

### Models 2B30 and 2B31

#### FEATURES

##### Low Cost

##### Complete Signal Conditioning Function

Low Drift:  $0.5\mu\text{V}/^\circ\text{C}$  max ("L"); Low Noise:  $1\mu\text{V}$  p-p max

Wide Gain Range: 1 to 2000V/V

Low Nonlinearity: 0.0025% max ("L")

High CMR: 140dB min (60Hz, G = 1000V/V)

Input Protected to 130V rms

Adjustable Low Pass Filter: 60dB/Decade Roll-Off (from 2Hz)

Programmable Transducer Excitation: Voltage (4V to 15V @ 100mA) or Current (100 $\mu\text{A}$  to 10mA)

#### APPLICATIONS

##### Measurement and Control of:

Pressure, Temperature, Strain/Stress, Force, Torque

Instrumentation: Indicators, Recorders, Controllers

Data Acquisition Systems

Microcomputer Analog I/O

#### GENERAL DESCRIPTION

Models 2B30 and 2B31 are high performance, low cost, compact signal conditioning modules designed specifically for high accuracy interface to strain gage-type transducers and RTD's (resistance temperature detectors). The 2B31 consists of three basic sections: a high quality instrumentation amplifier; a three-pole low pass filter, and an adjustable transducer excitation. The 2B30 has the same amplifier and filter as the 2B31, but no excitation capability.

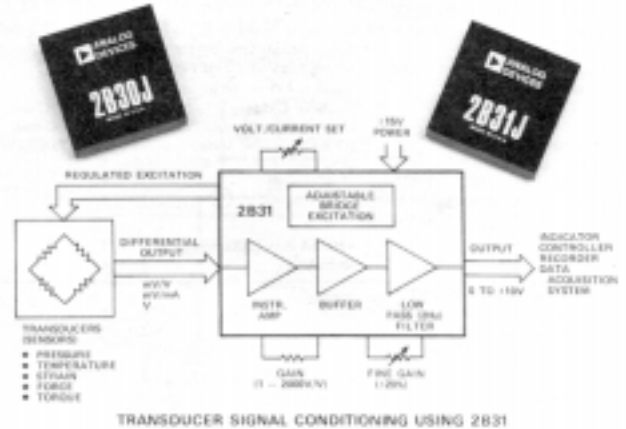
Available with low offset drift of  $0.5\mu\text{V}/^\circ\text{C}$  max (RTI, G = 1000V/V) and excellent linearity of 0.0025% max, both models feature guaranteed low noise performance ( $1\mu\text{V}$  p-p max), and outstanding 140dB common mode rejection (60Hz, CMV =  $\pm 10\text{V}$ , G = 1000V/V) enabling the 2B30/2B31 to maintain total amplifier errors below 0.1% over a 20°C temperature range. The low pass filter offers 60dB/decade roll-off from 2Hz to reduce normal-mode noise bandwidth and improve system signal-to-noise ratio. The 2B31's regulated transducer excitation stage features a low output drift (0.01 5%/°C max) and a capability of either constant voltage or constant current operation.

Gain, filter cutoff frequency, output offset level and bridge excitation (2B31) are all adjustable, making the 2B30/2B31 the industry's most versatile high-accuracy transducer-interface modules. Both models are offered in three accuracy selections, J/K/L, differing only in maximum nonlinearity and offset drift specifications.

#### APPLICATIONS

The 2B30/2B31 may be easily and directly interfaced to a wide variety of transducers for precise measurement and control of pressure, temperature, stress, force and torque. For applications

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in harsh industrial environments, such characteristics as high CMR, input protection, low noise, and excellent temperature stability make 2B30/2B31 ideally suited for use in indicators, recorders, and controllers.

The combination of low cost, small size and high performance of the 2B30/2B31 offers also exceptional quality and value to the data acquisition system designer, allowing him to assign a conditioner to each transducer channel. The advantages of this approach over low level multiplexers include significant improvements in system noise and resolution, and elimination of crosstalk and aliasing errors.

#### DESIGN FEATURES AND USER BENEFITS

**High Noise Rejection:** The true differential input circuitry with high CMR (140dB) eliminating common-mode noise pickup errors, input filtering minimizing RFI/EMI effects, output low pass filtering ( $f_c=2\text{Hz}$ ) rejecting 50/60Hz line frequency pickup and series-mode noise.

**Input and Output Protection:** input protected for shorts to power lines (130V rms), output protected for shorts to ground and either supply.

**Ease of Use:** Direct transducer interface with minimum external parts required, convenient offset and span adjustment capability.

**Programmable Transducer Excitation:** User-programmable adjustable excitation source-constant voltage (4V to 15V @ 100mA) or constant current (100 $\mu\text{A}$  to 10mA) to optimize transducer performance.

**Adjustable Low Pass Filter:** The three-pole active filter ( $f_c=2\text{Hz}$ ) reducing noise bandwidth and aliasing errors with provisions for external adjustment of cutoff frequency.