

Accuracy

 $\pm 0.1^{\circ}\text{C}$ input accuracy, 0.001°C input resolution

Ambient Temperature Range and Stability -10°C to +60°C operating ambient

Better than ±0.02% of span per °C stability **Response Time**

300 milliseconds typical

Isolation

Full 3-way isolation: input, output, power, 1200 VRMs min. 600 VACp or 600 VDC common mode protection 75 dB minimum common mode rejection Simultaneous 50 Hz and 60 Hz rejection

Housing and Connectors

IP 40, requires vertical installation on a 35 mm DIN rail inside a panel or enclosure

For use in Pollution Degree 2 Environment

Four 4-terminal removable connectors, 14 AWG max. wire size Power

85-265 VAC, 50/60 Hz or 60-300 VDC, 3 W maximum D versions: 9-30 VDC or 10-32 VAC 50/60 Hz, 3 W maximum The low noise 16 bit analog output is isolated and can be factory set for common voltage and milliamp output types.

Full 3-way isolation (input, output, power) make this module

useful for ground loop elimination, common mode signal rejec-

How to Order

tion, and noise pickup reduction.

Models are factory ranged. You must specify the sensor type and the following information.

T/C:	Thermocouple type, burnout setting
Custom:	Complete T/C data over temperature range
Temperature:	Range in °F or °C
Output:	Range and type (mV. V. mA)

Model	Description	Power
APD 4130	Thermocouple input to DC	85-265 VAC, 50/60 Hz or 60-300 VDC
APD 4130 D	output isolated transmitter	9-30 VDC or 10-32 VAC

An API exclusive feature includes an output test switch to provide a fixed output (independent of the input) when pressed. The output test greatly aids in saving time during initial startup and/or troubleshooting.

The test output level is adjustable from 0 to 100% of the output span.

Options and Accessory

Options—add to end of model number			
NC5	5 point NIST traceable calibration certificate		
NC11	11 point NIST traceable calibration certificate		
U	Conformal coating for moisture resistance		
R	Reverse acting output		
Accessory—order as separate line item			

API BP4 Spare removable 4 terminal plug, black

Note: Units are set up at the factory, but an appropriate simulator and multimeter may be required to adjust calibration in the field.

Instructions

Precautions

WARNING! All wiring must be performed by a gualified electrician or instrumentation engineer. See diagram for terminal designations and wiring examples. Consult factory for assistance.

WARNING! Avoid shock hazards! Turn signal input, output, and power off before connecting or disconnecting wiring, or removing or installing module.

Précautions

ATTENTION! Tout le câblage doit être effectué par un électricien ou ingénieur en instrumentation qualifié. Voir le diagramme pour désignations des bornes et des exemples de câblage. Consulter l'usine pour assistance.

ATTENTION! Éviter les risques de choc! Fermez le signal d'entrée, le signal de sortie et l'alimentation électrique avant de connecter ou de déconnecter le câblage, ou de retirer ou d'installer le module.

API maintains a constant effort to upgrade and improve its products. Specifications are subject to change without notice. See api-usa.com for latest product information. Consult factory for your specific requirements.



WARNING: This product can expose you to chemicals includ-ing nickel, which are known to the State of California to cause cancer or birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

Electrical Connections

See wiring diagrams at right. A multimeter and a temperature simulator may be used to check setup. Observe polarity. If the output does not function, check wiring and polarity.

The power supplies are fuse protected and the unit may be returned to API for fuse replacement.

Input

The thermocouple is connected as shown in the wiring diagrams at right. If a custom input was specified, see the model/serial number label for thermocouple type, temperature range and options.

Output

For milliamp ranges, determine if your device provides power to the current loop or if the loop must be powered by the APD module. Typical voltage may be 9-24 VDC at your device's terminals if it provides power to the loop

Models with ${\bf R}$ reverse acting output have the output range reversed. For example, 4-20 mA is 20-4 mA.

Module Power

Check model/serial number label for module operating voltage to make sure it matches available power.

When using DC power, either polarity is acceptable, but for consistency with similar API products, positive (+) can be wired to terminal 13 and negative (-) can be wired to terminal 16.

Calibration

The module is factory calibrated, but the output may be adjusted to account for lead length and load variations.

- Connect a multimeter to the output terminals 2 3, or 3 4 1. depending on output type. See wiring diagram at right.
- 2. Connect a temperature simulator to the input of the module.
- Connect power to the unit (terminals 13, 14, and 16) and apply 3. power to the module
- Wait until the yellow Status LED starts blinking once per second. 4. Low End Input Calibration
- 5. Use the simulator to apply the low end of the input signal.
- 6. Push the Set button to store the low end input value.
- The Status LED will turn on to indicate the reading was saved. 7.
- Use the Up and Down buttons to adjust the output to the desired 8. low output reading. For example: 4 mA for a 4-20 mA output or -10 V for a ± 10 V output.
- 9. Press and release the Set button to store the low output.

High End Input Calibration

10. Wait until the Status LED blinks once per second.

- 11. Use the simulator to apply the high end of the input signal.
- 12. Push the Set button to store the high end input value.
- 13. The Status LED will turn on to indicate the reading was saved. 14. Use the Up and Down buttons to adjust the output to the desired
- high output reading (i.e. 20 mA for a 4-20 mA output).
- 15. Press and release the Set button to store the high output.

Output Test Level Adjustment

16. Wait until the Status LED turns on and stays on.

- 17. Using the Up and Down buttons adjust the test output for the desired level (i.e. 12 mA for a 4-20 mA output).
- 18. Press and release the Set button to store the test output.
- 19. Wait until the Status LED starts blinks once per second
- 20. To change any value, turn off the power and repeat above steps.

Saving Setup

- 21. Press and release the Set button to store the value and lock it into memory. The Status LED will turn on during the storing process.
- 22. Once the Status LED turns off, setup and configuration is complete. Turn off power to the unit and remove the simulator and multimeter.

Adjusting Output After Installation

It may be necessary to fine-tune the output signal after installation to account for offset, tare, lead length, or operating temperature.

- 1. Press and release the Set button. This will turn on the yellow Status LED.
- 2. Use the Up and Down buttons to adjust the output to the desired level. The Status LED will turn off during the adjustment.
- 3. Once the desired output level has been met, press and release the Set button to save the adjustment. The "Status" LED will flash indicating that the change has been made

The unit has an auto Zero/Span detection for knowing which to adjust. If the output signal is greater than 50% of the Span, the unit will adjust the output signal Span.

If the output signal is less than 50% of the Span, the unit will adjust the output signal Zero.

Resetting to Factory Values

To reset the unit calibration and test output back to factory default, press and hold the Set button while the module is being powered up.

Upper Moun

Mounting to a DIN Rail

Install module vertically on a 35 mm DIN rail in a protective enclosure away from heat sources. Do not block air flow. Allow 1" (25 mm) above and below housing vents for air circulation.

- 1. Tilt front of module downward and clip the lower mount with spring clips to the bottom edge of DIN rail.
- 2. Push front of module upward until upper mount snaps into place.

Removal

Avoid shock hazards! Turn signal input, output, and power off before removing module.

- 1. Push up on bottom back of module.
- 2. Tilt the front of module downward to release upper mount from top edge of DIN rail.
- 3. The module can now be removed from the DIN rail

Output Test Function

When the Test button is pressed it will drive the output with a known good signal that can be used as a diagnostic aid during initial start-up or troubleshooting. When pressed again, the output will return to normal. The button allows hands-free operation of the Test Mode.

The Test level can be adjusted by using the Up and Down buttons. The level can be set by pressing the Set button, or it can default back to the setup value by not pressing the Set button.

Operation

The APD 4130 accepts a temperature input and provides a linearized and optically isolated DC voltage or current output.

The green LoopTracker® input LED provides a visual indication that a signal is being sensed by the input circuitry of the module. It also indicates the input signal strength by changing in intensity as the process changes from minimum to maximum.

If the LED fails to illuminate, or fails to change in intensity as the process changes, check the module power or signal input wiring. Note that it may be difficult to see the LEDs under bright lighting conditions.

The yellow status LED provides a visual indication of operational modes.

- Normal operation: Off
- Push-to-Test mode: Steadily on
- Blinking 2 digit code Operational error:

Operational Error Codes, Yellow LED

If an error occurs during operation, the yellow Status LED blinks an error code. Check sensor, wiring, or consult factory.

- 11 Analog-digital converter out-of-range O-O -00
- 12 Sensor under range
- 13 Sensor over range
- 14 CJC sensor abnormal range
- 1.5 CJC failure
- 16 Hard ADC out-of-range
- 17 Sensor hard fault, open circuit,
- hard ADC fault, or hard CJC fault



APD 4130 (



13 Power AC or DC +

14

16

Earth Ground

Power AC or DC -





0 - 0 0 0

-0000

0-00000

0-00000

0-000000