High Voltage DC to DC Transmitters, Isolated, Field Rangeable

APD HV-DC

Input: 0-100 VDC to 0-1200 VDC
Output: 0-1 V to ±10 VDC or 0-2 mA to 4-20 mA

- Field Selectable I/O Ranges
- Zero and Span Output Calibration Potentiometers
- Full 1200 V Input/Output/Power Isolation
- Input and Output LoopTracker® LEDs
- Output Test Button
- Selectable Sink/Source for Current Output

Applications
- High Voltage Battery Systems
- DC Motor and Variable Speed Drives
- Electric Railway Voltages
- Power Supply and Voltage Converters

Input Ranges
8 field selectable ranges
- 0-100 VDC
- 0-200 VDC
- 0-300 VDC
- 0-400 VDC
- 0-500 VDC
- 0-1000 VDC
- 0-1200 VDC

Custom range—consult factory, 2000 VDC max.

Input Impedance (Voltage)
2.5 MΩ

Common Mode Rejection
120 dB minimum

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

Output Ranges
18 field selectable ranges
Voltage:
- 0-1 V, 0-2 V, 0-4 V, 0-5 V, 1-5 V, 0-8 V, 0-10 V, 2-10 V
Bipolar voltage:
- ±5 V, ±10 V
Current:
- 0-2 mA, 0-4 mA, 0-8 mA, 0-10 mA
- 2-10 mA, 0-16 mA, 0-20 mA, 4-20 mA
20 V compliance, 1000 Ω at 20 mA

Consult factory for special ranges

Output Calibration
Multi-turn zero and span potentiometers to compensate for load and lead variations
±15% of span adjustment range typical

Output Loop Power Supply
20 VDC nominal, regulated, 25 mADC, max. ripple <10 mV/ACMS
May be selectively wired for sinking or sourcing mA output

Output Test
Front button sets output to test level when pressed
Potentiometer adjustable 0-100% of span

Output Ripple and Noise
Less than 10 mVMS 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
100 milliseconds nominal

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

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

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

Function
The APD HV-DC accepts a DC voltage input and provides an optically isolated DC voltage or current output that is linearly related to the input. This module is unique because it is field rangeable for voltage inputs from 100 VDC to 1200 VDC. Typical applications include signal isolation and signal conversion for a high voltage DC input.

Isolation
The optical isolation between input and output makes this module useful for ground loop elimination, common mode signal rejection or noise pickup reduction. The module power supply is isolated, resulting in full 3-way (input, output, power) isolation.

Fast Field Setup
The APD HV-DC input and output range settings can be reconfigured in the field via external switches. Range settings are on the module label. A user specified range is available that can be factory configured to meet your specific requirements. Consult the factory for assistance.

Sink/Source Output
For maximum versatility the output can be selectively wired for sinking or sourcing. The built-in 20 VDC loop excitation supply may be used to power passive mA devices. This allows the APD HV-DC to work with powered or unpowered mA devices.

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.

Output Test
An API exclusive feature includes a 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.

How to Order
All models are field rangeable

Please specify
Model
Input range (if you would like us to set the switches)
Output range (if you would like us to set the switches)
Custom range, if required
Option as required

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<td>1 custom input range can be specified if required</td>
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Option—add to end of model number

API PB4 Spare removable plug, black 4 terminal

Conformal coating for moisture resistance

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Mounting to a DIN Rail
Install module vertically on a 25 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 up 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 bottom edge of DIN rail.
3. The module can now be removed from the DIN rail.

Calibration
Input and output ranges, if specified on your order, are factory pre-configured (at 24°C ±1°C). Use the front-mounted Zero and Span potentiometers to calibrate the output.

Note: Perform the following calibration procedure any time switch settings are changed.

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 min. 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 output test potentiometer is factory set to provide approximately 50% output. When the test button is depressed it will drive the output side of the loop 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 can be used to set the test output to the desired level. 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.

Operation
The APD HV-DC accepts a high-voltage DC voltage input and provides an optically isolated DC voltage or current output that is linearly related to the input. The input is filtered and attenuated as required, then passed through to the output stage.

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, this may indicate a problem with module power or signal input wiring.

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.

Specifications are subject to change without notice. See api-usa.com for latest product information. Consult factory for your specific requirements.

Installation and Setup APD HV-DC

Output to terminal 13 and negative (–) can be wired to terminal 16. Consistency with similar API products, positive (+) can be wired to terminal 14.

When using DC power, either polarity is acceptable, but for power to the current loop or if it must be powered by the APD module, polarity must be observed when connecting the signal output.

When using an accurate calibration source, provide an input to the module equal to the minimum input required for the application.

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.

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 output test potentiometer is factory set to provide approximately 50% output. When the test button is depressed it will drive the output side of the loop 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 can be used to set the test output to the desired level. 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.

Operation
The APD HV-DC accepts a high-voltage DC voltage input and provides an optically isolated DC voltage or current output that is linearly related to the input. The input is filtered and attenuated as required, then passed through to the output stage.

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, this may indicate a problem with module power or signal input wiring.

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.

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