API 4393 L1 Series Transmitter-Isolator-Splitter

IsoSplitter™

One Input: 4-20 mA Source
Two Outputs: 4-20 mA Source or Sink

- *Single 4-20 mA Input & Dual 4-20 mA Output*
- *Zero and Span Potentiometers for Each Output*
- *55 mm Wide Package Saves Space*
- *2000 V Power/Input/Output/Channel Isolation*
- *Full Isolation Eliminates Ground Loops*
- *Input and Output LoopTracker® LEDs*
- *Output Test Pushbuttons*
- *Reliable Positive Locking Wire Terminals*



Applications

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 powered by internal +18 VDC unregulated loop power source

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

Input Loop Supply
18 VDC nominal, unregulated, 25 mADC

Output Range and Type

Model	Channel 1	Channel 2
API 4393 L1	4-20 mA source	4-20 mA source
API 4393 L1 EX1	4-20 mA sink	4-20 mA source
API 4393 L1 EX2	4-20 mA source	4-20 mA sink
API 4393 L1 EX3	4-20 mA sink	4-20 mA sink

Sinking outputs do not provide power and require an external loop supply

Output Drive
1000 ohms 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 multiturn 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

Output Test Button
Sets output to test level when pressed
Factory set 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. Better than ±0.04% of span per °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
D option:	9-30 VDC, 5 W typical, switching type

Models & Options

Factory Configured—Please specify model, power, and options

Model	4-20 mA Input	4-20 mA Ch. 1	4-20 mA Ch. 2
API 4393 L1	Source	Source	Source
API 4393 L1 EX1	Source	Sink	Source
API 4393 L1 EX2	Source	Source	Sink
API 4393 L1 EX3	Source	Sink	Sink

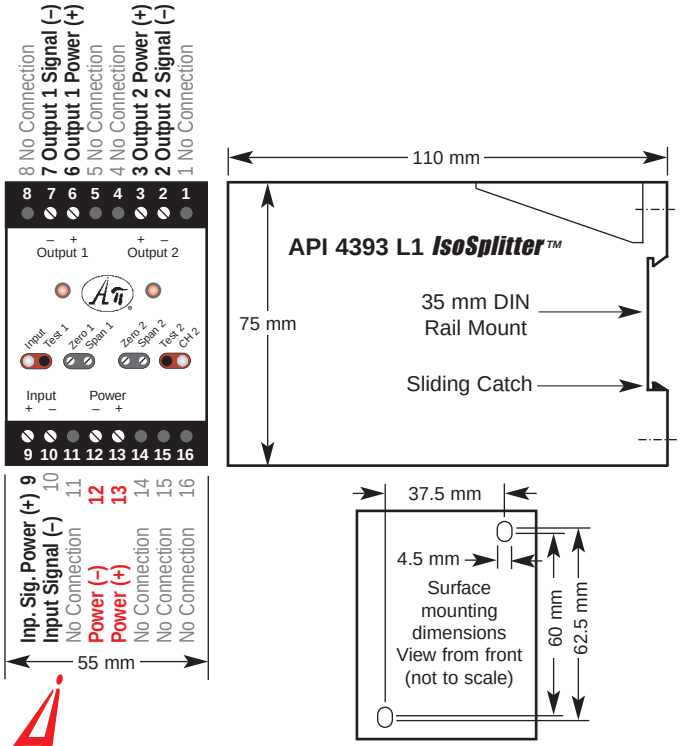
Options—Specify on Order

A230	Powered by 230 VAC, 50/60 Hz
D	Powered by 9-30 VDC
U	Conformal coating for moisture resistance

Accessories

API TK36	DIN rail, 35 mm W x 39" L, aluminum
API 535	Polycarbonate NEMA 4X enclosure for 1 module

Electrical Connections & Dimensions



ABSOLUTE PROCESS INSTRUMENTS, Inc.
Mod-tronic Instruments Limited
Tel: 905 457-6322 **Fax: 905 457-4716**
Toll Free: 800 794-5883
www.mod-tronic.com

© Absolute Process Instruments, Inc. 08/03

API 4393 L1 Series IsoSplitter™

FUNCTIONAL DESCRIPTION

The API 4393 L1 series ***IsoSplitters*** are used for splitting a single 2-wire 4-20 mA loop-powered transmitter signal into two independent optically isolated 4-20 mA analog outputs. This provides an economical solution where two outputs are required from a single 4-20 mA transmitter.

Typical applications include loop isolation, output drive boosting, output device separation and redundancy, or a combination of the four. 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 interface with and provide signal compatibility with recorders, data loggers, computers, programmable logic controllers, and process transmitters.

The API 4393 L1 series features an internal 18 VDC isolated loop power supply for the input loop. The isolated 4-20 mA output signals are simultaneously modulated and controlled by internal circuitry to provide accurate, linear, and bumpless signal transfer from the input to each output.

API 4393 L1 versions are available with *sourcing* and/or *sinking* outputs depending on if the output loops require loop power or already have a loop power supply. Sinking outputs (such as "open collector" outputs) normally have current flowing into the device output lead and require an external power supply in the circuit. Sourcing outputs normally have current flowing out of the device output lead and furnish power (current) to the circuit.

The API 4393 L1 version provides loop power to both output channels. The EX1 version requires an external loop supply for output 1. The EX2 version requires an external loop supply for output 2. The EX3 version requires an external loop supply for both outputs.

UNIQUE FEATURES

The fast-responding API 4393 L1 series ***IsoSplitter*** uses the latest technology in linear optical isolation for optimum noise immunity and complete freedom from AC artifacts in the output. In addition, the module's power supplies are isolated resulting in full 3-way (input, output, power) isolation for each channel. Standard power is 115 VAC. 230 VAC or 9-30 VDC power are optional.

API exclusive features include ***LoopTracker***® LEDs for the input and each output and **Functional Test Pushbuttons**. Both the LoopTracker LEDs and the functional test pushbuttons provide help in diagnostics and testing and save a great deal of time during initial startup and/or troubleshooting.

The LoopTracker LEDs (Green for input, Red for output) vary in intensity with changes in the input and the output process signals. These LEDs provides a continuous visual indication of the status of each process loop.

Each functional test pushbutton provides a fixed output, independent of the input signal, when held depressed. This output is factory set to approximately 50% of the output span.

INSTALLATION & OPERATION

The API 4393 L1 clips to an industry standard 35 mm DIN rail. The housing also allows for surface mounting. The API 4393 L1 is factory configured for the input and outputs. Refer to wiring diagram on reverse side for wiring connections. The power supplies are fuse protected and the unit may be returned to API for fuse replacement.

The LoopTracker LEDs will glow dimly when the process signals are at their minimum and increase in brightness until the maximum levels are reached. If all LEDs are off, check power to the unit. Note that it may be difficult to see the LEDs under bright lighting conditions.

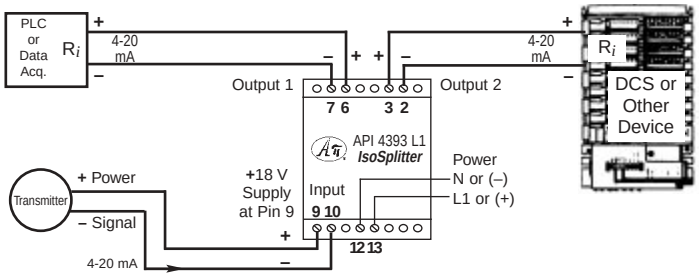
CALIBRATION

The API 4393 L1 is configured at the factory for 4-20 mA input and outputs. See module label for output configuration. Front-mounted, multi-turn Zero and Span potentiometers allow compensation for load and lead variations.

1. If fine-tuning is necessary, apply the appropriate 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 level (4 mA).
3. Using an accurate measurement device for the output, adjust the Zero potentiometer for the exact minimum output desired.
4. Next, set the input to the maximum input level (20 mA).
5. Adjust the Span pot for the exact maximum output desired.
6. Repeat Zero and Span adjustments for other output channel.
7. Repeat Zero and Span adjustments for maximum accuracy.

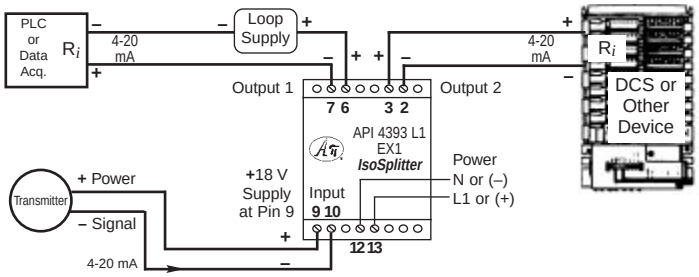
TYPICAL WIRING API 4393 L1

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.



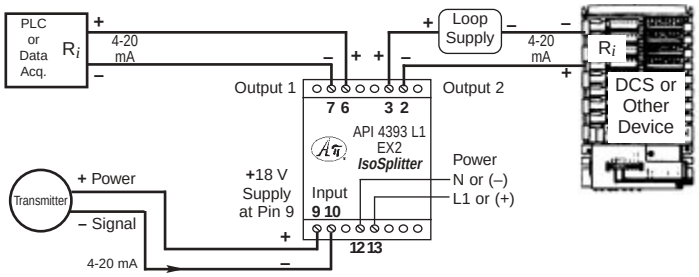
TYPICAL WIRING API 4393 L1 EX1

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.



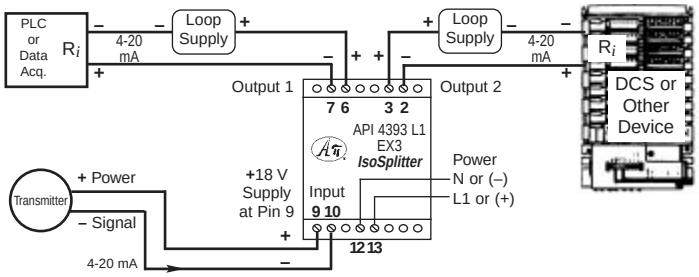
TYPICAL WIRING API 4393 L1 EX2

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.



API maintains a constant effort to upgrade and improve its products. Specifications are subject to change without notice. Consult factory for your specific requirements.

ABSOLUTE PROCESS INSTRUMENTS, Inc.