**IsoSplitter® DC to DC Signal Splitter/Isolator/Transmitter**

**APD 4393**

1 Input: 0-10 mV to 0-100 V, ±50 mV to ±10 V, 0-1 mA to 0-50 mA, 4-20 mA

2 Outputs: 0-1 V to 0-10 V, ±1 V to ±10 V, 0-1 mA to 20 mA, 4-20 mA

- One Input to Two Outputs with Full Isolation
- Zero and Span for Each Output
- Full 1200 V Input/Output /Power Isolation
- Built-In Loop Power Supplies for Sink/Source I/O
- Output Loop Test Button for Each Channel
- Built-In Loop Power Supplies for Sink/Source I/O

### Description

The APD 4393 IsoSplitter accepts a DC voltage or current input and provides two optically isolated DC voltage or current outputs that are linearly related to the input. The input range and each output range are independent and can be specified as required. This provides an economical solution when one signal must be sent to two different devices. Typical applications include isolation, output splitting, output device separation and redundancy (i.e. to prevent failure of the entire loop if one device fails), or a combination of these.

- The input signal is filtered, amplified, split, and then passed through an opto-coupler to the output stages. Full 4-way isolation (input, output 1, output 2, power) make this module useful for ground loop elimination, common mode signal rejection, and noise suppression.
- Adjustable Output Test function for Each Channel
- Zero and Span for Each Channel
- Input LoopTracker LED
- Output LoopTracker LED for Each Channel

### Applications

- Split, Convert, Boost, and Rescale Process Signals
- Split Process Signals for Control and Validation
- Interface a Process Signal with Multiple Panel Meters, PLCs, Recorders, Data Acq., DCS, & SCADA Systems

### DC Input Range

Factory configured, please specify
- Voltage: 0-10 mVDC to 0-100 VDC
- Bipolar voltage: ±50 mVDC to ±10 VDC
- Current: 0-1 mAADC to 0-50 mAADC (4-20 mAADC)

### Input Impedance and Burden

- Voltage: 200 kΩ minimum
- Current: 50 Ω typical
- Voltage burden: 1.25 VDC max. at 20 mA current input

### Input Loop Power Supply

15 VDC ±10%, regulated, 25 mAADC
- May be selectively wired for sinking or sourcing mA input

### LoopTracker

Variable brightness LEDs indicate I/O loop level and status
- One for input, one for each output
- Channel 1 and Channel 2 DC Output Ranges

### Channel 1 and Channel 2 DC 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 mAADC to 0-20 mAADC, 4-20 mAADC
- 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 Loop Power Supplies

20 VDC nominal, regulated, 25 mAADC for each output channel
- May be selectively wired for sinking or sourcing mA output

### Output Test/Override

Front momentary buttons or external contact closures for each channel to set output test levels.
- Each output test level potentiometer adjustable 0-100% of span

### Output Ripple and Noise

- Less than 10 mVrms
- 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

- 70 milliseconds typical
- Fast response time option DF, 10 milliseconds typical

### Isolation

- Full 4-way, 1200 Vrms minimum

### Installation Environment

- IP 40, requires installation in panel or enclosure with adequate ventilation
- For use in Pollution Degree 2 Environment
- Mount vertically (as shown in picture) to a 35 mm DIN rail allowing minimum 1” (25 mm) above and below housing vents for air circulation.

### 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

### Dimensions and Connectors

- 1.78” W x 4.62” H x 4.81” D
- 45 mm W x 117 mm H x 122 mm D
- Eight 4-terminal removable connectors, 14 AWG max wire size

### How to Order

Models are factory ranged. See I/O ranges above left.
- Please specify ranges and options on order
- Input range
  - Channel 1 output range
  - Channel 2 output range
- See options at right

### LoopTracker

API exclusive features include three LoopTracker LEDs (green for 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. A test button is provided for each output channel. The output test greatly aids in saving time during initial startup and/or troubleshooting.

The test output level for each channel is potentiometer adjustable from 0 to 100% of the output span.

Terminals are 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.

### Options and Accessories

Options—add to end of model number
- R1 Channel 1 I/O reversal (ie. 4-20 mA to 20-4 mA output)
- R2 Channel 2 I/O reversal (ie. 4-20 mA to 20-4 mA output)
- 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
- DF Fast response time, 10 milliseconds typical
- 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.

I/O Connections
Each product is factory configured to your exact input and output ranges as indicated on the serial number label. Polarity must be observed for signal wiring connections. If the input and/or output do not function, check wiring and polarity. For milliamp output 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 input. The power supplies are fuse protected and the unit may be removed from the DIN rail.

Calibration
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.

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

Operation
The APD 4393 isoSplitter® accepts a DC voltage or current input and provides two optically isolated DC voltage or current outputs that are 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. The 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.

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 airflow. Allow 1” (25 mm) above and below housing vents for air circulation.

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

Output
* To avoid damage to the module, do not leave any unused mA outputs disconnected. Use a 1000 Ohm 1/2 Watt resistor across unused mA terminals.

Module mA output is unpowered
* Current Sinking Output

Module powers mA output loop
* Current Source Output

External Contacts for Test Function

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

Input

Type of Device for Output Channel 1

<table>
<thead>
<tr>
<th>Type of Device for Output Channel 1</th>
<th>– Terminal</th>
<th>+ Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring or recording device accepts a voltage input.</td>
<td>3 (–)</td>
<td>4 (+)</td>
</tr>
<tr>
<td>Measuring/recording device accepts a mA (current) input and the input is unpowered or passive. APD module provides the loop power.</td>
<td>3 (–)</td>
<td>4 (+20 V)</td>
</tr>
<tr>
<td>Measuring or recording device accepts a mA (current) input and provides power to the current loop.</td>
<td>2 (–)</td>
<td>3 (+)</td>
</tr>
</tbody>
</table>

Type of Device for Output Channel 2

<table>
<thead>
<tr>
<th>Type of Device for Output Channel 2</th>
<th>– Terminal</th>
<th>+ Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring or recording device accepts a voltage input.</td>
<td>7 (–)</td>
<td>8 (+)</td>
</tr>
<tr>
<td>Measuring/recording device accepts a mA (current) input and the input is unpowered or passive. APD module provides the loop power.</td>
<td>7 (–)</td>
<td>8 (+20 V)</td>
</tr>
<tr>
<td>Measuring or recording device accepts a mA (current) input and provides power to the current loop.</td>
<td>6 (–)</td>
<td>7 (+)</td>
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