Input: True RMS 0-50 mVAC to 0-300 VAC, 0-1 mAAC to 0-1000 mAAC
Output: 0-1 V to 0-10 VDC, ±5 VDC, ±10 VDC, 0-1 mA to 0-20 mADC, 4-20 mADC

Quick Link: api-usa.com/6010

- Full 1200 V Input/Output/Power Isolation
- Zero and Span Output Calibration Potentiometers
- Input and Output LoopTracker® LEDs
- Functional Test Button with Remote Capability
- Built-In Loop Power Supply for Sink/Source Output

Applications

- Convert an AC Signal to a DC Process Signal
- Monitor Voltage Ranges
- Convert, Amplify Low Level AC Signals

AC Input Range
Factory configured, please specify input range
Consult factory for special ranges
Voltage: 0-50 mVAC to 0-300 VAC
Current: 0-1 mAAC to 0-1000 mAAC
Measurements are true RMS

Input Impedance (Voltage Input)
220 kΩ minimum

Input Voltage Burden (Current Input)
1.0 VRMS maximum

Input Frequency
40 Hz to 1000 Hz sinusoidal

Input Protection, Common Mode
750 VDC or 750 VACp

Common Mode Rejection
120 dB minimum

LoopTracker
Variable brightness LEDs indicate I/O loop level and status

DC Output Ranges
Factory configured, please specify input range
Consult factory for special ranges
Voltage: 0-1 VDC   to 0-10 VDC, 10 mA max
Voltage, **M09** option: 0-10 VDC   to 0-20 VDC
Bipolar voltage: ±1 VDC   to ±10 VDC
Current: 0-1 mADC   to 0-20 mADC
                       20 V compliance, 1000 Ω at 20 mA

Reverse output available

Output Calibration
Multi-turn zero and span potentiometers
±15% of span adjustment range typical

Output Loop Power Supply
20 VDC nominal, regulated, 25 mADC
Max. ripple, less than 10 mVRMS
May be selectively wired for sinking or sourcing mA output

Output Test/Override
Front momentary button or external contact closure sets output to test level. Potentiometer adjustable 0-100% of span.

Output Ripple and Noise
Less than 10 mVRMS at 40 Hz and above
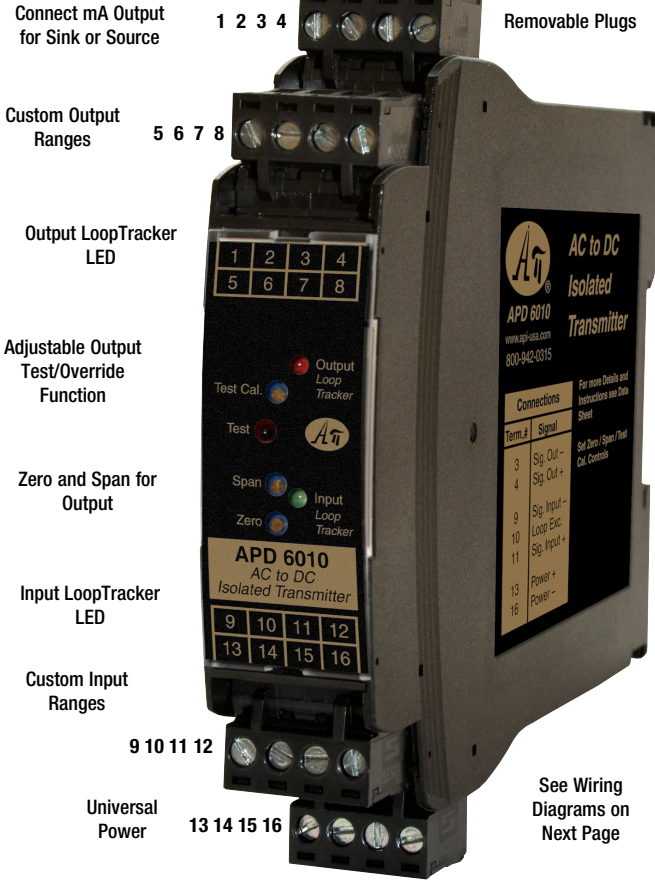
Linearity
Better than ±0.1% of span

Ambient Temperature Range and Stability
−10°C to +60°C operating ambient
Better than ±0.02% of span per °C stability

Response Time
150 milliseconds nominal (0-90%)

Isolation
1200 VRMS minimum
Full isolation: power to input, power to output, input to output

Housing and Connectors
IP 40, requires installation in panel or enclosure
For use in Pollution Degree 2 Environment
Mount vertically to a 35 mm DIN rail
Four 4-terminal removable connectors, 14 AWG max wire size

Power
85-265 VAC, 50/60 Hz or 60-300 VDC, 2 W maximum
D versions: 9-30 VDC or 10-32 VAC 50/60 Hz, 2 W maximum

c UL us
File E145968
85-265 VAC, 60-300 VDC
model only

6 YEAR WARRANTY

MADE IN USA

Applications Link
api-usa.com/apps

Free Factory I/O Setup!

Connect mA Output for Sink or Source — **1 2 3 4** — Removable Plugs

Custom Output Ranges — **5 6 7 8**

Output LoopTracker LED

Adjustable Output Test/Override Function

Zero and Span for Output

Input LoopTracker LED

Custom Input Ranges

9 10 11 12

Universal Power — **13 14 15 16**

See Wiring Diagrams on Next Page

Dimensions
0.89" W x 4.62" H x 4.81" D
22.5 mm W x 117 mm H x 122 mm D
Height includes connectors

Description
The APD 6010 accepts an AC voltage or current input and provides an optically isolated DC voltage or current output that is linearly related to the input. Typical applications include monitoring line, power supply, shunt, and motor voltages or current (either directly or with a current transducer) for control, preventive maintenance, etc.

The full 3-way (input, output, power) isolation makes this module useful for ground loop elimination or noise pickup reduction. The APD 6010 is factory configured to customer requirements. Consult the factory for assistance with special ranges.

Sink/Source Output Versatility
For maximum versatility a milliamp output can be selectively wired for sinking or sourcing. This allows the APD 6010 milliamp output to connect to a powered or unpowered current loop. The 20 VDC output loop supply can be used to power a passive mA device if required.

LoopTracker
API exclusive features include two LoopTracker LEDs (green for input, red for 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/or troubleshooting.

Functional Test
An API exclusive feature includes the Functional Test Button to provide a fixed output (independent of the input) when held depressed. The test output level is potentiometer adjustable from 0 to 100% of output span. The functional test button greatly aids in saving time during initial startup and/or troubleshooting.

The functional test can also be enabled with a customer-supplied external contact closure across terminals 5 and 6. This allows remote testing of the output or, for example, a PLC-controlled manual override setting.

How to Order

All models are factory ranged. Please specify
Model APD 6010 or
APD 6010 D for operation on low voltage power
Order options and accessories as required

I/O are factory set to your specifications. Please provide
Input range
Output range
Options as required

Model	Input	Output	Power
APD 6010	Factory configured—specify mVAC, VAC, or mAAC range	Factory configured—specify VDC or mADC range	85-265 VAC or 60-300 VDC
APD 6010 D			9-30 VDC or 10-32 VAC

Options–add to end of model number

R	Output reversal, such as 20-4 mA output
M09	High voltage output up to 20 V (specify range)
U	Conformal coating for moisture resistance

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

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.

WARNING: This product can expose you to chemicals including nickel, which is 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 output wiring connections. If the output does not function, check wiring and polarity.

See wiring diagrams at right. Observe polarity. If the output does not function, check wiring and polarity.

* Do not make any connections to unused terminals or use them as wiring junctions for external devices. This may cause permanent damage to the module!

Each product is factory configured to your exact input and output ranges as indicated on the serial number label.

Input

For an AC signal is it not necessary to observe polarity when connecting the input.

Connect the AC signal input to terminals 9 and 11 as shown in the wiring diagram.

Type of Input Device	Terminal	Terminal
Device with an AC voltage or AC milliamp output.	9	11

Voltage Output

If your receiving device (such as a PLC or a display) uses a voltage input, use terminals 3 and 4 as shown in the wiring diagram.

Current Output

Determine if your receiving device (such as a PLC or a display) provides 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 input terminals if it provides power to the loop.

If your device does not power the current loop, the APD can provide power using terminals 3 and 4 as shown as shown in the wiring diagram.

If it provides power to the loop or an external supply provides power to the loop, use terminals 2 and 3 as shown as shown in the wiring diagram.

Type of Device for Output	– Terminal	+ Terminal
Measuring/recording device accepts a voltage input.	3 (–)	4 (+)
Measuring/recording device accepts a mA (current) input and the input is unpowered or passive. APD module provides the loop power.	3 (–)	4 (+20 V)
Measuring/recording device accepts a mA (current) input and provides power to the current loop.	2 (–)	3 (+)

Module Power

Check model/serial number label for module operating voltage to make sure it matches available power.

When using DC power, either polarity is acceptable, but for consistency with similar API products, positive (+) can be wired to terminal 13 and negative (–) can be wired to terminal 16.

The power supplies are fuse protected and the unit may be returned to API for fuse replacement.

Mounting to a DIN Rail

Install module vertically on a 35 mm DIN rail in a protective enclosure away from heat sources. Do not block air flow. Allow 1" (25 mm) above and below housing vents for air circulation.

1. Tilt front of module downward and position against DIN rail.
2. Clip lower mount to bottom edge of DIN rail.
3. Push front of module upward until upper mount snaps into place.
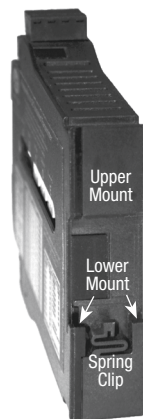
Removal

1. Push up on the bottom back of the 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.

Upper Mount

Lower Mount

Spring Clip

Calibration

Input and output ranges are factory pre-configured (at 24°C ±1°C). Front-mounted Zero and Span potentiometers are used to calibrate the output to compensate for load and lead variations.

1. Apply power to the module and allow a minimum 20 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 ±10V output.
4. Set the input at maximum and 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 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.

The Test Cal. potentiometer is factory set to approximately 50% output. It 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 Test Cal. potentiometer for the desired output level.

Operation

The APD 6010 accepts an AC voltage or current input and provides an optically isolated DC voltage or current output that is linearly related to the input.
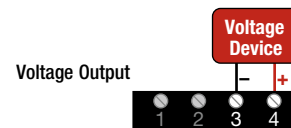
The green LoopTracker® input LED provides a visual indication that a signal is being sensed by the input circuitry of the module. It also indicates the input signal strength by changing in intensity as the process changes from minimum to maximum.

If the LED fails to illuminate, or fails to change in intensity as the process changes, check the module power or signal input wiring. Note that it may be difficult to see the LEDs under bright lighting conditions.

The red LoopTracker output LED provides a visual indication that the output signal is functioning. It becomes brighter as the input and the corresponding output change from minimum to maximum.

For current outputs, 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.
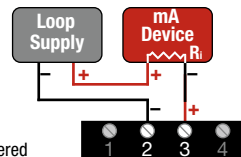

Output

Output Test

* Do not make connections to unused terminals!
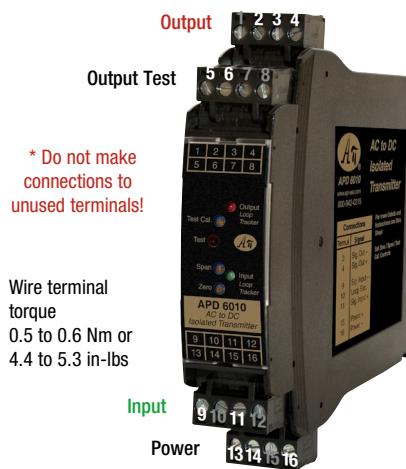
Wire terminal torque 0.5 to 0.6 Nm or 4.4 to 5.3 in-lbs

Input
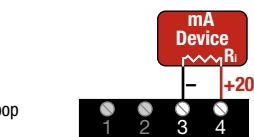
Power

Voltage Output — Voltage Device

mA output: determine if receiving device has a passive or powered input. The module can be wired for a sinking or sourcing mA output.

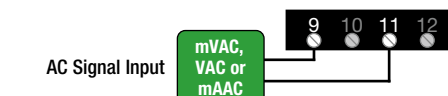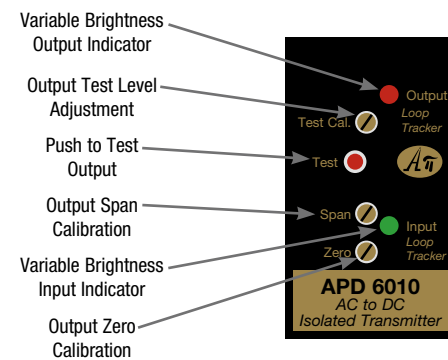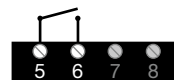3- or 4-wire transmitter or 2 wire transmitter with external power supply — Loop Supply — mA Device R_i

Sinking mA Output
Module mA output is unpowered

mA Device R_i

Sourcing mA Output
Module powers mA output loop

External Contact for Test Function

Variable Brightness Output Indicator

Output Test Level Adjustment

Push to Test Output

Output Span Calibration

Variable Brightness Input Indicator

Output Zero Calibration

Test Cal. — Output *Loop Tracker*
Test
Span — Input *Loop Tracker*
Zero

APD 6010
AC to DC Isolated Transmitter

AC Signal Input — mVAC, VAC or mAAC

* Do not make connections to unused terminals!

Cu 60/75°C conductors 14 AWG max.

13	Power AC or DC +
14	Earth Ground
16	Power AC or DC –
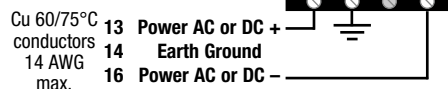
To maintain full isolation avoid combining power supplies in common with input, output, or unit power.