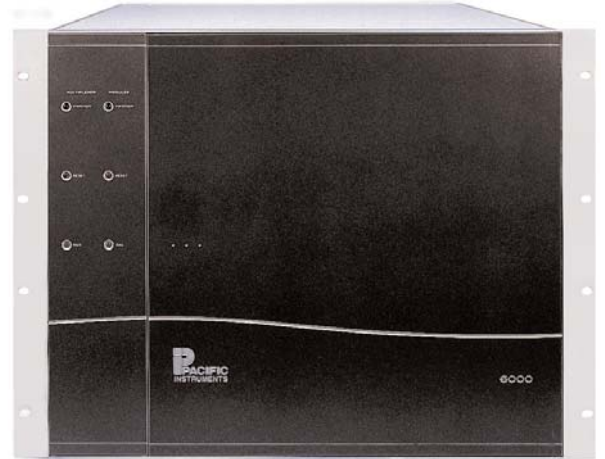


FEATURES

- Isolated input
- 300 Volts common mode
- Automatic zero
- Gains 1 to 5,000
- Voltage Substitution Calibration
- 50 kHz Bandwidth, 100 kHz optional
- Six-pole, low-pass filter
- Dual analog outputs
- Program monitoring of output



INPUT-ISOLATED INSTRUMENTATION AMPLIFIER

Series 6100 is an automated, transducer signal conditioning amplifier system. The basic mainframe holds 32 channels, which is expandable to 1,024 channels. It is available with RS-232, IEEE-488, USB or Ethernet interface and software for Windows 2000 and XP.

The 6165 is a two-channel amplifier-filter module. Each channel has isolated input, 50 kHz bandwidth and two outputs that can be filtered or wideband. Bandwidth of 100 kHz is optional.

The input is two-wire shielded and is isolated from the outputs, power and control interface. This gives the user complete freedom to ground the input without creating ground loops that introduce noise and offset errors. The isolation provides for operation with up to ± 300 Volts of common mode applied to the input.

The differential instrumentation amplifier has programmable gains from 1 to 5,000 and automatic zero. The standard filter is a six-pole Bessel with four programmable bandwidths and wideband. An optional four-pole Bessel filter has continuously programmable bandwidth with 1 Hz resolution below 1 kHz and 5 Hz above 1 kHz. Each channel has two buffered, ± 10 Volt outputs. The output can be digitally monitored using any of the supported interfaces.

Voltage substitution calibration, employing an external standard, is provided for gain calibration. Automatic zero and gain calibration are implemented in PI610 software.

The mainframe interfaces are IEEE-488, RS-232, Ethernet and USB 2.0. The 6100 has both the IEEE-488 and RS-232 interfaces. The the 6000U has a USB 2.0 interface. Ethernet interface can be provided using an adapter. Previous programmed operating parameters and the calibration settings are automatically loaded during power-up and by Reset.

User programming is facilitated by a high-level instruction set that is present in the mainframe or USB driver. The 6160 is programmed by text strings sent from the user's application. Optional Windows application software, PI610, is fully configured and ready to use. It provides menu programming of operating parameters or can download parameters from an Access compatible database file. It includes a window that graphically displays the amplifier output. PI610 may also be used as a component module DLL with LabView, Visual Basic, Excel or other windows programming language to design custom control and operator interfaces.

Panel60 is maintenance and calibration software for all Series 6000 and 6100 products. It is a beneficial tool that enables the technician to verify amplifier settings and configuration and make adjustments to gain, zero and other calibrated parameters. A calibration system, ACS2000, automatically calibrates amplifier gain and certifies the amplifier to the published specification with an archived record of measured performance.

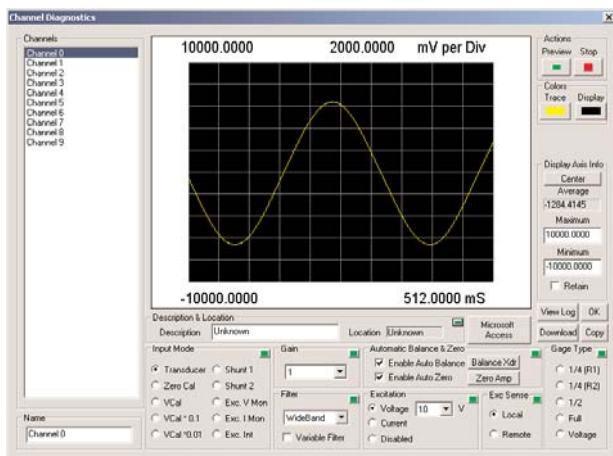
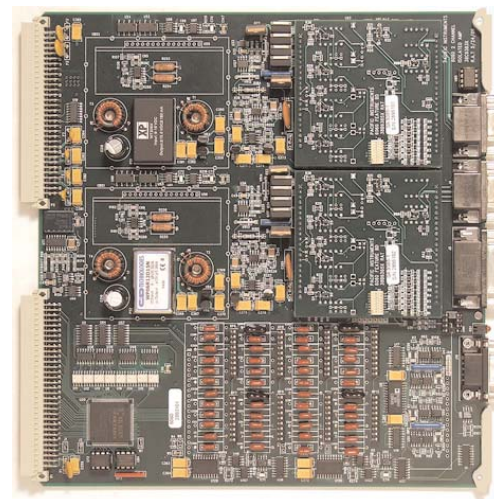


SYSTEM

- Fully programmable, no manual controls
- Thirty-two channels per enclosure, up to 1,024 channels per system
- Programmed operating parameters are automatically loaded at power-up
- Integral tray routes input and output cables to exit from the rear
- Choice of IEEE-488, RS232, USB 2.0 or Ethernet interface for programming and control
- Automatic calibration system, ACS2000, provides fast and automated calibration and certification to traceable standards.

CHANNEL MODULES

- Two channels per module
- Isolated input for use with grounded sources
- 300 Volt operating common mode
- High-resolution gain programming
- Highest accuracy, <0.05% for gain 1,000
- Voltage substitution calibration
- Automatic zero and calibration make test setup quick and easy
- Six-pole anti-alias filter
- Dual buffered outputs, digital output monitor
- Two sets of high and low-level alarms



PI610 SOFTWARE

- Ready to run or Application Programmers software
- Design a custom GUI using Visual Basic, LabView, Access or Excel
- Use spreadsheet, database or built-in screens to program channel settings
- Copy function makes adding channels quick and easy
- Simplify calibration using automatic procedures.
- Controls external voltage standard for traceable gain calibration
- Real-time monitor graphically displays amplifier output

INPUT

Configuration2 wire plus shield
 Impedance50 Megohms, shunted by 500 pF.
 Protection±50 Volts, differential and ±350 Volts common mode.

CALIBRATION

VoltageAlternate input for external calibration source.
 Programmable 1, 0.1 and 0.01, attenuation with ±0.02% accuracy. Attenuator output may be connected to bus for external monitoring.
 Zero CalibrationAmplifier input disconnected and shorted for zero calibration.

AMPLIFIER

Range.....±2 mV to ±10 Volts full scale.
 GainProgrammable from 1 to 5,000 with 0.05% resolution.
 Gain StepsSixteen 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 ±0.05% accuracy.
 Gain Stability±0.02% for 30 days, ±0.005%/°C.
 Linearity±0.01% for gains < 1000, ±0.02% for gain 1000 and higher.
 Common Mode60 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±300 Volts operating.
 ZeroAutomatic zero to ±2 µV RTI or ±1.0 mV RTO whichever is greater.
 Zero Stability±5 µV RTI, ±1mV RTO at constant temperature, ±1 µV RTI, ±0.2 mV RTO/°C.
 Source Current±25 nA, ±0.05 nA/°C.
 Noise (10 kHz).....2.0 µV RTI plus 0.3 mV RTO, RMS.
 Bandwidth50 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 ±0.1% for a 10 times overload to ±10 Volts.
 Monitor.....Output is read by a program instruction. Resolution is ±0.003%.
 OutputTwo ±10 Volt full scale buffered outputs. Each may be program selected for filtered or wideband response.

FILTER (STANDARD)

TypeSix-pole, low-pass Bessel (36 dB/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 (OPTIONS)

TypeFour-pole, low-pass Bessel (24 dB/octave)
 Freq. (PFBE2)4 Hz to 1 kHz, 1 Hz resolution, 1 kHz to 10 kHz, 5 Hz resolution, ±2% accuracy.
 Freq. (PHFBE2)10 Hz to 1 kHz, 1 Hz resolution, 1 kHz to 20 kHz, 5 Hz resolution, ±2% accuracy.

INTERFACE CONNECTORS

All connectors for input and output of analog and control signals are mounted on the front edge of the 6165 module. All mating connectors, except BNC type, are furnished.

InputEach channel has a 15-pin Type D input connector
 OutputBoth outputs for both channels in a 9-pin Type D connector.

ENCLOSURES AND INTERFACE

The rack enclosures provide slots for 16 modules, 32 channels using the 6165. They contain a channel controller and power supply that operates on 115 or 230 VAC. The basic 6100 Mainframe enclosure includes IEEE-488 and RS232 interfaces. One 6100 mainframe will control up to thirty-one 6001 slave enclosures. Ethernet is provided by an adapter on the 6100. The 6100U has a USB 2.0 interface. USB hubs are used to support multiple 6100U enclosures.

INDICATORS

Pwr/Adr.....Indicates power is applied to the enclosure. Blinks when a channel in the enclosure is being addressed by a program instruction.
 ResetIndicates that enclosure reset is being asserted.
 CalibrationIndicates that one or more channels are in a calibration mode.

PROGRAM INSTRUCTIONS

The following program instructions are provided to implement system programming and operation.

AddressSelects single channel or group of channels for subsequent programming.
 ResetStops any operation in process, sets all programmable parameters to the stored settings.
 Gain.....Program gain of channel, followed by autozero.
 FilterProgram filter steps and wideband for a channel, followed by autozero.
 Auto-ZeroNulls the outputs with the input disconnected and shorted.
 Cal EnableEnables or disables selected calibration mode.
 CalibrationSelects calibration mode and step.
 VerificationRead back channel status and parameters.
 Read OutputReturn value of channel output.

PHYSICAL

MODULE

Size0.8 inch wide by 9 inches high by 9 inches deep.
 WeightApproximately 13 oz.
 MountingThe module slides into the enclosure on card guides accessed through the front door and is secured by locking extractors. Rear access is not required to change modules or input and output connectors.

RACK ENCLOSURE (Master & Slave)

Module Slots16.
 Cable TrayA built-in tray routes input and output cables to exit from the rear of the enclosure.
 Cooling.....Built-in fan with replaceable filter.
 Size19 inches wide by 14 inches tall by 23 inches deep (including mating connectors).
 WeightApproximately 60 pounds, with all modules installed.
 Power.....115 or 230 VAC \pm 10%, 47 to 63 Hz.

ENVIRONMENTAL

TemperatureOperating, 0°C to +50°C.
 Humidity95% without condensation.
 Shock/Vibration.....Normal shipping and handling of laboratory instruments.

CALIBRATION SYSTEM

Pacific Instruments Model ACS2000, Automated Calibration System will align, calibrate and certify Series 6100 analog input modules to factory or user performance specifications. A fully automated, PC controlled test station, it has the flexibility to run a single performance test or complete calibration and certification procedures. Measured performance data is archived by unit serial number. A print utility generates hard copy test reports.

ORDERING INFORMATION

MODULE

6165Two-channel instrumentation amplifier, 50 kHz bandwidth, 100 kS/s.
 6165HFTwo-channel instrumentation amplifier, 100 kHz bandwidth, 200 kS/s.

OPTIONS

6000-PFBE2Continuously programmable filter, 4 Hz to 10 kHz.
 6000-PHFBE2Continuously programmable filter, 10 Hz to 20 kHz.

ENCLOSURES

6100Mainframe enclosure, 16-slot with IEEE-488 and RS232 interfaces.
 6100UMainframe enclosure, 16-slot with USB 2.0 programming and control interface.
 6101Slave enclosure, 16-slot. Used with 6000 mainframes.

ENCLOSURE OPTIONS

6000-EEthernet adapter for 6100 Mainframe.

SOFTWARE

PI610Operating software for Windows 2000/XP. Supplied as a turnkey application and DLL.
 PANEL60Maintenance and calibration software for Windows 2000/XP.

CALIBRATION SYSTEM

ACS2000Calibration & certification system with fixture for Model 6165.