

Series APD4059

For Load Cells/Pressure Transducer Transmitters. Field Rangeable, with Calibration Resistor



Description

The APD4059 accepts an input from one to four strain gages, bridge type sensors, load cells, or pressure transducers. It filters, amplifies, and converts the resulting millivolt signal into the selected DC voltage or current output that is linearly related to the input.

The full 3 way (input, output, power) isolation makes this module useful for ground loop elimination, common mode signal rejection or noise pick-up reduction. The adjustable excitation power supply generates a stable source of voltage to drive from one to four 350 Ω (or greater) devices. Sense lead circuitry is included to cancel the effects of leadwire resistance, if required.

Input, output, excitation and zero offset are field configurable, via external rotary and slide switches. Offsets up to $\pm 100\%$ of span can be used to cancel sensor offsets or non-zero deadweights (taring). Non-interactive zero and span simplifies calibration.

The APD4059 can be specified with varying degrees of filtering to tailor the response time to the application. Consult factory for assistance..

Sink/Source Versatility

For maximum versatility the APD4059STRD milliamp output can be selectively wired for sinking or sourcing. This allows connection to any type of mA input receiving device.

Status LEDs

Two LEDs (green for input, red for output) vary in intensity with changes in the process input and output signals. These provide a quick visual picture of your process loop at all times and can greatly aid in saving time during initial startup and/or troubleshooting.

Calibration Resistor

The APD4059 has provisions for an internal and external calibration resistor. The internal calibration resistor value can be specified at time of order, or the resistor can be customer installed or changed. For load cells with their own internal calibration resistor, terminals are provided for wiring connections. The test switch is used to shunt the calibration resistor across one arm of bridge to simulate strain.

Standard Features

- Use Internal or External Calibration Resistor
- Sense Lead Compensation
- Easy to Cancel or Tare Out Deadweights
- Drive up to Four 350 Ω Bridges
- Non-Interactive Zero and Span
- One Minute Setup for Hundreds of I/O Ranges
- Removable Plugs for Faster Installation
- Full 3-Way Input/Output/Power Isolation
- Variable Brightness I/O Status LEDs
- Adjustable Excitation Power Supply

Optional Features

- 10 millisecond response time typical (100 Hz)
- Conformal coating for moisture resistance

Applications

- Load Cell Weighing Systems and Scales
- Strain Gage Pressure Sensors and Transducers
- Tanks, Scales, Extruder Melt Pressure, Crane Loads

APD4059

Series ADP4059

Specifications

Baseline Configuration Specs Represented.
Modifications Encouraged - See Below
Custom Designs Available

Specifications

Input Range

100 Ω to 10,000 Ω bridges at 10 VDC
Up to four 350 Ω bridges at 10 VDC
Minimum: 0 to 5 mV range 0.5 mV/V sensitivity
Maximum: 0 to 400 mV range 40 mV/V sensitivity
Millivolt output range is determined by the sensor sensitivity (mV/V) and the excitation voltage:
mV/V sensitivity X excitation voltage = total mV range

Input Impedance

200 k Ω typical

Excitation Voltage

Switch Selectable: 0-10 VDC in 1 V increments
Maximum Output: 10 VDC maximum at 120 mA
Drive Capability: Up to four 350 Ω bridges at 10 VDC
Fine Adjustment: $\pm 5\%$ via multi-turn potentiometer
Stability: $\pm 0.01\%$ per $^{\circ}\text{F}$

Calibration Resistor

Provisions for internal and external calibration resistor
Specify value of internal calibration resistor.
Test switch shunts calibration resistor across one arm of bridge to simulate strain.

Sense Lead Compensation

Better than $\pm 0.01\%$ per 1 Ω change in leadwire resistance.
Maximum leadwire resistance: 10 Ω with 350 Ω at 10 VDC.

I/O LEDs

Variable brightness LEDs for input/output levels and status.

Output Ranges

Voltage (10 mA max.): 0-1 VDC to 0-10 VDC
Bipolar Voltage (± 10 mA max.): ± 5 VDC or ± 10 VDC
Current: 0-2 mADC to 0-20 mADC
Compliance, drive at 20 mA: 20 V, 1000 Ω drive
Current output can be selectively wired for sink or source

Specifications

Zero Offset (Tare)

$\pm 100\%$ of span in 15% increments

Output Calibration

Multi-turn zero and span potentiometers to compensate for load and lead variations
 $\pm 15\%$ of span adjustment range typical

Output Linearity

Better than $\pm 0.1\%$ of span

Response Time

1.5 kHz, -20dB @ 3.2 kHz

Common Mode Rejection

100 dB minimum

Isolation

1200 VRMS min.

Full isolation: power to input, power to output, input to output

Ambient Temperature Range and Stability

14 $^{\circ}\text{F}$ to +140 $^{\circ}\text{F}$ operating ambient
Better than $\pm 0.01\%$ of span per $^{\circ}\text{F}$ stability

Power

Standard: 9-30 VDC (either polarity) or 10-32 VAC
D option: 9-30 VDC (either polarity) or 10-32 VAC
Power: 2 to 5 Watts depending on number of load cells

Dimensions

0.89" W x 4.62" H x 4.81" D
Height includes connectors

Modifications and Warranty

MODIFICATIONS: We realize transducer applications vary greatly and as such our designs are flexible. Choice of pressure port, electrical termination, material compatibility and performance characteristics are a few of the many options available. Specifications on this datasheet represent the standard configuration only. Product and company names listed are trademarks of their respective companies. Specifications subject to change without notice.

WARRANTY: Stellar Technology warrants that its product shall be free from defective workmanship and/or material for a twelve month period from the date of shipment, provided that Stellar Technology's obligation hereunder shall be limited to correcting any defective material FOB our factory. No allowance will be made for any expenses incurred for correcting any defective workmanship and/or material without written consent by Stellar Technology. This warranty is in lieu of all other warranties expressed or implied.

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Due to the nature of technology, changes are inevitable. For latest technical specifications, see our website.

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