

## Data Acquisition Conditioner

### FEATURES

- Four input channels with RJ-45 connectors
- Hardware and software support for quarter-, half- and full-bridge circuits
- Built-in precision bridge completion for 120-, 350-, and 1000-ohm half and quarter bridges
- 2-Hz sampling rate
- Automatic and manual zero-balance and calibration
- Full control of all functions via USB Interface
- Portable, lightweight, and rugged design
- Powered via USB interface
- Intuitive, user-friendly software
- Programmable for custom applications

### DESCRIPTION

The Model D4 Data Acquisition Conditioner is a portable, USB-powered precision instrument for use with resistive strain gages and strain gage-based transducers.

The Model D4 has four channels of data acquisition. Connection to each channel is via a RJ-45 connector. Each channel of input accepts either full-, half-, and quarter-bridge configuration. All required bridge completion components for 120-, 350-, and 1000-ohm bridges are supplied.

Operation of the Model D4 is performed with commands sent via the USB connection. User-friendly application software is provided to control the D4 with a MS Windows-based personal computer. A Programmer's Reference Kit that includes a Programmer's Reference Manual, a NI LabVIEW instrument driver, and programming examples to simplify writing custom applications is also included. The D4 is also supplied with a calibration software utility that allows calibration of the D4 via the USB interface. The application software, Programmer's Reference Kit, and Instruction Manual are on a single CD included with the D4 unit.

The Model D4 uses modern digital signal processing technology to provide excellent noise rejection and stability. Proprietary scaling and linearization algorithms provide unsurpassed measurement accuracy for strain gage bridge measurements.



### SPECIFICATIONS

*Note: Performance may be degraded at high levels of repetitive electrostatic discharge; however, no damage to the unit will occur.*

#### Input Connections

Type: RJ-45 Modular

Quantity: Four

#### Bridge Configurations

Types: Quarter-, half-, and full bridges

Bridge Impedance: 60 to 2000  $\Omega$

Internal Bridge Completion:

Quarter bridge: 120  $\Omega$ , 350  $\Omega$  and 1000  $\Omega$   $\pm 0.01\%$

Half bridge: 1000  $\Omega$   $\pm 0.01\%$

#### Data Conversion

A/D Converter: Delta-sigma with integral chopper-stabilized programmable gain instrumentation amplifier

Resolution: 24 bits. Noise-free resolution: 18 bits typ.

Filter: Integrated linear phase FIR Sinc5 filter followed by a Sinc3 filter with a programmable decimation rate. Software selectable output rate provides >120 dB rejection of 50 or 60 Hz and higher level harmonics.

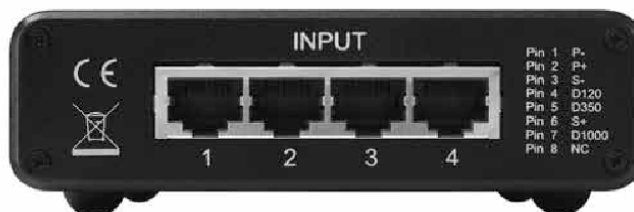
#### Measurement Range/Resolution

Strain Range:  $\pm 31,000$   $\mu\epsilon$  at GF = 2,000. ( $\pm 15.5$  mV/V)

Resolution:  $\pm 1$   $\mu\epsilon$  at GF = 2,000 ( $\pm 0.0005$  mV/V)



Front Panel



Back Panel

Pin 1: P-  
Pin 2: P+  
Pin 3: S-  
Pin 4: D120  
Pin 5: D350  
Pin 6: S+  
Pin 7: D1000  
Pin 8: NC

## Data Acquisition Conditioner

**Measurement Accuracy**

$\pm 0.1\%$  of reading  $\pm 3$  counts. (Instrument Gage Factor = 2.000)

**Gage Factor Control**

Range: 0.500 to 9.900

**Balance Control**

Type: Software

Control: Manual or automatic

**Bridge Excitation**

Value: 1.5 VDC nominal

Control: Software enable/disable

Measurements are fully ratiometric, and not degraded by variations in excitation voltage

**Communication Interface**

Universal serial bus (USB). Cable included

**Shunt Calibration**

Location: Across each quarter-bridge completion resistor

Control: Software

Values:

P- to D120:  $11.94\text{K } \Omega \pm 0.1\%$  (5000  $\mu\epsilon$  at GF = 2.00)

P- to D350:  $34.8\text{K } \Omega \pm 0.1\%$  (5000  $\mu\epsilon$  at GF = 2.00)

P- to D1000:  $99.5\text{K } \Omega \pm 0.1\%$  (5000  $\mu\epsilon$  at GF = 2.00)

**Power**

USB: 5 V 100 mA

**Operational Environment**

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

Humidity: Up to 90% RH. Non-condensing.

**Case**

Material: Aluminum

**Size and Weight**

Size: 4.3 W x 1.4 H x 5.7 L inches (110 x 36 x 145 mm)

Weight: 0.8 lb. (0.36 kg)

**ACCESSORIES**

D4-A106 Shielded Connectors

D4-A108 Crimping Tool

D4-A116 USB Cable (Type A to Type B—6-foot length)

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