DC to DC Signal Splitter, Isolated — API 4393 DIN L1 IsoSplitter®

1 Input: ***4-20 mA***
2 Outputs: ***4-20 mA Sinking or mVDC, ±10 to 0-10 VDC, 0-1 mA to 4-20 mA Sourcing***

- ***Single 4-20 mA Input & Dual Outputs***
- ***2000 V Power/Input/Output/Channel Isolation***
- ***Full Isolation Eliminates Ground Loops***
- ***Input and Output LoopTracker® LEDs***
- ***Functional Test Pushbutton for Each Channel***
- ***Independent Zero and Span for Each Channel***

Removable Plugs for Easy Hookup

LIFETIME WARRANTY



Applications

- **Isolate, Split, Rescale Process Signals**
- **Send One Process Signal to Two Locations**
- **Provides Optimal Isolation Between These and Others**

DCS: TBI-Bailey (ABB), Fisher-Rosemount (DeltaV™)
PLC: ABB, Allen Bradley (Micrologix™, Flex I/O™)
BAS: ABB, Siemens, Johnson Controls, Invensys

Specifications

Input Range
4 to 20 mA
Sinking inputs do not provide power and require an external loop supply or a powered transmitter

Input Voltage Burden
2 VDC maximum, 100 Ω nominal at 20 mA

Input Loop Supply for L1 Versions
15 VDC nominal, regulated, 25 mADC

Output Range and Type
4-20 mA sinking outputs do not provide power and require an external loop supply or a powered transmitter

Soucing Outputs
Voltage: ±5 VDC, ±10 VDC, 0-50 mVDC, 0-100 mVDC, 0-5 VDC, 0-10 VDC
Current: 0-1 mA, 0-20 mA, 4-20 mA (1000 Ω max. at 20 VDC typical)

Output Linearity
Better than ±0.1% of span

Output Ripple and Noise
Less than 10 mV_{RMS}

Output Zero and Span
Independent multi-turn zero and span potentiometers for each output channel to compensate for load and lead variations
±15% of span adjustment range typical, low interaction: <0.001 ppt

LoopTracker
Variable brightness LEDs indicate input/output loop level and status

Functional Test Buttons
Sets output to test level when pressed. One per output channel.
Factory set to drive output to approximately 50% of span

Response Time
70 milliseconds typical

Isolation
2000 V_{RMS} minimum
Full isolation: power to channel, input to output, channel to channel

Common Mode Rejection
120 dB minimum

Ambient Temperature Range and Stability
–10°C to +60°C operating ambient. Better than ±0.04% of span/°C stability.

Power Supplies
Input power supply fuse protected and fully isolated
Standard: 115 VAC ±10%, 50/60 Hz, 5 W max., linear type
A230 option: 230 VAC ±10%, 50/60 Hz, 5 W max., linear type
DD option: 9-30 VDC, 5 W typical, switching type

Description and Features

The **API 4393 L1** and **EX** series ***IsoSplitters*** are used for splitting a single 2-wire 4-20 mA transmitter signal input into two isolated outputs. Typical applications include isolation, output splitting, output device separation and redundancy (to prevent control loop failure if one loop fails), or a combination of these. The optical isolation between the input and outputs make this module useful for ground loop elimination, common mode signal rejection or noise pickup reduction.

This product is designed to function effectively in electrically noisy industrial environments. It is designed to provide signal compatibility with recorders, data loggers, computers programmable logic controllers, and process transmitters.

The **API 4393 L1** series features an internal 15 VDC isolated loop power supply for the input loop. Versions are available with sourcing and/or sinking I/O. Sourcing furnishes power (current) to the circuit. Sinking requires an external power supply in the circuit or a powered transmitter.

API exclusive features include two ***LoopTracker*** LEDs and **Functional Test Pushbuttons** for each channel. The LoopTracker LEDs (Green for input, Red for output) vary in intensity with changes in the process input and output signals and can provide a quick visual picture of your process loop at all times.

The functional test pushbutton provides a fixed output (independent of the input) when held depressed. This output is factory set to approximately 50% of the output span. Both the LoopTracker LEDs and functional test pushbutton greatly aid in saving time during initial startup and/or troubleshooting. The modules clip to an industry standard 35 mm DIN rail or they can be surface mounted.

Models & Options

Factory Configured—Please specify model, power, I/O ranges, and options

Model	Input	Ch. 1 Output	Ch. 2 Output
API 4393 DIN L1	Source	Source**	Source**
API 4393 DIN L1 EX1	Source	Sink	Source**
API 4393 DIN L1 EX2	Source	Source**	Sink
API 4393 DIN L1 EX3	Source	Sink	Sink
API 4393 DIN*	Sink	Source**	Source**
API 4393 DIN EX1	Sink	Sink	Source**
API 4393 DIN EX2	Sink	Source**	Sink
API 4393 DIN EX3	Sink	Sink	Sink

**See API 4393 data sheet* ***Can be voltage or current*

Options—Add to end of model number
A230 Powered by 230 VAC, 50/60 Hz
DD Powered by 9-30 VDC (DD instead of DIN in model number)
U Conformal coating for moisture resistance

Accessory—Order as separate line item
API TK36 DIN rail, 35 mm W x 39" L, aluminum

DC Input

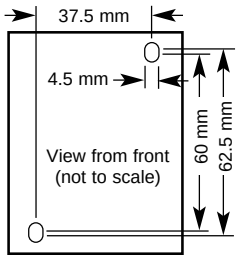
API 4393 DIN L1 IsoSplitter® Installation and Setup

DC Input

ELECTRICAL CONNECTIONS

WARNING! All wiring must be performed by a qualified electrician or instrumentation engineer. See wiring examples at right or consult factory for assistance.

The housing can be clipped to a standard 35 mm DIN rail or surface mounted. Each product is factory configured to your exact input and output requirements as indicated on the product label. The power supplies are fuse protected and the unit may be returned to API for fuse replacement.

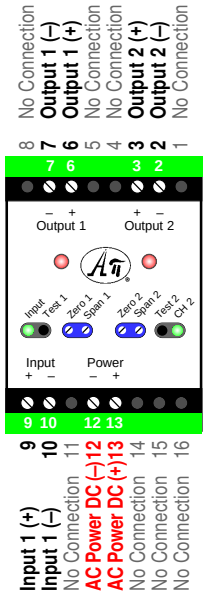


Surface mounting dimensions

Power Input Terminals – The white label on the side of the API module will indicate the power requirements. AC power is connected to terminals 12 and 13. For DC-powered versions positive (+) is connected to terminal 13 and negative (–) is connected to terminal 12.

Signal Input Terminals – Polarity must be observed when connecting the signal input. The positive connection (+) is applied to terminal 9 and the negative (–) is applied to terminal 10.

Signal Output Terminals – Polarity must be observed when connecting the signal output to the load. The positive connection (+) for channel 1 is connected to terminal 6 and the negative (–) is connected to terminal 7. The positive connection (+) for channel 2 is connected to terminal 3 and the negative (–) is connected to terminal 2.



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. Example: for 4-20 mA output, the Zero control will provide adjustment for the 4 mA or low end of the signal.
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 maximum accuracy.
6. Repeat adjustments for second channel.

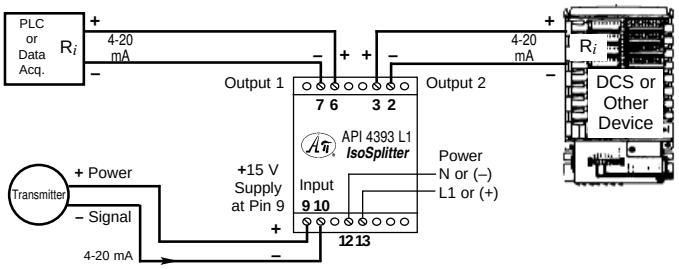
TEST BUTTONS

The Test pushbuttons are factory set to provide approximately 50% output. When depressed they 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.

OPERATION

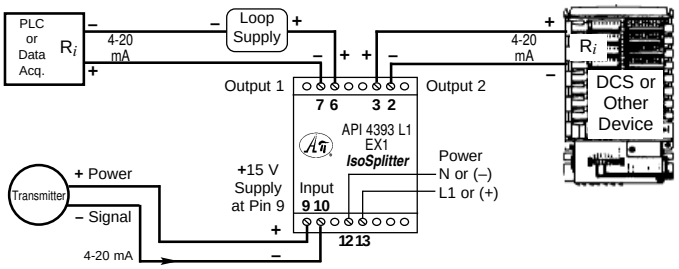
GREEN *LoopTracker*® Input LED – Provides a visual indication that a signal is being sensed by the input circuitry of the module. It also indicates the input signal strength by changing in intensity as the process changes from minimum to maximum. If the LED fails to illuminate, or fails to change in 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.

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.



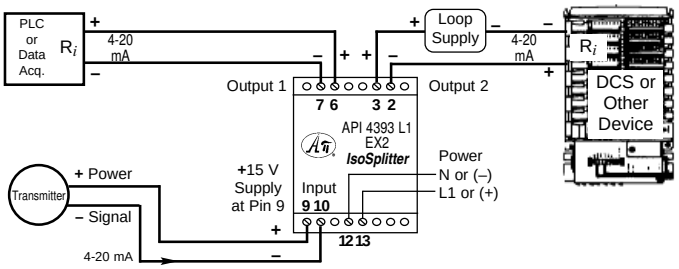
TYPICAL WIRING API 4393 L1

Use the API 4393 L1 IsoSplitter when a 2-wire loop-powered (passive) transmitter signal must be output to two passive devices. The API 4393 L1 output loop power supplies drive each output channel.



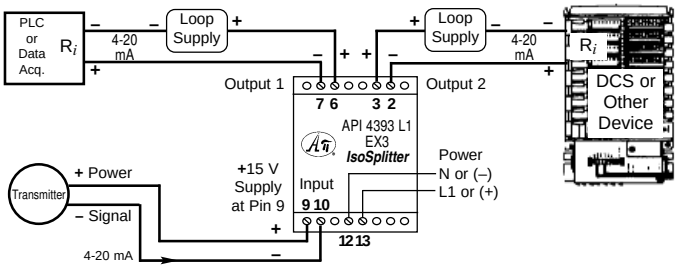
TYPICAL WIRING API 4393 L1 EX1

Use the API 4393 L1 EX1 IsoSplitter when a 2-wire loop-powered (passive) transmitter signal is output to two loops where the device on Output 1 uses an external loop power supply or provides its own power to the loop, and the loop on Output 2 is powered by the API 4393 L1 EX1.



TYPICAL WIRING API 4393 L1 EX2

Use the API 4393 L1 EX2 IsoSplitter when a 2-wire loop-powered transmitter signal is output to two loops where the loop on Output 1 is powered by the API 4393 L1 EX2 and the device on Output 2 uses an external loop power supply or provides its own power to the loop.



TYPICAL WIRING API 4393 L1 EX3

Use the API 4393 L1 EX3 IsoSplitter when a 2-wire loop-powered transmitter signal is output to two loops where each device has an integral loop supply or uses an external loop power supply as a drive source.