Two Independent Channels with Full Isolation

Zero and Span for Each Output

Input and Output LoopTracker™ LEDs

Output Test/Manual Override for Each Channel

Built-In I/O Power Supplies

Applications

- Monitor Temperature and Speed
- Convert/Isolate Dual Output Transmitters

Channel 1 RTD 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 (855, 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 °C change in leadwire resistance, 3 wire sensor

Channel 2 Frequency Input Range

Factory configured, please specify input range

- Frequency: 0-25 Hz to 0-2 kHz
- Any waveform with 5 microsecond min. pulse, 100 mV min. amplitude change, 100 mV to 150 Vrms amplitude

Channel 2 Sensor Power Supply

15 VDC ±10%, regulated, 25 mA, <10 mVrms max. ripple

Channel 2 Characteristics

- Impedance at max. sensitivity: 10 kΩ nom.
- Impedance at min. sensitivity: 100 kΩ nom.
- Sensitivity/hysteresis adjustment: Multi-turn potentiometer
- Sensitivity/hysteresis range: ±0.25 mV to ±2.5 V typical

- Normal mode protection: 200% of input rating
- Common mode protection: 600 V input to ground

LoopTracker

Variable brightness LEDs indicate I/O levels for each channel

Channel 1 and Channel 2 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 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 Characteristics

- Linearity: ±0.1% of span
- Temperature stability: Better than 0.04% span/°C
- Output ripple and noise: Less than 10 mVrms

Isolation

Full 5-way, 1200 Vrms minimum

Response Time

Channel 1: 70 milliseconds nominal

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

- Front buttons set each output to test level when pressed
- Each test level potentiometer adjustable 0-100% of span

Installation Environment

- Mount vertically to a 35 mm DIN rail
- For use in Pollution Degree 2 Environment
- IP 40 housing, requires installation inside an enclosure
- -10°C to +60°C operating ambient

Connectors

- 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

Models are factory configured. See I/O ranges above left. Ranges and options for each channel must be specified on order

How to Order

- Channel 1 input range
- Channel 2 input range
- Channel 1 output range
- Channel 2 output range

Models and options—add to end of model number

- Channel 1 I/O reversal (i.e. 20-4 mA out)
- Channel 2 I/O reversal (i.e. 20-4 mA out)
- Channel 1 and channel 2 I/O reversal
- Channel 1 high voltage output >10 V up to 20 V
- Channel 2 high voltage output >10 V up to 20 V
- Channel 1 and channel 2 high voltage output
- U: Conformal coating for moisture resistance

Options and Accessories

- 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. Consultez l’usine pour assistance.
ATTENTION! Évitez 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.

Electrical Connections
Polarity must be observed for signal wiring connections. If the input and/or output 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.

Outputs
For milliamp 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 0-24 VDC at your device’s terminals if it provides power to the loop.

Device for Output Channel 1
Terminal
Terminal
Voltage input device. 3 (-) 4 (+)
Passive or unpowered mA device. ADP module provides the power. 3 (-) 4 (+20 V)
mA input device powers the current loop. 2 (-) 3 (+)

Device for Output Channel 2
Terminal
Terminal
Voltage input device. 7 (-) 8 (+)
Passive or unpowered mA device. ADP module provides the power. 7 (-) 8 (+20 V)
mA input device powers the current loop. 6 (-) 7 (+)

Input 1, RTD Temperature
The sensor type and temperature range are factory configured. See the model/serial number label for sensor type and range.

Temperature Input Ch. 1
Term. Term. Term.
Two wire RTD 17 RTD Jumper 18 & 19 RTD
Three wire RTD 17 RTD 18 Exc. 19 RTD

Input 2, Frequency
The input range is pre-configured at the factory. No input calibration is necessary. The frequency input is compatible with most types of sensors that produce a minimum 100 mV amplitude change and a minimum 5 microsecond pulse width. A 15 VDC supply is available if required. Always refer to the sensor manufacturer’s data sheet to determine supply voltage compatibility and proper wiring.

Frequency Sensor Ch. 2
Signal Com. Sensor Power Sensor Input
2 wire or Namur requiring external power n/a 22 (+15 V) 23 (+)
2 wire self generating (VR) 21 (+) n/a 23 (+)
3 wire PNP or NPN 21 (+) 22 (+15 V) 23 (+)

Sensor Load
The frequency signal input is capacitively coupled to prevent any DC in the input. Some sensors, typically those without an internal load resistor, require a resistive load in order to function. The resistor value may be specified by the sensor manufacturer as the “minimum resistive load” or calculated from the sensor manufacturer’s specified “load current range”.
The 15 VDC power supply is capable of providing 25 mA. A load current range of 3 mA to 25 mA would typically use a 5 kΩ to 500 Ω resistor.

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.