

Input: 0-100 mV to 0-300 VDC, Bipolar Voltages, 0-1 mA to 0-1000 mADC
Output: 0-1 V to ±10 VDC or 0-1 mA to 4-20 mA

Quick Link: api-usa.com/4300

- Removable Plugs for Faster Installation
- 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 Supplies for Input and Output



Applications Link
api-usa.com/apps

Free Factory I/O Setup!

Applications

- Convert, Boost, Rescale Process Signals
- Isolate Single-Ended (Common Ground) PLC Inputs
- Interface Process Signals with Panel Meters, PLCs, Recorders, Data Acquisition, DCS, and SCADA Systems

DC Input Range

Factory configured, please specify input range or consult factory for special ranges.

See table on other side for common ranges.

Voltage: 0-100 mVDC to 0-300 VDC
 Bipolar voltage: ±100 mVDC to ±10 VDC
 Current: 0-1 mADC to 0-1000 mADC

Input Impedance (Voltage)

200 kΩ minimum

Input Voltage Burden (Current)

1.25 VDC maximum

Common Mode Rejection

120 dB minimum

Input Loop Power Supply

15 VDC nominal, regulated, 25 mADC

Max. ripple, less than 10 mVRMS

May be selectively wired for sinking or sourcing mA input

LoopTracker

Variable brightness LEDs indicate I/O loop level and status

DC Output Range

Factory configured, specify output range

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

Output Calibration

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

Output Loop Power Supply

20 VDC nominal, regulated, 25 mADC, <10 mVRMS max. ripple
 May be selectively wired for sinking or sourcing mA output

Output Test/Override

Front button sets output to test level when pressed or via external contact closure
 Potentiometer adjustable 0-100% of span

Output Ripple and Noise

Less than 10 mVRMS ripple and noise

Linearity

Better than ±0.1% of span

Ambient Temperature Range and Stability

-10°C to +60°C operating ambient
 Better than ±0.04% of span per °C stability

Response Time

Standard: 70 milliseconds nominal
 DF option: Fast response time. Output noise levels will be greater than standard specifications. Consult factory.

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



Removable Plugs

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 4300 accepts a DC voltage or current input and provides an optically isolated DC voltage or current output that is linearly related to the input.

Typical applications include signal isolation, conversion, boosting or a combination of the three. Full 3-way isolation (input, output, power) makes this module useful for ground loop elimination, common mode signal rejection or noise pickup reduction.

The APD 4300 can be factory configured for 4-20 mA input and 4-20 mA output to solve signal isolation, ground loop, common mode, or noise pickup problems for non-isolated PLC inputs.

For maximum versatility loop excitation power supplies are included for the input and output. A mA input and a mA output can be selectively wired for sinking or sourcing. This allows the APD 4300 to work with any combination of sinking or sourcing mA transmitters and sinking or sourcing mA receiving devices.

How to Order

All models are factory ranged

The APD 4300 is configured to your specifications. Milliamp inputs and outputs can be field wired for sink or source.

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.

Please specify

- Model
- Input range
- Output range
- Options as required

Model	Input	Output	Power
APD 4300	Factory configured—specify input range	Factory configured—specify output range	85-265 VAC or 60-300 VDC
APD 4300 D			9-30 VDC or 10-32 VAC

Options—add to end of model number

- R** Input/output reversal, such as 4-20 mA input to 20-4 mA output
- M09** High voltage output up to 20 V (specify range)
- DF** Fast response time, consult factory.
- U** Conformal coating for moisture resistance

Accessory—order as separate line item

- API BP4** Spare 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

See wiring diagrams. Observe 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!

Ranges

APD 4300 I/O ranges are set at the factory and must be specified when ordering. Listed below are commonly ordered input and output ranges. Consult factory for other available ranges or special ranges. See the model/serial number label for module information, options, and I/O range information.

Common Voltage Inputs		
0-100 mV	1-5 V	±200 mV
0-200 mV	0-10 V	±500 mV
0-500 mV	0-20 V	±1 V
0-1 V	0-50 V	±2 V
0-2 V	0-100 V	±5 V
0-5 V	±100 mV	±10 V
Common Current Inputs		
0-1 mA	0-20 mA	0-100 mA
0-10 mA	4-20 mA	0-200 mA
0-16 mA	10-50 mA	0-500 mA
Common Voltage Outputs		
0-1 V	1-5 V	±5 V
0-5 V	0-10 V	±10 V
Common Current Outputs		
0-20 mA	0-16 mA	4-20 mA

Input

Polarity must be observed when connecting the signal input.

For a transmitter with a current output, determine if it provides power to the current loop or if it must be powered by the APD module. Use a multi-meter to check for voltage at the transmitter output terminals. Typical voltage may be in the range of 9 to 24 VDC. In this case, wire the device to terminals 9 and 11.

Type of Input Device	- Terminal	+ Terminal
Sensor or transmitter w. voltage output.	9 (-)	11 (+)
Transmitter with a mA (current) output that provides power to the current loop. Typically a 3 or 4-wire device.	9 (-)	11 (+)
Transmitter with mA (current) output that is unpowered. Typically a 2-wire device. APD module provides loop power.	11 (-)	10 (+15 VDC)

Output

Polarity must be observed when connecting the signal output.

If your device requires a current input, determine if it provides power to the current loop or if it must be powered by the APD module. Use a multi-meter to check for voltage at the input terminals. Typical voltage may be in the range of 9 to 24 VDC. In this case, wire the device to terminals 2 and 4.

Device Connected to Output	- Terminal	+ Terminal
Measuring or 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 or recording device accepts a mA (current) input and provides power to the current loop.	2 (-)	3 (+)

Module Power Terminals

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.

Calibration

Input and output ranges as specified on your order are factory pre-configured (at 24°C ±1°C). Front-mounted, Zero and Span potentiometers can be 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. Next, set the input at maximum, 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 maximum accuracy.

Output Test Function

The test button may be used to drive the device on the output (a panel meter, chart recorder, etc.) with a known good signal that can be used as a system diagnostic aid during initial start-up or during troubleshooting.

When depressed it will drive the output with a known good signal. When released, the output will return to normal.

You can also enable the test function by connecting an external switch or button to terminals 5 and 6. This can be used as a remotely operated manual override to set the output at a fixed value regardless of the input signal.

The Test Cal. potentiometer can be used to set the test output to the desired level. It is factory set to provide approximately 50% output. It is adjustable 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. When released, the output will return to normal.

Operation

The APD 4300 is factory configured to your exact input and output requirements. The input is filtered, either amplified or attenuated as required, then passed through to the output stage.

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.

