1 Input: 100 Ω to 1 MΩ Potentiometer
2 Outputs: 0-1 V to 0-10 V, ±1 V to ±10 V, 0-1 mA to 20 mA, 4-20 mA

Quick Link: api-usa.com/3393

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

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

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!

Potentiometer Input Ranges

3 wire connection and full potentiometer travel is required
Consult factory for other ranges and configurations
1 VDC excitation provided to potentiometer

Minimum range:	0-100 Ω
Maximum range:	0-1 MΩ

Input Impedance
100 Ω to 1 MΩ minimum

Input Protection, Common Mode
100 dB minimum

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
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 mADC to 0-20 mADC, 4-20 mADC
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 mADC 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
Standard: 70 milliseconds nominal
DF option: Output noise levels will be greater than standard specifications. Consult factory.

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

Sink or Source mA Output for Each Channel — **Removable Plugs**

Output LoopTracker LED for Each Channel

Adjustable Output Test Function for Each Channel

Zero and Span for Each Channel

Input LoopTracker LED

Custom I/O Ranges

Connect Sink or Source mA Input

Universal Power

See Wiring Diagrams on Next Page

Description
The APD 3393 IsoSplitter accepts a potentiometer 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 voltage drop across a stable 1 VDC excitation source is measured allowing any full-range 3-wire potentiometer to be used.

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 pickup reduction.

I/O Sink/Source Versatility
Standard on the APD 3393 are 20 VDC loop excitation supplies for each output channel. These power supplies can be selectively wired for sinking or sourcing allowing use with any combination of powered or unpowered milliamp I/O devices.

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 provide 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.

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

Model	Description	Power
APD 3393	IsoSplitter 1 input to 2 outputs	85-265 VAC, 50/60 Hz or 60-300 VDC
APD 3393 D		9-30 VDC or 10-32 VAC

Options and Accessories
Options—add to end of model number

R1	Channel 1 I/O reversal (ie. 4-20 mA in to 20-4 mA out)
R2	Channel 2 I/O reversal (ie. 4-20 mA in to 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
DF	Fast response time, consult factory.
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

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!

Input and output ranges are factory pre-configured (at 24°C ±1°C). Use the front-mounted Zero and Span potentiometers to calibrate the outputs.

Outputs

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 terminals if it provides power to the loop.

Channel 1 Output Device	– 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 (+)

Channel 2 Output Device	– Terminal	+ Terminal
Measuring or recording device accepts a voltage input.	7 (–)	8 (+)
Measuring/recording device accepts a mA (current) input and the input is unpowered or passive. APD module provides the loop power.	7 (–)	8 (+20 V)
Measuring or recording device accepts a mA (current) input and provides power to the current loop.	6 (–)	7 (+)

Potentiometer Input

The potentiometer must be connected to all three signal input terminals as shown. 0-100% of the potentiometer range must be used. A stable 1 VDC source is used to excite the potentiometer. Voltage drop is measured across the potentiometer, thus allowing any full-range potentiometer to be used.

| Potentiometer Input	Terminal
Full scale or high side of potentiometer	17 (+1 VDC)
Zero or low end of potentiometer	18 (–)
Potentiometer wiper arm	19

Module Power Terminals

Check 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.

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 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.
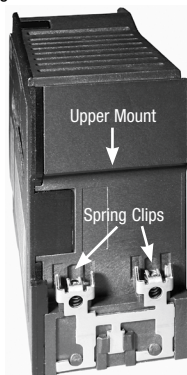
Removal

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.

Upper Mount

Spring Clips

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.
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 initial 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 3393 IsoSplitter® accepts a potentiometer 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.
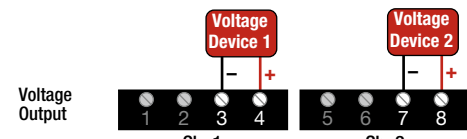
If the LED fails to illuminate, or fails to change in intensity as the process changes, check the module power or signal input wiring.

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.

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. Note that it may be difficult to see the LEDs under bright lighting conditions.
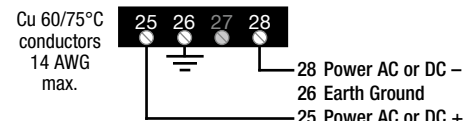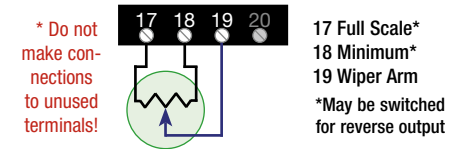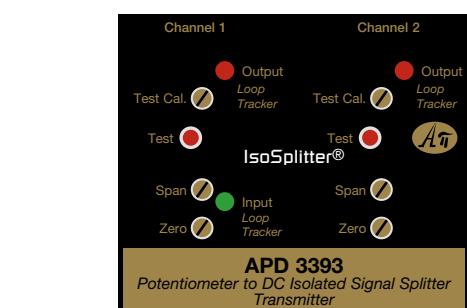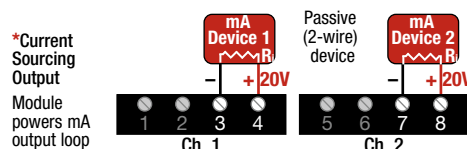
Wire terminal torque 0.5 to 0.6 Nm or 4.4 to 5.3 in-lbs

Output 1   Output 2
Output Test 1   Output Test 2
Input   not used
Power   not used

* Do not make connections to unused terminals!

Voltage Output — Voltage Device 1 / Voltage Device 2

Ch. 1   Ch. 2

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

*Current Sinking Output
Module mA output is unpowered — mA Device 1 / mA Device 2, Loop Power Source 1 / Loop Power Source 2

Ch. 1   Ch. 2

*Current Sourcing Output
Module powers mA output loop — mA Device 1 / Passive (2-wire) device / mA Device 2, +20V

Ch. 1   Ch. 2

External Contacts for Test Function — 9 10 11 12 / 13 14 15 16

Channel 1   Channel 2
Output Loop Tracker
Test Cal.   Test Cal.
Test   Test
Span   Span
Zero   Zero
Input Loop Tracker
IsoSplitter®

APD 3393
Potentiometer to DC Isolated Signal Splitter Transmitter

* Do not make connections to unused terminals!

17 18 19 20
17 Full Scale*
18 Minimum*
19 Wiper Arm
*May be switched for reverse output

Cu 60/75°C conductors 14 AWG max.

25 26 27 28
28 Power AC or DC –
26 Earth Ground
25 Power AC or DC +

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