NON-ISOLATED DIFFERENTIAL RTD TO DC TRANSMITTER
API 4001 G SA-B

Specifications

RTD Inputs
Two; (1 Hot/1 Cold); 100 ohm Platinum, DIN (.00385) curve
3-wire preferred; 2-wire acceptable for short lead length applications

Input Differential Span
Minimum: 20 degree F/10 degree C
Maximum: 900 degree F/500 degree C

Input Common Mode Temperature
Entire usable range of 100-Pt

Leadwire Resistance
40 ohm maximum

Leadwire Effect
Less than .02% of span per ohm of leadwire resistance

Output Capability
(Voltage) +/- 10VDC, +/- 10mA max.
(Current) 20mADC, 20V compliance
Outputs clamped not to exceed +/- 5% over/underrange

Response Time
100mSec typical

Temperature Stability
Better than .02% of Span per degree C

Zero/Span Control Range
+/- 15% typical

Functional Test Pushbutton
Adjustable from 0 to 100% of Span

Output Ripple and Noise
Less than 10mV RMS

Ambient Temperature Range (Operating)
-10 to +60 degree C

Power
Standard: 115VAC +/-10%, 50/60Hz, 2.5W max.
Optional: 230VAC +/-10%, 50/60Hz, 2.5W max.
* 12VAC +/-10%, 50/60Hz, 2.5W max.
* 24VAC +/-10%, 50/60Hz, 2.5W max.
* 12VDC +/-5%, 125mA max.
* 24VDC +/-5%, 65mA max.

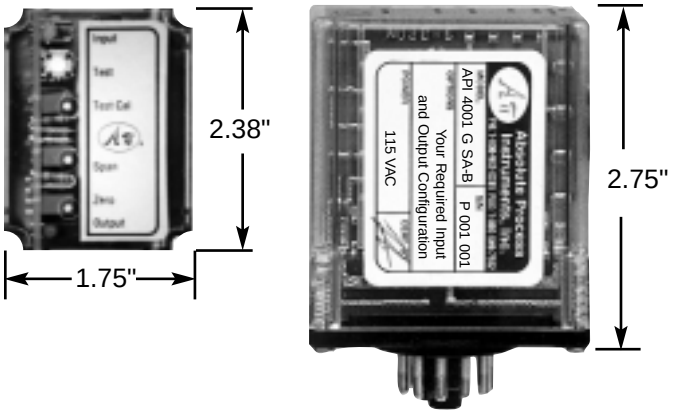
FUNCTIONAL DESCRIPTION

The Api 4001 G SA-B Plug-In accepts two 100 ohm platinum (DIN curve) RTD inputs and provides a linearly-transferred DC voltage or current output proportional to the difference in temperature of the two RTD's. Differential or single-ended input ranges from 20 degrees F thru 900 degrees F (10 degrees C thru 500 degrees C) can be accomodated. Eight common DC output ranges are standard; other outputs are available (consult factory). The 4001 G SA-B features 3-wire RTD leadwire compensation and linearization, for accurate outputs over wide temperature ranges. Api Exclusive Features include Input/Output LoopTracker™ LED's and the Functional Test Pushbutton, which provides a fixed output (independent of the input) when held depressed. The Test Output Level can be set by a top-accessible multiturn potentiometer. Other features include an 11-pin standard plug-in base; 3-piece modular construction, and various module power options in addition to 115VAC; PLUS Api's Lifetime Warranty.

FEATURES

- **RTD Leadwire Compensation**
- **RTD Linearization**
- **Voltage or Current Outputs**
- **Input/Output LoopTracker™ LED's**
- **Functional Test Pushbutton**
- **LIFETIME WARRANTY**

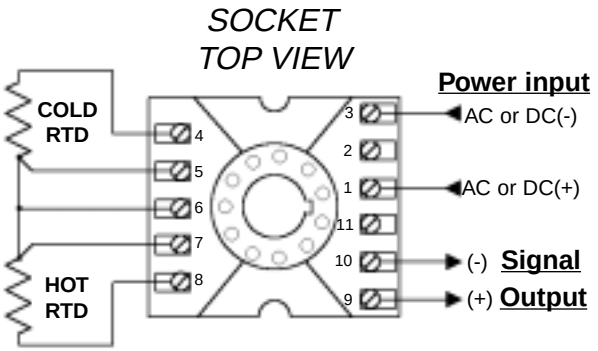
CASE DIMENSIONS



OPERATION

The 4001 G SA-B excites the "hot" and "cold" RTD's with constant 5mA current sources which are curvature-corrected (linearized) for 100 ohm platinum, DIN-curve RTD's. A switched-capacitor technique is used to convert the differential (temperature-difference) signal into a single-ended signal. A precision amplifi-

Electrical Connection



RTD Type	*Can Be Converted To*	Voltage
100 Ohm @ 0°C Pt (D.I.N) (d=.00385)		0 to 1V 0 to 5V 1 to 5V 0 to 10V +/- 5v +/- 10V
Temperature -325 to 1300°F -200 to 700°C		**Current** 0 to 20mA 4 to 20mA
Differential Span Minimum: 20°F(10°C) Maximum: 900°F(500°C)		

The API 4001 G SA-B can convert many other Range Combinations. Consult factory for your specific Range needs.

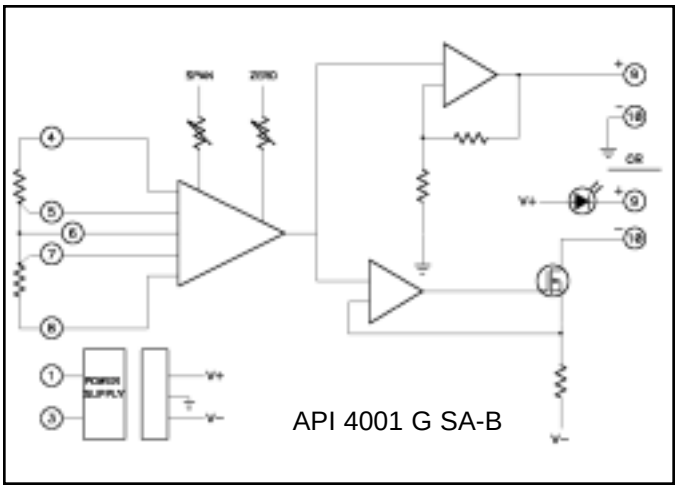
API maintains a constant effort to upgrade and improve its products; therefore; specifications are subject to change without notice.

er then amplifies this signal; zero and span controls (non-interactive) provide a standard level signal to the output stage. The output stage is internally configured for voltage or current output and the gain is scaled to the specific user-requested limits.

When pressed, the Functional Test pushbutton substitutes an internally-generated reference signal in place of the input. The Test Cal control can be adjusted to any output level from 0 to 100 % of span, to facilitate troubleshooting or testing.

CALIBRATION

The Api 4001 G SA-B is shipped from the factory calibrated to your input/output specifications. Recalibration of the Api 4001 G SA-B will require two accurate, matched RTD simulators, plus an accurate DC digital voltmeter, for best results. In particular, be aware that measuring small temperature differentials (20°F to 40°F or 10°C to 20°C) on large "offsets" (800°F, 400°C or more) will require very precise matching (0.1 %) of RTD's for acceptable results. To calibrate, connect two RTD simulators to the module input, and an accurate DC voltmeter (or milliammeter, as required) to the module output. For best accuracy, calibrate the unit near the actual temperatures the unit will encounter in the application. Set the "cold" RTD simulator to the low-end differential temperature compared to the "hot" RTD simulator. Adjust the module's "zero" control for the specified 0% (low end) output. Set the "hot" RTD simulator to the "high" differential value and adjust the module "span" control for the specified "high" (100%) output level. The zero and span controls normally have little interaction. Finally, the Test Cal control may be set to provide the desired output when the Test Pushbutton is held depressed.



API 4001 G SA-B

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