Two Independent Channels with Full Isolation

Zero and Span for Each Output

Input and Output LoopTracker® LEDs

Output Test/Manual Override for Each Channel

Built-In I/O Power Supplies

Output Test/Manual Override for Each Channel

Monitor Position and Weight or Pressure

Convert/Isolate Dual Output Transmitters

Description

Twelve different high performance signals can be concurrently monitored, tested and isolated in the APD 2035 duo2pak. These twelve signals are provided in a compact unit with two isolated channels and output test functions for each channel. This compact unit provides an economical two channel solution in one device.

Applications

- Monitor Position and Weight or Pressure
- Convert/Isolate Dual Output Transmitters

Channel 1 Potentiometer Input Range

Use any 3 wire full-travel potentiometer

1 VDC excitation provided to potentiometer

Consult factory for other ranges and configurations

Minimum range: 0-100 Ω

Maximum range: 0-1 MΩ

Input impedance: 100 Ω to 1 MΩ minimum

Input com. mode rejection: 100 dB minimum

Channel 2 Bridge Input Range

Factory configured, please specify sensor mV/V and mV range

Sensor range: 0-1 V to 0-2000 mV

Millivolt output range is determined by the sensitivity of the sensor (mV/V) and the excitation voltage applied.

mV/V sensitivity X excitation voltage = total mV range

Input impedance: 1 MΩ minimum

Input com. mode rejection: 100 dB minimum

Channel 2 Excitation Voltage

Range: 4 to 10 VDC factory set, please specify

Adjustment: ±10% via front potentiometer

Maximum output: 10 VDC maximum at 30 mA

Stability: ±0.01% per °C

Designed for one 350 Ω (or greater) sensor

LoopTracker

Variable brightness LEDs indicate I/O levels for each channel

Channel 1 and Channel 2 Output Ranges

Factory configured, please specify for each output channel

Voltage: 0-1 VDC to 0-10 VDC, 10 mA max

up to 20 VDC with M19, M29, M39

Bipolar voltage: ±1 VDC to ±10 VDC

Current: 0-1 mA/DC to 0-25 mA/DC, 4-20 mA/DC

V 20 V compliance, 1000 Ω at 20 mA

Output Calibration

Multi-turn zero and span potentiometers for each output channel

±15% of span adjustment range typical

Output Characteristics

Linearity: ±0.1% of span

Temperature stability: Better than 0.04% span/°C

Output ripple and noise: Less than 10 mV/DC

Isolation

Full 5-way, 1200 Vrms minimum

Response Time

70 milliseconds nominal

Output Loop Power Supplies

20 VDC nominal, regulated, 25 mA/DC for each output channel

May be selectively wired for sinking or sourcing mA output

Output Test

Front buttons set each output to test level when pressed

Each test level potentiometer adjustable 0-100% of span

Installation Environment

Mount vertically to a 35 mm DIN rail

For use in Pollution Degree 2 Environment

IP 40 housing, requires installation inside an enclosure

-10°C to +60°C operating ambient

Connectors

Eight 4-terminal removable connectors, 14 AWG max wire size

Power

85-265 VAC, 50/60 Hz or 60-300 VDC, 6 W maximum

D versions: 9-30 VDC or 10-32 VAC 50/60 Hz, 6 W maximum

How to Order

Models are factory ranged. See I/O ranges above left.

Ranges and options for each channel must be specified on order

Channel 1 input range

Channel 2 input range, excitation voltage

Channel 1 output range

Channel 2 output range

Models, Description, Power

APD 2035

Duopak 2 channel Pot.-DC, Strain-DC converter/isolator/transmitter

85-265 VAC, 50/60 Hz or 60-300 VDC

APD 2035 D

9-30 VDC or 10-32 VAC

Output LoopTracker

LED for Each Channel

Adjustable Output Test Function for Each Channel

Zero and Span for Each Channel

Input LoopTracker

LED for Each Channel

Custom I/O Ranges

Universal Power

LoopTracker

API exclusive features include four LoopTracker LEDs (green for each input, red for each output) that 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 troubleshooting.

Output Test

An API exclusive feature includes output test buttons for each channel to provide a fixed output (independent of the input) when held depressed.

Terminals are also provided to operate the test functions remotely for each channel. This also allows use as a remote manual override to provide a temporary fixed output if desired.

The test output level for each channel is potentiometer adjustable from 0 to 100% of the output span. The output test greatly aids in saving time during initial startup and/or troubleshooting.

Options and Accessories

Options—add to end of model number

R1 Channel 1 I/O reversal (i.e. 20-4 mA out)

R2 Channel 2 I/O reversal (i.e. 20-4 mA out)

M19 Channel 1 and channel 2 I/O reversal

M29 Channel 2 high voltage output >10 V up to 20 V

M39 Channel 1 and channel 2 high voltage output

Conformal coating for moisture resistance

Accessory—order as separate line item

API BF4 Spare removable 4 terminal plug, black

1.78" W x 4.62" H x 4.81" D

45 mm W x 117 mm H x 122 mm D

DuoPak® Two Channel Signal Converter/Isolator/Transmitter, Factory Ranged

APD 2035

APD 2035 D

API USA

api-usa.com/2000

Free Factory

Lead Free

Conformal coating for moisture resistance

RoHS
Precautions
WARNING! All wiring must be performed by a qualified electrician or instrumentation engineer. See diagram for terminal designations and wiring examples. Consult factory for assistance.
WARNING! Avoid shock hazards! Turn signal input, output, and power off before connecting or disconnecting wiring, or removing or installing module.

Précautions
ATTENTION! Tout le câblage doit être effectué par un électricien ou ingénieur en instrumentation qualifié. Voir le diagramme pour désignations des bornes et des exemples de câblage. Consulter l’usine pour assistance.
ATTENTION! Éviter les risques de choc! Fermez le signal d’entrée, le signal de sortie et l’alimentation électrique avant de connecter ou de déconnecter le câblage, ou de retirer ou d’installer le module.

API maintains a constant effort to upgrade and improve its products. Specifications are subject to change without notice. See api-usa.com for latest product information. Consult factory for your specific requirements.

CAUTION: Never short the excitation leads together. This will approximately ±10% fine adjustment of the excitation voltage. The excitation voltage is factory set and should match the sensor manufacturer’s specified output. See the manufacturer’s data sheet for wiring and color-coding. Polarity must be observed when connecting input. Sensor shield wire (if provided) should be grounded at one end only.

The excitation voltage is factory set and should match the sensor manufacturer’s specifications. A front potentiometer allows approximately ±10% fine adjustment of the excitation voltage.

Precautions
WARNING! All wiring must be performed by a qualified electrician or instrumentation engineer. See diagram for terminal designations and wiring examples. Consult factory for assistance. WARNING! Avoid shock hazards! Turn signal input, output, and power off before connecting or disconnecting wiring, or removing or installing module.

ATTENTION! Tout le câblage doit être effectué par un électricien ou ingénieur en instrumentation qualifié. Voir le diagramme pour désignations des bornes et des exemples de câblage. Consulter l’usine pour assistance.
ATTENTION! Éviter les risques de choc! Fermez le signal d’entrée, le signal de sortie et l’alimentation électrique avant de connecter ou de déconnecter le câblage, ou de retirer ou d’installer le module.

API maintains a constant effort to upgrade and improve its products. Specifications are subject to change without notice. See api-usa.com for latest product information. Consult factory for your specific requirements.

CAUTION: Never short the excitation leads together. This will approximately ±10% fine adjustment of the excitation voltage. The excitation voltage is factory set and should match the sensor manufacturer’s recommended value.

Using an accurate voltmeter on terminals 22 and 24 adjust the excitation voltage fine adjustment potentiometer to the strain gauge manufacturer’s recommended value.

3. The module can now be removed from the DIN rail.

Calibration
Input and output ranges are factory pre-configured (at 24°C ±1°C). Front-mounted Zero and Span potentiometers for each channel can be used to compensate for load and lead variations.
1. Apply power to the module and allow a minimum 30 minute warm up time.
2. Using an accurate voltmeter fine adjustment potentiometer to the strain gauge manufacturer’s recommended value.
3. Using an accurate calibration source, provide an input to the module equal to the minimum input required for the application.
4. Using an accurate measurement device for the output, adjust the Zero potentiometer for the exact minimum output desired. The Zero control should only be adjusted when the input signal is at this minimum. This will produce the corresponding minimum output for the exact voltage. For example: 4 mA for a 4-20 mA output or –10 V for a ±10 V output.
5. Set the input at maximum, and then adjust the Span pot for the exact maximum output desired. The Span control should only be adjusted when the input signal is at its maximum. This will produce the corresponding maximum output signal. Example: for 4-20 mA output, the Span control will provide adjustment for the 20 mA or high end of the signal.
6. Repeat adjustments for both channels for maximum accuracy.

Output Test Function
When the Test button is depressed it will drive the output with a known good signal that can be used as a diagnostic aid during initial start-up or troubleshooting. When released, the output will return to normal.

Each Test Cal. potentiometer is factory set to approximately 50% output. Each can be adjusted to set the test output from 0 to 100% of the output span. Each can be adjusted to set the test output from 0 to 100% of the output span. Press and hold the Test button and adjust the corresponding Test Cal. potentiometer for the desired output level.

They may optionally be externally wired for remote test operation or a manual override. See wiring diagram at right.

Operation
The APD 2035 accepts one potentiometer input and one strain gauge input and provides two optically isolated DC voltage or current outputs that are linearly related to the inputs.

Green LoopTracker® input LEDs provide a visual indication that each signal is being sensed by the input circuitry of the module. They also indicates the input signal strength by changing in intensity as the process changes, check the module power or signal input wiring.

To avoid damage to the module, do not make any connections to unused terminals.

*May be switched for reverse output

Wire terminal torque
0.5 to 0.6 Nm or 4.4 to 5.3 in-lbs

To maintain full isolation avoid combining power supplies in common with inputs, outputs, or unit power.

Absolute Process Instruments
1220 American Way Libertyville, IL 60048
Phone: 800-942-0315 Fax: 800-949-7502
api-usa.com