

Solving Your Process Signal Interface Challenges

Convert ♦ Rescale ♦ Transmit ♦ Isolate ♦ Split ♦ Alarm

Signal Conversion and Isolation for

Process Control

Temperature

Flow

Pressure

Speed

Weighing

Valves

AC & DC Power

PLCs & DCSs



ABSOLUTE PROCESS INSTRUMENTS Inc.

800-942-0315 api-usa.com

09-10

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NEW!

Introducing our new **APD** family of alarms and transmitters!

Same great features you've come to expect (our exclusive Push-to-Test Button and LoopTracker®), plus...

- Sink/source versatility
- All new DIN housing
- Removeable plugs
- Universal power



APD 1080 Page 9

DC Input Field Rangeable Alarm, 1 DPDT Relay

APD 1090 Page 9

DC Input Field Rangeable Alarm 2 SPDT Relays

APD 4300 Page 10

Factory Ranged DC-DC Transmitter

APD 4300 PLC Page 11

4-20 mA PLC Input Isolator

APD 4380 Page 12

Field Rangeable DC-DC Transmitter

APD HV-DC Page 14

Field Rangeable Hi-Voltage Input DC-DC Transmitter

APD 4059 Page 26

Field Rangeable Strain Gauge Transmitter



NEW!

Back Cover

Thermo Pro® T16B Battery powered RTD thermometer

Thermo Pro T16ADA Temperature alarm

NEW!

Page 24



DuoPak® with one or two strain gauge inputs.

It's Easy to Buy from API

- Call 800-942-0315 or fax your order to 800-949-7502.
 - We accept American Express, Discover, Master Card, and Visa credit cards.
 - We accept purchase orders from established accounts on net 30 terms. See www.api-usa.com/terms for credit terms and to download our credit application.
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- Buy from our nationwide network of representatives. Our factory-trained representatives can provide on-site support and technical assistance. Call us to find your local representative or visit www.api-usa.com.
 - Call us to find a factory authorized distributor near you. Your local API distributor may already be on your approved vendor list, making purchasing easy!

Prices and Specifications

API quotations are firm for 30 days. Order acceptance subject to pricing and credit approval. Prices are subject to change at any time. See www.api-usa.com for our current price list. Orders are invoiced at the price prevailing at the date of shipment. Prices do not include any taxes, freight, handling, duty or other similar charges.

If applicable, please fax your current resale tax or tax exemption certificate. Please note that tax laws may require you to purchase from a representative or distributor in your area.

Specifications are subject to change at any time. We reserve the right to upgrade, change or discontinue products without notice. Call us if you have specific requirements.

Shipping

Prices are FOB Libertyville, IL. Normal shipment is via UPS ground, pre-pay and add. Call us if you have specific shipping requirements.

Warranty

Lifetime: Signal conditioners, isolators, transmitters, and power supplies manufactured by Absolute Process Instruments.

5 years: API current switches, current transmitters.

3 years: API-Camille Bauer products.

2 years: DPP series power supplies.

1 year: Cecomp products, current transducers.

Products are warranted to be free from deviations in material and workmanship in accordance with the API warranty statement in our current price list available from api-usa.com.

Service and Returns

Call API Customer Service at 800-942-0315 to obtain a RMA# for repairs or returns. Most API and Cecomp products can be repaired or refurbished. Only new unused products can be returned for credit and are subject to a restocking fee. Shipping costs for repairs and returns must be prepaid by the customer.

Our Company



Facta non Verba—Deeds not Words

Our engineering-oriented and application-driven company provides solutions to your technical challenges. API and Cecomp designed products are manufactured in our Libertyville, IL facility.

Absolute Process Instruments, Inc. www.api-usa.com

- Industry leading manufacturer of standard and custom industrial signal conditioners, signal converters, alarms, signal transmitters, temperature alarms and transmitters.

Cecomp Electronics Division www.cecomp.com

- Industry leading manufacturer of digital pressure and vacuum gauges, transmitters, alarms, as well as digital temperature products and transmitters.
- Designer and manufacturer of custom industrial electronics.

Api-Camille Bauer Division www.apicb.com

- Electrical power monitors and transducers, capacitive-type rotary position transducers, signal conditioners, and temperature transmitters from Switzerland.

Rheintacho USA www.rheintacho.us

- Rotary speed sensors and monitors from Germany.



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ABSOLUTE PROCESS INSTRUMENTS Inc.

Email: njsales@a-aelectric.com

AL and 5RL Current Transformers**Input:** 0-50 to 0-1600 Amps AC**Output:** 0 to 5 Amps AC

Standard CTs with 5 Amp output for monitoring AC motor and heater current

- Monitor Electric Furnaces, Machinery, Motors
- Inputs for Power Meters

Frequency Range

50 to 400 Hz

Insulation Level

600 Volts, 10 kV BIL full wave

Leads

24" long, stranded #16 AWG
UL 1015 105 °C, CSA approved

Model	Ratio	Accuracy at 60 Hz	Burden VA at 60 Hz	Price
1.05" I.D. x 2.47" O.D. x 1.05" W				
AL-500	50:5	±3%	2.0	\$46
1.56" I.D. x 3.56" O.D. x 1.10" W				
5RL-101	100:5	±2%	2.0	\$54
5RL-201	200:5	±1%	5.0	\$54
5RL-401	400:5	±1%	12.5	\$54
5RL-501	500:5	±1%	20.0	\$54

Call for other ratios and sizes

Datasheet Quick Link: api-usa.com/CT**CS-AC and CS-DC Current Switches****Input:** Up to 150 Amps AC**Output:** SPDT Relay or N.C. or N.O. SSR

Economical and easy-to-install sensors for monitoring current out-of-limit conditions

- Process Limit or Motor Over-Current Alarm
- Heater Break, Conveyor Jam Alarm

Solid State Switch Models

Non-polarity sensitive magnetically isolated solid state switch

Mechanical Relay Models

Isolated SPDT mechanical relay

5 A @ 240 VAC, 3 A inductive (1/8 HP @ 240 VAC)

5 A @ 30 VDC

Hysteresis

Approximately 5% of setpoint

Response Time**CS-AC:** 120 milliseconds**CS-DC:** 120 milliseconds (10% above setpoint)

20 milliseconds (100% above setpoint)

Datasheet Quick Link: api-usa.com/CS**CS-AC Indication**

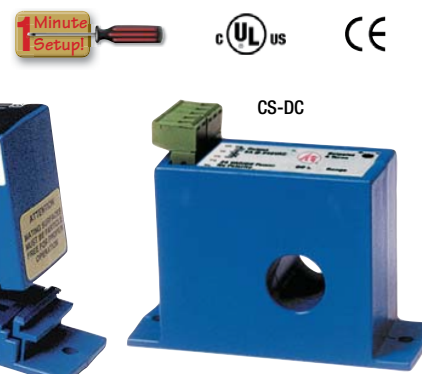
Normal operation: Red LED slowly flashes once every 2-3 seconds

Alarm: Red LED quickly flashes 2-3 times per second

CS-DC Indication

Green LED indicates when unit is on

Red LED turns on above trip point

External Dimensions**CS-AC:** 3.53" W x 2.47" H x 1.19" D**CS-DC:** 3.88" W x 2.9" H x 1.5" D**Isolation****CS-AC:** 1270 VAC**CS-DC:** 3 kV

Model	Freq. Range	Type	Power	Switch	Rating	Setpoint Range	Price
CS-AC-1	6 to 100 Hz	Split core 0.85" x 0.85" aperture	Self	N.C. SSR	0.2 A at 135 VAC/VDC	1.75 to 150 AAC adjustable via 11 turn potentiometer	\$108
CS-AC-2				N.O. SSR	0.15 A at 240 VAC/VDC		\$108
CS-DC-1S-12	DC to 400 Hz	Solid core 0.75" dia. aperture	12 VAC/VDC ±10%	SPDT	5 A @ 240 VAC, 3 A ind., 5 A @ 30 VDC	Jumper selectable Low: 5 to 20 A Mid: 18 to 50 A, High: 50 to 100 A adjustable via 9 turn potentiometer	\$135
CS-DC-2S-12				N.O. SSR	0.15 A at 240 VAC/VDC		\$130
CS-DC-1S-24			20 to 28 VAC/VDC	SPDT	5 A @ 240 VAC, 3 A ind., 5 A @ 30 VDC		\$135
CS-DC-2S-24				N.O. SSR	0.15 A at 240 VAC/VDC		\$130

CTX-AC Current Transmitters**Input:** 0-2 Amps to 2000 Amps AC**Output:** 4-20 mA

Easy-to-install sensors for converting current measurements to a standard 4-20 mA signal

- VFD or SCR Control Monitoring
- Machinery, Building, or Lighting Power

Loop Power

Powered by 4-20 mA current loop, 12 VDC to 40 VDC max.

CTX series 0, 1, 2Loop voltage: $V_L = 12 \text{ VDC} + (R_L \times 0.020 \text{ A})$ Loop resistance: $R_L = (V_L - 12 \text{ VDC}) \div 0.020 \text{ A}$ **CTX series 3, 4:** 500 Ω max. load**Frequency Range**

10 to 400 Hz

Datasheet Quick Link: api-usa.com/CTXAC

CTX-ACR-0, -1, -2



CTX-ACR-3, -4

Model	Type	Selectable Ranges			Select	Aperture	Ext. Dim.	Isolation	Response	Accuracy	Output	Limit	Price
CTX-AC-0	Averaging	0-2 A	0-5 A		Jumper	0.85" x 0.85" split core	3.53" W x 2.61" H x 1.18" D	UL listed to 1270 VAC, tested to 5000 VAC	600 msec to 90% step change	±0.8% FS	4-20 mA powered by loop	23 mA max.	\$190
CTX-ACR-0	True RMS												\$230
CTX-AC-1	Averaging	0-10 A	0-20 A	0-50 A									\$170
CTX-ACR-1	True RMS												\$220
CTX-AC-2	Averaging	0-100 A	0-150 A	0-200 A									\$170
CTX-ACR-2	True RMS												\$220
CTX-AC-3S	Averaging	0-375 A	0-500 A	0-750 A	Switch	3.0" dia. solid core	4.5" W x 5.74" H x 2.50" D	600 VAC	100 msec 10% to 90% step change	±1% FS	4-20 mA powered by loop	22.4 mA max.	\$245
CTX-ACR-3S	True RMS												\$285
CTX-AC-4S	Averaging	0-1000 A	0-1333 A	0-2000 A									\$325
CTX-ACR-4S	True RMS												\$365

API 1600 G, API 1620 G AC Input Voltage/Current Alarms**Input:** 50 mV to 300 VAC, 1 mA to 5 AAC**Output:** One DPDT Relay or Two SPDT Relays

Versatile custom-ranged voltage or current alarms for machinery or OEM applications

- Machinery Over- and Under-Current
- Voltage Out of Limit Alarm

LoopTracker®

Variable brightness green LED indicates input level and status

Alarm Setpoint

12 turn potentiometer, field adjustable from 0-100% of span

Functional Test/Reset Button

Toggle relay(s) to opposite state when pressed

Resets latching relay on **API 1600 G HT****Response Time**

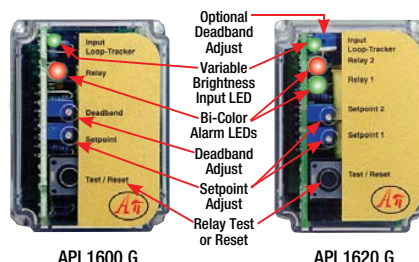
70 milliseconds typical

Relay Ratings

7 A @ 240 VAC maximum resistive load

3.5 A @ 240 VAC maximum inductive load

8 A @ 30 VDC maximum

Datasheet Quick Link: api-usa.com/1600

API 1600 G

API 1620 G

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)



Model	Input Range (Specify)	Alarm Relay	Deadband	Power	Price
API 1600 G	0-50 mVAC to 0-300 VAC or 0-1 mAAC to 0-900 mAAC	1 DPDT alarm relay HI alarm standard See table at right for alarm options	1% to 100% of span, 12 turn potentiometer	115 VAC	\$259
API 1600 G A230				230 VAC	\$259
API 1600 G P				80-265 VAC, 48-300 VDC	\$319
API 1600 G D	>0-900 mAAC to 0-5 AAC Includes API 011 socket and 25 W shunt	2 SPDT alarm relays HI/LO alarms, internal jumper configurable for LO/HI, LO/LO, HI/HI See table at right for alarm options	Fixed at 1% of span, standard See options for adjustable deadband	9-30 VDC	\$319
API 1600 G 5A				115 VAC	\$289
API 1600 G A230 5A				230 VAC	\$289
API 1600 G P 5A	>0-900 mAAC to 0-5 AAC Includes API 011 socket and 25 W shunt			80-265 VAC, 48-300 VDC	\$349
API 1600 G D 5A				9-30 VDC	\$349
API 1620 G	0-50 mVAC to 0-300 VAC or 0-1 mAAC to 0-900 mAAC			115 VAC	\$279
API 1620 G A230				230 VAC	\$279
API 1620 G P				80-265 VAC, 48-300 VDC	\$339
API 1620 G D	>0-900 mAAC to 0-5 AAC Includes API 011 socket and 25 W shunt			9-30 VDC	\$339
API 1620 G 5A				115 VAC	\$309
API 1620 G A230 5A				230 VAC	\$309
API 1620 G P 5A	>0-900 mAAC to 0-5 AAC Includes API 011 socket and 25 W shunt			80-265 VAC, 48-300 VDC	\$369
API 1620 G D 5A				9-30 VDC	\$369

Options—add to end of model number	Adder
R API 1600 G: Reverse-acting alarms	\$20
L API 1600 G: Low trip (on decreasing signal)	free
HT API 1600 G: Latching alarm, push button reset	\$35
HP API 1600 G: Latching alarm, power-off reset	\$35
R API 1620 G: Reverse-acting alarms	\$20
A API 1620 G: Adjustable deadbands 1% to 100% of span, 1 turn potentiometer Adjusted symmetrically about each setpoint	\$25
HH API 1620 G: HI/HI trip	free
LL API 1620 G: LO/LO trip	free
U Conformal coating for moisture resistance	\$20

Accessories—order as a separate line item	Price
API 011 11-pin socket	\$11
API 011 FS 11-pin finger safe socket	\$11
API TK36 DIN rail, 35 mm W x 39" L, aluminum	\$15

API 6010 G AC Input Isolated Transmitters**Input:** 50 mV to 300 VAC, 1 mA to 5 AAC**Output:** 0-1 V to ± 10 VDC, 0-1 mA to 4-20 mA

Versatile custom-ranged transmitter converts voltage or current to a process signal

- Motor, Heater, or Machinery input to PLC
- Monitor Electrical Loads or Voltage Drops

LoopTracker®

Variable brightness LEDs indicate I/O loop level and status

Output Zero and SpanMulti-turn potentiometers, $\pm 15\%$ of span adjustment range**Response Time**

150 milliseconds typical

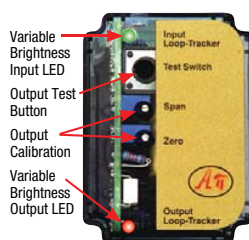
Functional Test Button

Sets output to test level when pressed

Potentiometer adjustable 0-100% of span

Isolation2000 V_{RMS}, 3-way: power/input, power/output, input/output**Dimensions**

1.75" W x 2.75" H x 2.38" D (not including socket)

Datasheet Quick Link: api-usa.com/6010

API 6010 G



API 6010 G 5A

Model	Input Range (Specify)	Output Range (Specify)	Power	Price
API 6010 G	0-50 mVAC to 0-300 VAC or 0-1 mAAC to 0-900 mAAC	Voltage: 0-1 VDC to 0-10 VDC ± 1 VDC to ± 10 VDC Current: 0-1 mAADC to 0-20 mAADC 20 V compliance, 1000 Ω at 20 mA	115 VAC	\$319
API 6010 G A230			230 VAC	\$319
API 6010 G P			80-265 VAC, 48-300 VDC	\$379
API 6010 G D	>0-900 mAAC to 0-5 AAC Includes API 008 socket and 25 W shunt		9-30 VDC	\$379
API 6010 G 5A			115 VAC	\$349
API 6010 G A230 5A			230 VAC	\$349
API 6010 G P 5A	>0-900 mAAC to 0-5 AAC Includes API 008 socket and 25 W shunt		80-265 VAC, 48-300 VDC	\$409
API 6010 G D 5A			9-30 VDC	\$409

Options—add to end of model number	Adder
EXTSUP Open collector (sinking or unpowered) mA output	\$60
HC High current output, >20 mA - 50 mAADC	\$70
DF Fast response, 1 millisecond nominal	\$40
U Moisture resistant conformal coating	\$20
Accessories—order as a separate line item	Price
API 008 8-pin socket	\$8
API 008 FS 8-pin finger safe socket	\$8
API TK36 DIN rail, 35 mm W x 39" L, aluminum	\$15



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Web : www.A-Aelectric.com Email: njsales@a-aelectric.com

API 6380 G, API 6380 G HV Field Rangeable AC Input Isolated Transmitters**Input:** 50 mV to 600 VAC, 5 mA to 5 AAC**Output:** 0-1 V to ± 10 VDC, 0-2 mA to 0-25 mA

Wide-ranging transmitters for converting AC voltage and current measurements to a standard process signal

- Monitor/ Isolate/Rescale AC Voltage or Current
- 3-Way Isolation

Input**API 6380 G:** 20 switch selectable input ranges

mVAC: 0-50, 0-100, 0-200, 0-500

VAC: 0-1, 0-2, 0-5, 0-10, 0-20, 0-50, 0-100, 0-125, 0-175, 0-200, 0-250

mAAC: 0-5, 0-10, 0-50, 0-100, 0-200

API 6380 G HV: 24 switch selectable input ranges

mVAC: 0-50, 0-100, 0-200, 0-500

VAC: 0-1, 0-2, 0-5, 0-10, 0-20, 0-50, 0-100, 0-125, 0-175, 0-200, 0-250, 0-300, 0-400, 0-500, 0-600

mAAC: 0-5, 0-10, 0-50, 0-100, 0-200

5A option: 5 Amp external 25 W shunt resistor with API 008

socket for current inputs >200 mAAC to 5A

With shunt use mV input settings only

S option: true RMS measurement for distorted AC waveforms

Consult factory for special ranges

Input ImpedanceWith 0-4 volt input: 1 M Ω minimumWith > 4 volt input: 220 k Ω minimumCurrent input: 10 Ω **Input Frequency**

40 Hz to 1000 Hz sinusoidal input

Datasheet Quick Link: api-usa.com/6380**LoopTracker®**

Variable brightness green LED for input level and status

Variable brightness red LED for output level and status

Output

16 field selectable output ranges

VDC: 0-1, 0-2, 0-4, 1-5, 0-5, 0-8, 2-10, 0-10, ± 5 , ± 10

mADC: 0-2, 2-10, 0-10, 0-16, 4-20, 0-20

Normal acting output, internal jumper for output reversal

Output LinearityBetter than $\pm 0.1\%$ of span**Output Zero and Span**Multi-turn potentiometers, $\pm 15\%$ of span adjustment range

Non-interactive zero and span potentiometers

Functional Test Button

Sets output to test level when pressed

Potentiometer adjustable 0-100% of span

Response Time

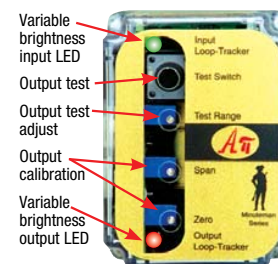
200 milliseconds typical (0-90%)

Isolation2000 V_{RMS}, 3-way: power/input, power/output, input/output**Dimensions**

1.75" W x 2.75" H x 2.38" D (not including socket)



API 008 socket sold separately



API 6380 G

Model	Type	Input Ranges	Output Ranges	Power	Price
API 6380 G	Averaging	20 switch selectable ranges 0-50 to 0-500 mVAC 0-1 to 0-250 VAC 0-5 to 0-200 mAAC	16 switch selectable ranges 0-1 to 0-10 VDC ± 1 to ± 10 VDC 0-2 to 0-25 mADC mA outputs have 20 V compliance, 1000 Ω at 20 mA	115 VAC	\$359
API 6380 G A230				230 VAC	\$359
API 6380 G P				80-265 VAC, 48-300 VDC	\$419
API 6380 G D				9-30 VDC	\$419
API 6380 G S				115 VAC	\$399
API 6380 G S A230	True RMS	0-5 to 0-200 mAAC		230 VAC	\$399
API 6380 G S P				80-265 VAC, 48-300 VDC	\$459
API 6380 G S D				9-30 VDC	\$459
API 6380 G 5A				115 VAC	\$389
API 6380 G 5A A230				230 VAC	\$389
API 6380 G 5A P	Averaging, high current input	Switch selectable mV ranges for shunt >0-200 mAAC to 0-5 AAC Includes API 008 socket and 25 W shunt		80-265 VAC, 48-300 VDC	\$449
API 6380 G 5A D				9-30 VDC	\$449
API 6380 G S 5A				115 VAC	\$429
API 6380 G S 5A A230				230 VAC	\$429
API 6380 G S 5A P				80-265 VAC, 48-300 VDC	\$489
API 6380 G S 5A D	True RMS high current input			9-30 VDC	\$489
API 6380 G HV				115 VAC	\$379
API 6380 G HV A230				230 VAC	\$379
API 6380 G HV P				80-265 VAC, 48-300 VDC	\$439
API 6380 G HV D				9-30 VDC	\$439
API 6380 G S HV	True RMS high voltage input	24 switch selectable ranges 0-50 to 0-500 mVAC 0-1 to 0-600 VAC 0-5 to 0-200 mAAC		115 VAC	\$419
API 6380 G S HV A230				230 VAC	\$419
API 6380 G S HV P				80-265 VAC, 48-300 VDC	\$479
API 6380 G S HV D				9-30 VDC	\$479

Options—add to end of model number		Adder
U	Moisture resistant conformal coating	\$20
Accessories—order as a separate line item		Price
API 008	8-pin socket	\$8
API 008 FS	8-pin finger safe socket	\$8
API TK36	DIN rail, 35 mm W x 39" L, aluminum	\$15

Monitoring a Current Transformer

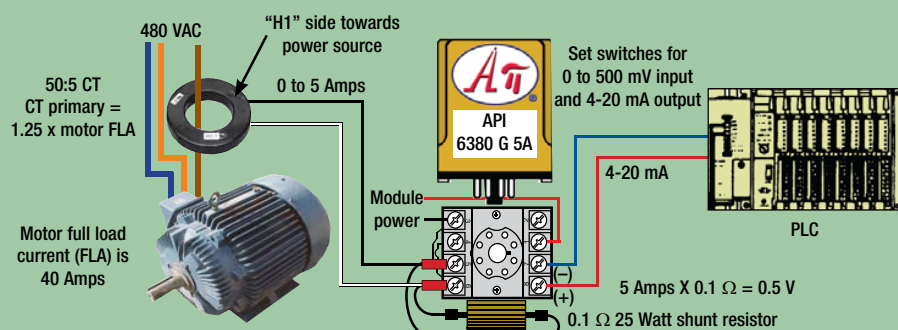
A current transformer (CT) can be connected to one leg of the 3-phase wiring to monitor motor current as long as the 3 phases are balanced. Note that this does not measure motor load. The CT has an output of 0 to 5 Amps. The readings need to be monitored by a PLC that accepts a 4-20 mA input.

Use an API 6380 G 5A isolated AC to DC transmitter with the 5 Amp current shunt. It converts the 0-5 A signal to 4-20 mA.

The module input switches are set to the 0-500 mV range to read the voltage drop across the 0.1 Ω current shunt.

$$5 \text{ Amps} \times 0.1 \Omega = 0.5 \text{ V or } 500 \text{ mV}$$

The output switches are set to 4-20 mA. The output provides power to the loop, so no additional power supply is needed.



API 2000 **DuoPak** Series 2 Channel Isolated Transmitters

Inputs: AC, DC, RTD, Frequency, Pot., Strain

Outputs: 0-1 V to ± 10 VDC, 0-1 mA to 0-20 mA

Two independent channels of signal conversion, isolation, and retransmission in one compact package. Convert any combination of two input signals to standard process signals.

- Simultaneous Voltage and Current Monitoring
- Motor Current with Speed or Temperature
- Monitor AC Actuator Load and Position

Inputs

The DuoPak converter/isolator provides two independent channels of signal conversion, isolation, and retransmission in one compact package. Order any combination of DC, AC, RTD, frequency, potentiometer, or strain gauge inputs.

LoopTracker LEDs

Variable brightness green LED for input level and status
Variable brightness red LED for output level and status

Outputs

Factory configured—specify output range for each channel

Voltage: 0-1 VDC to 0-10 VDC, ± 1 VDC to ± 10 VDC

Current: 0-1 mA to 0-20 mA

1000 Ω at 20 mA, 20 V compliance

Consult factory for other ranges



Free Factory I/O Setup!

Output Calibration

Multi-turn zero and span potentiometers for each channel
 $\pm 15\%$ of span adjustment range typical

Output Linearity, Ripple and Noise

Better than $\pm 0.1\%$ of span

Functional Test Button

Sets output to test level when pressed
Factory set to approximately 50% of span

Common Mode Rejection

120 dB minimum

Isolation

2000 V_{RMS}, 3-way: power/input, power/output, input/output

Ambient Temperature Range and Stability

-10°C to $+60^{\circ}\text{C}$ operating ambient

Better than $\pm 0.04\%$ of span per $^{\circ}\text{C}$ stability

Dimensions

2.17" W x 3.0" H x 4.33" D (not including connectors)



Datasheet Quick Link: api-usa.com/2000

DC Input	AC Input	RTD Input	Frequency Input	Potentiometer Input	Strain Gauge Input																		
Input Ranges 0-100 mVDC to 0-500 VDC 200 kΩ min. impedance ±100 mVDC to ±10 VDC 200 kΩ min. impedance 0-1 mAADC to 0-900 mADC 1.25 VDC max. burden mA inputs sink current Popular ranges: 0-1 V, 0-2 V, 0-5 V, 1-5 V, 0-10 V, ±1 V, ±5 V, ±10 V, 0-1 mA, 0-20 mA, 4-20 mA Response Time 70 milliseconds typical	Input Ranges 0-50 mVAC to 0-300 VAC 200 kΩ min. impedance 0-1 mAAC to 0-900 mAAC 1.0 VRMS max. burden Typical Input Ranges 0-50 mVAC, 0-100 mVAC, 0-150 VAC, 0-250 VAC 0-10 mAAC, 0-100 mAAC Input Protection 750 VDC or 750 VACp common mode Response Time 150 milliseconds typical	Input Ranges & Types Specify: 2- or 3-wire RTD, type, curve, °F or °C range Minimum span: 100°F or 55°C <table><tr><td>Resistance</td><td>Type</td></tr><tr><td>10 Ω</td><td>Copper</td></tr><tr><td>100 Ω</td><td>Pt 0.00385</td></tr><tr><td>100 Ω</td><td>Pt 0.00392</td></tr><tr><td>100 Ω</td><td>Copper</td></tr><tr><td>120 Ω</td><td>Nickel</td></tr><tr><td>1000 Ω</td><td>Pt 0.00385</td></tr><tr><td>1000 Ω</td><td>Balco Ni-Fe</td></tr><tr><td>2000 Ω</td><td>Pt 0.00385</td></tr></table> Linearization Better than ±0.1% of span	Resistance	Type	10 Ω	Copper	100 Ω	Pt 0.00385	100 Ω	Pt 0.00392	100 Ω	Copper	120 Ω	Nickel	1000 Ω	Pt 0.00385	1000 Ω	Balco Ni-Fe	2000 Ω	Pt 0.00385	Input Ranges 0-25 Hz to 0-20 kHz 100 kΩ minimum impedance Amplitude 100 mVRMS min., 150 VRMS max. Input Waveforms Sine, sawtooth, square wave, or others with greater than 100 mV amplitude change Sensor Power Supply 15 VDC regulated 25 mADC	Input Ranges Minimum: 0-100 Ω Maximum: 0-1.0 MΩ Full travel of the potentiometer required Consult factory for other ranges Response Time 70 milliseconds typical	Input Ranges Specify: excitation voltage, sensor mV/V Minimum: 1 mV/V Maximum: 200 mV/V Excitation Voltage 10 VDC max. at 30 mA Response Time 70 milliseconds typical
Resistance	Type																						
10 Ω	Copper																						
100 Ω	Pt 0.00385																						
100 Ω	Pt 0.00392																						
100 Ω	Copper																						
120 Ω	Nickel																						
1000 Ω	Pt 0.00385																						
1000 Ω	Balco Ni-Fe																						
2000 Ω	Pt 0.00385																						

Model	Channel 1 Input (Specify)	Output 1 (Specify)	Channel 2 Input (Specify)	Output 2 (Specify)	Power	Price
API 2066 DIN	AC mV, V, or mA range	Specify mV, V, or mA range	AC mV, V, or mA range	Specify mV, V, or mA range	80-265 VAC or 40-300 VDC	\$495
API 2060 DIN	AC mV, V, or mA range		DC mV, V, or mA range			\$495
API 2067 DIN	AC mV, V, or mA range		Frequency range			\$495
API 2063 DIN	AC mV, V, or mA range		Any full-range potentiometer			\$495
API 2061 DIN	AC mV, V, or mA range		RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$			\$495
API 2065 DIN	AC mV, V, or mA range		Bridge mV/V, excitation volts			\$495
API 2006 DIN	DC mV, V, or mA range		AC mV, V, or mA range			\$495
API 2076 DIN	Frequency range		AC mV, V, or mA range			\$495
API 2036 DIN	Any full-range potentiometer		AC mV, V, or mA range			\$495
API 2016 DIN	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$		AC mV, V, or mA range			\$495
API 2056 DIN	Bridge mV/V, excitation volts	See table at right for output options	AC mV, V, or mA range	See table at right for output options	9-30 VDC or 10-32 VAC	\$495
API 2066 DD	AC mV, V, or mA range		AC mV, V, or mA range			\$555
API 2060 DD	AC mV, V, or mA range		DC mV, V, or mA range			\$555
API 2067 DD	AC mV, V, or mA range		Frequency range			\$555
API 2063 DD	AC mV, V, or mA range		Any full-range potentiometer			\$555
API 2061 DD	AC mV, V, or mA range		RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$			\$555
API 2065 DD	AC mV, V, or mA range		Bridge mV/V, excitation volts			\$555
API 2006 DD	DC mV, V, or mA range		AC mV, V, or mA range			\$555
API 2076 DD	Frequency range		AC mV, V, or mA range			\$555
API 2036 DD	Any full-range potentiometer		AC mV, V, or mA range			\$555
API 2016 DD	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$	See table at right for output options	AC mV, V, or mA range	See table at right for output options		\$555
API 2056 DD	Bridge mV/V, excitation volts		AC mV, V, or mA range			\$555

Options—add to end of model number		Adder
L1	Channel 1 sourcing milliamp input, provides power to ch. 1 input loop	\$20
L2	Channel 2 sourcing milliamp input, provides power to ch. 2 input loop	\$20
L3	Channel 1 & 2 sourcing milliamp inputs, provides power to ch. 1 & 2 input loops	\$20
R1	Channel 1 I/O reversal, such as 20-4 mA output	\$20
R2	Channel 2 I/O reversal, such as 20-4 mA output	\$20
R3	Channel 1 & channel 2 I/O reversal, such as 20-4 mA outputs	\$20
EX1	Channel 1 open collector sinking (unpowered) mA output	\$20
EX2	Channel 2 open collector sinking (unpowered) mA output	\$20
EX3	Channel 1 & channel 2 open collector sinking (unpowered) mA outputs	\$20
U	Moisture resistant conformal coating	\$20
Accessories—order as a separate line item		Price
API GP8	Spare green 8 terminal connector	\$8
API TK36	DIN rail, 35 mm W x 39" L, aluminum	\$15



800-942-0315

api-usa.com



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Web : www.A-Aelectric.com Email: njsales@a-aelectric.com

CS-DC Current Switches**Input:** 5 to 100 Amps AC or DC**Output:** SPDT Relay or N.O. SSR

Economical and easy-to-install sensors for alarming current out-of-limit conditions

- Process Limit or Motor Over-Current Alarm
- DC Power Limit Alarm
- Battery Current Alarm

Switch Type

CS-DC-1S: Isolated SPDT mechanical relay
5 A @ 240 VAC, 3 A ind. (1/8 HP @ 240 VAC), 5 A @ 30 VDC

CS-DC-2S: Isolated solid state switch, Normally Open
0.15 A @ 240 VAC/VDC, Not polarity sensitive,
Off state leakage: <10 μ A

Frequency Range

DC to 400 Hz

Setpoint Range and Adjustment

Jumper selectable: 5 to 20 A, 18 to 50 A, 50 to 100 A
9 turn potentiometer setpoint adjustment

Hysteresis

Approximately 5% of setpoint

Response Time

100 milliseconds (10% above setpoint)
20 milliseconds (100% above setpoint)

Indication

Green power LED, Red LED turns on above trip point

Isolation Voltage

3000 Volts

Dimensions

3.88" W x 2.9" H x 1.5" D

Model	Power	Output	Price
CS-DC-1S-12	12 VAC/VDC $\pm$ 10%	SPDT	\$135
CS-DC-2S-12	12 VAC/VDC $\pm$ 10%	N.O. SSR	\$130
CS-DC-1S-24	20 to 28 VAC/VDC	SPDT	\$135
CS-DC-2S-24	20 to 28 VAC/VDC	N.O. SSR	\$130



CS-DC

Datasheet Quick Link: api-usa.com/CS

API 1000 G, API 1020 G DC Input Voltage/Current Alarms**Input:** 100 mV to 300 VDC, 1 mA to 5 ADC**Output:** One DPDT Relay or Two SPDT Relays

Easy-to-install plug-in modules for alarming current out-of-limit conditions

- Process Limit Alarm
- DC Power Limit Alarm
- Shunt Current Alarm

LoopTracker®

Variable brightness green LED indicates input level and status

Alarm Setpoint

12 turn potentiometer, field adjustable from 0-100% of span

Functional Test/Reset Button

Toggle relay(s) to opposite state when pressed
Resets latching relay on API 1000 G with HT option

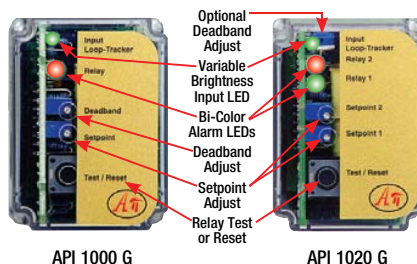
Response Time

70 milliseconds typical

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)

Datasheet Quick Link: api-usa.com/1000



API 1000 G

API 1020 G

Relay Ratings

7 A @ 240 VAC maximum resistive load
3.5 A @ 240 VAC maximum inductive load
8 A @ 30 VDC maximum



Model	Input Ranges (Specify)	Alarm Relay	Deadband	Power	Price
API 1000 G	0-100 mVDC to 0-300 VDC	1 DPDT alarm relay HI alarm std.	1% to 100% of span, 12 turn potentiometer	115 VAC	\$219
API 1000 G A230	or			230 VAC	\$219
API 1000 G P	0-1 mADC to 0-900 mADC			80-265 VAC, 48-300 VDC	\$279
API 1000 G D				9-30 VDC	\$279
API 1000 G 5A	>0-900 mADC to 0-5 ADC			115 VAC	\$249
API 1000 G A230 5A	Includes API 011 socket and 25 W shunt			230 VAC	\$249
API 1000 G P 5A		2 SPDT alarm relays HI/LO alarms, internal jumper configurable for LO/LO, HI/LO, LO/LO, HI/LO	Fixed at 1% of span, standard See options for adjustable deadband	80-265 VAC, 48-300 VDC	\$309
API 1000 G D 5A				9-30 VDC	\$309
API 1020 G	0-100 mVDC to 0-300 VDC			115 VAC	\$249
API 1020 G A230	or			230 VAC	\$249
API 1020 G P	0-1 mADC to 0-900 mADC			80-265 VAC, 48-300 VDC	\$309
API 1020 G D				9-30 VDC	\$309
API 1020 G 5A	>0-900 mADC to 0-5 ADC			115 VAC	\$279
API 1020 G A230 5A	Includes API 011 socket and 25 W shunt			230 VAC	\$279
API 1020 G P 5A				80-265 VAC, 48-300 VDC	\$339
API 1020 G D 5A				9-30 VDC	\$339

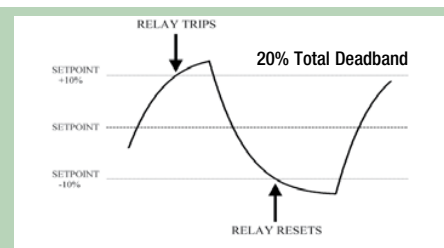
Options—add to end of model number	Adder
R API 1000 G: Reverse-acting alarms	\$20
L API 1000 G: Low trip (on decreasing signal)	free
HT API 1000 G: Latching alarm, push button reset	\$35
HP API 1000 G: Latching alarm, power-off reset	\$35
R API 1020 G: Reverse-acting alarms	\$20
A API 1020 G: Adjustable deadbands 1% to 100% of span, 1 turn potentiometer Adjusted symmetrically about each setpoint	\$25
HH API 1020 G: HI/LO trip	free
LL API 1020 G: LO/LO trip	free
U Conformal coating for moisture resistance	\$20

Accessories—order as a separate line item	Price
API 011 11-pin socket	\$11
API 011 FS 11-pin finger safe socket	\$11
API TK36 DIN rail, 35 mm W x 39" L, aluminum	\$15

What is Deadband?

Deadband is the range through which an input can be varied without initiating an observable output response. Deadband is usually expressed in percent of span. Deadband is needed to prevent alarm contacts from changing state too frequently or chattering when near the setpoint.

In the example at right, a 20% total deadband is applied to the setpoint of a monitored parameter. The relay will trip and reset to its untripped state as indicated in the graph.



API 1005 G, API 1025 G 4-20 mA Input Alarms

Input: 4-20 mA with Loop Supply

Output: One DPDT Relay or Two SPDT Relays

Easy-to-install plug-in modules for alarming 4-20 mA current loops

- Process Limit Backup Alarm
- Loop Break or Loop Out of Range Alarm

Input Loop Power Supply

18 VDC nominal, unregulated, 25 mADC

LoopTracker®

Variable brightness green LED indicates input level and status

Alarm Setpoint

12 turn potentiometer, field adjustable from 0-100% of span

Functional Test/Reset Button

Toggle relay(s) to opposite state when pressed

Resets latching relay on API 1005 G with HT option

Response Time

70 milliseconds typical

Dimensions

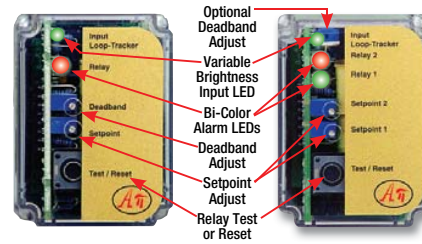
1.75" W x 2.75" H x 2.38" D (not including socket)

Relay Ratings

7 A @ 240 VAC maximum resistive load

3.5 A @ 240 VAC maximum inductive load

8 A @ 30 VDC maximum

Datasheet Quick Link: api-usa.com/1005

API 1005 G

API 1025 G

Options—add to end of model number	Adder
R API 1005 G: Reverse-acting alarms	\$20
L API 1005 G: Low trip (on decreasing signal)	free
HT API 1005 G: Latching alarm, push button reset	\$35
HP API 1005 G: Latching alarm, power-off reset	\$35
R API 1025 G: Reverse-acting alarms	\$20
A API 1025 G: Adjustable deadbands 1% to 100% of span, 1 turn potentiometer Adjusted symmetrically about each setpoint	\$25
HH API 1025 G: HI/LO trip	free
LL API 1025 G: LO/LO trip	free
U Conformal coating for moisture resistance	\$20

Accessories—order as a separate line item	Price
API 011 11-pin socket	\$11
API 011 FS 11-pin finger safe socket	\$11
API TK36 DIN rail, 35 mm W x 39" L, aluminum	\$15

API 1080 G, API 1090 G Field Configurable DC Input Alarms

Input: 0-50 mV ~ ±10 VDC, 0-1 mA ~ 0-20 mA

Output: One DPDT Relay or Two SPDT Relays

Versatile DC voltage/current input alarms allow field configuration of input ranges and alarm type

- Process Limit Backup Alarm
- Over, Under, Out-of-Range Alarm

Input Voltage Burden

1.0 VDC typical at 20 mA

Loop Power Supply

18 VDC nominal, unregulated, 25 mA

LoopTracker®

Variable brightness LED indicates input loop level and status

Functional Test/Reset Button

Toggles relay to opposite state when pressed

Resets latching relay if latching relay mode was selected

Alarm Setpoint

Potentiometer adjustable from 0-100% of span

Deadband

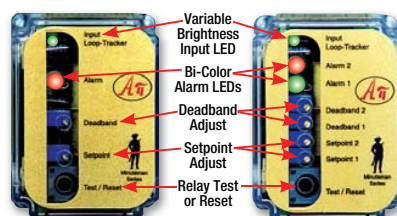
Potentiometer adjustable from 1.0-100% of span

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)



API 011 Socket Sold Separately



API 1080 G

API 1090 G



API 011 Socket Sold Separately

API 1080 G Relay Output

One DPDT contact, field configurable

7 A @ 240 VAC resistive load

3.5 A @ 240 VAC inductive load

8 A @ 30 VDC maximum

API 1090 G Relay Output

Two SPDT relays, field configurable

7 A @ 240 VAC resistive load

3.5 A @ 240 VAC inductive load

8 A @ 30 VDC maximum

Datasheet Quick Link: api-usa.com/1080GDatasheet Quick Link: api-usa.com/1090G

Model	Input Ranges	Alarm Relay	Power	Price
API 1080 G	24 selectable input ranges	1 DPDT alarm relay	115 VAC	\$219
API 1080 G A230	0-50 mVDC to ±10 VDC,	field configurable for	230 VAC	\$219
API 1080 G P	0-1 mADC to 0-20 mADC	HI/LO, latching,	80-265 VAC, 48-300 VDC	\$279
API 1080 G D	18 VDC loop power supply	normal/reverse action	9-30 VDC	\$279
API 1090 G	26 selectable input ranges	2 SPDT alarm relays	115 VAC	\$249
API 1090 G A230	0-50 mVDC to ±10 VDC,	Each alarm field configurable for	230 VAC	\$249
API 1090 G P	0-1 mADC to 0-20 mADC	HI/LO, latching,	80-265 VAC, 48-300 VDC	\$309
API 1090 G D	18 VDC loop power supply	normal/reverse action	9-30 VDC	\$309

Options—add to end of model number	Adder
5A Input 0-500 mADC to 0-5 ADC Includes API 011 socket and 25 W shunt	\$30
U Conformal coating for moisture resistance	\$20

Accessories—order as a separate line item	Price
API 011 11-pin socket	\$11
API 011 FS 11-pin finger safe socket	\$11
API TK36 DIN rail, 35 mm W x 39" L, aluminum	\$15



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APD 1080, APD 1090 Field Configurable DC Input Alarms

Input: 0-50 mV ~ ±10 VDC, 0-1 mA ~ 0-20 mA

Output: One DPDT Relay or Two SPDT Relays

Versatile DC voltage/current input alarms allow field configuration of input ranges and alarm type

- Process Limit Backup Alarm
- Over, Under, Out-of-Range Alarm

Input Loop Power Supply

15 VDC, regulated, 25 mA

LoopTracker®

Variable brightness LED indicates input loop level and status

Functional Test/Reset Button

Toggles relay(s) to opposite state when pressed

Resets latching relay if latching relay mode was selected

Setpoint

12 turn potentiometer adjustable from 0 to 100% of span

Deadband

Potentiometer adjustable from 1.0 to 100% of span

Dimensions

0.89" W x 3.94" H x 4.81" D (not including connectors)

Datasheet Quick Link:
api-usa.com/APD1080

Pending



Free Factory I/O Setup!

APD 1080 Relay

One DPDT contact
7 A @ 240 VAC resistive
3.5 A @ 240 VAC inductive
8 A @ 30 VDC maximum



APD 1080

Datasheet Quick Link:
api-usa.com/APD1090

Pending



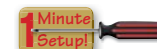
Free Factory I/O Setup!

APD 1090 Relays

Two SPDT relays
7 A @ 240 VAC resistive
3.5 A @ 240 VAC inductive
8 A @ 30 VDC maximum



APD 1090



Model	Input Ranges	Alarm Relay	Power	Price
APD 1080	24 selectable input ranges 0-50 mVDC to ±10 VDC, 0-1 mAADC to 0-20 mAADC	1 DPDT alarm relay Field configurable for HI/LO, latching, normal/rev. action	80-265 VAC or 48-300 VDC	\$219
APD 1080 D			9-30 VDC or 10-32 VAC	\$219
APD 1090	26 selectable input ranges 0-50 mVDC to ±10 VDC, 0-1 mAADC to 0-20 mAADC	2 SPDT alarm relays Each alarm field configurable for HI/LO, latching, normal/rev. action	80-265 VAC or 48-300 VDC	\$249
APD 1090 D			9-30 VDC or 10-32 VAC	\$249

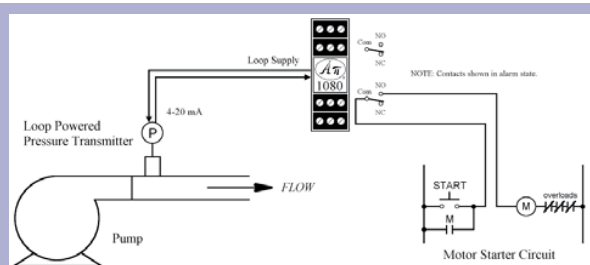
Options—add to end of model number	Adder
U Moisture resistant conformal coating	\$20
Accessories—order as a separate line item	Price
API TK36 DIN rail, 35 mm W x 39" L, aluminum	\$15

Pumping System High Pressure Shutdown Application

High head pressure is causing pump failures. If the pressure exceeds a preset limit, the pump must be shut down. A manual reset is necessary to restart pump.

A loop powered pressure transducer is installed at the discharge side of the pump. The pressure transducer is connected to an APD 1080 DC input field selectable single setpoint alarm module.

The APD 1080 provides the loop power for the 4-20 mA pressure transducer from its built-in loop excitation supply. The setpoint is adjusted to the high pressure limit. The relay contacts are wired in series with the motor starter such that if the pressure is above the setpoint, the pump will be stopped. It is necessary to press the START push button to restart the pump. The standard heavy-duty relay contacts are rated 7A @ 240 VAC and can directly control most devices.



API 1040 G DC Input Transmitters with Alarms

Input: 0-100 mV ~ 200 VDC, 0-1 mA ~ 0-50 mA

Output: mA or Volts, SPDT Relay

Combine rescaling, transmission, and alarm functions in one unit

- Process Signal Retransmission with Limits
- Optional Alarm Setpoint Retransmission

Input

Factory configured—see table below for ranges

Non-isolated transmitter

Input Loop Power Supply

18 VDC nominal, unregulated, 25 mAADC

LoopTracker®

Variable brightness green LED indicates I/O level and status

Output

Factory configured—specify transmitter output range

Output Zero and Span

Multi-turn potentiometers, ±15% of span adjustment range

Output Linearity

Better than ±0.1% of span



Free Factory I/O Setup!

Datasheet Quick Link: api-usa.com/1040

Alarm Setpoint

12 turn potentiometer, adjustable from 0-100% of span

SPR option: 0-1 VDC alarm setpoint retransmission

Relay Ratings

7 A @ 240 VAC maximum resistive load
3.5 A @ 240 VAC maximum inductive load
8 A @ 30 VDC maximum

Deadband

12 turn potentiometer, adjustable from 1-100% of span

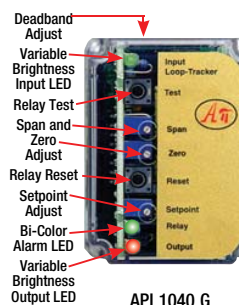
Functional Test/Reset Button

Toggle relay(s) to opposite state when pressed

Resets latching relay with HT option

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)



API 1040 G



Model	Input (Specify)	Alarm Relay	Output (Specify)	Power	Price
API 1040 G				115 VAC	\$259
API 1040 G A230	0-100 mVDC to 0-200 VDC	1 SPDT alarm relay	0-1 VDC to ±10 VDC	230 VAC	\$259
API 1040 G P	0-1 mAADC to 0-50 mAADC	HI alarm standard	0-2 mA to 0-20 mA	80-265 VAC, 48-300 VDC	\$319
API 1040 G D				9-30 VDC	\$319
API 1040 G SPR				115 VAC	\$269
API 1040 G A230 SPR	0-100 mVDC to 0-200 VDC	1 SPDT alarm relay	0-1 VDC to ±10 VDC	230 VAC	\$269
API 1040 G P SPR	0-1 mAADC to 0-50 mAADC	HI alarm standard	0-1 VDC alarm setpoint retransmission	80-265 VAC, 48-300 VDC	\$329
API 1040 G D SPR				9-30 VDC	\$329

Options—add to end of model number	Adder
R Reverse-acting alarms	\$20
L Low trip (on decreasing signal)	free
U Moisture resistant conformal coating	\$20
Accessories—order as a separate line item	Price
API 011 11-pin socket	\$11
API 011 FS 11-pin finger safe socket	\$11
API TK36 DIN rail, 35 mm W x 39" L, aluminum	\$15

API 4300 G, API 4310 G DC Input Isolated Transmitters

Input: 0-10 mV ~ 0-500 VDC, 0-100 μ A ~ 0-5 AOutput: 0-1 V ~ $\pm$ 10 VDC, 0-1 mA ~ 4-20 mA

Factory-ranged transmitters convert a non-standard DC voltage or current signal to a standard process signal

- Convert—Isolate—Transmit Process Signals
- Interface Meters, Recorders, PLCs, DCSs, SCADA, Data Acquisition Systems

Current Input Voltage Burden

1.25 VDC maximum

Input Loop Power Supply

18 VDC nominal, unregulated, 25 mA

LoopTracker®

Variable brightness LEDs indicate I/O loop level and status

Response Time

70 milliseconds typical

Functional Test Button

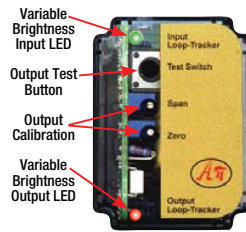
Sets output to test level when pressed
Potentiometer adjustable 0-100% of span

Isolation

2000 V_{RMS}, 3-way: power/input, power/output, input/output

cUL US

Free Factory I/O Setup!



API 4300 G, API 4310 G

Output Linearity

Better than $\pm$ 0.1% of span

Output Zero and Span

Multi-turn potentiometers, $\pm$ 15% of span adjustment range

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)

Datasheet Quick Link: api-usa.com/4300

Output Test Adjust

Model	Input (Specify)	Output (Specify)	Power	Price
API 4300 G	0-100 mVDC to 0-500 VDC $\pm$ 100 mVDC to $\pm$ 10 VDC 0-1 mADC to 0-900 mADC	0-1 VDC to 0-10 VDC	115 VAC	\$289
API 4300 G A230		$\pm$ 1 VDC to $\pm$ 10 VDC	230 VAC	\$289
API 4300 G P		0-1 mADC to 0-20 mADC	80-265 VAC, 48-300 VDC	\$349
API 4300 G D		20 V compliance, 1000 Ω at 20 mA	9-30 VDC	\$349
API 4310 G	Low range, narrow input span 0-10 mVDC to 0-100 mVDC $\pm$ 10 mVDC to $\pm$ 100 mVDC 0-100 μ ADC to 0-1 mADC	See option table at right for special outputs	115 VAC	\$319
API 4310 G A230			230 VAC	\$319
API 4310 G P			80-265 VAC, 48-300 VDC	\$379
API 4310 G D			9-30 VDC	\$379

Options—add to end of model number	Adder
EXTSUP	Open collector mA output when a sinking (unpowered) output is required
DF	Fast response, 1 millisecond nominal
HC	High current output, >20 to 50 mADC
M01	Input/output reversal
5A	Input >0-900 mADC to 0-5 ADC with API 008 socket and 25 W shunt
U	Moisture resistant conformal coating
Accessories—order as a separate line item	Price
API 008	8-pin socket
API 008 FS	8-pin finger safe socket
API TK36	DIN rail, 35 mm W x 39" L, aluminum

APD 4300 DC Input Isolated Transmitters

Input: 0-10 mV ~ 0-500 VDC, 0-100 μ A ~ 0-5 AOutput: 0-1 V ~ $\pm$ 10 VDC, 0-1 mA ~ 4-20 mA

Factory-ranged transmitters convert a non-standard DC voltage or current signal to a standard process signal

- Convert—Isolate—Transmit Process Signals
- Interface Meters, Recorders, PLCs, DCSs, SCADA, Data Acquisition Systems

Current Input Burden and Compliance

1.25 VDC maximum

20 V compliance, 1000 Ω at 20 mA

Input Loop Power Supply

15 VDC, regulated, 25 mA

LoopTracker®

Variable brightness LEDs indicate I/O loop level and status

Functional Test Button

Sets output to test level when pressed
Potentiometer adjustable 0-100% of span

Response Time

70 milliseconds typical

cUL US
Pending

NEW!

Free Factory I/O Setup!

Datasheet Quick Link: api-usa.com/APD4300

Output Zero and Span

Multi-turn potentiometers, $\pm$ 15% of span adjustment range

Output Linearity

Better than $\pm$ 0.1% of span

Isolation

1200 V_{RMS}, 3-way: power/input, power/output, input/output

Dimensions

0.89" W x 3.94" H x 4.81" D (not including connectors)



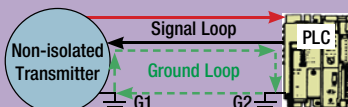
APD 4300

Model	Input (Specify)	Output (Specify)	Power	Price
APD 4300	0-100 mVDC to 0-100 VDC $\pm$ 100 mVDC to $\pm$ 10 VDC 0-1 mADC to 0-900 mADC	0-1 VDC to 0-10 VDC $\pm$ 1 VDC to $\pm$ 10 VDC 0-1 mADC to 0-20 mADC	80-265 VAC or 48-300 VDC	\$289
APD 4300 D		See table at right for output options	9-30 VDC or 10-32 VAC	\$289

Options—add to end of model number	Adder
DF	Fast response, 1 millisecond nominal
M01	Input/output reversal
M09	High voltage output to 20 VDC
U	Moisture resistant conformal coating
Accessories—order as a separate line item	Price
API TK36	DIN rail, 35 mm W x 39" L, aluminum

Eliminating Ground Loops

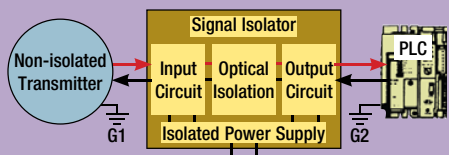
In a process control system, it is common for more than one ground connection to exist amongst the various input devices and the control system.



Even though these points are connected to earth ground, they may have slightly different relative voltage levels. This allows current to flow between the grounds by way of the process loop causing erratic readings, drifting, or errors when a certain device is added to the system.

The solution lies in the use of signal isolators. These devices break the galvanic path (DC continuity) between grounds while allowing the analog signal to continue throughout the loop. An isolator also can eliminate the electrical noise of AC continuity (common mode voltage).

The best signal isolators provide three-way isolation (input, output, and power) to eliminate any possibility of a ground loop.



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APD 4300 PLC 4-20 mA PLC Input Isolators

Solve signal drift and input errors when using PLCs with single-ended (common ground) 4-20 mA inputs

- Isolate Ground Loop Problems
- Restore Proper PLC Input Function
- Can be Wired for Passive or Powered I/O Devices

Input

4-20 mA DC limited to approximately 3 mA to 23 mA
Can be wired for sinking (unpowered) or sourcing (powered)

Input Loop Power Supply

15 VDC, regulated, 25 mA DC

LoopTracker®

Variable brightness LEDs indicate I/O loop level and status

Isolation

1200 V_{RMS}, 3-way: power/input, power/output, input/output

Dimensions

0.89" W x 3.94" H x 4.81" D (not including connectors)

Response Time

70 milliseconds typical



Datasheet Quick Link: api-usa.com/APD4300PLC

Output

4-20 mA DC limited to approximately 3 mA to 23 mA
20 V compliance, 1000 Ω at 20 mA
Can be wired for sinking (unpowered) or sourcing (powered)

Output Loop Power Supply

15 VDC, regulated, 25 mA DC

Output Zero and Span

Multi-turn potentiometers, $\pm 15\%$ of span adjustment range

Output Linearity

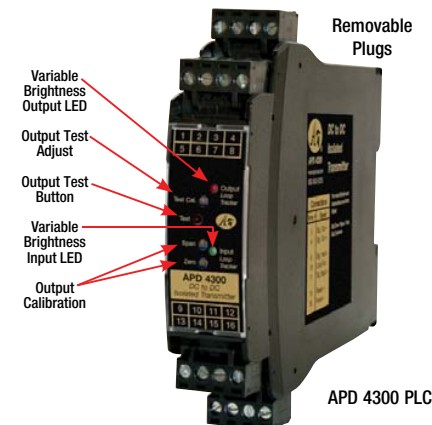
Better than $\pm 0.1\%$ of span

Functional Output Test

Output set to test level when activated using test button or customer-supplied switch closure across terminals 5 and 6
Potentiometer adjustable 0-100% of span

Input: 4-20 mA Sink or Source

Output: 4-20 mA Sink or Source



APD 4300 PLC

Options—add to end of model number		Adder
DF	Fast response, 1 millisecond nominal	\$40
M01	I/O reversal (such as 4-20 to 20-4 mA)	\$30
U	Moisture resistant conformal coating	\$20
Accessories—order as a separate line item		Price
API TK36	DIN rail, 35 mm W x 39" L, aluminum	\$15

CTX-DC DC Current Transmitter

Input: 0-50 to 0-400 Amps DC

Output: 4-20 mA

Easy-to-install sensors for converting DC current measurements to a standard 4-20 mA signal

- Battery System Monitoring
- DC Motors or Heaters

Datasheet Quick Link: api-usa.com/CTXDC

Isolation

3000 V monitored line to output
Power input and output signal not isolated

Response Time

100 milliseconds (to 90% step change)

External Dimensions

3.53" W x 2.70" H x 1.18" D



CTX-DC

0.85" x 0.85"
Aperture

Model	Jumper Selectable Ranges			Output	Power	Price
CTX-DC-0	0-50 ADC	0-75 ADC	0-100 ADC	4-20 mA DC source, 23 mA limit, 650 Ω maximum load	20-50 VDC or 22-38 VAC	\$230
CTX-DC-1	0-100 ADC	0-150 ADC	0-200 ADC			\$225
CTX-DC-2	0-150 ADC	0-225 ADC	0-300 ADC			\$225
CTX-DC-3	0-200 ADC	0-300 ADC	0-400 ADC			\$225

API 4380 G, API 4380 G HV3 Field Rangeable DC Input Isolated Transmitters

Input: 0-50 mV $\sim \pm 200$ VDC, 0-1 mA $\sim$ 0-20 mA

Output: 0-1 V $\sim \pm 10$ VDC, 0-2 mA $\sim$ 4-20 mA

Wide-ranging transmitters for isolating and converting DC voltage/current inputs to standard process signals

- Interface Meters, Recorders, PLCs, DCSs, SCADA, and Data Acquisition Systems
- Switch Selectable One Minute Setup!

Input Loop Power Supply

4380 G: 18 VDC nominal, unregulated, 25 mA

4380 G HV3: not applicable for voltage inputs

LoopTracker®

Variable brightness LEDs indicate I/O loop level and status

Functional Test Button

Sets output to test level when pressed

Potentiometer adjustable 0-100% of span



Output Zero and Span

Multi-turn potentiometers, $\pm 15\%$ of span adjustment

Output Linearity

Better than $\pm 0.1\%$ of span

Response Time

100 milliseconds typical

Isolation

2000 V_{RMS}, 3-way: power/input, power/output, input/output

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)

API 4380 G



Datasheet Quick Link: api-usa.com/4380

Model	Inputs	Outputs	Power	Price
API 4380 G	24 field selectable ranges 0-50 mV to 0-10 V ± 50 mV to ± 10 V 0-1 mA to 0-20 mA	16 field selectable ranges 0-1 VDC to 0-10 VDC 1 VDC to ± 10 VDC	115 VAC	\$289
API 4380 G A230			230 VAC	\$289
API 4380 G P			80-265 VAC, 48-300 VDC	\$349
API 4380 G D			9-30 VDC	\$349
API 4380 GHV3	23 field selectable ranges 0-1 VDC to 0-200 VDC ± 75 VDC to ± 200 VDC	0-2 mADC to 0-20 mADC 1000 Ω at 20 mA 20 V compliance	115 VAC	\$349
API 4380 GHV3 A230			230 VAC	\$349
API 4380 GHV3 P			80-265 VAC, 48-300 VDC	\$409
API 4380 GHV3 D			9-30 VDC	\$409

Options—add to end of model number		Adder
DF	Fast response 4380 G: 5 milliseconds nominal 4380 G HV3: 30 milliseconds nominal	\$40
U	Moisture resistant conformal coating	\$20
Accessories—order as a separate line item		Price
API 008	8-pin socket	\$8
API 008 FS	8-pin finger safe socket	\$15
API TK36	DIN rail, 35 mm W x 39" L, aluminum	\$15

APD 4380 Field Rangeable DC Input Isolated Transmitters**Input:** 0-50 mV ~ ±200 VDC, 0-1 mA ~ 0-20 mA**Output:** 0-1 V ~ ±10 VDC, 0-2 mA ~ 4-20 mA

Wide-ranging transmitters for isolating and converting DC voltage/current inputs to a standard process signal

- Interface Meters, Recorders, PLCs, DCSs, SCADA, Data Acquisition Systems
- Switch Selectable One Minute Setup!

Current Input Burden and Compliance

1 VDC maximum at 20 mA
1000 Ω at 20 mA, 20 V compliance

Input Loop Power Supply

15 VDC, regulated, 25 mA

LoopTracker®

Variable brightness LEDs indicate I/O loop level and status

Functional Test Button

Sets output to test level when pressed
Potentiometer adjustable 0-100% of span



Datasheet Quick Link: api-usa.com/APD4380

Output Zero and Span

Multi-turn potentiometers, ±15% of span adjustment

Output Linearity

Better than ±0.1% of span

Response Time

100 milliseconds typical

Isolation

1200 Vrms, 3-way: power/input, power/output, input/output

Dimensions

0.89" W x 3.94" H x 4.81" D (not including connectors)



Option—add to end of model number	Adder
U Moisture resistant conformal coating	\$20
Accessory—order as a separate line item	Price
API TK36 DIN rail, 35 mm W x 39" L, aluminum	\$15

API 4385 G Field Rangeable DC Input Isolated Transmitters**Input:** 0-50 mV ~ ±200 VDC, 0-1 mA ~ 0-20 mA**Output:** 0-1 V ~ ±10 VDC, 0-2 mA ~ 4-20 mA

Wide-ranging transmitters for isolating and converting DC voltage and current measurements to a standard process signal

- Interface Meters, Recorders, PLCs, DCSs, SCADA, Data Acquisition Systems
- Switch Selectable One Minute Setup!

Input Loop Power Supply

18 VDC nominal, unregulated, 25 mA

LoopTracker®

Variable brightness LEDs indicate I/O loop level and status

Functional Test Button

Sets output to test level when pressed
Potentiometer adjustable 0-100% of span

Isolation

2000 Vrms, 3-way: power/input, power/output, input/output



Datasheet Quick Link: api-usa.com/4385

Output Zero and Span

Multi-turn potentiometers, ±15% of span adjustment
Non-interactive zero and span

Output Linearity

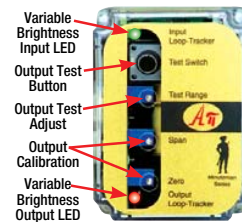
Better than ±0.1% of span

Response Time

70 milliseconds typical

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)



API 4385 G

Options—add to end of model number	Adder
DF Fast response, 5 milliseconds nominal	\$40
M01 I/O reversal (such as 4-20 to 20-4 mA)	\$30
U Moisture resistant conformal coating	\$20
Accessories—order as a separate line item	Price
API 008 8-pin socket	\$8
API 008 FS 8-pin finger safe socket	\$8
API TK36 DIN rail, 35 mm W x 39" L, aluminum	\$15

API Functional Test Button

The Functional Test button will, when pressed, outputs a test signal independent of the input signal. This signal can be used to momentarily check loop status, alarm operation, and test any downstream devices.

This signal is adjustable from 0-100% of span by holding the test button down and adjusting the test potentiometer on the module. On some models, the test signal is fixed at 50% of output span.

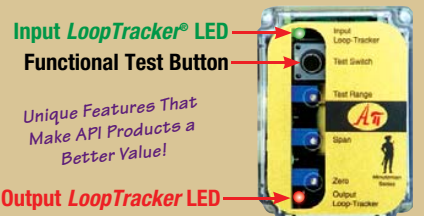
On alarm models, pressing the Functional Test button will switch the relay(s) and bi-color LED(s) to the opposite state regardless of the input signal level. When released, the alarms will return to their normal operating state.

With the latching alarm mode or option, pressing the test button allows the latched alarm to be reset, provided the alarm condition no longer exists for that setpoint.

API LoopTracker®

The API LoopTracker LEDs indicate the level of the input and/or output signals by varying their intensity. As the process signal increases, the brightness of the LED increases, and as the signal decreases the LED brightness decreases.

Should a problem develop in the loop, such as a faulty device in the loop causing an incomplete path for current, the LoopTracker detects this and ceases to illuminate. This function works on both the input and output loop, allowing the technician to diagnose the cause of the problem quickly and efficiently, therefore minimizing system down time.



Unique Features That Make API Products a Better Value!



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API 2000 **DuoPak** Series 2 Channel Isolated Transmitters

Inputs: AC, DC, RTD, Frequency, Pot., Strain
Outputs: 0-1 V to ± 10 VDC, 0-1 mA to 0-20 mA

Two independent channels of signal conversion, isolation, and retransmission in one compact package. Convert any combination of two input signals to standard process signals.

- Simultaneous Voltage and Current Monitoring
- Monitor Current with Speed or Temperature
- Monitor DC Motor Shunts and Voltage

Inputs

The DuoPak converter/isolator provides two independent channels of signal conversion, isolation, and retransmission in one compact package. Order any combination of DC, AC, RTD, frequency, potentiometer, or strain gauge inputs.

LoopTracker LEDs

Variable brightness green LED for input level and status
 Variable brightness red LED for output level and status

Outputs

Factory configured—specify output range for each channel

Voltage: 0-1 VDC to 0-10 VDC, ± 1 VDC to ± 10 VDC

Current: 0-1 mA to 0-20 mA

1000 Ω at 20 mA, 20 V compliance

Consult factory for other ranges

**Output Calibration**

Multi-turn zero and span potentiometers for each channel
 $\pm 15\%$ of span adjustment range typical

Output Linearity, Ripple and Noise

Better than $\pm 0.1\%$ of span

Functional Test Button

Sets output to test level when pressed
 Factory set to approximately 50% of span

Common Mode Rejection

120 dB minimum

Isolation

2000 V_{RMS}, 3-way: power/input, power/output, input/output

Ambient Temperature Range and Stability

-10°C to $+60^{\circ}\text{C}$ operating ambient

Better than $\pm 0.04\%$ of span per $^{\circ}\text{C}$ stability

Dimensions

2.17" W x 3.0" H x 4.33" D (not including connectors)

Removable Plugs

Datasheet Quick Link: api-usa.com/2000

DC Input	AC Input	RTD Input	Frequency Input	Potentiometer Input	Strain Gauge Input
Input Ranges 0-100 mVDC to 0-500 VDC 200 k Ω min. impedance ± 100 mVDC to ± 10 VDC 200 k Ω min. impedance 0-1 mA to 0-900 mA 1.25 VDC max. burden mA inputs sink current Popular ranges: 0-1 V, 0-2 V, 0-5 V, 1-5 V, 0-10 V, ± 1 V, ± 5 V, ± 10 V, 0-1 mA, 0-20 mA, 4-20 mA Response Time 70 milliseconds typical	Input Ranges 0-50 mVAC to 0-300 VAC 200 k Ω min. impedance 0-1 mAAC to 0-900 mAAC 1.0 V _{RMS} max. burden Typical Input Ranges 0-50 mVAC, 0-100 mVAC, 0-150 VAC, 0-250 VAC 0-10 mAAC, 0-100 mAAC Input Protection 750 VDC or 750 VAC _p common mode Response Time 150 milliseconds typical	Input Ranges & Types Specify: 2- or 3-wire RTD, type, curve, $^{\circ}\text{F}$ or $^{\circ}\text{C}$ range Minimum span: 100°F or 55°C Resistance Type 10 Ω Copper 100 Ω Pt 0.00385 100 Ω Pt 0.00392 100 Ω Copper 120 Ω Nickel 1000 Ω Pt 0.00385 1000 Ω Balco Ni-Fe 2000 Ω Pt 0.00385 Linearization Better than $\pm 0.1\%$ of span	Input Ranges 0-25 Hz to 0-20 kHz 100 k Ω minimum impedance Amplitude 100 mV _{RMS} min., 150 V _{RMS} max. Input Waveforms Sine, sawtooth, square wave, or others with greater than 100 mV amplitude change Sensor Power Supply 15 VDC regulated 25 mA	Input Ranges Minimum: 0-100 Ω Maximum: 0-1.0 M Ω Full travel of the potentiometer required Consult factory for other ranges Response Time 70 milliseconds typical	Input Ranges Specify: excitation voltage, sensor mV/V Minimum: 1 mV/V Maximum: 200 mV/V Excitation Voltage 10 VDC max. at 30 mA Response Time 70 milliseconds typical

Model	Channel 1 Input (Specify)	Output 1 (Specify)	Channel 2 Input (Specify)	Output 2 (Specify)	Power	Price
API 2000 DIN	DC mV, V, or mA range	Specify mV, V, or mA range	DC mV, V, or mA range	Specify mV, V, or mA range	80-265 VAC or 40-300 VDC	\$379
API 2006 DIN	DC mV, V, or mA range		AC mV, V, or mA range			\$495
API 2007 DIN	DC mV, V, or mA range		Frequency range			\$495
API 2003 DIN	DC mV, V, or mA range		Any full-range potentiometer			\$495
API 2001 DIN	DC mV, V, or mA range		RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$			\$495
API 2005 DIN	DC mV, V, or mA range	See table at right for output options	Bridge mV/V, excitation volts	See table at right for output options		\$495
API 2060 DIN	AC mV, V, or mA range		DC mV, V, or mA range			\$495
API 2070 DIN	Frequency range		DC mV, V, or mA range			\$495
API 2030 DIN	Any full-range potentiometer		DC mV, V, or mA range			\$495
API 2010 DIN	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$		DC mV, V, or mA range			\$495
API 2050 DIN	Bridge mV/V, excitation volts	Specify mV, V, or mA range	DC mV, V, or mA range	Specify mV, V, or mA range	9-30 VDC or 10-32 VAC	\$495
API 2000 DD	DC mV, V, or mA range		DC mV, V, or mA range			\$439
API 2006 DD	DC mV, V, or mA range		AC mV, V, or mA range			\$555
API 2007 DD	DC mV, V, or mA range		Frequency range			\$555
API 2003 DD	DC mV, V, or mA range		Any full-range potentiometer			\$555
API 2001 DD	DC mV, V, or mA range	See table at right for output options	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$	See table at right for output options		\$555
API 2005 DD	DC mV, V, or mA range		Bridge mV/V, excitation volts			\$555
API 2060 DD	AC mV, V, or mA range		DC mV, V, or mA range			\$555
API 2070 DD	Frequency range		DC mV, V, or mA range			\$555
API 2030 DD	Any full-range potentiometer		DC mV, V, or mA range			\$555
API 2010 DD	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$		DC mV, V, or mA range			\$555
API 2050 DD	Bridge mV/V, excitation volts		DC mV, V, or mA range			\$555

Options—add to end of model number		Adder
L1	Channel 1 sourcing milliamp input, provides power to ch. 1 input loop	\$20
L2	Channel 2 sourcing milliamp input, provides power to ch. 2 input loop	\$20
L3	Channel 1 & 2 sourcing milliamp inputs, provides power to ch. 1 & 2 input loops	\$20
R1	Channel 1 I/O reversal, such as 20-4 mA output	\$20
R2	Channel 2 I/O reversal, such as 20-4 mA output	\$20
R3	Channel 1 & channel 2 I/O reversal, such as 20-4 mA outputs	\$20
EX1	Channel 1 open collector sinking (unpowered) mA output	\$20
EX2	Channel 2 open collector sinking (unpowered) mA output	\$20
EX3	Channel 1 & channel 2 open collector sinking (unpowered) mA outputs	\$20
U	Moisture resistant conformal coating	\$20
Accessories—order as a separate line item		Price
API GP8	Spare green 8 terminal connector	\$8
API TK36	DIN rail, 35 mm W x 39" L, aluminum	\$15



APD HV-DC Field Rangeable High Voltage DC Input Isolated Transmitters

Input: 0-100 VDC to 0-1200 VDC
Output: 0-1 V to ± 10 VDC, 0-1 mA to 0-20 mA

Field configurable transmitter for isolating and converting higher voltage DC signals to a standard process signal

- Field Selectable I/O Ranges
- DC Motor Monitoring
- Switch Selectable One Minute Setup!

Input Impedance2.5 M Ω **LoopTracker®**

Variable brightness LEDs for I/O level and status

Functional Test Button

Sets output to test level when pressed
 Adjustable 0-100% of span

Response Time

70 milliseconds typical

Isolation1200 V_{RMS}, 3-way: power/input, power/output, input/output

Datasheet Quick Link: api-usa.com/HVDC

**Output Zero and Span**Multi-turn potentiometers, $\pm 15\%$ of span adjustment**Output Linearity, Ripple and Noise**Better than $\pm 0.1\%$ of span**Dimensions**

0.89" W x 3.94" H x 4.81" D (not including connectors)



APD HV-DC

Model	Input	Output	Power	Price
APD HV-DC	8 field selectable ranges 0-100 VDC, 0-200 VDC, 0-300 VDC, 0-400 VDC, 0-500 VDC, 0-1000 VDC, 0-1200 VDC, custom	18 field selectable ranges 0-1 V, 1-5 V, 2-10 V, 0-10 V, ± 10 V 0-2 mA, 2-10 mA, 4-20 mA, 0-20 mA 20 V compliance, 1000 Ω at 20 mA	80-265 VAC or 48-300 VDC 9-30 VDC or 10-32 VAC	\$379 \$379

Option—add to end of model number	Adder
U Moisture resistant conformal coating	\$20
Accessory—order as a separate line item	Price
API TK36 DIN rail, 35 mm W x 39" L, aluminum	\$15

API 4390, 4391, 4392 DIN 2 Channel DC Input Isolated Transmitters

Inputs: mVDC, ± 10 to 0-10 VDC, 0-1 mA to 4-20 mA
Outputs: 0-5 V, 0-10 V, ± 5 V, ± 10 V, 0-20 mA, 4-20 mA

Factory ranged two channel transmitters for process signal conversion and isolation. Sink/source options allow compatibility with all 4-20 mA transmitters and current loops.

- Isolate/Transmit/Convert Two Channels
- DC Signal Rescaling for DCS Systems and PLCs

Input

Factory configured—specify an input for each channel
 ± 5 VDC, ± 10 VDC, 0-100 mVDC,
 0-5 VDC, 0-10 VDC, 0-100 VDC,
 0-1 mADC, 0-20 mA, 4-20 mA; input channels sink current
 Current inputs: 1.25 VDC maximum voltage burden
 Consult factory for special ranges

Input Loop Supply for L1 Versions

15 VDC nominal, regulated, 25 mADC

LoopTracker®

Variable brightness LEDs indicate I/O loop level and status

Functional Test Buttons

Sets output to approximately 50% of span when pressed

Response Time

70 milliseconds typical



Datasheet Quick Link: api-usa.com/4390

Output

Factory configured—specify an output for each channel
 0-100 mV, 0-5 VDC, 0-10 VDC, ± 5 VDC, ± 10 VDC
 0-20 mA, 4-20 mA; output channels source current
 Output drive 1000 Ω at 20 VDC typical
 Consult factory for special ranges

Output LinearityBetter than $\pm 0.1\%$ of span**Output Zero and Span**

Multi-turn potentiometers for each channel
 $\pm 15\%$ span adjustment
 Ultra-low interaction zero and span

Isolation2000 V_{RMS}, 3-way: power/input, power/output, input/output**Dimensions**

2.17" W x 3.0" H x 4.33" D (not including connectors)

Removable Plugs



API 4390 DIN

Model	Specify Channel 1 Input Range	Specify Channel 1 Output Range	Specify Channel 2 Input Range	Specify Channel 2 Output Range	Power	Price
API 4390 DIN	VDC, mADC	VDC, mADC	VDC, mADC	VDC, mADC	80-265 VAC	\$379
API 4391 DIN	VDC, mADC	± 5 , ± 10 VDC	VDC, mADC	± 5 , ± 10 VDC	or	\$379
API 4392 DIN	$\pm$ VDC, $\pm$ mADC	$\pm$ VDC, mADC	$\pm$ VDC, $\pm$ mADC	$\pm$ VDC, mADC	40-300 VDC	\$379
API 4390 DD	VDC, mADC	VDC, mADC	VDC, mADC	VDC, mADC		\$439
API 4391 DD	VDC, mADC	± 5 , ± 10 VDC	VDC, mADC	± 5 , ± 10 VDC	9-30 VDC/VAC	\$439
API 4392 DD	$\pm$ VDC, $\pm$ mADC	$\pm$ VDC, mADC	$\pm$ VDC, $\pm$ mADC	$\pm$ VDC, mADC		\$439

Options—add to end of model number	Adder
L1 Ch. 1 sourcing (powered) mA input	\$20
L2 Ch. 2 sourcing (powered) mA input	\$20
L3 Ch. 1 & 2 sourcing (powered) mA inputs	\$20
EX1 Channel 1 sinking (unpowered) mA output	\$20
EX2 Ch. 2 sinking (unpowered) mA output	\$20
EX3 Ch.1 & 2 sinking (unpowered) mA outputs	\$20
DF Fast response, consult factory	\$40
U Moisture resistant conformal coating	\$20

Accessories—order as a separate line item	Price
API GP8 Spare green 8 terminal connector	\$8
API TK36 DIN rail, 35 mm W x 39" L, aluminum	\$15

Sink vs. Source

When connecting various current inputs and outputs it is important to keep in mind what device is powering the circuit to avoid conflicts. Inputs and outputs can either "sink" current or "source" current. A 2-wire transmitter is a passive device and thus "sinks" current. A 4-wire transmitter operates on an external power source and thus "sources" or provides power to the circuit. Only one device can power a 4-20 mA current loop. Note that sinking-sourcing and sourcing-sinking pairing is always used, and never sourcing-sourcing or sinking-sinking.

Single-Ended Inputs

Typically used with two-wire transmitters, one wire is connected to a power source and each signal wire is connected to a PLC input channel. Ground variations can create reading errors that generally increase as distance between earth grounds increase and also from nearby electrical interference.

Differential Inputs

Two signal wires run from each signal source to the PLC input. Each input signal is measured in reference to its own ground, eliminating ground differential errors. Noise immunity is improved since the pair of wires pick up interference equally.

EXTSUP (External Supply) Option

The API EXTSUP option provides a sinking or unpowered current output. PLC analog input cards can be configured to accept differential (individual common) inputs or single-ended (one common) inputs. A PLC often has an input power supply, or one installed in the panel, as the power source for the single-ended inputs. Use of the EXTSUP option is required to provide a sinking output for the signal conditioner to be compatible with the PLC's single ended inputs.



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Sold by AA Electric 1-800-237-8274 • Lakeland, FL • Lawrenceville, GA • East Rutherford, NJ

Web : www.A-Aelectric.com Email: njsales@a-aelectric.com

API 4393 DIN IsoSplitter® DC Input Isolated Signal Splitters

Input: mVDC, ± 10 to 0-10 VDC, 0-1 mA to 4-20 mAOutputs: mVDC, ± 10 to 0-10 VDC, 0-1 mA to 4-20 mA

Split one process signal into two while maintaining isolation. Sink/source options allow compatibility with all 4-20 mA transmitters and current loops.

- Convert One Input to Two Outputs
- Outputs Can be Individually Rescaled
- Two Functions with One Sensor

Input

Factory configured—specify input range
Consult factory for special ranges

0-50 mVDC, 0-100 mVDC, 0-5 VDC, 0-10 VDC,
 ± 5 VDC, ± 10 VDC, 0-1 mADC, 0-20 mA, 4-20 mA

Current sinking is standard for mA input and does not provide power to the input loop. Use **L1** option for current sourcing mA input.

Input Voltage Burden

1.25 VDC to 2 VDC maximum, 100 Ω nominal at 20 mA

Input Loop Supply for L1 Versions

15 VDC nominal, regulated, 25 mADC

LoopTracker®

Variable brightness LEDs indicate I/O loop level and status



Datasheet Quick Link: api-usa.com/4393

Outputs

Factory configured—specify an output for each channel
Consult factory for special ranges

0-50 mVDC, 0-100 mVDC, 0-5 VDC, 0-10 VDC,
 ± 5 VDC, ± 10 VDC, 0-1 mADC, 0-20 mA, 4-20 mA

Current sourcing is standard for mA outputs and provides power to the output loops. Use **EX** option on one or both channels as needed for current sinking outputs.

Output Zero and Span

Multi-turn potentiometers, $\pm 15\%$ of span adjustment range

Output Linearity

Better than $\pm 0.1\%$ of span

Isolation

2000 V_{RMS}, 3-way: power/input, power/output, input/output

Removable Plugs



API 4393 DIN

Functional Test Buttons

One per output channel

Sets output to test level when pressed

Factory set to drive output to approximately 50% of span

Response Time

70 milliseconds typical

Dimensions

2.17" W x 3.0" H x 4.33" D (not including connectors)

Model	Input Range	Specify Output 1 Range	Specify Output 2 Range	Power	Price
API 4393 DIN	Specify VDC, $\pm$ VDC, mADC, $\pm$ mADC (sinking)	VDC, $\pm$ VDC, mADC (sourcing)	VDC, $\pm$ VDC, mADC (sourcing)	80-265 VAC or 40-300 VDC	\$349
API 4393 DIN L1	4-20 mA (sourcing)	VDC, $\pm$ VDC, mADC (sourcing)	VDC, $\pm$ VDC, mADC (sourcing)		\$369
API 4393 DIN L1 EX1	4-20 mA (sourcing)	mADC (sinking)	mADC (sourcing)		\$389
API 4393 DIN L1 EX2	4-20 mA (sourcing)	mADC (sourcing)	mADC (sinking)		\$389
API 4393 DIN L1 EX3	4-20 mA (sourcing)	mADC (sinking)	mADC (sinking)	9-30 VDC	\$389
API 4393 DD	Specify VDC, $\pm$ VDC, mADC, $\pm$ mADC (sinking)	VDC, $\pm$ VDC, mADC (sourcing)	VDC, $\pm$ VDC, mADC (sourcing)		\$409
API 4393 DD L1	4-20 mA (sourcing)	VDC, $\pm$ VDC, mADC (sourcing)	VDC, $\pm$ VDC, mADC (sourcing)		\$429
API 4393 DD L1 EX1	4-20 mA (sourcing)	mADC (sinking)	mADC (sourcing)		\$449
API 4393 DD L1 EX2	4-20 mA (sourcing)	mADC (sourcing)	mADC (sinking)		\$449
API 4393 DD L1 EX3	4-20 mA (sourcing)	mADC (sinking)	mADC (sinking)		\$449

Options—add to end of model number		Adder
DF	Fast response, consult factory	\$40
U	Moisture resistant conformal coating	\$20
Accessories—order as a separate line item		Price
API GP8	Spare green 8 terminal connector	\$8
API TK36	DIN rail, 35 mm W x 39" L, aluminum	\$15

API LPI-1, LPI-2, DPI-2 4-20 mA Loop-Powered Isolators

Input: One or Two 4-20 mA

Output: One or Two 4-20 mA

Use these passive isolators to eliminate signal drifting due to grounding issues

- Isolate 4-20 mA Current Loops
- Eliminate Ground Loops, Reduce Noise Effects

Input and Output

1 or 2 channels, 4 to 20 mADC, powered by input loop

Input Voltage Burden

Approximately 9 VDC at 20 mA

Output Load Capability

Up to 1000 Ω with 20 V compliance at 20 mA at 30 VDC or approximately 750 Ω at 24 VDC depending on supply voltage

Output Zero and Span

Multi-turn potentiometers, $\pm 10\%$ of span range typical

LoopTracker®

Variable brightness LED indicates output loop current

Functional Test Switch

Momentary contact switch with spring-loaded return

Sets output to calibration reference level of 4 mA to allow testing of module circuits and output loop

Isolation

1200 V_{RMS} min., input to output, channel to channel

Response Time

60 milliseconds typical

Dimensions

DIN: 0.89" W x 3.0" H x 3.88" D

Plug-in: 1.75" W x 2.75" H x 2.38" D (not including socket)



API LPI-1



API LPI-2



API DPI-2



API DPI-2

Datasheet Quick Link: api-usa.com/LPI

Datasheet Quick Link: api-usa.com/DPI

Model	Type	I/O	Power	Price
API LPI-1	8-pin plug in	One 4-20 mA	Passive, powered by current loop	\$179
API LPI-2		Ch. 1: 4-20 mA Ch. 2: 4-20 mA		\$319
API DPI-2	DIN housing	Ch. A: 4-20 mA Ch. B: 4-20 mA		\$269

Option—add to end of model number		Adder
U	Moisture resistant conformal coating	\$20
Accessories—order as a separate line item		Price
API 008	8-pin socket	\$8
API 008 FS	8-pin finger safe socket	\$8
API TK36	DIN rail, 35 mm W x 39" L, aluminum	\$15



API 4400 G - API 4408 G DC Input Isolated Math Modules

Inputs: 0-100 mV to 0-10 VDC or 0-1 mA to 0-20 mA

Output: 0-1 V to ± 10 VDC or 0-1 mA to 4-20 mA

Combine up to 4 sensor inputs and output average, differential, or average with differential

- Calculate Average Temperatures
- Add, Subtract, Average Flow Signals
- Varied Input Scale Capable

Input

Factory configured—please specify input range
See table below

Popular ranges: 0-1 VDC, 0-5 VDC, 1-5 VDC, 0-10 VDC,
 ± 5 VDC, ± 10 VDC, 0-20 mA, 4-20 mA

Consult factory for special ranges or functions

Input Impedance

Voltage: 100 k Ω per volt nominal
Current: 50 Ω nominal

Input Voltage Burden (Current)

1.0 V_{RMS} maximum

Balance Between Inputs

Better than $\pm 0.5\%$ of span

LoopTracker®

Variable brightness LEDs indicate I/O loop level and status

Response Time

100 milliseconds typical, or consult factory



Datasheet Quick Link: api-usa.com/4400

Output

Factory configured—specify output range
See table below

Current compliance: 1000 Ω at 20 mA, 20 V
Consult factory for other ranges

Output Zero and Span

Multi-turn potentiometers, $\pm 15\%$ span adjustment range

Functional Test Button

Sets output to test level when pressed
Potentiometer adjustable 0-100% of span

Output Linearity

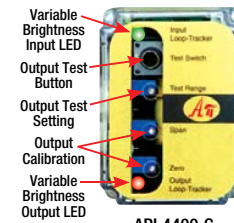
Better than $\pm 0.1\%$ of span

Isolation

2000 V_{RMS}, 3-way: power/input, power/output, input/output
All inputs share common ground connection at module input

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)



API 4400 G



Options—add to end of model number		Adder
A230	Powered by 230 VAC	free
P	Powered by 80-265 VAC/40-300 VDC	\$60
D	Powered by 9-30 VDC	\$60
TM	True math option (consult factory)	call
DF	Fast response, 1 millisecond nominal	\$40
U	Moisture resistant conformal coating	\$20
Accessories—order as a separate line item		Price
API 011	11-pin socket	\$11
API 011 FS	11-pin finger safe socket	\$11
API TK36	DIN rail, 35 mm W x 39" L, aluminum	\$15

Math Module Tips

Math module inputs can be identical or mixed signal levels. All inputs connect to a common ground on the module socket.

The span of each input is treated as a 0 to 100% input range before the math function is applied. The output will not exceed 100% of any input.

If your application requires math on the actual voltage or milliamp signal levels, consult factory for the True Math option.

API 4440 G DC Input Isolated Square Root Extractors

Input: 0-50 mV to 0-200 VDC or 0-1 mA to 0-50 mA

Output: 0-1 V to ± 10 VDC or 0-1 mA to 4-20 mA

The output of this isolated transmitter is the square root of the input signal

- Linearize Flow Meters
- Linearize Pitot Tube ΔP Measurements

Input

Factory configured—specify input range

Consult factory for special ranges

DC voltage: 0-50 mV to 0-200 V

DC current: 0-1 mA to 0-50 mA

Input Impedance

Voltage: 50 k Ω minimum
Current: 50 Ω nominal

Input Loop Power Supply

18 VDC nominal, unregulated, 25 mADC

LoopTracker®

Variable brightness LEDs indicate I/O level and status

Accuracy

Better than $\pm 0.25\%$ of span

Response Time

70 milliseconds typical

Output

Factory configured—specify output range

Voltage: 0-1 VDC to 0-10 VDC, ± 1 VDC to ± 10 VDC

Current: 0-1 mADC to 0-20 mADC

1000 Ω at 20 mA, 20 V compliance

Consult factory for other ranges

Output Ripple and Noise

Less than $\pm 0.2\%$ of span

Output Zero and Span

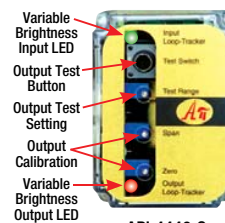
Multi-turn potentiometers
 $\pm 15\%$ span adjustment range

Functional Test Button

Sets output to test level when pressed
Potentiometer adjustable 0-100% of span

Isolation

2000 V_{RMS}, 3-way: power/input, power/output, input/output



API 4440 G



Option—add to end of model number		Adder
U	Moisture resistant conformal coating	\$20
Accessories—order as a separate line item		Price
API 008	8-pin socket	\$8
API 008 FS	8-pin finger safe socket	\$8
API TK36	DIN rail, 35 mm W x 39" L, aluminum	\$15

Model	Function	Input (Specify)	Output (Specify)	Power	Price
API 4440 G	Output is square root of input	0-50 mVDC to 0-200 VDC 0-1 mADC to 0-50 mADC	0-1 VDC to 0-10 VDC	115 VAC	\$379
API 4440 G A230			± 1 VDC to ± 10 VDC	230 VAC	\$379
API 4402 G P			0-1 mADC to 0-20 mADC	80-265 VAC or 40-300 VDC	\$439
API 4403 G D				9-30 VDC	\$439



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API 9046 G Regulated DC Power Supplies

Input: 115 VAC or 230 VAC
Output: 5 VDC to 32 VDC or ± 5 VDC to ± 15 VDC

Reliable plug in power supplies

- Power Passive 4-20 mA Sensors
- Easy to Install Plug-in Loop Supply

Operating Voltage

Standard: 115 VAC $\pm 10\%$, 50/60 Hz, 2.5 W max.
A230 option: 230 VAC $\pm 10\%$, 50/60 Hz, 2.5 W max.

Noise and Ripple

Less than 5 mV

Regulation

Line: $\leq \pm 0.5\%$ of output for $V_{in} \pm 10\%$
Load: $\leq \pm 3\%$ for load range of 10-100% of rating

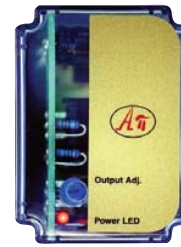
Output Adjustment (9046 only)

Potentiometer for fine output adjustment
 $\pm 10\%$ of span adjustment range typical

Accessories—order as a separate line item	Price
API 008 8-pin socket	\$8
API 008 FS 8-pin finger safe socket	\$8
API TK36 DIN rail, 35 mm W x 39" L, aluminum	\$15

Datasheet Quick Link: api-usa.com/9046

Model	Voltage	Current	Power	Price
API 9046-05	5 VDC	250 mA	115 VAC	\$109
API 9046-06	6 VDC	200 mA	115 VAC	\$109
API 9046-09	9 VDC	150 mA	115 VAC	\$109
API 9046-10	10 VDC	140 mA	115 VAC	\$109
API 9046-12	12 VDC	125 mA	115 VAC	\$109
API 9046-15	15 VDC	100 mA	115 VAC	\$109
API 9046-18	18 VDC	85 mA	115 VAC	\$109
API 9046-24	24 VDC	75 mA	115 VAC	\$109
API 9046-28	28 VDC	60 mA	115 VAC	\$109
API 9046-32	32 VDC	50 mA	115 VAC	\$109
API 9046-CH-05	± 5 VDC	150 mA	115 VAC	\$139
API 9046-CH-06	± 6 VDC	150 mA	115 VAC	\$139
API 9046-CH-12	± 12 VDC	150 mA	115 VAC	\$139
API 9046-CH-15	± 15 VDC	150 mA	115 VAC	\$139



API 9046 G



Options—add to end of model number	Adder
A230 Powered by 230 VAC, 50/60 Hz	free
U Moisture resistant conformal coating	\$20

DPP15-24, DPP30-24 Regulated DC Power Supplies

Input: 85-264 VAC or 90-375 VDC
Output: 24 VDC, 630 mA or 1300 mA

Low cost high output power supplies

- Power Passive 4-20 mA Sensors
- High Output Capability
- 2 Year Warranty

Operating Voltage

85-264 VAC (47-63 Hz) or 90-375 VDC

Output Voltage and Current

DPP15-24: 24 VDC, 630 mA, 15 W
DPP30-24: 24 VDC, 1300 mA, 30 W
Other output voltages available

Connections

Use copper wire 24 AWG to 12 AWG (0.5-2.5 mm²)

Noise and Ripple

Less than 50 mV

Regulation

Line: Less than $\pm 0.5\%$ of output
Load: Less than $\pm 0.5\%$

Output Adjustment

Potentiometer for output adjustment
 $\pm 1\%$ of span adjustment range, approx. 22.5-28.5 VDC
24 VDC output pre-set to 24.5 VDC

Datasheet Quick Link: api-usa.com/DPP

Overload Protection

Cycle input power to reset unit

Ambient Temperature Range

-10°C to $+71^{\circ}\text{C}$ operating ambient
Convection cooled
25 mm clearance required on all sides

Agency Approvals

UL1310 Class 2
UL60950-1
UL508
NEC Class 2(2)
EN60950-1
ISA 12.12

Dimensions

DPP15-24: 0.9" W x 2.95" H x 3.81" D
DPP30-24: 1.77" W x 2.95" H x 3.58" D



API DPP30-24

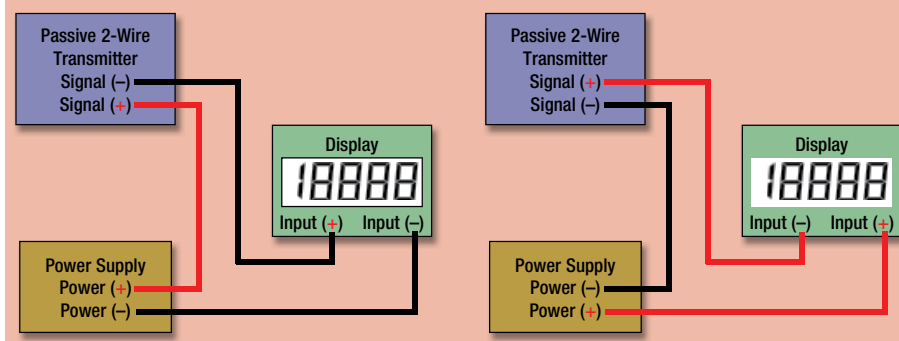


API DPP15-24

Model	Voltage	Current	Power	Price
DPP15-24	24 VDC	630 mA	85-264 VAC or	\$59
DPP30-24	24 VDC	1300 mA	90-375 VDC	\$69

Wiring a 4-20 mA Current Loop

Most transmitters and digital displays are reverse polarity protected and will not work if wired backwards. Avoid wiring analog meters backwards, and do not short the power supply. Either wiring diagram will work.



Current Drive

The output compliance (voltage drive) capabilities of a powered transmitter, and therefore the maximum loop resistance it can drive, is a function of the voltage it can supply to the 4-20 mA loop. Too large a loop resistance will cause the output to "limit" or saturate before reaching its full 20 mA output.

total load = instrument impedance + wire impedance

For units with a 20 V compliance, the output range is 10 to 1000 Ω . For the units with a 12 V compliance, the output range is 10 to 600 Ω .

Voltage Outputs

To prevent problems from noise when using voltage outputs, it is recommended that you use shielded or twisted pair wires. You must select the proper gauge wire to reduce the impedance of the system and generally voltage outputs are best for short distances.

API 1700 G, API 1720 G Frequency Input Alarms**Input:** 0-10 Hz to 0-20 kHz**Output:** One DPDT Relay or Two SPDT Relays

Easy-to-install plug-in modules for alarming frequency or speed out-of-limit conditions

- Machinery Speed High or Low Alarm
- Motor Over Speed Alarm

Input Impedance (Voltage)100 k Ω minimum**Input Protection**

Normal mode: 200% of input rating

Common mode: 600 VDC or 600 VAC_p input to ground**Input Amplitude Range**

100 mVRMS to 150 VRMS

LoopTracker®

Variable brightness green LED indicates input level and status

Alarm Setpoint

12 turn potentiometer, field adjustable from 0-100% of span

Functional Test/Reset Button

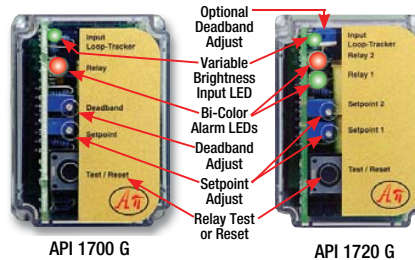
Toggle relay(s) to opposite state when pressed

Resets latching relay on **API 1700 G HT****Response Time**

70 milliseconds typical

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)

Datasheet Quick Link: api-usa.com/1700**Relay Ratings**

7 A @ 240 VAC maximum resistive load

3.5 A @ 240 VAC maximum inductive load

8 A @ 30 VDC maximum

Model	Input Range (Specify)	Alarm Relay	Deadband	Power	Price
API 1700 G	Factory configured Minimum: 0-10 Hz Maximum: 0-20 kHz	1 DPDT alarm relay HI alarm std.	1% to 100% of span, 12 turn potentiometer	115 VAC	\$259
API 1700 G A230				230 VAC	\$259
API 1700 G P				80-265 VAC, 48-300 VDC	\$319
API 1700 G D		2 SPDT alarm relays HI/LO alarms, internal jumper for LO/HI, LO/LO, HI/HI	Fixed 1% of span, see options for adjustable deadband	9-30 VDC	\$319
API 1720 G				115 VAC	\$279
API 1720 G A230				230 VAC	\$279
API 1720 G P				80-265 VAC, 48-300 VDC	\$339
API 1720 G D				9-30 VDC	\$339



Options—add to end of model number	Adder
R API 1700 G: Reverse-acting alarms	\$20
L API 1700 G: Low trip (on decreasing signal)	free
HT API 1700 G: Latching alarm, push button reset	\$35
HP API 1700 G: Latching alarm, power-off reset	\$35
R API 1720 G: Reverse-acting alarms	\$20
A API 1720 G: Adjustable deadbands 1% to 100% of span, 1 turn potentiometer Adjusted symmetrically about each setpoint	\$25
HH API 1720 G: HI/HI trip	free
LL API 1720 G: LO/LO trip	free
U Conformal coating for moisture resistance	\$20

Accessories—order as a separate line item	Price
API 011 11-pin socket	\$11
API 011 FS 11-pin finger safe socket	\$11
API TK36 DIN rail, 35 mm W x 39" L, aluminum	\$15

API 7010 G Frequency Input to DC Isolated Transmitters**Input:** 0-25 Hz to 0-20 kHz**Output:** 0-1 V to ± 10 VDC or 0-1 mA to 4-20 mA

Versatile custom-ranged transmitter converts a frequency signal to a process signal

- Machinery Speed Monitoring
- Convert a Variable Frequency Square Wave to DC

Input

Factory configured—specify input range

Frequency: 0-25 Hz to 0-20 kHz

Allowable amplitude: 100 mVRMS to 150 VRMS

Input Waveform

Sawtooth

Square wave

Sine wave

Most other waveforms with greater than 100 mV amplitude change

Input Impedance100 k Ω minimum**Input Protection**

Normal mode: 200% of input rating

Common mode: 600 VDC or 600 VAC_p input to ground

System voltages must not exceed socket voltage rating

Input Loop Power Supply

18 VDC nominal, unregulated, 25 mADC

LoopTracker®

Variable brightness LEDs indicate I/O loop level and status

Datasheet Quick Link: api-usa.com/7010**Output**

Factory configured—specify output range

Voltage: 0-1 VDC to 0-10 VDC, ± 1 VDC to ± 10 VDC

Current: 0-1 mADC to 0-20 mADC

1000 Ω at 20 mA, 20 V compliance

Consult factory for other ranges

Output LinearityBetter than $\pm 0.1\%$ of span**Response Time**

70 milliseconds typical

Output Zero and SpanMulti-turn potentiometers $\pm 15\%$ of span adjustment range**Functional Test Button**

Sets output to test level when pressed.

Factory set to approximately 50% of span

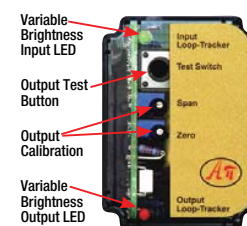
Isolation

2000 VRMS, 3-way: power/input, power/output, input/output

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)

Model	Input (Specify)	Output (Specify)	Power	Price
API 7010 G	Specify frequency range 0-25 Hz to 0-20 kHz Allowable amplitude 100 mVRMS to 150 VRMS	0-1 VDC to 0-10 VDC ± 1 VDC to ± 10 VDC 0-2 mADC to 0-20 mADC	115 VAC	\$309
API 7010 G A230			230 VAC	\$309
API 7010 G P			80-265 VAC, 48-300 VDC	\$369
API 7010 G D			9-30 VDC	\$369



API 7010 G



Options—add to end of model number	Adder
HC High current output, >20 to 50 mADC	\$70
EXTSUP Open collector output when a sinking (unpowered) output is required	\$60
U Moisture resistant conformal coating	\$20
Accessories—order as a separate line item	Price
API 008 8-pin socket	\$8
API 008 FS 8-pin finger safe socket	\$8
API TK36 DIN rail, 35 mm W x 39" L, aluminum	\$15



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API 7500 G Field Rangeable DC to Frequency Isolated Transmitters**Input:** 0-50 mV to ± 10 VDC, 0-1 mA to 4-20 mA**Output:** 0-1 Hz to 0-30 kHz MOSFET or TTL

Wide-ranging transmitters for isolating and converting DC process signals to a square wave

- Analog to Frequency for Totalizers and Counters
- Use with API 7010 G for Remote Monitoring

Input

24 field selectable ranges—see table below
Consult factory for other ranges

Input Impedance

Voltage: 1 M Ω minimum

Current: 50 Ω typical

Input Loop Power Supply

18 VDC nominal, unregulated, 25 mADC

LoopTracker®

Variable brightness LEDs indicate I/O loop level and status

Functional Test Button

Sets output to test level when pressed

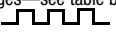
Potentiometer adjustable 2% to 100% of span

Response Time

70 milliseconds typical

Consult factory for faster response times

Output

30 field selectable ranges—see table below
Square wave 

Open drain MOSFET, 24 VDC maximum

I_{sink} 50 mA maximum

V_{on} 0.6 V maximum at 50 mA I_{sink}

Output Linearity

Better than $\pm 0.4\%$ of span

Cutout Control

Disables output when input falls below preset level

Potentiometer Adjustable from 2% to 25% of range

Output Zero and Span

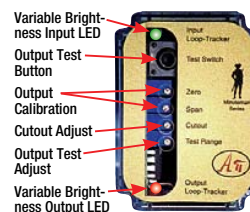
Multi-turn potentiometers, $\pm 15\%$ of span adjustment range

Isolation

2000 V_{RMS}, 3-way: power/input, power/output, input/output

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)



API 7500 G



Socket Sold Separately

Model	Input	Output	Power	Price
API 7500 G	24 field-selectable ranges 0-50 mVDC to ± 10 VDC 0-1 mADC to 0-20 mADC including 4-20 mA	30 field-selectable ranges 0-100 Hz to 0-30 kHz	115 VAC	\$319
API 7500 G A230			230 VAC	\$319
API 7500 G P			80-265 VAC, 48-300 VDC	\$379
API 7500 G D		30 field-selectable ranges Low frequency range 0-1 Hz to 0-300 Hz	9-30 VDC	\$379
API 7500 G SS			115 VAC	\$319
API 7500 G SS A230			230 VAC	\$319
API 7500 G SS P			80-265 VAC, 48-300 VDC	\$379
API 7500 G SS D			9-30 VDC	\$379

Options—add to end of model number	Adder
M02 TTL 9 V _{p-p} powered output instead of MOSFET output	\$20
M03 API 7500: adjustable signal generator with no input	\$20
U Moisture resistant conformal coating	\$20
Accessories—order as a separate line item	
API 008 8-pin socket	\$8
API 008 FS 8-pin finger safe socket	\$8
API TK36 DIN rail, 35 mm W x 39" L, aluminum	\$15

API 7580 G Field Rangeable Frequency Input to DC Isolated Transmitters**Input:** 0-100 Hz to 0-30 kHz**Output:** 0-1 V to ± 10 VDC, 0-2 mA to 4-20 mA

Wide-ranging transmitters for isolating and converting a frequency to a process signal

- Monitor Motor or Line Speed
- Convert a Variable Frequency to 4-20 mA

Input

30 field-selectable ranges

Low: 0-100 Hz to 0-1500 Hz in 100 Hz increments

High: 0-2 kHz to 0-30 kHz in 2 kHz increments

Input Sensitivity/Hysteresis

Single turn potentiometer for sensitivity adjustment

Maximum sensitivity: ± 25 mV typical

Minimum sensitivity: ± 2.5 V typical

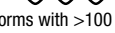
Input Amplitude Range

100 mV to 150 V_{RMS}

Input Waveform

Sawtooth 

Square wave 

Sine wave 

Most other waveforms with >100 mV amplitude change

Input Loop Power Supply

18 VDC nominal, unregulated, 25 mADC

LoopTracker®

Variable brightness LEDs indicate I/O loop level and status

Functional Test Button

Sets output to test level when pressed

Potentiometer adjustable 0% to 100% of span

Output

16 field-selectable ranges

Voltage: 0-1 VDC to 0-10 VDC, ± 1 VDC to ± 10 VDC

Current: 0-2 mADC to 0-20 mADC

20 V compliance, 1000 Ω at 20 mA

Consult factory for other ranges

Output Accuracy

Better than $\pm 0.2\%$ of span

Better than $\pm 0.8\%$ repeatability

Response Time

Low ranges: 600 milliseconds typical

High ranges: 110 milliseconds typical

Output Zero and Span

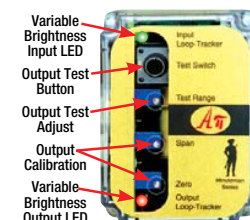
Multi-turn potentiometers, $\pm 15\%$ of span adjustment range

Isolation

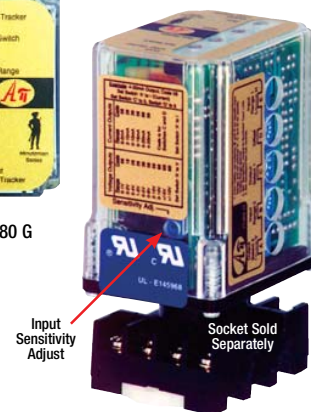
2000 V_{RMS}, 3-way: power/input, power/output, input/output

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)



API 7580 G



Input Sensitivity Adjust

Socket Sold Separately

Model	Input	Output	Power	Price
API 7580 G	30 field-selectable ranges 0-100 Hz to 0-30 kHz	16 field-selectable ranges 0-1 VDC to ± 10 VDC	115 VAC	\$319
API 7580 G A230			230 VAC	\$319
API 7580 G P		0-2 mADC to 0-20 mADC including 4-20 mA	80-265 VAC, 48-300 VDC	\$379
API 7580 G D			9-30 VDC	\$379

Options—add to end of model number	Adder
U Moisture resistant conformal coating	\$20
Accessories—order as a separate line item	
API 008 8-pin socket	\$8
API 008 FS 8-pin finger safe socket	\$8
API TK36 DIN rail, 35 mm W x 39" L, aluminum	\$15

API 2000 **DuoPak** Series 2 Channel Isolated Transmitters

Inputs: AC, DC, RTD, Frequency, Pot., Strain

Outputs: 0-1 V to ± 10 VDC, 0-1 mA to 0-20 mA

Two independent channels of signal conversion, isolation, and retransmission in one compact package. Convert any combination of two input signals to standard process signals.

- Simultaneous Speed and Current Monitoring
- Motor Speed with Temperature or Voltage
- Monitor Speed Differences

Inputs

The DuoPak converter/isolator provides two independent channels of signal conversion, isolation, and retransmission in one compact package. Order any combination of DC, AC, RTD, frequency, potentiometer, or strain gauge inputs.

LoopTracker LEDs

Variable brightness green LED for input level and status
Variable brightness red LED for output level and status

Outputs

Factory configured—specify output range for each channel

Voltage: 0-1 VDC to 0-10 VDC, ± 1 VDC to ± 10 VDC

Current: 0-1 mA to 0-20 mA

1000 Ω at 20 mA, 20 V compliance

Consult factory for other ranges

**Output Calibration**

Multi-turn zero and span potentiometers for each channel
 $\pm 15\%$ of span adjustment range typical

Output Linearity, Ripple and Noise

Better than $\pm 0.1\%$ of span

Functional Test Button

Sets output to test level when pressed
Factory set to approximately 50% of span

Common Mode Rejection

120 dB minimum

Isolation

2000 V_{RMS}, 3-way: power/input, power/output, input/output

Ambient Temperature Range and Stability

-10°C to $+60^{\circ}\text{C}$ operating ambient

Better than $\pm 0.04\%$ of span per $^{\circ}\text{C}$ stability

Dimensions

2.17" W x 3.0" H x 4.33" D (not including connectors)

Removable Plugs



Datasheet Quick Link: api-usa.com/2000

DC Input	AC Input	RTD Input	Frequency Input	Potentiometer Input	Strain Gauge Input																		
Input Ranges 0-100 mVDC to 0-500 VDC 200 kΩ min. impedance ±100 mVDC to ±10 VDC 200 kΩ min. impedance 0-1 mADC to 0-900 mADC 1.25 VDC max. burden mA inputs sink current Popular ranges: 0-1 V, 0-2 V, 0-5 V, 1-5 V, 0-10 V, ±1 V, ±5 V, ±10 V, 0-1 mA, 0-20 mA, 4-20 mA Response Time 70 milliseconds typical	Input Ranges 0-50 mVAC to 0-300 VAC 200 kΩ min. impedance 0-1 mAAC to 0-900 mAAC 1.0 VRMS max. burden Typical Input Ranges 0-50 mVAC, 0-100 mVAC, 0-150 VAC, 0-250 VAC 0-10 mAAC, 0-100 mAAC Input Protection 750 VDC or 750 VACp common mode Response Time 150 milliseconds typical	Input Ranges & Types Specify: 2- or 3-wire RTD, type, curve, °F or °C range Minimum span: 100°F or 55°C <table><tr><td>Resistance</td><td>Type</td></tr><tr><td>10 Ω</td><td>Copper</td></tr><tr><td>100 Ω</td><td>Pt 0.00385</td></tr><tr><td>100 Ω</td><td>Pt 0.00392</td></tr><tr><td>100 Ω</td><td>Copper</td></tr><tr><td>120 Ω</td><td>Nickel</td></tr><tr><td>1000 Ω</td><td>Pt 0.00385</td></tr><tr><td>1000 Ω</td><td>Balco Ni-Fe</td></tr><tr><td>2000 Ω</td><td>Pt 0.00385</td></tr></table> Linearization Better than ±0.1% of span	Resistance	Type	10 Ω	Copper	100 Ω	Pt 0.00385	100 Ω	Pt 0.00392	100 Ω	Copper	120 Ω	Nickel	1000 Ω	Pt 0.00385	1000 Ω	Balco Ni-Fe	2000 Ω	Pt 0.00385	Input Ranges 0-25 Hz to 0-20 kHz 100 kΩ minimum impedance Amplitude 100 mVRMS min., 150 VRMS max. Input Waveforms Sine, sawtooth, square wave, or others with greater than 100 mV amplitude change Sensor Power Supply 15 VDC regulated 25 mADC	Input Ranges Minimum: 0-100 Ω Maximum: 0-1.0 MΩ Full travel of the potentiometer required Consult factory for other ranges Response Time 70 milliseconds typical	Input Ranges Specify: excitation voltage, sensor mV/V Minimum: 1 mV/V Maximum: 200 mV/V Excitation Voltage 10 VDC max. at 30 mA Response Time 70 milliseconds typical
Resistance	Type																						
10 Ω	Copper																						
100 Ω	Pt 0.00385																						
100 Ω	Pt 0.00392																						
100 Ω	Copper																						
120 Ω	Nickel																						
1000 Ω	Pt 0.00385																						
1000 Ω	Balco Ni-Fe																						
2000 Ω	Pt 0.00385																						

Model	Channel 1 Input (Specify)	Output 1 (Specify)	Channel 2 Input (Specify)	Output 2 (Specify)	Power	Price
API 2070 DIN	Frequency range	Specify mV, V, or mA range	DC mV, V, or mA range	Specify mV, V, or mA range	80-265 VAC or 40-300 VDC	\$495
API 2076 DIN	Frequency range		AC mV, V, or mA range			\$495
API 2077 DIN	Frequency range		Frequency range			\$495
API 2073 DIN	Frequency range		Any full-range potentiometer			\$495
API 2071 DIN	Frequency range		RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$			\$495
API 2075 DIN	Frequency range	See table at right for output options	Bridge mV/V, excitation volts	See table at right for output options		\$495
API 2007 DIN	DC mV, V, or mA range		Frequency range			\$495
API 2067 DIN	AC mV, V, or mA range		Frequency range			\$495
API 2037 DIN	Any full-range potentiometer		Frequency range			\$495
API 2017 DIN	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$		Frequency range			\$495
API 2057 DIN	Bridge mV/V, excitation volts	Specify mV, V, or mA range	Frequency range	Specify mV, V, or mA range	9-30 VDC or 10-32 VAC	\$495
API 2070 DD	Frequency range		DC mV, V, or mA range			\$555
API 2076 DD	Frequency range		AC mV, V, or mA range			\$555
API 2077 DD	Frequency range		Frequency range			\$555
API 2073 DD	Frequency range		Any full-range potentiometer			\$555
API 2071 DD	Frequency range	See table at right for output options	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$	See table at right for output options		\$555
API 2075 DD	Frequency range		Bridge mV/V, excitation volts			\$555
API 2007 DD	DC mV, V, or mA range		Frequency range			\$555
API 2067 DD	AC mV, V, or mA range		Frequency range			\$555
API 2037 DD	Any full-range potentiometer		Frequency range			\$555
API 2017 DD	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$	See table at right for output options	Frequency range	See table at right for output options		\$555
API 2057 DD	Bridge mV/V, excitation volts		Frequency range			\$555

Options—add to end of model number		Adder
L1	Channel 1 sourcing milliamp input, provides power to ch. 1 input loop	\$20
L2	Channel 2 sourcing milliamp input, provides power to ch. 2 input loop	\$20
L3	Channel 1 & 2 sourcing milliamp inputs, provides power to ch. 1 & 2 input loops	\$20
R1	Channel 1 I/O reversal, such as 20-4 mA output	\$20
R2	Channel 2 I/O reversal, such as 20-4 mA output	\$20
R3	Channel 1 & channel 2 I/O reversal, such as 20-4 mA outputs	\$20
EX1	Channel 1 open collector sinking (unpowered) mA output	\$20
EX2	Channel 2 open collector sinking (unpowered) mA output	\$20
EX3	Channel 1 & channel 2 open collector sinking (unpowered) mA outputs	\$20
U	Moisture resistant conformal coating	\$20
Accessories—order as a separate line item		Price
API GP8	Spare green 8 terminal connector	\$8
API TK36	DIN rail, 35 mm W x 39" L, aluminum	\$15



800-942-0315

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Web : www.A-Aelectric.com Email: njsales@a-aelectric.com

API 4003 G I Potentiometer Input Isolated Transmitters

Input: 100 Ω to 1 M Ω Potentiometers

Output: 0-1 V to ± 10 VDC or 0-1 mA to 4-20 mA

Transmitter with factory ranged output accepts any full-range potentiometer input

- Position Monitoring
- Convert Potentiometer Position to Process Signal

Input

Minimum: 0-100 Ω
Maximum: 0-1.0 M Ω
Full travel of the potentiometer is required
Consult factory for other ranges and configurations

Input Impedance

Minimum: 0-100 Ω
Maximum: 0-1.0 M Ω

Input Loop Power Supply

18 VDC nominal, unregulated, 25 mADC

LoopTracker®

Variable brightness LEDs indicate I/O loop level and status

Isolation

2000 V_{RMS}, 3-way: power/input, power/output, input/output

Response Time

70 milliseconds typical

Model	Input	Output (Specify)	Power	Price
API 4003 G I	Any full-range potentiometer 0-100 Ω to 0-1.0 M Ω	0-1 VDC to 0-10 VDC ± 1 VDC to ± 10 VDC 0-1 mADC to 0-20 mADC	115 VAC	\$269
API 4003 G I A230			230 VAC	\$269
API 4003 G I P			80-265 VAC, 48-300 VDC	\$329
API 4003 G I D			9-30 VDC	\$329

Datasheet Quick Link: api-usa.com/4003

Output

Factory configured—specify output range
Voltage: 0-1 VDC to 0-10 VDC, ± 1 VDC to ± 10 VDC
Current: 0-1 mADC to 0-20 mADC
1000 Ω at 20 mA, 20 V compliance
Consult factory for other ranges

Output Linearity

Better than $\pm 0.1\%$ of span

Output Zero and Span

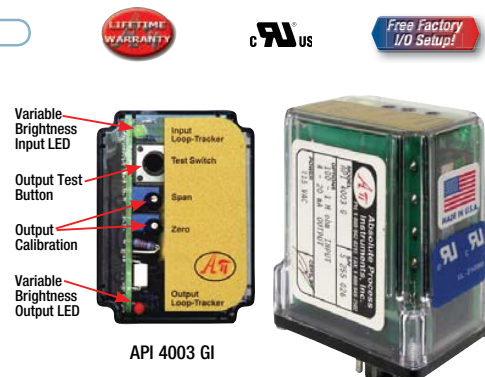
Multi-turn potentiometers
 $\pm 15\%$ of span adjustment range

Functional Test Button

Sets output to test level when pressed
Adjustable 0-100% of span

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)



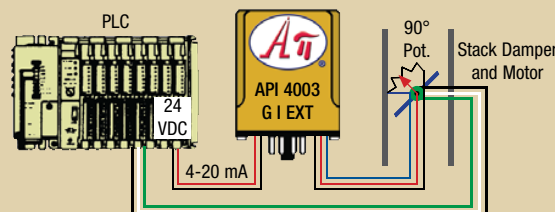
Options—add to end of model number	Adder
EXTSUP	Open collector output when a sinking (unpowered) output is required
U	Moisture resistant conformal coating
Accessories—order as a separate line item	Price
API 008	8-pin socket
API 008 FS	8-pin finger safe socket
API TK36	DIN rail, 35 mm W x 39" L, aluminum

Controlling Damper Position

A PLC is controlling a stack damper motor as part of a process. The damper is equipped with a potentiometer for position feedback, and the PLC has a single-ended 4-20 mA input and generates its own 24 VDC power for the loop. An API 4003 G I potentiometer to DC transmitter with the external supply (EXTSUP) option is used because the PLC will provide power to the 4-20 mA loop instead of the API module output circuit.

The API 4003 G I EXT SUP measures the resistance of the damper position feedback potentiometer and transmits it to the PLC as a 4-20 mA signal. The 4-20 mA loop allows the distance between the PLC and the potentiometer to be greater than would be possible with potentiometer wires.

The unique input circuitry of all API potentiometer modules will allow them to work with any full range potentiometer, making ordering and setup easy. The 2000 V_{RMS} isolation protects against unexpected ground loops and electrical noise and isolates it from other PLC inputs.



API 4008 G Field Rangeable Potentiometer Input Isolated Transmitters

Input: 100 Ω to 1 M Ω Potentiometers

Output: 0-1 V to ± 10 VDC, 0-2 mA to 4-20 mA

Field configurable transmitter accepts any full-range potentiometer

- Position Monitoring
- Convert Potentiometer Position to Process Signal

Input

Minimum: 0-100 Ω
Maximum: 0-1.0 M Ω
Full travel of the potentiometer is required
Consult factory for other ranges and configurations

Input Impedance

0-10 M Ω minimum

Input Loop Power Supply

18 VDC nominal, unregulated, 25 mADC

LoopTracker®

Variable brightness LEDs indicate I/O loop level and status

Functional Test Button

Sets output to test level when pressed
Potentiometer adjustable 0% to 100% of span

Isolation

2000 V_{RMS}, 3-way: power/input, power/output, input/output

Datasheet Quick Link: api-usa.com/4008

Output

18 field-selectable ranges
Voltage: 0-1 VDC to 0-10 VDC, ± 1 VDC to ± 10 VDC
Current: 0-2 mADC to 0-20 mADC
20 V compliance, 1000 Ω at 20 mA
Consult factory for other ranges

Output Linearity

Better than $\pm 0.1\%$ of span

Response Time

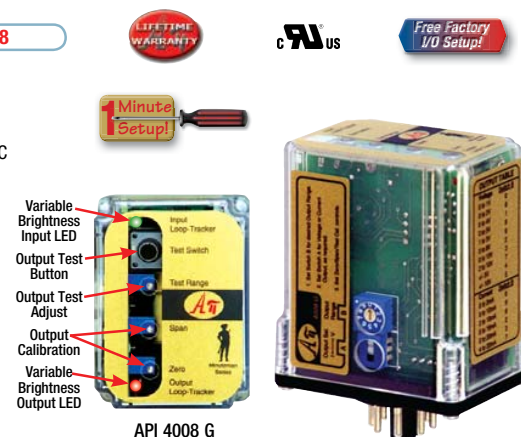
70 milliseconds typical

Output Zero and Span

Multi-turn potentiometers
 $\pm 15\%$ of span adjustment range

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)



Options—add to end of model number	Adder
U	Moisture resistant conformal coating
Accessories—order as a separate line item	Price
API 008	8-pin socket
API 008 FS	8-pin finger safe socket
API TK36	DIN rail, 35 mm W x 39" L, aluminum

API 2000 **DuoPak** Series 2 Channel Isolated Transmitters

Inputs: AC, DC, RTD, Frequency, Pot., Strain
Outputs: 0-1 V to ± 10 VDC, 0-1 mA to 0-20 mA

Two independent channels of signal conversion, isolation, and retransmission in one compact package. Convert any combination of two input signals to standard process signals.

- Measure, Rescale Two Axis Position
- Measure Temperature and Position
- Hydraulic Cylinder Pressure and Position

Inputs

The DuoPak converter/isolator provides two independent channels of signal conversion, isolation, and retransmission in one compact package. Order any combination of DC, AC, RTD, frequency, potentiometer, or strain gauge inputs.

LoopTracker LEDs

Variable brightness green LED for input level and status
 Variable brightness red LED for output level and status

Outputs

Factory configured—specify output range for each channel

Voltage: 0-1 VDC to 0-10 VDC, ± 1 VDC to ± 10 VDC

Current: 0-1 mA to 0-20 mA

1000 Ω at 20 mA, 20 V compliance

Consult factory for other ranges

**Output Calibration**

Multi-turn zero and span potentiometers for each channel
 $\pm 15\%$ of span adjustment range typical

Output Linearity, Ripple and Noise

Better than $\pm 0.1\%$ of span

Functional Test Button

Sets output to test level when pressed
 Factory set to approximately 50% of span

Common Mode Rejection

120 dB minimum

Isolation

2000 V_{RMS}, 3-way: power/input, power/output, input/output

Ambient Temperature Range and Stability

-10°C to $+60^{\circ}\text{C}$ operating ambient

Better than $\pm 0.04\%$ of span per $^{\circ}\text{C}$ stability

Dimensions

2.17" W x 3.0" H x 4.33" D (not including connectors)

Removable Plugs



Datasheet Quick Link: api-usa.com/2000

DC Input	AC Input	RTD Input	Frequency Input	Potentiometer Input	Strain Gauge Input																		
Input Ranges 0-100 mVDC to 0-500 VDC 200 kΩ min. impedance ±100 mVDC to ±10 VDC 200 kΩ min. impedance 0-1 mAADC to 0-900 mADC 1.25 VDC max. burden mA inputs sink current Popular ranges: 0-1 V, 0-2 V, 0-5 V, 1-5 V, 0-10 V, ±1 V, ±5 V, ±10 V, 0-1 mA, 0-20 mA, 4-20 mA Response Time 70 milliseconds typical	Input Ranges 0-50 mVAC to 0-300 VAC 200 kΩ min. impedance 0-1 mAAC to 0-900 mAAC 1.0 VRMS max. burden Typical Input Ranges 0-50 mVAC, 0-100 mVAC, 0-150 VAC, 0-250 VAC 0-10 mAAC, 0-100 mAAC Input Protection 750 VDC or 750 VACp common mode Response Time 150 milliseconds typical	Input Ranges & Types Specify: 2- or 3-wire RTD, type, curve, °F or °C range Minimum span: 100°F or 55°C <table><tr><td>Resistance</td><td>Type</td></tr><tr><td>10 Ω</td><td>Copper</td></tr><tr><td>100 Ω</td><td>Pt 0.00385</td></tr><tr><td>100 Ω</td><td>Pt 0.00392</td></tr><tr><td>100 Ω</td><td>Copper</td></tr><tr><td>120 Ω</td><td>Nickel</td></tr><tr><td>1000 Ω</td><td>Pt 0.00385</td></tr><tr><td>1000 Ω</td><td>Balco Ni-Fe</td></tr><tr><td>2000 Ω</td><td>Pt 0.00385</td></tr></table> Linearization Better than ±0.1% of span	Resistance	Type	10 Ω	Copper	100 Ω	Pt 0.00385	100 Ω	Pt 0.00392	100 Ω	Copper	120 Ω	Nickel	1000 Ω	Pt 0.00385	1000 Ω	Balco Ni-Fe	2000 Ω	Pt 0.00385	Input Ranges 0-25 Hz to 0-20 kHz 100 kΩ minimum impedance Amplitude 100 mVRMS min., 150 VRMS max. Input Waveforms Sine, sawtooth, square wave, or others with greater than 100 mV amplitude change Sensor Power Supply 15 VDC regulated 25 mADC	Input Ranges Minimum: 0-100 Ω Maximum: 0-1.0 MΩ Full travel of the potentiometer required Consult factory for other ranges Response Time 70 milliseconds typical	Input Ranges Specify: excitation voltage, sensor mV/V Minimum: 1 mV/V Maximum: 200 mV/V Excitation Voltage 10 VDC max. at 30 mA Response Time 70 milliseconds typical
Resistance	Type																						
10 Ω	Copper																						
100 Ω	Pt 0.00385																						
100 Ω	Pt 0.00392																						
100 Ω	Copper																						
120 Ω	Nickel																						
1000 Ω	Pt 0.00385																						
1000 Ω	Balco Ni-Fe																						
2000 Ω	Pt 0.00385																						

Model	Channel 1 Input (Specify)	Output 1 (Specify)	Channel 2 Input (Specify)	Output 2 (Specify)	Power	Price
API 2030 DIN	Any full-range potentiometer	Specify mV, V, or mA range	DC mV, V, or mA range	Specify mV, V, or mA range	80-265 VAC or 40-300 VDC	\$495
API 2036 DIN	Any full-range potentiometer		AC mV, V, or mA range			\$495
API 2037 DIN	Any full-range potentiometer		Frequency range			\$495
API 2031 DIN	Any full-range potentiometer		RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$			\$495
API 2035 DIN	Any full-range potentiometer		Bridge mV/V, excitation volts			\$495
API 2033 DIN	Any full-range potentiometer	See table at right for output options	Any full-range potentiometer	See table at right for output options		\$495
API 2063 DIN	DC mV, V, or mA range		Any full-range potentiometer			\$495
API 2063 DIN	AC mV, V, or mA range		Any full-range potentiometer			\$495
API 2073 DIN	Frequency range		Any full-range potentiometer			\$495
API 2013 DIN	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$		Any full-range potentiometer			\$495
API 2053 DIN	Bridge mV/V, excitation volts	Specify mV, V, or mA range	Any full-range potentiometer	Specify mV, V, or mA range	9-30 VDC or 10-32 VAC	\$555
API 2030 DD	Any full-range potentiometer		DC mV, V, or mA range			\$555
API 2036 DD	Any full-range potentiometer		AC mV, V, or mA range			\$555
API 2037 DD	Any full-range potentiometer		Frequency range			\$555
API 2033 DD	Any full-range potentiometer		RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$			\$555
API 2035 DD	Any full-range potentiometer	See table at right for output options	Bridge mV/V, excitation volts	See table at right for output options		\$555
API 2033 DD	Any full-range potentiometer		Any full-range potentiometer			\$555
API 2003 DD	DC mV, V, or mA range		Any full-range potentiometer			\$555
API 2063 DD	AC mV, V, or mA range		Any full-range potentiometer			\$555
API 2073 DD	Frequency range		Any full-range potentiometer			\$555
API 2013 DD	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$		Any full-range potentiometer			\$555
API 2053 DD	Bridge mV/V, excitation volts		Any full-range potentiometer			\$555

Options—add to end of model number		Adder
L1	Channel 1 sourcing milliamp input, provides power to ch. 1 input loop	\$20
L2	Channel 2 sourcing milliamp input, provides power to ch. 2 input loop	\$20
L3	Channel 1 & 2 sourcing milliamp inputs, provides power to ch. 1 & 2 input loops	\$20
R1	Channel 1 I/O reversal, such as 20-4 mA output	\$20
R2	Channel 2 I/O reversal, such as 20-4 mA output	\$20
R3	Channel 1 & channel 2 I/O reversal, such as 20-4 mA outputs	\$20
EX1	Channel 1 open collector sinking (unpowered) mA output	\$20
EX2	Channel 2 open collector sinking (unpowered) mA output	\$20
EX3	Channel 1 & channel 2 open collector sinking (unpowered) mA outputs	\$20
U	Moisture resistant conformal coating	\$20
Accessories—order as a separate line item		Price
API GP8	Spare green 8 terminal connector	\$8
API TK36	DIN rail, 35 mm W x 39" L, aluminum	\$15



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API 4051 G Strain Gauge (Bridge) to DC Transmitters

Input: 1mV/V to 200 mV/V

Output: 0-1 V to ± 10 VDC or 0-1 mA to 4-20 mA

Factory ranged load cell transmitter can drive up to 4 load cells

- Transmitter for Load Cells, Pressure Sensors
- Convert Strain Gauge Input to DC Signal

Input

Factory configured—specify excitation voltage, sensor mV/V rating, output range, power and options

Minimum sensor rating: 1 mV/V

Maximum sensor rating: 200 mV/V

Millivolt output range is determined by the sensitivity of the sensor (mV/V) and the excitation voltage applied

$$\text{mV/V sensitivity} \times \text{excitation voltage} = \text{total mV range}$$

Input Impedance

1.0 M Ω minimum

Excitation Voltage

Maximum output: 10 VDC maximum at 30 mA

Internal adjustment: 4 to 10 VDC

LoopTracker®

Variable brightness LEDs indicate I/O loop level and status

Datasheet Quick Link: api-usa.com/4051

Output

Factory configured—specify output range

Voltage: 0-1 VDC to 0-10 VDC, ± 1 VDC to ± 10 VDC

Current: 0-1 mADC to 0-20 mADC

1000 Ω at 20 mA, 20 V compliance

Consult factory for other ranges

Output Linearity

Better than $\pm 0.1\%$ of span

Response Time

70 milliseconds typical

Output Zero and Span

Multi-turn potentiometers $\pm 15\%$ of span adjustment range

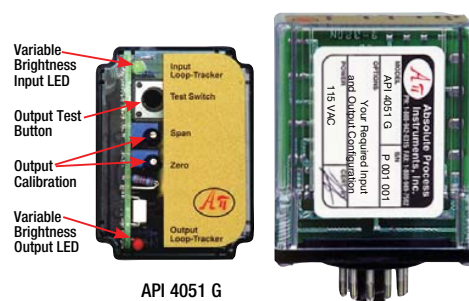
Functional Test Button

Sets output to test level when pressed

Adjustable 0-100% of span

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)



API 4051 G

Model	Input (Specify)	Output (Specify)	Power	Price
API 4051 G	Any load cell, strain gauge or bridge-type sensor with 1 mV/V to 200 mV/V sensitivity	0-1 VDC to 0-10 VDC ± 1 VDC to ± 10 VDC 0-1 mADC to 0-20 mADC	115 VAC	\$299
API 4051 G A230			230 VAC	\$299
API 4051 G P			80-265 VAC, 48-300 VDC	\$359
API 4051 G D			9-30 VDC	\$359

Options—add to end of model number		Adder
DF	Fast response, 1 millisecond nominal response time	\$40
M01	Toggle switch with internal shunt calibration resistor	\$40
U	Moisture resistant conformal coating	\$20
Accessories—order as a separate line item		Price
API 011	11-pin socket	\$11
API 011 FS	11-pin finger safe socket	\$11
API TK36	DIN rail, 35 mm W x 39" L, aluminum	\$15

Typical Wiring Color Codes For Load Cells. Always consult manufacturer for exceptions or custom wire colors.

Manufacturer	+ Excitation	- Excitation	+ Signal	- Signal	Shield	+ Sense	- Sense
A & D	Red	White	Green	Blue	Yellow		
Allegany	Green	Black	White	Red	Bare		
Artech	Red	Black	Green	White	Bare		
Beowulf	Green	Black	White	Red	Bare		
BLH	Green	Black	White	Red	Yellow		
Cardinal	Green	Black	White	Red	Bare		
Celtron	Red	Black	Green	White	Bare		
Digi Matex	Red	White	Green	Yellow	Silver		
Dillon	Green	White	Black	Red	Orange		
Electroscale	Red	Black	Green	White	Bare		
Entran	Red	Black	Yellow or Green	White			
Evergreen	Green	Black	White	Red	Bare		
Flintec	Green	Black	White	Red	Yellow		
Force Measurement	Red	Black	Green	White	Bare		
Futek	Red	Black	Green	White			
General Sensor	Red	Black	Green	White	Bare		
GSE	Red	Black	White	Green	Bare		
HBM	Green	Black	White	Red	Yellow		
HBM (PLC/SBE)	Red	Black	Green	White	Yellow		
Interface	Red	Black	Green	White	Bare		
Kubota	Red	White	Green	Blue	Yellow		
LeBow	Red	Black	Green	White	Bare		
Mettler Toledo	White	Blue	Green	Black	Orange	Yellow	Red
National Scale	Green	Black	White	Red	Yellow		
NCI	Red	Black	White	Green	Bare	Yellow	Blue
Nikkei	Red	Black	Green	White	Bare		
Pennsylvania	Orange	Blue	Green	White	Blare		
Philips	Red	Blue	Green	Gray	Bare		
Presage Promotion	Blue	White	Red	Black	Yellow		
Revere	Green	Black	White	Red	Orange		
Rice Lake	Red	Black	Green	White	Bare		
Sensortronic	Red	Black	Green	White	Bare		
Sensortronic (column)	Green	Black	White	Red	Bare		
Sensotec	Red	Black	White	Green	Bare		
Strainsert	Red	Black	Green	White	Bare		
T-Hydrionics	Red	Black	Green	White	Bare		
Tedea Huntleigh	Green	Black	Red	White	Bare	Blue	Brown
Thames Side	Red	Blue	Green	Yellow	Bare		
Toledo	Green	Black	White	Red	Yellow		
Totalcomp	Red	Black	Green	White	Blare		
Transducers Inc.	Red	Black	Green	White	Orange		
Weigh-Tronix	Green	Black	White	Red	Orange		

Troubleshooting a Pressure Transducer, Load Cell, Strain Gauge or Bridge

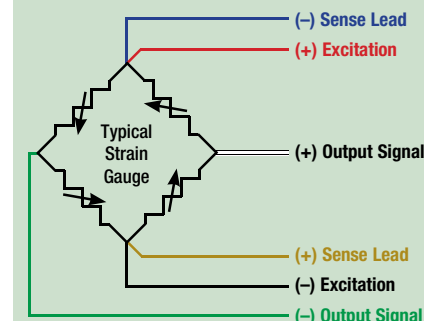
Measure the strain gauge voltages at the locations shown.

Excitation is measured in Volts.

Sensitivity is measured in mV/V.

$$\text{mV/V sensitivity} \times \text{excitation voltage} = \text{total mV range}$$

Meter Connection		No load, no pressure reading
+ Lead	- Lead	
+ Exc.	- Exc.	Excitation Volts
+ Sig.	- Exc.	+ ½ Excitation
- Sig.	- Exc.	+ ½ Excitation
+ Sig.	- Sig.	Zero Volts
Meter Connection		Full load, full pressure reading
+ Lead	- Lead	
+ Exc.	- Exc.	Excitation Volts
+ Sig.	- Exc.	$\frac{\text{Excitation} + (\text{Excitation} \times \text{Sensitivity})}{2}$
- Sig.	- Exc.	$\frac{\text{Excitation} - (\text{Excitation} \times \text{Sensitivity})}{2}$
+ Sig.	- Sig.	Excitation x Sensitivity



API 2000 **DuoPak** Series 2 Channel Isolated Transmitters

Inputs: AC, DC, RTD, Frequency, Pot., Strain

Outputs: 0-1 V to ± 10 VDC, 0-1 mA to 0-20 mA

Convert two strain gauge, bridge, or load cell signals or one load cell and another input (such as voltage, current, position, speed, or temperature) to standard process signals

- Differential Pressure when Using Two Transducers
- Measure Load and Position
- Measure Pressure with Temperature

Inputs

The DuoPak converter/isolator provides two independent channels of signal conversion, isolation, and retransmission in one compact package. Order any combination of DC, AC, RTD, frequency, potentiometer, or strain gauge inputs.

LoopTracker LEDs

Variable brightness green LED for input level and status
Variable brightness red LED for output level and status

Outputs

Factory configured—specify output range for each channel

Voltage: 0-1 VDC to 0-10 VDC, ± 1 VDC to ± 10 VDC

Current: 0-1 mA to 0-20 mA

1000 Ω at 20 mA, 20 V compliance

Consult factory for other ranges



Free Factory
I/O Setup!

**Output Calibration**

Multi-turn zero and span potentiometers for each channel
 $\pm 15\%$ of span adjustment range typical

Output Linearity, Ripple and Noise

Better than $\pm 0.1\%$ of span

Functional Test Button

Sets output to test level when pressed
Factory set to approximately 50% of span

Common Mode Rejection

120 dB minimum

Isolation

2000 V_{RMS}, 3-way: power/input, power/output, input/output

Ambient Temperature Range and Stability

-10°C to $+60^{\circ}\text{C}$ operating ambient

Better than $\pm 0.04\%$ of span per $^{\circ}\text{C}$ stability

Dimensions

2.17" W x 3.0" H x 4.33" D (not including connectors)

Removable Plugs



Datasheet Quick Link: api-usa.com/2000

DC Input	AC Input	RTD Input	Frequency Input	Potentiometer Input	Strain Gauge Input
Input Ranges 0-100 mVDC to 0-500 VDC 200 k Ω min. impedance ± 100 mVDC to ± 10 VDC 200 k Ω min. impedance 0-1 mA to 0-900 mA 1.25 VDC max. burden mA inputs sink current Popular ranges: 0-1 V, 0-2 V, 0-5 V, 1-5 V, 0-10 V, ± 1 V, ± 5 V, ± 10 V, 0-1 mA, 0-20 mA, 4-20 mA Response Time 70 milliseconds typical	Input Ranges 0-50 mVAC to 0-300 VAC 200 k Ω min. impedance 0-1 mA to 0-900 mA 1.0 V _{RMS} max. burden Typical Input Ranges 0-50 mVAC, 0-100 mVAC, 0-150 VAC, 0-250 VAC 0-10 mA, 0-100 mA Input Protection 750 VDC or 750 VAC common mode Response Time 150 milliseconds typical	Input Ranges & Types Specify: 2- or 3-wire RTD, type, curve, $^{\circ}\text{F}$ or $^{\circ}\text{C}$ range Minimum span: 100°F or 55°C Resistance Type 10 Ω Copper 100 Ω Pt 0.00385 100 Ω Pt 0.00392 100 Ω Copper 120 Ω Nickel 1000 Ω Pt 0.00385 1000 Ω Balco Ni-Fe 2000 Ω Pt 0.00385 Linearization Better than $\pm 0.1\%$ of span	Input Ranges 0-25 Hz to 0-20 kHz 100 k Ω minimum impedance Amplitude 100 mV _{RMS} min., 150 V _{RMS} max. Input Waveforms Sine, sawtooth, square wave, or others with greater than 100 mV amplitude change Sensor Power Supply 15 VDC regulated 25 mA	Input Ranges Minimum: 0-100 Ω Maximum: 0-1.0 M Ω Full travel of the potentiometer required Consult factory for other ranges Response Time 70 milliseconds typical	Input Ranges Specify: excitation voltage, sensor mV/V Minimum: 1 mV/V Maximum: 200 mV/V Excitation Voltage 10 VDC max. at 30 mA Response Time 70 milliseconds typical

Model	Channel 1 Input (Specify)	Output 1 (Specify)	Channel 2 Input (Specify)	Output 2 (Specify)	Power	Price
API 2000 DIN	Bridge mV/V, excitation volts	Specify mV, V, or mA range	DC mV, V, or mA range	Specify mV, V, or mA range	80-265 VAC or 40-300 VDC	\$495
API 2006 DIN	Bridge mV/V, excitation volts		AC mV, V, or mA range			\$495
API 2007 DIN	Bridge mV/V, excitation volts		Frequency range			\$495
API 2003 DIN	Bridge mV/V, excitation volts		Any full-range potentiometer			\$495
API 2001 DIN	Bridge mV/V, excitation volts		RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$			\$495
API 2005 DIN	Bridge mV/V, excitation volts	See table at right for out- put options	Bridge mV/V, excitation volts	See table at right for out- put options		\$495
API 2060 DIN	DC mV, V, or mA range		Bridge mV/V, excitation volts			\$495
API 2070 DIN	AC mV, V, or mA range		Bridge mV/V, excitation volts			\$495
API 2030 DIN	Frequency range		Bridge mV/V, excitation volts			\$495
API 2010 DIN	Any full-range potentiometer		Bridge mV/V, excitation volts			\$495
API 2050 DIN	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$	Specify mV, V, or mA range	DC mV, V, or mA range	Specify mV, V, or mA range	9-30 VDC or 10-32 VAC	\$555
API 2000 DD	Bridge mV/V, excitation volts		AC mV, V, or mA range			\$555
API 2006 DD	Bridge mV/V, excitation volts		Frequency range			\$555
API 2007 DD	Bridge mV/V, excitation volts		Any full-range potentiometer			\$555
API 2003 DD	Bridge mV/V, excitation volts		RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$			\$555
API 2001 DD	Bridge mV/V, excitation volts	See table at right for out- put options	Bridge mV/V, excitation volts	See table at right for out- put options		\$555
API 2005 DD	Bridge mV/V, excitation volts		Bridge mV/V, excitation volts			\$555
API 2060 DD	DC mV, V, or mA range		Bridge mV/V, excitation volts			\$555
API 2070 DD	AC mV, V, or mA range		Bridge mV/V, excitation volts			\$555
API 2030 DD	Frequency range		Bridge mV/V, excitation volts			\$555
API 2010 DD	Any full-range potentiometer		Bridge mV/V, excitation volts			\$555
API 2050 DD	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$		Bridge mV/V, excitation volts			\$555

Options—add to end of model number		Adder
L1	Channel 1 sourcing milliamp input, provides power to ch. 1 input loop	\$20
L2	Channel 2 sourcing milliamp input, provides power to ch. 2 input loop	\$20
L3	Channel 1 & 2 sourcing milliamp inputs, provides power to ch. 1 & 2 input loops	\$20
R1	Channel 1 I/O reversal, such as 20-4 mA output	\$20
R2	Channel 2 I/O reversal, such as 20-4 mA output	\$20
R3	Channel 1 & channel 2 I/O reversal, such as 20-4 mA outputs	\$20
EX1	Channel 1 open collector sinking (unpowered) mA output	\$20
EX2	Channel 2 open collector sinking (unpowered) mA output	\$20
EX3	Channel 1 & channel 2 open collector sinking (unpowered) mA outputs	\$20
U	Moisture resistant conformal coating	\$20
Accessories—order as a separate line item		Price
API GP8	Spare green 8 terminal connector	\$8
API TK36	DIN rail, 35 mm W x 39" L, aluminum	\$15



800-942-0315

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API 4058 G Field Rangeable Strain Gauge Input Transmitters**Input:** 0-5 mV to 0-1200 mVDC**Output:** 0-1 V to ± 10 VDC or 0-1 mA to 4-20 mA

Field configurable load cell transmitter can drive up to 4 load cells

- Interface Weighing Systems
- Sum Up to Four 350 Ω Load Cells
- Easy Field Setup

Input

1 to 4 strain gauges, bridges, or load cells

18 field selectable output ranges

Range: 0-5 mV to 0-1200 mV

Sensitivity: 0.5 mV/V to 120 mV/V

Millivolt output range is determined by the sensitivity of the sensor (mV/V) and the excitation voltage applied

$$\text{mV/V sensitivity} \times \text{excitation voltage} = \text{total mV range}$$
Input Impedance1.0 M Ω minimum**Excitation Voltage**

Range: 0-10 VDC

Max. output: 10 VDC at 115 mA

Drive capability: Up to four 350 Ω bridges at 10 VDC

Selection: Switch-selectable in 1 V increments

Fine adjustment: $\pm 2.5\%$ via multi-turn potentiometerStability: $\pm 0.01\%$ per $^{\circ}\text{C}$ **LoopTracker[®]**

Variable brightness LEDs indicate I/O loop level and status



Datasheet Quick Link: api-usa.com/4058

Output

16 field selectable output ranges

Voltage: 0-1 VDC to 0-10 VDC

Bipolar voltage: ± 1 VDC to ± 10 VDC

Current: 0-2 mADC to 0-25 mADC

20 V compliance,

1000 Ω at 20 mA**Output Linearity**Better than $\pm 0.1\%$ of span**Response Time**

70 milliseconds typical

Output Zero, Span and Offset

Multi-turn potentiometers

 $\pm 15\%$ of span adjustment rangeZero offset (tare) $\pm 100\%$ of span in 15% increments**Functional Test Button**

Sets output to test level when pressed

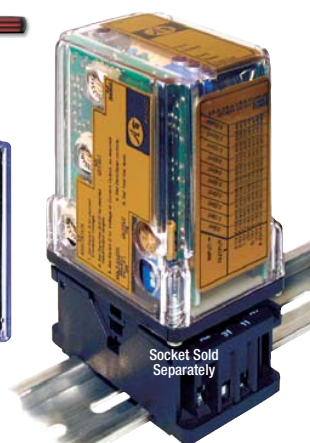
Adjustable 0-100% of span

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)



API 4058 G



Options—add to end of model number		Adder
DF	Fast response, 1 millisecond nominal response time	\$40
M01	Toggle switch with internal shunt calibration resistor	\$40
U	Moisture resistant conformal coating	\$20
Accessories—order as a separate line item		Price
API 011	11-pin socket	\$11
API 011 FS	11-pin finger safe socket	\$11
API TK36	DIN rail, 35 mm W x 39" L, aluminum	\$15

API 4059 G Field Rangeable Strain Gauge Input Isolated Transmitters**Input:** 0-5 mV to 0-400 mVDC**Output:** 0-1 V to ± 10 VDC or 0-2 mA to 4-20 mA

Field configurable load cell transmitter can drive up to 4 load cells. Fully isolated with non-interactive zero and span.

- Interface Weighing Systems
- Sum Up to Four 350 Ω Load Cells
- Easy Field Setup

Input

1 to 4 strain gauges, bridges, or load cells

14 field selectable input ranges

Range: 0-5 mV to 0-400 mV

Sensitivity: 0.5 mV/V to 40 mV/V

Millivolt output range is determined by the sensitivity of the sensor (mV/V) and the excitation voltage applied

$$\text{mV/V sensitivity} \times \text{excitation voltage} = \text{total mV range}$$
Input Impedance200 k Ω typical**Excitation Voltage**

Range: 0-10 VDC

Max. output: 10 VDC at 120 mA

Drive capability: Up to four 350 Ω bridges at 10 VDC

Selection: Switch-selectable in 1 V increments

Fine adjustment: $\pm 5\%$ via multi-turn potentiometerStability: $\pm 0.01\%$ per $^{\circ}\text{C}$ **Sense Lead Compensation**Better than $\pm 0.01\%$ per 1 Ω change in leadwire resistance

Leadwire resistance 10 Ω maximum for 10 VDC excitation for 350 Ω bridge

Isolation2000 V_{RMS}, 3-way: power/input, power/output, input/output

Datasheet Quick Link: api-usa.com/4059

LoopTracker[®]

Variable brightness LEDs indicate I/O loop level and status

Output

16 field selectable output ranges

Voltage: 0-1 VDC to 0-10 VDC

Bipolar voltage: ± 1 VDC to ± 10 VDC

Current: 0-2 mADC to 0-25 mADC

20 V compliance

1000 Ω at 20 mA**Output Linearity**Better than $\pm 0.1\%$ of span**Response Time**

70 milliseconds typical

Output Zero, Span and Offset

Multi-turn potentiometers

Non-Interactive zero and span

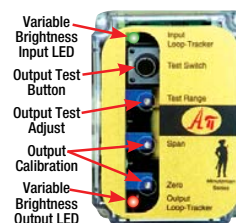
 $\pm 15\%$ of span adjustment rangeZero offset (tare) $\pm 100\%$ of span in 15% increments**Functional Test Button**

Sets output to test level when pressed

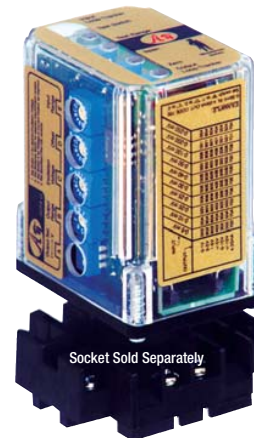
Adjustable 0-100% of span

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)



API 4059 G



Options—add to end of model number		Adder
DF	Fast response, 10 millisecond nominal response time	\$40
M02	Toggle switch for customer-supplied external shunt calibration resistor	\$40
U	Moisture resistant conformal coating	\$20
Accessories—order as a separate line item		Price
API 011	11-pin socket	\$11
API 011 FS	11-pin finger safe socket	\$11
API TK36	DIN rail, 35 mm W x 39" L, aluminum	\$15

Model	Input	Output	Power	Price
API 4059 G	1 to 4 load cells, strain gauges or bridge sensors with	0-1 VDC to 0-10 VDC	115 VAC	\$339
API 4059 G A230		± 1 VDC to ± 10 VDC	230 VAC	\$339
API 4059 G D	0.5 mV/V to 120 mV/V sensitivity	0-2 mADC to 0-25 mADC	9-30 VDC	\$399



APD 4059 Field Rangeable Strain Gauge Input Isolated Transmitters**Input:** 0-5 mV to 0-400 mVDC**Output:** 0-1 V to ± 10 VDC or 0-2 mA to 4-20 mA

Field configurable load cell transmitter can drive up to 4 load cells

- Interface Weighing Systems
- Sum Up to Four 350 Ω Load Cells
- Easy Field Setup



Free Factory I/O Setup!

Datasheet Quick Link: api-usa.com/APD4059**Input**

One to four load cells

Range: 0-5 mV to 0-400 mV

Sensitivity: 0.5 mV/V to 40 mV/V

Millivolt output range is determined by the sensitivity of the sensor (mV/V) and the excitation voltage applied

$$\text{mV/V sensitivity} \times \text{excitation voltage} = \text{total mV range}$$
Input Impedance200 k Ω typical**Excitation Voltage**

Range: 0-10 VDC

Max. output: 10 VDC at 120 mA

Drive capability: Up to four 350 Ω bridges at 10 VDC

Selection: Switch-selectable in 1 V increments

Fine adjustment: $\pm 5\%$ via multi-turn potentiometerStability: $\pm 0.01\%$ per $^{\circ}\text{C}$ **Sense Lead Compensation**Better than $\pm 0.01\%$ per 1 Ω change in leadwire resistance

Leadwire resistance 10 Ω maximum for 10 VDC excitation for 350 Ω bridge

Isolation1200 V_{RMS}, 3-way: power/input, power/output, input/output**LoopTracker®**

Variable brightness LEDs indicate I/O loop level and status

Output

Field configurable

Voltage: 0-1 VDC to 0-10 VDC

Bipolar voltage: ± 1 VDC to ± 10 VDC

Current: 0-2 mADC to 0-25 mADC

20 V compliance, 1000 Ω at 20 mA**Output Linearity**Better than $\pm 0.1\%$ of span**Response Time**

70 milliseconds typical

Output Zero, Span and Offset

Multi-turn potentiometers

Non-Interactive zero and span

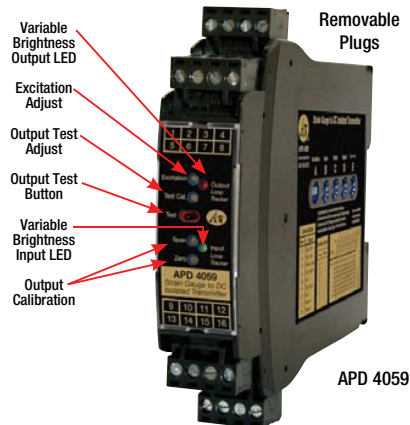
 $\pm 15\%$ of span adjustment rangeZero offset (tare) $\pm 100\%$ of span in 15% increments**Functional Test Button**

Sets output to test level when pressed

Adjustable 0-100% of span

Dimensions

0.89" W x 3.94" H x 4.81" D (not including connectors)



APD 4059

Options—add to end of model number		Adder
DF	Fast response, 10 millisecond nominal response time	\$40
M02	Toggle switch for customer-supplied external shunt calibration resistor	\$40
U	Moisture resistant conformal coating	\$20
Accessories—order as a separate line item		Price
API TK36	DIN rail, 35 mm W x 39" L, aluminum	\$15

API SUM Strain Gauge Summing Board for API 4058 G or API 4059 G**Input:** One to Four Strain Gauges or Load Cells**Output:** 0-1 V to ± 10 VDC or 0-2 mA to 4-20 mA

Maximum versatility for wiring and calibrating your weighing system

- Four Excitation and Signal Trim Potentiometers
- Sum up to Four 350 Ω Load Cells
- Easy Field Setup of Scales or Weighing Systems

Input

1 to 4 strain gauges, bridges, or load cells

4 switches to enable or disable individual strain gauges

Strain Gauge Connections

Individual terminal blocks for up to 4 strain gauges with provisions for signal (+), signal (-), signal shield, excitation (+), and excitation (-)

Strain Gauge Trim Adjustment

4 multi-turn potentiometers to adjust output of each strain gauge

Excitation Supply

Switch to select internal (with API 4058 G or API 4059 G) or customer-provided external excitation supply

Terminals provided for connecting external excitation

Excitation Supply Adjustment

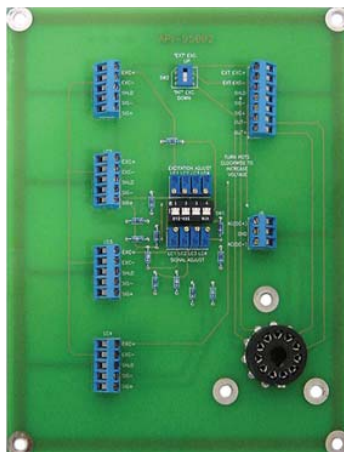
4 multi-turn potentiometers to adjust excitation voltage for each strain gauge to compensate for lead variations

Output Connection

Signal (+) and signal (-) terminals for combined output signal

Power Connection

Terminals for AC or DC external power and ground

Datasheet Quick Link: api-usa.com/SUM

API SUM 000

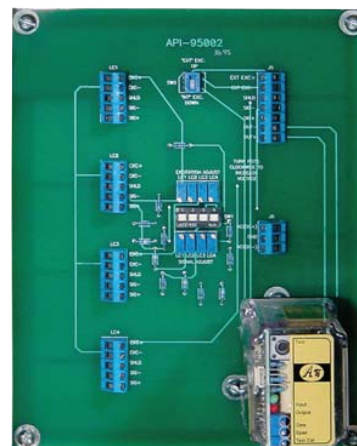
Dimensions

6.85" W x 8.75" H x 0.75" D

Customer is responsible for proper installation inside a protective enclosure



Free Factory I/O Setup!



API SUM 025

Dimensions

6.85" W x 8.75" H x 3.75" D

Customer is responsible for proper installation inside a protective enclosure

Model	Description	Price
API SUM 000	Summing board only.	\$219
API SUM 025	Summing board with API 4059 G strain gauge signal conditioner.	\$519
API SUM xxx	Summing board with special configurations to meet your requirements. Consult factory.	call



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API 1200 G, API 1220 G Thermocouple Input Alarms

Input: Most Thermocouple Types

Output: One DPDT Relay or Two SPDT Relays

Factory configured thermocouple temperature transmitter ranged to your specifications

- Process Limit Backup Alarm
- Temperature Over, Under or, Out of Range Alarm

Input

Factory configured—specify T/C type and temperature range

Thermocouple type: J, K, T, E, R, or S

Temperature range: °F or °C

Minimum recommended span is 5 mV

Consult factory for other T/C types

Cold-Junction Compensation

Automatic for specified thermocouple

T/C Burn-Out Protection

Upscale burnout standard, downscale burnout with option B

LoopTracker®

Variable brightness green LED indicates input level and status

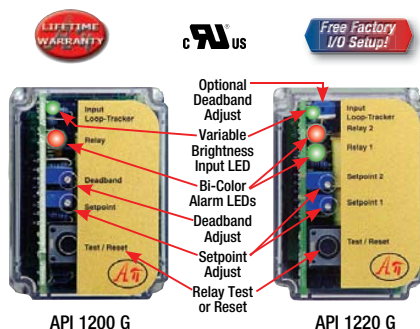
Alarm Setpoint

12 turn potentiometer, field adjustable from 0-100% of span

Functional Test/Reset Button

Toggle relay(s) to opposite state when pressed

Resets latching relay on API 1200 G HT



API 1200 G

API 1220 G

Datasheet Quick Link: api-usa.com/1200

Relay Ratings

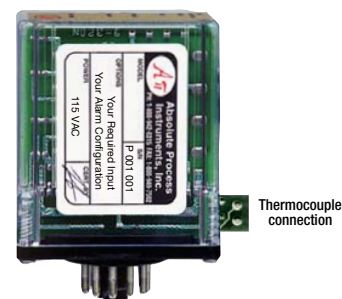
7 A @ 240 VAC maximum resistive load

3.5 A @ 240 VAC maximum inductive load

8 A @ 30 VDC maximum

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)



Thermocouple connection

Model	Input (Specify)	Alarm Relay	Deadband	Power	Price
API 1200 G	Thermocouple type, temperature range, °F or °C	1 DPDT alarm relay HI alarm standard	1% to 100% of span, 12 turn potentiometer	115 VAC	\$259
API 1200 G A230				230 VAC	\$259
API 1200 G P				80-265 VAC, 48-300 VDC	\$319
API 1200 G D				9-30 VDC	\$319
API 1220 G		2 SPDT alarm relays HI/LO alarms, internal jumper configurable for LO/HI, LO/LO, HI/HI	Fixed at 1% of span standard, see options for adjustable deadband	115 VAC	\$279
API 1220 G A230				230 VAC	\$279
API 1220 G P				80-265 VAC, 48-300 VDC	\$339
API 1220 G D				9-30 VDC	\$339

Options—add to end of model number	Adder
R API 1200 G: Reverse-acting alarms	\$20
L API 1200 G: Low trip (on decreasing signal)	free
HT API 1200 G: Latching alarm, push button reset	\$35
HP API 1200 G: Latching alarm, power-off reset	\$35
R API 1220 G: Reverse-acting alarms	\$20
A API 1220 G: Adjustable deadbands 1% to 100% of span, 1 turn potentiometer Adjusted symmetrically about each setpoint	\$25
HH API 1220 G: HI/HI trip	free
LL API 1220 G: LO/LO trip	free
B Downscale burnout	\$25
U Conformal coating for moisture resistance	\$20

Accessories—order as a separate line item	Price
API 011 11-pin socket	\$11
API 011 FS 11-pin finger safe socket	\$11
API TK36 DIN rail, 35 mm W x 39" L, aluminum	\$15

API 1400 G, API 1420 G RTD or Thermistor Input Alarms

Input: Most RTDs and Thermistors

Output: One DPDT Relay or Two SPDT Relays

Factory configured RTD temperature transmitter ranged to your specifications

- Process Limit Backup Alarm
- Temperature Over, Under or, Out of Range Alarm

Input

Factory configured—specify the following

RTD: resistance in Ohms at 0°C, such as 100 Ω

Most 10 Ω to 2000 Ω 2- or 3-wire RTD types available

Curve (alpha): such as "385" or "3916"

Thermistor: type (NTC, PTC) and temperature curve data

Temperature range: in °F or °C

Note: 100°F (55°C) is the recommended minimum span

LoopTracker®

Variable brightness green LED indicates input level and status

Alarm Setpoint

12 turn potentiometer, field adjustable from 0-100% of span

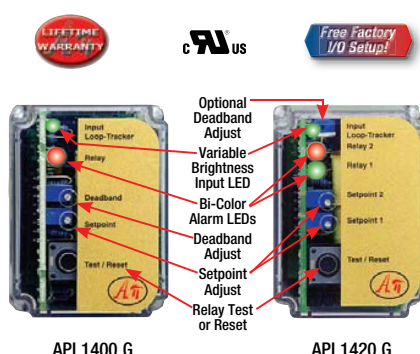
Functional Test/Reset Button

Toggle relay(s) to opposite state when pressed

Resets latching relay on API 1400 G HT

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)



API 1400 G

API 1420 G

Datasheet Quick Link: api-usa.com/1400

Relay Ratings

7 A @ 240 VAC maximum resistive load

3.5 A @ 240 VAC maximum inductive load

8 A @ 30 VDC maximum



Model	Input (Specify)	Alarm Relay	Deadband	Power	Price
API 1400 G	RTD or Thermistor type, temperature range, °F or °C	1 DPDT alarm relay HI alarm standard	1% to 100% of span, 12 turn potentiometer	115 VAC	\$259
API 1400 G A230				230 VAC	\$259
API 1400 G P				80-265 VAC, 48-300 VDC	\$319
API 1400 G D				9-30 VDC	\$319
API 1420 G		2 SPDT alarm relays HI/LO alarms, internal jumper configurable for LO/HI, LO/LO, HI/HI	Fixed at 1% of span standard, see options for adjustable deadband	115 VAC	\$279
API 1420 G A230				230 VAC	\$279
API 1420 G P				80-265 VAC, 48-300 VDC	\$339
API 1420 G D				9-30 VDC	\$339

Options—add to end of model number	Adder
R API 1400 G: Reverse-acting alarms	\$20
L API 1400 G: Low trip (on decreasing signal)	free
HT API 1400 G: Latching alarm, push button reset	\$35
HP API 1400 G: Latching alarm, power-off reset	\$35
R API 1420 G: Reverse-acting alarms	\$20
A API 1420 G: Adjustable deadbands 1% to 100% of span, 1 turn potentiometer Adjusted symmetrically about each setpoint	\$25
HH API 1420 G: HI/HI trip	free
LL API 1420 G: LO/LO trip	free
U Conformal coating for moisture resistance	\$20

Accessories—order as a separate line item	Price
API 011 11-pin socket	\$11
API 011 FS 11-pin finger safe socket	\$11
API TK36 DIN rail, 35 mm W x 39" L, aluminum	\$15

API 4001 G L RTD Input Isolated Transmitters

Input: 10 Ω to 2000 Ω RTDsOutput: 0-1 V to ± 10 VDC, 0-1 mA to 4-20 mA

A versatile RTD temperature transmitter linearized and ranged to your specifications

- Interface Standard or Special RTDs to PLCs
- Rescale a Temperature Range to a Full 4-20 mA

Input

Factory configured—see ordering table
100°F (55°C) is the recommended minimum span

RTD Linearization

Linearized to better than $\pm 0.1\%$ of span

LoopTracker®

Variable brightness LEDs indicate I/O loop level and status

Isolation

2000 VRMS, 3-way: power/input, power/output, input/output

Functional Test Button

Sets output to approximately 50% of span when pressed



Datasheet Quick Link: api-usa.com/4001

Output

Factory configured—specify output range, see table below
Consult factory for other ranges

Output Linearity

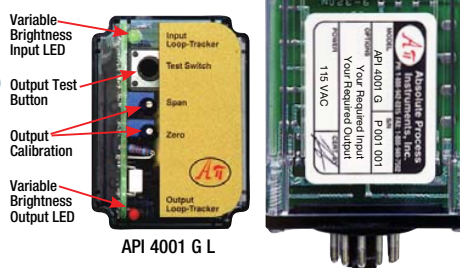
Better than $\pm 0.1\%$ of span

Output Zero and Span

Multi-turn potentiometers $\pm 15\%$ of span adjustment range

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)



API 4001 G L

Model	Input (Specify)	Output (Specify)	Power	Price
API 4001 G L	10 Ω to 2000 Ω 2- or 3-wire RTDs	0-1 VDC to 0-10 VDC	115 VAC	\$349
API 4001 G L A230	Specify Ω at $^{\circ}\text{C}$, such as 100 Ω , curve such as "385" or "3916", temperature range: in $^{\circ}\text{F}$ or $^{\circ}\text{C}$	± 1 VDC to ± 10 VDC	230 VAC	\$349
API 4001 G L P		0-1 mADC to 0-20 mADC	80-265 VAC, 48-300 VDC	\$409
API 4001 G L D		1000 Ω at 20 mA, 20 V comp.	9-30 VDC	\$409

Options—add to end of model number		Adder
EXTSUP	Open collector output when a sinking (unpowered) mA output is required	\$60
M01	I/O reversal, such as 20-4 mA output	\$30
U	Moisture resistant conformal coating	\$20
Accessories—order as a separate line item		Price
API 008	8-pin socket	\$8
API 008 FS	8-pin finger safe socket	\$8
API TK36	DIN rail, 35 mm W x 39" L, aluminum	\$15

API 4001 G SA-B Differential RTD Input Transmitters

Input: Two 100 Ω 0.00385 RTDsOutput: 0-1 V to ± 10 VDC, 0-1 mA to 4-20 mA

Accepts Two 100 Ω RTD inputs to give a process signal equal to their differential temperature

- Monitor Heat Exchanger ΔT
- Rescale ΔT Ranges to Full 4-20 mA

Inputs

Two 100 Ω Platinum RTDs, 0.00385 DIN curve
3-wire preferred, 2-wire acceptable for short lead lengths

Input Differential Span

Minimum: 20°F or 10°C
Maximum: 900°F or 500°C

Input Common Mode Temperature

Entire Pt 100 range: -325 to 1300°F (-200 to 700°C)

LoopTracker®

Variable brightness LEDs indicate I/O level and status

Functional Test Button

Press to sets output to test level, adjustable 0-100% of span



Datasheet Quick Link: api-usa.com/4001GSAB

Output

Factory configured—specify output range, see table below
Consult factory for other ranges

Outputs clamped not to exceed $\pm 5\%$ over- or under-range

Output Linearity

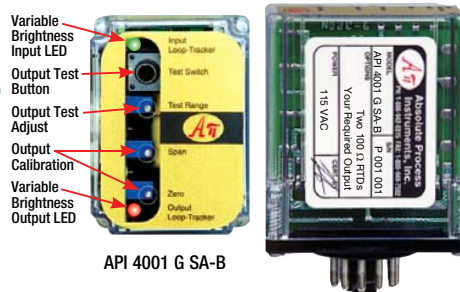
Better than $\pm 0.2\%$ of span

Output Zero and Span

Multi-turn potentiometers, $\pm 15\%$ of span adjustment range

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)



API 4001 G SA-B

Model	Input	Output (Specify)	Power	Price
API 4001 G SA-B	Two RTDs	0-1 VDC to 0-10 VDC	115 VAC	\$349
API 4001 G SA-B A230	100 Ω Platinum	± 1 VDC to ± 10 VDC	230 VAC	\$349
API 4001 G SA-B P	0.00385 DIN curve	0-1 mADC to 0-20 mADC	80-265 VAC, 48-300 VDC	\$409
API 4001 G SA-B D		1000 Ω at 20 mA, 20 V compliance	9-30 VDC	\$409

Options—add to end of model number		Adder
EXTSUP	Open collector output when a sinking (unpowered) mA output is required	\$60
M01	I/O reversal, such as 20-4 mA output	\$30
U	Moisture resistant conformal coating	\$20
Accessories—order as a separate line item		Price
API 011	11-pin socket	\$11
API 011 FS	11-pin finger safe socket	\$11
API TK36	DIN rail, 35 mm W x 39" L, aluminum	\$15

Sineax V624 RTD or T/C Input Isolated Transmitters, Programmable

Input: Thermocouple or RTD

Output: 0-1 V to ± 10 VDC, 0-1 mA to 4-20 mA

A programmable temperature transmitter that can be tailored to your specifications

- Factory or Field PC Programmable
- 23 Point Linearization of RTDs or Thermocouples

Input

RTD Input 2-, 3-, 4-wire, Pt100, Ni100

T/C Input J, K, T, E, R, S, N, B, L, U, W-Re

For factory programming specify sensor type, range in $^{\circ}\text{F}$, $^{\circ}\text{C}$, or K, internal or external CJC for T/C

Output

For factory programming specify output range, standard or reverse, sensor fault output, response time if > 2 sec.

0-20 or 4-20 mA to 20-0 mA, 2 mA min. span

0-2 V to 0-10 V, 10-0 V, 1 V min. span

Output Linearity

Better than $\pm 0.2\%$ of span

Isolation

2300 VRMS, 3-way: power/input, power/output, input/output

Dimensions

0.69" W x 3.35" H x 4.49" D

Model	Output	Power	Price
V 624-9110	4-20 mA	24-60 VAC/VDC	\$470
V 624-9210	4-20 mA	85-230 VAC/VDC	\$470
V 624-9120	0-10 V	24-60 VAC/VDC	\$470
V 624-9220	0-10 V	85-230 VAC/VDC	\$470
PK 610-A	Programming cables and software		\$240



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API 2000 **DuoPak** Series 2 Channel Isolated Transmitters

Inputs: AC, DC, RTD, Frequency, Pot., Strain
Outputs: 0-1 V to ± 10 VDC, 0-1 mA to 0-20 mA

Convert two RTD signals or one RTD and another input such as voltage, current, position, speed, or strain to two standard process signals

- Dual Temperature Measurements
- Measure Motor Temperature and Current
- Measure Strain with Temperature

Inputs

The DuoPak converter/isolator provides two independent channels of signal conversion, isolation, and retransmission in one compact package. Order any combination of DC, AC, RTD, frequency, potentiometer, or strain gauge inputs.

LoopTracker LEDs

Variable brightness green LED for input level and status
 Variable brightness red LED for output level and status

Outputs

Factory configured—specify output range for each channel

Voltage: 0-1 VDC to 0-10 VDC, ± 1 VDC to ± 10 VDC

Current: 0-1 mA to 0-20 mA

1000 Ω at 20 mA, 20 V compliance

Consult factory for other ranges



Free Factory I/O Setup!

Output Calibration

Multi-turn zero and span potentiometers for each channel
 $\pm 15\%$ of span adjustment range typical

Output Linearity, Ripple and Noise

Better than $\pm 0.1\%$ of span

Functional Test Button

Sets output to test level when pressed
 Factory set to approximately 50% of span

Common Mode Rejection

120 dB minimum

Isolation

2000 V_{RMS}, 3-way: power/input, power/output, input/output

Ambient Temperature Range and Stability

-10°C to $+60^{\circ}\text{C}$ operating ambient

Better than $\pm 0.04\%$ of span per $^{\circ}\text{C}$ stability

Dimensions

2.17" W x 3.0" H x 4.33" D (not including connectors)

Removable Plugs

Datasheet Quick Link: api-usa.com/2000

DC Input	AC Input	RTD Input	Frequency Input	Potentiometer Input	Strain Gauge Input
Input Ranges 0-100 mVDC to 0-500 VDC 200 k Ω min. impedance ± 100 mVDC to ± 10 VDC 200 k Ω min. impedance 0-1 mA to 0-900 mA 1.25 VDC max. burden mA inputs sink current Popular ranges: 0-1 V, 0-2 V, 0-5 V, 1-5 V, 0-10 V, ± 1 V, ± 5 V, ± 10 V, 0-1 mA, 0-20 mA, 4-20 mA Response Time 70 milliseconds typical	Input Ranges 0-50 mVAC to 0-300 VAC 200 k Ω min. impedance 0-1 mAAC to 0-900 mAAC 1.0 V _{RMS} max. burden Typical Input Ranges 0-50 mVAC, 0-100 mVAC, 0-150 VAC, 0-250 VAC 0-10 mAAC, 0-100 mAAC Input Protection 750 VDC or 750 VAC _p common mode Response Time 150 milliseconds typical	Input Ranges & Types Specify: 2- or 3-wire RTD, type, curve, $^{\circ}\text{F}$ or $^{\circ}\text{C}$ range Minimum span: 100°F or 55°C Resistance Type 10 Ω Copper 100 Ω Pt 0.00385 100 Ω Pt 0.00392 100 Ω Copper 120 Ω Nickel 1000 Ω Pt 0.00385 1000 Ω Balco Ni-Fe 2000 Ω Pt 0.00385 Linearization Better than $\pm 0.1\%$ of span	Input Ranges 0-25 Hz to 0-20 kHz 100 k Ω minimum impedance Amplitude 100 mV _{RMS} min., 150 V _{RMS} max. Input Waveforms Sine, sawtooth, square wave, or others with greater than 100 mV amplitude change Sensor Power Supply 15 VDC regulated 25 mA	Input Ranges Minimum: 0-100 Ω Maximum: 0-1.0 M Ω Full travel of the potentiometer required Consult factory for other ranges Response Time 70 milliseconds typical	Input Ranges Specify: excitation voltage, sensor mV/V Minimum: 1 mV/V Maximum: 200 mV/V Excitation Voltage 10 VDC max. at 30 mA Response Time 70 milliseconds typical

Model	Channel 1 Input (Specify)	Output 1 (Specify)	Channel 2 Input (Specify)	Output 2 (Specify)	Power	Price
API 2010 DIN	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$	Specify mV, V, or mA range	DC mV, V, or mA range	Specify mV, V, or mA range	80-265 VAC or 40-300 VDC	\$495
API 2016 DIN	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$		AC mV, V, or mA range			\$495
API 2017 DIN	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$		Frequency range			\$495
API 2013 DIN	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$		Any full-range potentiometer			\$495
API 2015 DIN	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$		Bridge mV/V, excitation volts			\$495
API 2011 DIN	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$	See table at right for output options	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$	See table at right for output options	9-30 VDC or 10-32 VAC	\$495
API 2001 DIN	DC mV, V, or mA range		RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$			\$495
API 2061 DIN	AC mV, V, or mA range		RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$			\$495
API 2071 DIN	Frequency range		RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$			\$495
API 2031 DIN	Any full-range potentiometer		RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$			\$495
API 2051 DIN	Bridge mV/V, excitation volts	Specify mV, V, or mA range	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$	Specify mV, V, or mA range	9-30 VDC or 10-32 VAC	\$495
API 2010 DD	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$		DC mV, V, or mA range			\$555
API 2016 DD	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$		AC mV, V, or mA range			\$555
API 2017 DD	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$		Frequency range			\$555
API 2013 DD	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$		Any full-range potentiometer			\$555
API 2015 DD	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$	See table at right for output options	Bridge mV/V, excitation volts	See table at right for output options	9-30 VDC or 10-32 VAC	\$555
API 2011 DD	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$		RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$			\$555
API 2001 DD	DC mV, V, or mA range		RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$			\$555
API 2061 DD	AC mV, V, or mA range		RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$			\$555
API 2071 DD	Frequency range		RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$			\$555
API 2031 DD	Any full-range potentiometer	See table at right for output options	RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$	See table at right for output options	9-30 VDC or 10-32 VAC	\$555
API 2051 DD	Bridge mV/V, excitation volts		RTD Ω , type, range, $^{\circ}\text{F}$ or $^{\circ}\text{C}$			\$555

Options—add to end of model number		Adder
L1	Channel 1 sourcing milliamp input, provides power to ch. 1 input loop	\$20
L2	Channel 2 sourcing milliamp input, provides power to ch. 2 input loop	\$20
L3	Channel 1 & 2 sourcing milliamp inputs, provides power to ch. 1 & 2 input loops	\$20
R1	Channel 1 I/O reversal, such as 20-4 mA output	\$20
R2	Channel 2 I/O reversal, such as 20-4 mA output	\$20
R3	Channel 1 & channel 2 I/O reversal, such as 20-4 mA outputs	\$20
EX1	Channel 1 open collector sinking (unpowered) mA output	\$20
EX2	Channel 2 open collector sinking (unpowered) mA output	\$20
EX3	Channel 1 & channel 2 open collector sinking (unpowered) mA outputs	\$20
U	Moisture resistant conformal coating	\$20
Accessories—order as a separate line item		Price
API GP8	Spare green 8 terminal connector	\$8
API TK36	DIN rail, 35 mm W x 39" L, aluminum	\$15



API 4130 G L Thermocouple Input Isolated Transmitters

Input: J, K, T, E, R, or S Thermocouples

Output: 0-1 V to ± 10 VDC, 0-1 mA to 4-20 mA

A versatile thermocouple temperature transmitter ranged and linearized to your specifications

- Interface Thermocouples to PLCs
- Rescale Temperature Range to Full 4-20 mA

Datasheet Quick Link: api-usa.com/4130**Input**

Factory configured—specify T/C type and temperature range
Thermocouple type: J, K, T, E, R, or S
Temperature range: °F or °C
Minimum recommended span is 5 mV
Consult factory for other T/C types

Cold-Junction Compensation

Automatic for specified thermocouple

T/C Burn-Out Protection

Upscale burnout standard, downscale burnout with option B

LoopTracker®

Variable brightness LEDs indicate I/O loop level and status

Isolation2000 V_{RMS}, 3-way: power/input, power/output, input/output**Functional Test Button**

Sets output to test level when pressed
Test level factory set to approximately 50% of span

Response Time

70 milliseconds typical

Output

Factory configured—specify output range
Voltage: 0-1 VDC to 0-10 VDC, ± 1 VDC to ± 10 VDC
Current: 0-1 mADC to 0-20 mADC
1000 Ω at 20 mA, 20 V compliance
Consult factory for other ranges

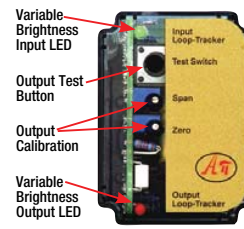
Output LinearityLinearized to better than $\pm 0.5\%$ of spanHA linearization to $\pm 0.2\%$ of span**Output Zero and Span**

Multi-turn potentiometers
 $\pm 15\%$ of span adjustment range

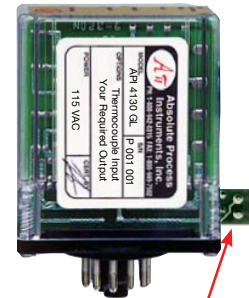
Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)

Accessories—order as a separate line item		Price
API 008	8-pin socket	\$8
API 008 FS	8-pin finger safe socket	\$8
API TK36	DIN rail, 35 mm W x 39" L, aluminum	\$15



API 4130 G L



Thermocouple connection

Options—add to end of model number		Adder
EXTSUP	Open collector output when a sinking (unpowered) mA output is required	\$60
B	Downscale T/C burnout protection instead of upscale	\$25
HA	High accuracy linearization to $\pm 0.2\%$ of span	\$85
U	Moisture resistant conformal coating	\$20

ThermoPro® T16L Loop Powered RTD Transmitters, Programmable

Input: Built-In 100 Ω RTD Probe

Output: 4-20 mA Loop Powered

An economical 2-wire 4-20 mA temperature transmitter with local indication

- Heat Exchanger and Tank Content Temperatures
- Oven and Heating Equipment Temperatures

Temperature Range

-58.0°F to 392.0°F or -50.0°C to 200.0°C

Selectable °F or °C

Keypad programmable 4-20 mA output range

Resolution

0.1°F or 0.1°C

Accuracy $\pm 0.3^\circ\text{C}$ at 0°C, $\pm 1.1^\circ\text{C}$ at 150°C**Sensor**IEC-751 Class B 100 Ω 0.00385 alpha curve RTD

1/2" NPT male, 316 stainless steel

Spring-loaded probes fit standard thermowells

Consult factory for other probe types or configurations

Display

4 readings per second nominal display update rate

4 digit LCD, 1/2" digit height, alphanumeric lower display

Functional Test Button

Sets output to test level when pressed

Test level user settable 0 to 100% of span

Datasheet Quick Link: api-usa.com/ThermoPro**Calibration**

User settable pass code required to enter calibration mode

Zero and span temperature calibration

Loop Supply Voltage

Any DC supply or loop resistance that maintains 8 to 32 VDC

Reverse polarity protected

3 ft long, 2-conductor 22 AWG cable

Loop Output Characteristics

12,000 count 4-20 mA output

Updated approximately 4 times per second

Configurable for upscale or downscale burnout

Indication on display for low loop power

Dimensions

3.5" W x 3.0" H x 2.0" D housing only

Add approximately 1" to depth for strain relief and wire clearance

Environmental

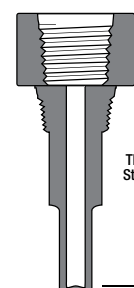
NEMA 4X housing

Operating temperature: -4 to 185°F (-20 to 85°C) at housing



ThermoPro T16LT

Typical Thermowell (not included)

1/2" NPT
316 StainlessL =
Thermowell
Stem Length

Options—add to end of model number		Adder
U	Moisture resistant conformal coating	\$20

Model	Temperature Range	Probe Type	Length	Output	Power	Price
T16L2	-58.0°F to 392.0°F or -50.0°C to 200.0°C programmable range to correspond to 4-20 mA output	100 Ω RTD, 1/2 NPT fitting 316 SS	2.5" L fixed length	4-20 mA output	Powered by 4-20 mA current loop 8-32 VDC	\$389
T16L4			4" L fixed length			\$389
T16L6			6" L fixed length			\$389
T16L9			9" L fixed length			\$389
T16L12			12" L fixed length			\$389
T16L2S			2.5" L spring-loaded			\$389
T16L4S			4" L spring-loaded			\$389
T16L6S			6" L spring-loaded			\$389
T16L9S			9" L spring-loaded			\$389
T16L12S			12" L spring-loaded			\$389



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API 3200 G Valve Positioner/Actuator/Controllers

An easy-to-setup valve actuator with factory ranged input and choice of position feedback types

- Automatic or Manual Control of Motorized Valves
- Valve, Linear Actuator, or Damper Control

Input Zero and Span

Potentiometer adjustable, $\pm 10\%$ of span range typical

LoopTracker®

Variable brightness LED indicates input level and status



Operational Controls

Automatic/manual switch, open/close buttons

Deadband

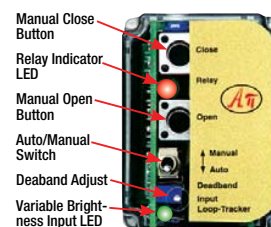
12 turn potentiometer, adjustable 1 to 25% of span

Dimensions

1.75" W x 2.75" H x 2.38" D (not including socket)

Input: 0-1 to 0-100 VDC, 0-10 mA to 0-1 ADC

Output: 7 A SPDT Relay with Neutral Position



API 3200 G



Datasheet Quick Link: api-usa.com/3200

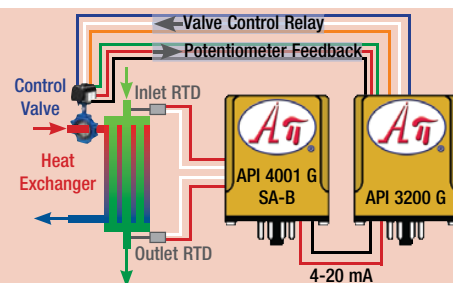
Model	Input (Specify)	Feedback	Output	Power	Price
API 3200 G	0-1 VDC to 0-100 VDC,	Potentiometer range	SPDT relay with neutral contact position 7 A @ 240 VAC maximum resistive load 3.5 A @ 240 VAC maximum inductive load	115 VAC	\$249
API 3200 G A230	0-10 mADC to 0-1 ADC	0-100 Ω to 0-100 k Ω		230 VAC	\$249
API 3200 G P				80-265 VAC, 48-300 VDC	\$309
API 3200 G D				9-30 VDC	\$309
API 3200 G M01	0-1 V, 0-5 V, 1-5 V, 0-10 V	Voltage		115 VAC	\$269
API 3200 G M01 A230	typical or specify	0-1 V, 0-5 V, 1-5 V, 0-10 V		230 VAC	\$269
API 3200 G M01 P				80-265 VAC, 48-300 VDC	\$329
API 3200 G M01 D				9-30 VDC	\$329
API 3200 G M420	0-20 mA, 4-20 mA, 10-50 mA	Current		115 VAC	\$269
API 3200 G M420 A230	typical or specify	0-20 mA, 4-20 mA, 10-50 mA		230 VAC	\$269
API 3200 G M420 P				80-265 VAC, 48-300 VDC	\$329
API 3200 G M420 D				9-30 VDC	\$329

Maintaining Heat Exchanger Differential Temperature

A process requires precise control of the change in temperature of the process fluid as it passes through a heat exchanger. RTDs at the heat exchanger inlet and outlet are connected to an API 4001 G SA-B differential RTD to DC transmitter module.

The API 4001 G SA-B computes the differential temperature and provides a proportional 4-20 mA output signal. This is used by the API 3200 G valve positioner module to drive the temperature control valve open or closed as necessary to maintain the required process fluid temperature differential.

The API 3200 G controls the position of the valve by comparing the 4-20 mA input to that of the valve's position feedback potentiometer or slidewire. An SPDT relay provides bidirectional signals to drive the valve motor open or close. When the valve position, as indicated by the feedback signal, becomes equal to the position as represented by the control input, the relay will go to the neutral position and the valve motor will halt. The deadband control allows precise positioning of the motor to eliminate hunting or oscillation. An auto/manual switch, open/close buttons and an input LoopTracker LED allow easy setup and diagnostics.



API Module Accessories

Model	Description	Price
API TK36	Pre-punched aluminum DIN rail 39" (1 meter) long.	\$15
API CLP1	Hold-down spring for all plug-in modules. For mobile or high vibration applications.	\$3
API GP8	Green 8-pin replacement plug for 55 mm DIN housing. Each.	\$8



API TK36 Aluminum DIN Rail, 39" Long

Socket	Description	Max. Voltage	Price
API 008	8 pin octal	600 Volts	\$8
API 008-5A	8 pin octal, with shunt for inputs up to 5 Amps	600 Volts	\$30
API 008 FS	8 pin octal, finger safe	300 Volts	\$8
API 011	11 pin octal style	300 Volts	\$11
API 011-5A	11 pin octal style, with shunt for inputs up to 5 Amps	300 Volts	\$30
API 011 FS	11 pin octal style, finger safe	300 Volts	\$11

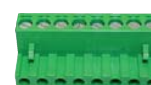


API 008
8-pin socket

API 008 FS
8-pin finger-safe socket

API 011
11-pin socket

API 011 FS
11-pin finger-safe socket



API GP8
Green plug for 55 mm DIN housing



API CLP1
Hold-down spring fits all API sockets



Module with API 008-5A socket and current shunt

Industry standard relay sockets are used with all API plug-in modules. All versions can be DIN rail or surface mounted. Black break-resistant thermoplastic.

API 008, API 011: UL recognized, file no. E60008, CSA certified, file no. LR29513

API 008 FS, API 011 FS: UL recognized, file no. E113714, CSA certified, file no. LR26716



NEW ThermoPro® T16 RTD Temperature Indicators and Alarms

T16B: Battery Powered Indicator

T16ADA: Low Voltage Powered Dual Alarm

Economical RTD temperature indicators and alarms

- Local Temperature Indication
- Temperature Out-of-Limits Alarm

Range and Resolution

–58.0°F to 392.0°F or –50.0°C to 200.0°C

Accuracy

±0.3°C at 0°C, ±1.1°C at 150°C

Sensor

IEC-751 Class B 100 Ω Platinum RTD, 0.00385 alpha curve
1/2" NPT male, 316 stainless steel
Spring-loaded probe versions fit standard thermowells

Display

4 readings per second nominal display update rate
4 digit LCD, 1/2" digit height, alphanumeric lower display

Calibration

User settable pass code required to enter calibration mode
Zero and span temperature calibration

Dimensions

3.5" W x 3.0" H x 2.0" D housing only

Environmental

NEMA 4X housing

Operating temperature: –4 to 185°F (–20 to 85°C) at housing

Datasheet Quick Link
api-usa.com/ThermoPro

Battery Powered T16B

Includes 2 AA batteries
Battery life approximately 1000 hours

Dual Alarm T16ADA

Powered by 8 to 24 VAC 50/60 Hz or 9 to 32 VDC
Reverse polarity protected
3 ft long, 2-conductor 22 AWG cable
2 SPDT relays, 1A/24VDC, 0.5A/115VAC non-inductive
Programmable setpoints, High or Low
Normal or reverse acting
Programmable hysteresis
LED alarm status indication
3 ft long, 6-conductor 22 AWG cable

Options—add to end of model number

U Moisture resistant conformal coating **\$20**

Model	Temperature Range	Probe Type	Length	Output	Power	Price
T16B2	–58.0°F to 392.0°F or –50.0°C to 200.0°C	100 Ω RTD, 1/2 NPT fitting 316 SS	2.5" L fixed length	None	2 AA batteries	\$389
T16B4			4" L fixed length			\$389
T16B6			6" L fixed length			\$389
T16B9			9" L fixed length			\$389
T16B12			12" L fixed length			\$389
T16B2S			2.5" L spring-loaded			\$389
T16B4S	–58.0°F to 392.0°F or –50.0°C to 200.0°C	100 Ω RTD, 1/2 NPT fitting 316 SS	4" L spring-loaded	2 SPDT relays, 1A/24VDC, 0.5A/115VAC non-inductive Fully programmable	8 to 24 VAC 50/60 Hz or 9 to 32 VDC	\$389
T16B6S			6" L spring-loaded			\$389
T16B9S			9" L spring-loaded			\$389
T16B12S			12" L spring-loaded			\$389
T16ADA2	–58.0°F to 392.0°F or –50.0°C to 200.0°C	100 Ω RTD, 1/2 NPT fitting 316 SS	2.5" L fixed length			\$479
T16ADA4			4" L fixed length			\$479
T16ADA6			6" L fixed length			\$479
T16ADA9			9" L fixed length			\$479
T16ADA12			12" L fixed length			\$479
T16ADA2S			2.5" L spring-loaded			\$479
T16ADA4S	–58.0°F to 392.0°F or –50.0°C to 200.0°C	100 Ω RTD, 1/2 NPT fitting 316 SS	4" L spring-loaded	Fully programmable	8 to 24 VAC 50/60 Hz or 9 to 32 VDC	\$479
T16ADA6S			6" L spring-loaded			\$479
T16ADA9S			9" L spring-loaded			\$479
T16ADA12S			12" L spring-loaded			\$479



NEW!

ThermoPro T16B
Battery Powered
Indicator

See Page 30
for ThermoPro
Temperature
Transmitters

ThermoPro T16ADA
Temperature Alarm



NEW!

1/2" NPT
316 Stainless



ABSOLUTE PROCESS INSTRUMENTS Inc.

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