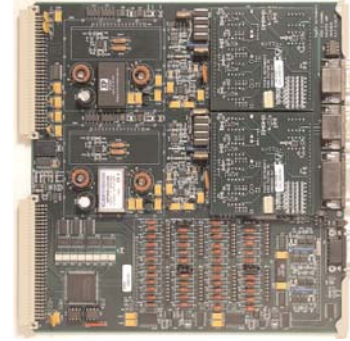


The 6065 is a two-channel instrumentation amplifier-digitizer module. Each channel has isolated input, 50 kHz bandwidth and two outputs that can be filtered or wideband. Bandwidth of 100 kHz is optional.

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  $\pm 300$  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,  $\pm 10$  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 PI660 software.



## 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

## SPECIFICATIONS

### INPUT

Configuration .....2 wire plus shield  
 Impedance .....50 Megohms, shunted by 500 pF.  
 Protection ..... $\pm 50$  Volts, differential and  $\pm 350$  Volts common mode.

### CALIBRATION

Voltage .....Alternate input for external calibration source.  
 Programmable 1, 0.1 and 0.01, attenuation with  $\pm 0.02\%$  accuracy. Attenuator output may be connected to bus for external monitoring.  
 Zero Calibration .....Amplifier input disconnected and shorted for zero calibration.

### AMPLIFIER

Range..... $\pm 2$  mV to  $\pm 10$  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  $\pm 0.05\%$  accuracy.  
 Gain Stability ..... $\pm 0.02\%$  for 30 days,  $\pm 0.005\%/^{\circ}\text{C}$ .  
 Linearity ..... $\pm 0.01\%$  for gains < 1000,  $\pm 0.02\%$  for gain 1000 and higher.  
 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 ..... $\pm 300$  Volts operating.  
 Zero .....Automatic zero to  $\pm 2$   $\mu\text{V}$  RTI or  $\pm 1.0$  mV RTO whichever is greater.  
 Zero Stability ..... $\pm 5$   $\mu\text{V}$  RTI,  $\pm 1$  mV RTO at constant temperature,  $\pm 1$   $\mu\text{V}$  RTI,  $\pm 0.2$  mV RTO/ $^{\circ}\text{C}$ .  
 Source Current ..... $\pm 25$  nA,  $\pm 0.05$  nA/ $^{\circ}\text{C}$ .  
 Noise (10 kHz).....2.0  $\mu\text{V}$  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/ $\mu\text{s}$ .  
 Overload Recovery....120  $\mu\text{s}$  to within  $\pm 0.1\%$  for a 10 times overload to  $\pm 10$  Volts.

Monitor.....Output is read by a program instruction. Resolution is  $\pm 0.003\%$ .  
 Output .....Two  $\pm 10$  Volt full scale buffered outputs. Each may be program selected for filtered or wideband response.

### FILTER (STANDARD)

Type .....Six-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)

Type .....Four-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,  $\pm 2\%$  accuracy.  
 Freq. (PHFBE2) .....10 Hz to 1 kHz, 1 Hz resolution, 1 kHz to 20 kHz, 5 Hz resolution,  $\pm 2\%$  accuracy.

### ANALOG-TO-DIGITAL CONVERTER

Sample..... $\pm 50$  nS channel-to-channel time correlation.  
 Resolution .....16 bits, two's complement output.  
 Rate .....Programmable up to 100 kS/s per channel.  
 Rate (HF) .....Programmable up to 200 kS/s per channel.

### GENERAL

Mounting.....Occupies one slot in Series 6000 enclosures.  
 Connectors.....Inputs are 15-pin and outputs are 9-pin Type D  
 Temperature.....0 $^{\circ}\text{C}$  to +50 $^{\circ}\text{C}$  operating.

### ORDERING INFORMATION

6065 Two-channel transducer amplifier, 100 kS/s  
 6065HF Two-channel transducer amplifier, 200 kS/s.