IsoSplitter® RTD to DC Signal Splitter/Isolator/Transmitter

APD 1393

1 Input: 2 or 3 Wire RTD
2 Outputs: 0-1 V to 0-10 V, ±1 V to ±10 V, 0-1 mA to 20 mA, 4-20 mA

- One RTD Input to Two Independent DC Outputs
- Zero and Span for Each Output
- Full 1200 V Isolation
- Input and Output LoopTracker® LEDs
- Output Test Button for Each Channel
- Built-In Loop Power Supply for Sink/Source Output

Applications

- Split, Convert Output From One RTD Sensor for PLC Input, Control and/or Validation
- Interface an RTD with Multiple Panel Meters, PLCs, Recorders, Data Acq, DCS, & SCADA Systems

Temperature Input Range

Factory configured, please provide complete sensor specifications and temperature range. 100°F (55°C) minimum span.

RTD input: Resistance at 0°C
Curve: (385, 3916, 392 etc.)
Temperature range in °F or °C
RTD resistance: Typically 10 Ω to 2000 Ω, 2 or 3 wire
Excitation current: Typically 10 Ω: 10 mA, 100 Ω: 2 mA, 1000 Ω: 0.5 mA, 2000 Ω: 0.2 mA
Leadwire comp.: < ±0.05% of span per 1 Ω change in leadwire resistance, 3 wire sensor

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
Bipolar voltage: ±1 VDC to ±10 VDC
Current: 0-1 mA to 0-20 mA, 4-20 mA
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 mA 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

Isolation

Full 4-way, 1200 Vrms minimum

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
Eight 4-terminal removable connectors, 14 AWG max wire size

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

Description

The APD 1393 IsoSplitter accepts an RTD temperature input and provides two optically isolated and linearized DC voltage or current outputs. The sensor type and temperature range and each independent output range can be specified as required. This provides an economical solution when one temperature signal must be sent to two different devices.

Typical applications include validation, datalogging, output device separation and redundancy (i.e. to prevent failure of the entire loop if one device fails), or a combination of these. The temperature input is linearized, 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.

Output Sink/Source Versatility

Standard on the APD 1393 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 devices.

How to Order

Models are factory ranged. See I/O ranges above left. Please specify ranges and options on order

Sensor specifications, input temperature range
Channel 1 input range
Channel 2 output range
See options at right

Options and Accessories

Options—add to end of model number
R1 Channel 1 output reversal (ie. 20-4 mA out)
R2 Channel 2 input reversal (ie. 20-4 mA out)
R3 Channel 1 and channel 2 output 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
U Conformal coating for moisture resistance

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

Universal Power

Dimensions

45 mm W x 4.62” H x 4.81” D
45 mm W x 117 mm H x 122 mm D
Height includes connectors

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 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.

Quick Link: api-usa.com/1393
Mounting to a DIN Rail
Instal 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. Lift front of module downward 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. Lift 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
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 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 ±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. 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 1393 IsoSplitter® accepts an RTD input and provides two linearized and optically isolated DC voltage or current outputs.

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.

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.

Electrical Connections
Polarity must be observed for output wiring connections. If the outputs do not function, check wiring and polarity.

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

Check label for module operating voltage to make sure it matches available power.

Type of Device for Output Channel 1
Measuring or recording device accepts a voltage input.

Measuring/recording device accepts a mA (current) input and the input is unpowered or passive. (APD module provides the loop power).

Measuring or recording device accepts a mA (current) input and provides power to the loop.

Type of Device for Output Channel 2
Measuring or recording device accepts a voltage input.

Measuring/recording device accepts a mA (current) input and the input is unpowered or passive. (APD module provides the loop power).

Measuring or recording device accepts a mA (current) input and provides power to the loop.

RTD Input
The sensor type and temperature range are factory configured. See the model/serial number label for sensor type and range. The temperature sensor input is connected as shown in the wiring diagrams at right.

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, wire positive (+) to terminal 25 and negative (−) to terminal 28.