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

Applications
- Monitor a DC Signal and an AC Signal
- Convert/Isolate Dual Output Transmitters

Channel 1 DC Input Range
- Factory configured, please specify input type and range
  - Voltage: 0-10 mA to 0-100 VDC
  - Bipolar voltage: ±50 mA to ±10 VDC
  - Current: 0-1 mA to 0-50 mA, 4-20 mA
- Voltage input impedance: 200 kΩ minimum
- Current input impedance: 50 Ω typical
- Input comm. mode rejection: 120 dB minimum
- Current input voltage burden: 1.25 VDC max. at 20 mA
- Input loop power supply: 15 VDC, ±10%, regulated, 25 mA DC, may be connected for sinking or sourcing mA input

Channel 2 AC Input Range
- Factory configured, please specify input type and range
  - Voltage: 0-50 mA to 0-300 VAC
  - Current: 0-1 mA to 0-1000 mA AC
- Measurement type: True RMS
- Frequency: 40 Hz to 1000 Hz sinusoidal
- Voltage input impedance: 220 kΩ minimum
- Current input voltage burden: 1.0 Vmax maximum

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 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: Better than 0.04% span/°C
- Ripple and noise: Less than 10 mVrms

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

LoopTracker
- Variable brightness LEDs indicate I/O levels for each channel

Channel 1 and 2 Output Ranges
- Factory configured, please specify output type and range
  - Voltage: 0-1 mA to 0-20 mA, 4-20 mA
  - Bipolar voltage: ±50 mA to ±10 VDC
  - Current: 0-1 mA to 0-20 mA, 4-20 mA

Channel 1 output range
- 20 VDC nominal, regulated, 25 mA DC for each output

Channel 2 output range
- Bipolar voltage: ±50 mA to ±10 VDC
- Universal Power
- Connect Sink or Source mA for DC Input

Channel 2: AC to DC

Sink or Source mA Output for Each Channel

Adjustable Output Test Function for Each Channel

Zero and Span for Each Channel

Custom I/O Ranges

Connect Sink or Source mA for DC Input

Dimensions
- 1.78” W x 4.82” H x 4.81” D
- 45 mm W x 117 mm H x 122 mm D
- Height includes connectors

Description
- The APD 2006 DuoPak accepts one DC voltage or current input and one AC voltage or current input provides two optically isolated DC voltage or currents that are linearly related to the inputs.
- The input ranges and the output ranges for each channel are independent and can be specified as required. This provides an economical two channel solution in one device.

Typical applications include signal conversion, isolation, and redundancy (i.e. to prevent failure of the entire loop if one device fails), or a combination of these.
- Each input signal is filtered, amplified, and then passed remotely for each channel. This also allows use as a remote terminal 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 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)
  - R3 Channel 1 and channel 2 I/O reversal
- M19 Channel 1 high voltage output >10 V up to 20 V
- M29 Channel 2 high voltage output >10 V up to 20 V
- M39 Channel 1 and channel 2 high voltage output
- U Conformal coating for moisture resistance

Accessory—order as separate line item
- API BP4 Spare removable 4 terminal plug, black

Two Channel Signal Converter/Isolator/Transmitter, Factory Ranged APD 2006

APD 2006 D

Model Description Power
- DuoPak 2 channel DC-DC, AC-DC converter/isolator/transmitter
- 85-265 VAC, 50/60 Hz or 60-300 VDC
- 9-30 VDC or 10-32 VAC

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api-usa.com/2000

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Free Factory I/O Setup!

Diagrams on Next Page
Mounting to a DIN Rail
Install module vertically on a 35 mm DIN rail in a protective enclosure away from loose sources. Do not block air flows. Allow 1" (25 mm) above and below housing vents for air circulation.

1. Tilt front of module down and position the lower spring clips against the bottom edge of DIN rail.
2. Push front of module upward until upper mount snaps into place.

Removal
Avoid shock hazards. Turn signal input, output, and power off.
1. Push up on bottom back of module.
2. Tilt front of module downward to release upper mount from top edge of DIN rail.
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 calibration source, provide an input to the module equal to the minimum input required for the application.
3. 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 its minimum. This will produce the corresponding minimum output signal. For example: 4 mA for a 4-20 mA output or –10 V for a ±10 V output.
4. 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.
5. Repeat adjustments for both output 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 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. 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 2006 accepts one DC voltage or current input and one AC voltage or current input 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 from minimum to maximum. If an LED fails to illuminate, or fails to change in intensity as the process changes may indicate a problem with the module power or signal output wiring.

Two red LoopTracker output LEDs provide a visual indication that the output signals are functioning. They become brighter as the input and each corresponding output change from minimum to maximum.

For a current output the red LED will only light if the output loop current path is complete. For either current or voltage outputs, failure to illuminate or a failure to change in intensity as the process changes may indicate a problem with the module power or signal output wiring.

**Precautions**

**WARNING!!** All wiring must be performed by a qualified electrician or instrument heat sink 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 exemples de câblage. Consulter l’usine pour assistance.

**ATTENTION!!** Évitez 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.

**WARNING:** This product can expose you to chemicals including nickel, which are known to the State of California to cause cancer or birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

Electrical Connections

Polarity must be observed for signal wiring connections. If the input and/or output do not function, check wiring and polarity.

Each product is factory configured to your exact input and/or output do not function, check wiring and polarity.

For milliamp ranges determine if your devices provide power to the current loop or if the loop must be powered by the APD module. Typical voltage may be 9-24 VDC at your device’s terminals if it provides power to the loop.

**Device for Output Channel 1**

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Terminal</th>
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<tbody>
<tr>
<td>3 (-)</td>
<td>4 (+)</td>
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</table>

Measuring/recording device accepts a voltage input.

Measuring/recording device has an unpowered or passive mA input. APD module provides the loop power.

Measuring/recording device has a mA input and powers the current loop.

**Device for Output Channel 2**

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Terminal</th>
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<tbody>
<tr>
<td>7 (-)</td>
<td>8 (+)</td>
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</table>

Measuring/recording device has an unpowered or passive mA input. APD module provides the loop power.

Measuring/recording device has a mA input and powers the current loop.

**Input 1, DC**

For milliamp ranges determine if your devices provide power to the current loop or if the loop must be powered by the APD module. Typical voltage may be 9-24 VDC at your device’s terminals if it provides power to the loop.

**DC Input Channel 1**

<table>
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<tbody>
<tr>
<td>17 (-)</td>
<td>19 (+)</td>
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</table>

Sensor or transmitter with a voltage output.

mV output transmitter that powers the current loop. Typically a 3 or 4-wire device.

Transmitter with an unpowered mA output. Typically a 2-wire device. APD module provides loop power.

**Input 2, AC**

Any polarity may be used for an AC input. A transmitter DC power supply is available at terminals 22 and 23, but is not commonly used with an AC input.

**AC Input Channel 2**

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Terminal</th>
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<tbody>
<tr>
<td>21</td>
<td>23</td>
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</table>

Device with an AC voltage or AC milliamp output.

Transmitter power supply.

**Module Power Terminals**

Check model/serial number label for module operating voltage to make sure it matches available power. The power supplies are fuse protected and the unit may be returned to API for fuse replacement.

When using DC power, either polarity is acceptable, but for consistency, wire positive (+) to terminal 25 and negative (–) to terminal 28.

**Specifications are subject to change without notice.** To see the LEDs under bright lighting conditions.

Two red LoopTracker output LEDs provide a visual indication that the output signals are functioning. They become brighter as the input and each corresponding output change from minimum to maximum.

For a current output the red LED will only light if the output loop current path is complete. For either current or voltage outputs, failure to illuminate or a failure to change in intensity as the process changes may indicate a problem with the module power or signal output wiring.

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

**Operation**

The APD 2006 accepts one DC voltage or current input and one AC voltage or current input provides two optically isolated DC voltage or current outputs that are linearly related to the inputs.

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For a current output the red LED will only light if the output loop current path is complete. For either current or voltage outputs, failure to illuminate or a failure to change in intensity as the process changes may indicate a problem with the module power or signal output wiring.

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

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