

The 6029 input module has eight channels each providing excitation for IEPE transducers, programmable AC or DC-coupled differential instrumentation amplifier, low-pass filter and analog to digital converter. Sample rate is programmable up to 200 kS/s with 16-bit resolution.

Using amplifier/digitizer-per-channel architecture the 6029 provides high bandwidth and digitizing speed with excellent channel-to-channel time correlation. It offers the highest accuracy and completely eliminates crosstalk between channels. It may be used to condition and digitize signals from piezoelectric transducers with built-in or in-line charge amplifiers and other AC or DC voltage measurements. Input attenuation and current inputs, including 4-20 mA current loop, are available.

An adjustable 2-20 mA current source with 24 Volt compliance is provided for powering IEPE transducers. Gain is programmable from 1 to 5,000 providing  $\pm 2$  mV to  $\pm 10$  Volts full scale input sensitivity. Zero and gain calibrations are automatic.

Bandwidth is DC, 1 Hz when AC coupled, to 50 or 100 kHz. The low-pass filter may be employed to minimize alias errors for data sampling. A plug-in resistor module establishes the desired frequency. Filter frequency may be specified at the time of ordering. Frequency modules are available from 250 Hz to 50 kHz.



### FEATURES

- Current source for IEPE Transducers
- AC or DC coupled differential input
- Programmable input sensitivity,  $\pm 2$  mV to  $\pm 10$  Volts
- Four-pole, antialiasing filter
- 50 kHz or 100 kHz signal bandwidth
- 100 kS/s or 200 kS/s with 16-bit resolution

### SPECIFICATIONS

#### INPUTS

Configuration . . . . .Differential, 2-wire with shield. Programmable AC or DC input. Input attenuator and current input are available.

F/S Range . . . . . $\pm 2$  mV to  $\pm 10$  Volts

Selection . . . . .Input, Voltage Calibration, Zero (short).

Impedance (AC) . . . . .100k Ohms, shunted by 1,000 pF.

Impedance (DC) . . . . .50 Megohms, shunted by 500 pF.

Protection . . . . . $\pm 50$  Volts differential,  $\pm 30$  Volts common mode.

#### EXCITATION

Current . . . . .2 to 20 mA. 6 mA is supplied unless otherwise specified.

Compliance . . . . .24 Volts minimum.

Verification . . . . .Short and open detection.

#### 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 output bus for accuracy check.

Zero Calibration . . . . .Amplifier input disconnected and shorted for zero calibration.

#### AMPLIFIER

Gain . . . . .Programmable 1 to 5000 using calibrated steps or continuous with 0.05% resolution.

Gain Steps . . . . .1, 2, 3, 5, 10, 20, 30, 50, 100, 200, 300, 500, 1,000, 2,000, 3,000, 5,000 with  $\pm 0.05\%$  accuracy

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

Linearity . . . . . $\pm 0.01\%$  for Gains < 1,000,  $\pm 0.02\%$  for Gains > 1,000

Common Mode . . . . .60 dB plus gain in dB to 110 dB, DC to 60 Hz.

CM Voltage . . . . . $\pm 10$  Volts.

Zero . . . . .Automatic to  $\pm 1$  mV.

Zero Stab. X1 . . . . . $\pm 1$  mV,  $\pm 0.2$  mV/ $^{\circ}\text{C}$ .

Zero Stab. X1000 . . . . . $\pm 5$  mV,  $\pm 1$  mV/ $^{\circ}\text{C}$ .

Noise X1 . . . . .0.2 mV RMS for 20 kHz bandwidth.

Noise X1000 . . . . .2.8 mV RMS for 20 kHz bandwidth.

Bandwidth . . . . .DC to 50 kHz (-3dB). 1 Hz to 50 kHz (-3dB) in AC coupled mode.

Bandwidth (HF) . . . . .DC to 100 kHz (-3dB). 1 Hz to 100 kHz (-3dB) in AC coupled mode.

Slew Rate . . . . .3.2 V/ $\mu\text{s}$ .

Analog Output . . . . .Optional  $\pm 10$  Volts full scale, 20 mA. Programmable for wideband or filtered response.

#### FILTER

Type . . . . .Four-pole, low-pass Bessel, with cut-off frequencies from 250 Hz to 50kHz and wideband.

Frequency . . . . .Selected by plug-in module. 10 kHz supplied unless otherwise specified.

#### ANALOG-TO-DIGITAL CONVERTER

Sample . . . . . $\pm 50$  nS channel-to-channel time correlation.

Resolution . . . . .16 bits, two's complement output.

Rate (6029) . . . . .Programmable up to 100 kS/s per channel.

Rate (6029HF) . . . . .Programmable up to 200 kS/s per channel.

Linearity . . . . . $\pm 1\frac{1}{2}$  LSB ( $\pm 0.004\%$ )

Continuity . . . . .Monotonic to 15 bits.

#### GENERAL

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

Connectors . . . . .Input connector is 50-pin Type D. Output is 15-pin Type D High Density. Mating connectors are supplied.

Temperature . . . . . $0^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ .

#### SCREW TERMINAL ADAPTER (6081)

Termination . . . . .8 channels, screw clamp terminals for inputs and outputs, #18 to #28 wire.

Mounting . . . . .Installs on the front of the input module behind the enclosure door.

#### ORDERING INFORMATION

6029 . . . . .8-Channel AC/DC-Coupled Amplifier-Digitizer with 50 kHz bandwidth, 100 kS/s.

6029HF . . . . .8-Channel AC/DC-Coupled Amplifier-Digitizer with 100 kHz bandwidth, 200 kS/s.

6029-AO . . . . .Optional Single Buffered  $\pm 10$  Volts full scale Analog Output.

*Consult factory for attenuator and current input options.*