

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. Each channel has a buffered analog output that can be selected for wideband or filtered response.

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 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.

## SPECIFICATIONS

### INPUT

Configuration . . . . .8 channels, differential, 2-wire with shield.  
Type . . . . .Programmable AC or DC input. Input attenuator and current input are available.  
Range . . . . . $\pm 2$  mV to  $\pm 10$  Volts  
Impedance (AC) . .100k Ohms, shunted by 1,000 pf.  
Impedance (DC) . .50 Megohms, shunted by 500 pF.  
Protection . . . . . $\pm 50$  Volts differential and common mode.

### EXCITATION / TRANSDUCER POWER

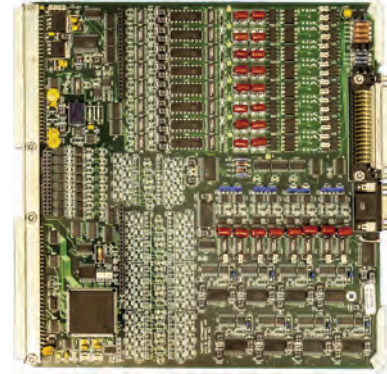
Current . . . . .2 to 20 mA. 6 mA is supplied unless otherwise specified.  
Compliance . . . . .24 Volts minimum.  
Verification . . . . .Short and open detection.  
Voltage . . . . . $\pm 12$  or  $\pm 15$  Volts jumper selectable per channel,  $\pm 24$  also available

### AMPLIFIER

Gain . . . . .Programmable 1 to 5000, in 1, 2, 3, 5 steps, 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  $\pm 2$  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 100kHz for Gains 1 to 1,000 and 50kHz for Gains > 1,000 (-3dB). 1Hz to 100kHz (-3dB) in AC coupled mode.  
Slew Rate . . . . .3.2 V/ $\mu\text{s}$ .  
Analog Output . . . . $\pm 10$  Volts full scale, 20 mA. Programmable for wideband or filtered response.

### FILTER

Type . . . . .Single frequency 4-pole (standard) or 4 frequency 4-pole or 2 frequency 8-pole Bessel.



## FEATURES

- AC or DC coupled inputs
- 2 to 20 mA current excitation
- Gains 1 to 5,000 with 0.05% accuracy
- 4, 6 or 8-pole, low-pass filter
- 100 kHz signal bandwidth
- Up to 200 kS/s per channel with 16-bit resolution
- Buffered  $\pm 10$  Volt analog output

Frequency . . . . .From 250Hz to 50kHz  
Standard 4 Pole: 10kHz  
4 Frequency 4 Pole: 10Hz, 1kHz, 10kHz, 20kHz  
2 Frequency 8 Pole: 2kHz and 20kHz..  
Noise . . . . .1 mV peak, RTO.  
Other . . . . .Other filter characteristics and cut offs available.

### DIGITIZER

Sample . . . . . $\pm 50$  nS channel-to-channel time correlation.  
Resolution . . . . .16 bits, two's complement output per channel.  
Rate . . . . .Programmable up to 200 kS/s digitizer per channel.  
Linearity . . . . . $\pm 1\frac{1}{2}$  LSB ( $\pm 0.004\%$ )  
Continuity . . . . .Monotonic to 15 bits.  
Alarms . . . . .Two alarms each with upper and lower limits that are programmable from negative to positive full scale. Limits checked on each ADC sample.

### CALIBRATION

Voltage Subst . . . . .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 . . . . .Amplifier input disconnected and shorted for zero calibration.

### MECHANICAL

Mounting . . . . .Occupies one slot in Series 6000 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 $^{\circ}\text{C}$ .

### ORDERING INFORMATION

6029-BE4 . . . . .8-Ch Voltage/IEPE Single Freq, 4-Pole Bessel.  
6029PF4-BE4 . . . .8-Ch Voltage/IEPE 4-Freq, 4-Pole Bessel.  
6029PF2-BE8 . . . .8-Ch Voltage/IEPE 2-Freq, 8-Pole Bessel.  
6029-HV . . . . .8-Ch Voltage Digitizer w/ 100:1 Attenuator  
6029-I . . . . .8-Ch Current Input for 0-20mA  
6083 . . . . .8-Ch BNC Adapter