

High Accuracy DC to DC Isolated Transmitter, Field Configurable

APD 4381 

Input: 0-50 mV to 2-10 VDC, ± 25 mVDC to ± 10 VDC, 0-500 μ A to 4-20 mA
Output: 0-1 V to 0-10 V, ± 5 V, ± 10 V, 0-2 mA to 4-20 mA, Reverse Acting Optional

Quick Link: api-usa.com/apd4381

- One Model Covers All Common DC Sensors
- Zero and Span for Output
- Full 1200 V Isolation
- Input LoopTracker® LED
- Output Test Function
- Built-In Loop Power Supply for Sink/Source Output

Applications

- Convert/Isolate DC Sensors for PLC Input, Control and/or Validation
- Interface DC Sensors with Panel Meters, PLCs, Recorders, Data Acq., DCS, & SCADA Systems

Input Types and Ranges, Field Selectable

DC volts 35 ranges from ± 25 mVDC to ± 10 VDC
 DC mA 20 ranges from ± 0.5 mADC to ± 20 mADC

LoopTracker

Variable brightness green LED indicates input level and status

Status LED

Yellow LED for setup and operational status

DC Output Ranges, Field Selectable

Voltage: 0-1 V, 0-2 V, 0-4 V,
 0-5 V, 1-5 V,
 0-8 V, 0-10 V, 2-10 V,
 ± 5 VDC, ± 10 VDC
Current: 0-2 mA, 0-4 mA, 0-8 mA,
 0-10 mA, 2-10 mA,
 0-16 mA, 0-20 mA,
 4-20 mA
 20 V compliance, 1000 Ω at 20 mA

Reverse Acting Output, Factory Set

R option: Reverse acting output
 increasing input = decreasing output signal
 Reverse acting models cannot be converted to direct acting

Output Calibration

Zero and span set by using up/down buttons, $\pm 10\%$ range

Output Ripple and Noise

Less than $\pm 0.2\%$ of span

Output Loop Power Supply

20 VDC nom., regulated, 25 mADC, < 10 mVrms max. ripple
 May be selectively wired for sinking or sourcing mA output

Output Test

Front push button switch enables/disables test level output
 Adjustable 0-100% of span via up/down buttons

Accuracy and Resolution

$\pm 0.1\%$ span accuracy, 18 bit resolution

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

Ambient Temperature Range and Stability

-10°C to $+60^\circ\text{C}$ operating ambient
 Better than 0.02% of span per $^\circ\text{C}$

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

Dimensions

Height includes connectors
 0.89" W x 4.62" H x 4.81" D (22.5 x 117 x 122 mm)



Sink or Source
 mA Output



Applications Link
api-usa.com/apps

Free Factory
I/O Setup!

Setup and Status
 LED

Adjustable Output
 Test Function

Zero and Span for
 Output

Input LoopTracker
 LED

Universal DC Input



Removable Plugs

Universal
 Power

Actual Size

Description

The APD 4381 accepts a DC input and provides an optically isolated and high accuracy DC voltage or current output.

The input and output ranges are field configurable.

The input type is set with switches and its range is configured using front buttons, a multimeter and an input simulator.

This provides a versatile solution that works with all commonly available DC inputs.

The input is sampled and then passed through an optocoupler to the output stage.

Full 3-way isolation (input, output, power) make this module useful for ground loop elimination, common mode signal rejection, and noise pickup reduction.

The low noise 18 bit analog output is isolated and can be set up for common voltage and milliamp output types.

How to Order

Models are field rangeable. For free setup specify the following.

DC: Range and mV, volts, or mA
 Output: Range and type (mV, V, mA)
 Default: 4-20 mA input, 4-20 mA output

Model	Description	Power
APD 4381	DC input to DC output isolated transmitter	85-265 VAC, 50/60 Hz or 60-300 VDC
APD 4381 D		9-30 VDC or 10-32 VAC

Output Sink/Source Versatility

Standard on the APD 4381 is a 20 VDC loop excitation supply for the milliamp output. The output can be selectively wired for sinking or sourcing allowing use with a powered or unpowered milliamp device.

LoopTracker

An API exclusive feature includes a green LoopTracker LED that varies in intensity with changes in the process input signal.

It provides a quick visual picture of your process input at all times and can greatly aid in saving time during initial startup and troubleshooting.

Output Test

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: An appropriate simulator and a multimeter are required for setup. We can set up the I/O ranges at no extra charge.

Precautions

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

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

Précautions

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

Range Selection

Select ranges before installation. Use the tables on the next page to select the I/O ranges. The module side label lists output ranges. Ranges can also be found at api-usa.com/4381

Check the model/serial number label for module power, options, or custom range information. A custom range uses switch settings described in the Custom Range Table.

Models with **R** reverse acting output use the same switch settings, except the output range is reversed (4-20 mA is 20-4 mA).

1. Set switches A, B, and C from the table to set input type and range.
2. Set switches D and E from the table to set the output range and set switch E: V for voltage or I for current output.

For output ranges that fall between the listed ranges use the next highest setting. The output can be trimmed using the zero and span buttons.

Electrical Connections

See wiring diagrams at right. A multimeter and an input signal simulator are required for 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 DC input is connected as shown in the wiring diagrams at right. If a custom input was specified, see the model/serial number label for type, range, or options. You device must provide loop power for a milliamp input.

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.

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.

Range Calibration

1. Connect a multimeter to the output terminals 2 and 3, or 3 and 4 depending on output type. See wiring diagram at right.
2. Connect an appropriate VDC or mADC simulator to the input of the module.
3. Connect power to the unit (terminals 13, 14, and 16) and apply power to the module.
4. Wait until the yellow Status LED blinks (once per second).

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.
7. The Status LED will turn on to indicate the reading was saved.
8. Use the Up and Down buttons to adjust the output to the desired low output reading (i.e. 4 mA for a 4-20 mA output).
9. Press and release the Set button to store the low output.

High End Input Calibration

10. Wait until the yellow 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.

Blinking Yellow LED Setup Error Codes

If an error occurred or invalid selection was made, the yellow Status LED blinks an error code. Check switches A, B, C, and input wiring.

- | | |
|---|---------------------|
| 2 1 Invalid sensor selected | ● — ● |
| 2 6 Invalid DC range selected | ● — ● ● ● ● ● ● |
| 2 7 Invalid input setting
(Zero greater than Span) | ● — ● ● ● ● ● ● ● ● |

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 steps 1 to 19.

Saving Setup

21. Press and release the Set button to store the settings and lock them 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.

Changing I/O Setup

To reset the unit back to factory default without changing any input switch settings press and hold the Set button while the module is being powered up.

If using a new input switch setting, the unit will automatically start in setup mode to allow you to calibrate and store your new configuration.

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.

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 4381 accepts a DC input and provides an 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.

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

Normal operation: Off
Push-to-Test mode: Steadily on
User setup mode: Blinking once per second

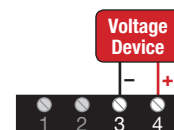
Note that it may be difficult to see the LEDs under bright lighting conditions.

Blinking Yellow LED Operational Error Codes

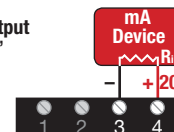
If an error occurs during operation, the yellow Status LED blinks an error code. Check sensor, wiring, or consult factory.

- | | |
|---|---------------------|
| 1 1 Analog-digital converter out-of-range | ● — ● |
| 1 2 Sensor under range | ● — ● ● |
| 1 3 Sensor over range | ● — ● ● ● ● |
| 1 6 Hard ADC out-of-range | ● — ● ● ● ● ● ● |
| 1 7 Sensor hard fault, open circuit, hard ADC fault | ● — ● ● ● ● ● ● ● ● |

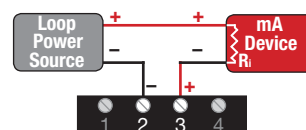
Voltage Output Switch E set to "V"



Current Sourcing Output Switch E set to "I"



Current Sinking Output Switch E set to "I"

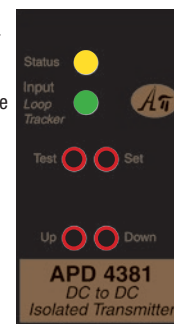


Do Not Connect to Unused Terminals 1, 5, 7

DC Input (Module does not power mA loop)

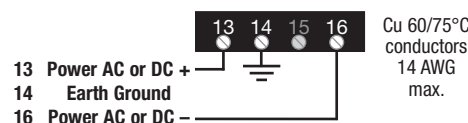


Yellow status LED Setup: blinks once per second
Off: normal operation
2 digit code: error code
To maintain full isolation and avoid malfunctions, do not connect power supplies in common with input, output or unit power.
Do not connect any devices to unused terminals.



Green LoopTracker LED brightness varies with input level

Do Not Connect to Unused Terminals 9, 10, 11, 12



Range Table: DC Voltage, DC Current

APD 4381 

For models with "R" option, output ranges are reversed

DC	Output	±10 V	0-10 V	±5 V	2-10 V	0-8 V	0-5 V	1-5 V	0-4 V	0-2 V	0-1 V	0-20 mA	4-20 mA	0-16 mA	0-10 mA	2-10 mA	0-8 mA	0-4 mA	0-2 mA
Type	Switches	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
±mV	±25 mV	9B35V	9B33V	9B34V	9B37V	9B32V	9B39V	9B36V	9B31V	9B38V	9B30V	9B33I	9B37I	9B32I	9B39I	9B36I	9B31I	9B38I	9B30I
±mV	±100 mV	9145V	9143V	9144V	9147V	9142V	9149V	9146V	9141V	9148V	9140V	9143I	9147I	9142I	9149I	9146I	9141I	9148I	9140I
±mV	±50 mV	9D35V	9D33V	9D34V	9D37V	9D32V	9D39V	9D36V	9D31V	9D38V	9D30V	9D33I	9D37I	9D32I	9D39I	9D36I	9D31I	9D38I	9D30I
±V	±125 V	9345V	9343V	9344V	9347V	9342V	9349V	9346V	9341V	9348V	9340V	9343I	9347I	9342I	9349I	9346I	9341I	9348I	9340I
±V	±0.2 V	9545V	9543V	9544V	9547V	9542V	9549V	9546V	9541V	9548V	9540V	9543I	9547I	9542I	9549I	9546I	9541I	9548I	9540I
±V	±0.25 V	9845V	9843V	9844V	9847V	9842V	9849V	9846V	9841V	9848V	9840V	9843I	9847I	9842I	9849I	9846I	9841I	9848I	9840I
±V	±0.5 V	9D45V	9D43V	9D44V	9D47V	9D42V	9D49V	9D46V	9D41V	9D48V	9D40V	9D43I	9D47I	9D42I	9D49I	9D46I	9D41I	9D48I	9D40I
±V	±0.8 V	9155V	9153V	9154V	9157V	9152V	9159V	9156V	9151V	9158V	9150V	9153I	9157I	9152I	9159I	9156I	9151I	9158I	9150I
±V	±1 V	9165V	9163V	9164V	9167V	9162V	9169V	9166V	9161V	9168V	9160V	9163I	9167I	9162I	9169I	9166I	9161I	9168I	9160I
±V	±1.25 V	9365V	9363V	9364V	9367V	9362V	9369V	9366V	9361V	9368V	9360V	9363I	9367I	9362I	9369I	9366I	9361I	9368I	9360I
±V	±2 V	9565V	9563V	9564V	9567V	9562V	9569V	9566V	9561V	9568V	9560V	9563I	9567I	9562I	9569I	9566I	9561I	9568I	9560I
±V	±2.5 V	9865V	9863V	9864V	9867V	9862V	9869V	9866V	9861V	9868V	9860V	9863I	9867I	9862I	9869I	9866I	9861I	9868I	9860I
±V	±4 V	9A65V	9A63V	9A64V	9A67V	9A62V	9A69V	9A66V	9A61V	9A68V	9A60V	9A63I	9A67I	9A62I	9A69I	9A66I	9A61I	9A68I	9A60I
±V	±5 V	9D65V	9D63V	9D64V	9D67V	9D62V	9D69V	9D66V	9D61V	9D68V	9D60V	9D63I	9D67I	9D62I	9D69I	9D66I	9D61I	9D68I	9D60I
±V	±8 V	9175V	9173V	9174V	9177V	9172V	9179V	9176V	9171V	9178V	9170V	9173I	9177I	9172I	9179I	9176I	9171I	9178I	9170I
±V	±10 V	9275V	9273V	9274V	9277V	9272V	9279V	9276V	9271V	9278V	9270V	9273I	9277I	9272I	9279I	9276I	9271I	9278I	9270I
mV	0-50 mV	9C35V	9C33V	9C34V	9C37V	9C32V	9C39V	9C36V	9C31V	9C38V	9C30V	9C33I	9C37I	9C32I	9C39I	9C36I	9C31I	9C38I	9C30I
mV	0-100 mV	9E35V	9E33V	9E34V	9E37V	9E32V	9E39V	9E36V	9E31V	9E38V	9E30V	9E33I	9E37I	9E32I	9E39I	9E36I	9E31I	9E38I	9E30I
V	0.1-0.5 V	9745V	9743V	9744V	9747V	9742V	9749V	9746V	9741V	9748V	9740V	9743I	9747I	9742I	9749I	9746I	9741I	9748I	9740I
V	0.2-1 V	9C45V	9C43V	9C44V	9C47V	9C42V	9C49V	9C46V	9C41V	9C48V	9C40V	9C43I	9C47I	9C42I	9C49I	9C46I	9C41I	9C48I	9C40I
V	0-0.2 V	9245V	9243V	9244V	9247V	9242V	9249V	9246V	9241V	9248V	9240V	9243I	9247I	9242I	9249I	9246I	9241I	9248I	9240I
V	0-0.25 V	9445V	9443V	9444V	9447V	9442V	9449V	9446V	9441V	9448V	9440V	9443I	9447I	9442I	9449I	9446I	9441I	9448I	9440I
V	0-0.4 V	9645V	9643V	9644V	9647V	9642V	9649V	9646V	9641V	9648V	9640V	9643I	9647I	9642I	9649I	9646I	9641I	9648I	9640I
V	0-0.5 V	9945V	9943V	9944V	9947V	9942V	9949V	9946V	9941V	9948V	9940V	9943I	9947I	9942I	9949I	9946I	9941I	9948I	9940I
V	0-0.8 V	9B45V	9B43V	9B44V	9B47V	9B42V	9B49V	9B46V	9B41V	9B48V	9B40V	9B43I	9B47I	9B42I	9B49I	9B46I	9B41I	9B48I	9B40I
V	0-1 V	9E45V	9E43V	9E44V	9E47V	9E42V	9E49V	9E46V	9E41V	9E48V	9E40V	9E43I	9E47I	9E42I	9E49I	9E46I	9E41I	9E48I	9E40I
V	0-2 V	9265V	9263V	9264V	9267V	9262V	9269V	9266V	9261V	9268V	9260V	9263I	9267I	9262I	9269I	9266I	9261I	9268I	9260I
V	0-2.5 V	9465V	9463V	9464V	9467V	9462V	9469V	9466V	9461V	9468V	9460V	9463I	9467I	9462I	9469I	9466I	9461I	9468I	9460I
V	0-4 V	9665V	9663V	9664V	9667V	9662V	9669V	9666V	9661V	9668V	9660V	9663I	9667I	9662I	9669I	9666I	9661I	9668I	9660I
V	0-5 V	9965V	9963V	9964V	9967V	9962V	9969V	9966V	9961V	9968V	9960V	9963I	9967I	9962I	9969I	9966I	9961I	9968I	9960I
V	1-5 V	9765V	9763V	9764V	9767V	9762V	9769V	9766V	9761V	9768V	9760V	9763I	9767I	9762I	9769I	9766I	9761I	9768I	9760I
V	0-8 V	9B65V	9B63V	9B64V	9B67V	9B62V	9B69V	9B66V	9B61V	9B68V	9B60V	9B63I	9B67I	9B62I	9B69I	9B66I	9B61I	9B68I	9B60I
V	0-10 V	9E65V	9E63V	9E64V	9E67V	9E62V	9E69V	9E66V	9E61V	9E68V	9E60V	9E63I	9E67I	9E62I	9E69I	9E66I	9E61I	9E68I	9E60I
V	2-10 V	9C65V	9C63V	9C64V	9C67V	9C62V	9C69V	9C66V	9C61V	9C68V	9C60V	9C63I	9C67I	9C62I	9C69I	9C66I	9C61I	9C68I	9C60I
uA	±500 uA	ABB5V	ABB3V	ABB4V	ABB7V	ABB2V	ABB9V	ABB6V	ABB1V	ABB8V	ABB0V	ABB3I	ABB7I	ABB2I	ABB9I	ABB6I	ABB1I	ABB8I	ABB0I
mA	±1 mA	ADB5V	ADB3V	ADB4V	ADB7V	ADB2V	ADB9V	ADB6V	ADB1V	ADB8V	ADB0V	ADB3I	ADB7I	ADB2I	ADB9I	ADB6I	ADB1I	ADB8I	ADB0I
mA	±2 mA	A1C5V	A1C3V	A1C4V	A1C7V	A1C2V	A1C9V	A1C6V	A1C1V	A1C8V	A1C0V	A1C3I	A1C7I	A1C2I	A1C9I	A1C6I	A1C1I	A1C8I	A1C0I
mA	±2.5 mA	A3C5V	A3C3V	A3C4V	A3C7V	A3C2V	A3C9V	A3C6V	A3C1V	A3C8V	A3C0V	A3C3I	A3C7I	A3C2I	A3C9I	A3C6I	A3C1I	A3C8I	A3C0I
mA	±4 mA	A5C5V	A5C3V	A5C4V	A5C7V	A5C2V	A5C9V	A5C6V	A5C1V	A5C8V	A5C0V	A5C3I	A5C7I	A5C2I	A5C9I	A5C6I	A5C1I	A5C8I	A5C0I
mA	±5 mA	A8C5V	A8C3V	A8C4V	A8C7V	A8C2V	A8C9V	A8C6V	A8C1V	A8C8V	A8C0V	A8C3I	A8C7I	A8C2I	A8C9I	A8C6I	A8C1I	A8C8I	A8C0I
mA	±8 mA	AAC5V	AAC3V	AAC4V	AAC7V	AAC2V	AAC9V	AAC6V	AAC1V	AAC8V	AAC0V	AAC3I	AAC7I	AAC2I	AAC9I	AAC6I	AAC1I	AAC8I	AAC0I
mA	±10 mA	ADC5V	ADC3V	ADC4V	ADC7V	ADC2V	ADC9V	ADC6V	ADC1V	ADC8V	ADC0V	ADC3I	ADC7I	ADC2I	ADC9I	ADC6I	ADC1I	ADC8I	ADC0I
mA	±16 mA	A1D5V	A1D3V	A1D4V	A1D7V	A1D2V	A1D9V	A1D6V	A1D1V	A1D8V	A1D0V	A1D3I	A1D7I	A1D2I	A1D9I	A1D6I	A1D1I	A1D8I	A1D0I
mA	±20 mA	A2D5V	A2D3V	A2D4V	A2D7V	A2D2V	A2D9V	A2D6V	A2D1V	A2D8V	A2D0V	A2D3I	A2D7I	A2D2I	A2D9I	A2D6I	A2D1I	A2D8I	A2D0I
mA	0-1 mA	ACB5V	ACB3V	ACB4V	ACB7V	ACB2V	ACB9V	ACB6V	ACB1V	ACB8V	ACB0V	ACB3I	ACB7I	ACB2I	ACB9I	ACB6I	ACB1I	ACB8I	ACB0I
mA	0-2 mA	AEB5V	AEB3V	AEB4V	AEB7V	AEB2V	AEB9V	AEB6V	AEB1V	AEB8V	AEB0V	AEB3I	AEB7I	AEB2I	AEB9I	AEB6I	AEB1I	AEB8I	AEB0I
mA	0-4 mA	A2C5V	A2C3V	A2C4V	A2C7V	A2C2V	A2C9V	A2C6V	A2C1V	A2C8V	A2C0V	A2C3I	A2C7I	A2C2I	A2C9I	A2C6I	A2C1I	A2C8I	A2C0I
mA	0-5 mA	A4C5V	A4C3V	A4C4V	A4C7V	A4C2V	A4C9V	A4C6V	A4C1V	A4C8V	A4C0V	A4C3I	A4C7I	A4C2I	A4C9I	A4C6I	A4C1I	A4C8I	A4C0I
mA	0-8 mA	A6C5V	A6C3V	A6C4V	A6C7V	A6C2V	A6C9V	A6C6V	A6C1V	A6C8V	A6C0V	A6C3I	A6C7I	A6C2I	A6C9I	A6C6I	A6C1I	A6C8I	A6C0I
mA	0-10 mA	A9C5V	A9C3V	A9C4V	A9C7V	A9C2V	A9C9V	A9C6V	A9C1V	A9C8V	A9C0V	A9C3I	A9C7I	A9C2I	A9C9I	A9C6I	A9C1I	A9C8I	A9C0I
mA	2-10 mA	A7C5V	A7C3V	A7C4V	A7C7V	A7C2V	A7C9V	A7C6V	A7C1V	A7C8V	A7C0V	A7C3I	A7C7I	A7C2I	A7C9I	A7C6I	A7C1I	A7C8I	A7C0I
mA	0-16 mA	ABC5V	ABC3V	ABC4V	ABC7V	ABC2V	ABC9V	ABC6V	ABC1V	ABC8V	ABC0V	ABC3I	ABC7I	ABC2I	ABC9I	ABC6I	ABC1I	ABC8I	ABC0I
mA	0-20 mA	AEC5V	AEC3V	AEC4V	AEC7V	AEC2V	AEC9V	AEC6V	AEC1V	AEC8V	AEC0V	AEC3I	AEC7I	AEC2I	AEC9I	AEC6I	AEC1I	AEC8I	AEC0I
mA	4-20 mA	ACC5V	ACC3V	ACC4V	ACC7V	ACC2V	ACC9V	ACC6V	ACC1V	ACC8V	ACC0V	ACC3I	ACC7I	ACC2I	ACC9I	ACC6I	ACC1I	ACC8I	ACC0I

Range Table: Custom Input Range

APD 4381 

For models with "R" option, output ranges are reversed

Custom Input	Output	±10 V	0-10 V	±5 V	2-10 V	0-8 V	0-5 V	1-5 V	0-4 V	0-2 V	0-1 V	0-20 mA	4-20 mA	0-16 mA	0-10 mA	2-10 mA	0-8 mA	0-4 mA	0-2 mA
Type	Switches	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
See module side label		FF85V	FF83V	FF84V	FF87V	FF82V	FF89V	FF86V	FF81V	FF88V	FF80V	FF83I	FF87I	FF82I	FF89I	FF86I	FF81I	FF88I	FF80I

Range Setup Record

APD 4381 

Date installed	Model	Serial number	Location	Input range	Output range	A	B	C	D	E