

Input: True RMS 0-40 mVAC to 0-300 VAC, 0-4 mAAC to 0-200 mAAC
Output: 0-1 V to 0-10 VDC, ± 5 VDC, ± 10 VDC, 0-2 mA to 20 mADC

[Quick Link: api-usa.com/6380](http://api-usa.com/6380)

- One Minute Setup for Hundreds of I/O Ranges
- External Switches & Tables for Range Selection
- Zero and Span Output Calibration Potentiometers
- Full 1200 V Input/Output/Power Isolation
- Input and Output LoopTracker® LEDs
- Output Test Button
- Built-In Loop Power Supply for Sink/Source Output



[Applications Link](http://api-usa.com/apps)
api-usa.com/apps



Applications

- Convert, Boost, and Rescale Process Signals
- Isolate Single-Ended (Common Ground) PLC Inputs
- Interface Process Signals with Panel Meters, PLCs, Recorders, Data Acquisition, DCS, & SCADA Systems

AC Input Ranges

Field selectable ranges via switch settings
 Voltage: 0-40 mVAC to 0-300 VAC
 Current: 0-4 mAAC to 0-200 mAAC
 Measurements are true RMS

Input Impedance

Voltage (0-4 VAC): 1 M Ω minimum
 Voltage (>4 VAC): 220 k Ω minimum
 Current: 10 Ω typical

Input Frequency

40 Hz to 1000 Hz sinusoidal

Common Mode Rejection

120 dB minimum

LoopTracker

Variable brightness LEDs indicate I/O loop level and status

DC Output Ranges

Field selectable ranges via switch settings
 Voltage: 0-1 VDC to 0-10 VDC, 10 mA max
 Bipolar voltage: ± 1 VDC to ± 10 VDC
 Current: 0-2 mADC to 0-20 mADC
 20 V compliance, 1000 Ω at 20 mA

Output offset: $\pm 100\%$ in 15% increments

Reverse output available

Output Calibration

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

Output Loop Power Supply

20 VDC nominal, regulated, 25 mADC
 Max. ripple, less than 10 mVRMS
 May be selectively wired for sinking or sourcing mA output

Output Test

Front momentary button sets output to test level
 Potentiometer adjustable 0-100% of span

Output Ripple and Noise

Less than 10 mVRMS ripple and noise

Linearity

Better than $\pm 0.1\%$ of span

Ambient Temperature Range and Stability

-10°C to +60°C operating ambient
 Better than $\pm 0.02\%$ of span per °C stability

Response Time

200 milliseconds nominal (0-90%)

Isolation

1200 VRMS minimum
 Full isolation: power to input, power to output, input to output

Power

85-265 VAC, 50/60 Hz or 60-300 VDC, 2 W maximum
 D versions: 9-30 VDC or 10-32 VAC 50/60 Hz, 2 W maximum

Housing and Connectors

IP 40, requires installation in panel or enclosure
 For use in Pollution Degree 2 Environment
 Mount vertically to a 35 mm DIN rail
 Four 4-terminal removable connectors, 14 AWG max wire size



Dimensions

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

Description

The APD 6380 accepts an AC voltage or current input and provides an optically isolated DC voltage or current output that is linearly related to the input.

Typical applications include signal isolation, conversion, boosting or a combination of the three. Full 3-way isolation (input, output, power) makes this module useful for ground loop elimination, common mode signal rejection or noise pickup reduction.

Sink/Source Output Versatility

For maximum versatility a milliamp output can be selectively wired for sinking or sourcing. This allows the APD 6380 milliamp output to connect to a powered or unpowered current loop. The 20 VDC output loop supply can be used to power a passive mA device if required.

How to Order

All models are field rangeable
 For APD 6380, specify if UL version is required
 Order options and accessories as required
 Order D versions for operation on low voltage power

LoopTracker

API exclusive features include two LoopTracker LEDs (green for input, red for output) that vary in intensity with changes in the process input and output signals. These provide a quick visual picture of your process loop at all times and can greatly aid in saving time during initial startup and/or troubleshooting.

Output Test

An API exclusive feature includes the test button to provide a fixed output (independent of the input) when held depressed. The test output level is potentiometer adjustable from 0 to 100% of output span.

The output test button greatly aids in saving time during initial startup and/or troubleshooting.

Free factory setup. Please specify on your order

Input range
 Output range

Model	Input	Output	Power
APD 6380	Field configurable—specify range if factory is to set switches	Field configurable—specify range if factory is to set switches	85-265 VAC or 60-300 VDC
APD 6380 D			9-30 VDC or 10-32 VAC

Options—add to end of model number

R Output reversal, such as 20-4 mA output
 U Conformal coating for moisture resistance

Accessory—order as separate line item

API BP4 Spare removable 4 terminal plug, black

Output	0-1 V	0-2 V	0-4 V	1-5 V	0-5 V	0-8 V	2-10 V	0-10 V	±5 V	±10 V	0-2 mA	0-4 mA	0-8 mA	2-10 mA	0-10 mA	0-16 mA	4-20 mA	0-20 mA
Switches	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE
Input	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE
0-4 mA	IA60V	IA68V	IA61V	IA66V	IA69V	IA62V	IA67V	IA63V	IA64V	IA65V	IA60I	IA68I	IA61I	IA66I	IA69I	IA62I	IA67I	IA63I
0-5 mA	IA20V	IA28V	IA21V	IA26V	IA29V	IA22V	IA27V	IA23V	IA24V	IA25V	IA20I	IA28I	IA21I	IA26I	IA29I	IA22I	IA27I	IA23I
0-7.5 mA	I2E0V	I2E8V	I2E1V	I2E6V	I2E9V	I2E2V	I2E7V	I2E3V	I2E4V	I2E5V	I2E0I	I2E8I	I2E1I	I2E6I	I2E9I	I2E2I	I2E7I	I2E3I
0-10 mA	I220V	I228V	I221V	I226V	I229V	I222V	I227V	I223V	I224V	I225V	I220I	I228I	I221I	I226I	I229I	I222I	I227I	I223I
0-12 mA	IA70V	IA78V	IA71V	IA76V	IA79V	IA72V	IA77V	IA73V	IA74V	IA75V	IA70I	IA78I	IA71I	IA76I	IA79I	IA72I	IA77I	IA73I
0-15 mA	IA30V	IA38V	IA31V	IA36V	IA39V	IA32V	IA37V	IA33V	IA34V	IA35V	IA30I	IA38I	IA31I	IA36I	IA39I	IA32I	IA37I	IA33I
0-20 mA	IB20V	IB28V	IB21V	IB26V	IB29V	IB22V	IB27V	IB23V	IB24V	IB25V	IB20I	IB28I	IB21I	IB26I	IB29I	IB22I	IB27I	IB23I
0-25 mA	I820V	I828V	I821V	I826V	I829V	I822V	I827V	I823V	I824V	I825V	I820I	I828I	I821I	I826I	I829I	I822I	I827I	I823I
0-30 mA	I230V	I238V	I231V	I236V	I239V	I232V	I237V	I233V	I234V	I235V	I230I	I238I	I231I	I236I	I239I	I232I	I237I	I233I
0-40 mA	IO60V	IO68V	IO61V	IO66V	IO69V	IO62V	IO67V	IO63V	IO64V	IO65V	IO60I	IO68I	IO61I	IO66I	IO69I	IO62I	IO67I	IO63I
0-50 mA	IO20V	IO28V	IO21V	IO26V	IO29V	IO22V	IO27V	IO23V	IO24V	IO25V	IO20I	IO28I	IO21I	IO26I	IO29I	IO22I	IO27I	IO23I
0-60 mA	IB30V	IB38V	IB31V	IB36V	IB39V	IB32V	IB37V	IB33V	IB34V	IB35V	IB30I	IB38I	IB31I	IB36I	IB39I	IB32I	IB37I	IB33I
0-75 mA	I830V	I838V	I831V	I836V	I839V	I832V	I837V	I833V	I834V	I835V	I830I	I838I	I831I	I836I	I839I	I832I	I837I	I833I
0-80 mA	I960V	I968V	I961V	I966V	I969V	I962V	I967V	I963V	I964V	I965V	I960I	I968I	I961I	I966I	I969I	I962I	I967I	I963I
0-90 mA	I3F0V	I3F8V	I3F1V	I3F6V	I3F9V	I3F2V	I3F7V	I3F3V	I3F4V	I3F5V	I3F0I	I3F8I	I3F1I	I3F6I	I3F9I	I3F2I	I3F7I	I3F3I
0-100 mA	I920V	I928V	I921V	I926V	I929V	I922V	I927V	I923V	I924V	I925V	I920I	I928I	I921I	I926I	I929I	I922I	I927I	I923I
0-117 mA	IOB0V	IOB8V	IOB1V	IOB6V	IOB9V	IOB2V	IOB7V	IOB3V	IOB4V	IOB5V	IOB0I	IOB8I	IOB1I	IOB6I	IOB9I	IOB2I	IOB7I	IOB3I
0-120 mA	I330V	I338V	I331V	I336V	I339V	I332V	I337V	I333V	I334V	I335V	I330I	I338I	I331I	I336I	I339I	I332I	I337I	I333I
0-125 mA	IO90V	IO98V	IO91V	IO96V	IO99V	IO92V	IO97V	IO93V	IO94V	IO95V	IO90I	IO98I	IO91I	IO96I	IO99I	IO92I	IO97I	IO93I
0-150 mA	IO30V	IO38V	IO31V	IO36V	IO39V	IO32V	IO37V	IO33V	IO34V	IO35V	IO30I	IO38I	IO31I	IO36I	IO39I	IO32I	IO37I	IO33I
0-175 mA	I140V	I148V	I141V	I146V	I149V	I142V	I147V	I143V	I144V	I145V	I140I	I148I	I141I	I146I	I149I	I142I	I147I	I143I
0-200 mA	I120V	I128V	I121V	I126V	I129V	I122V	I127V	I123V	I124V	I125V	I120I	I128I	I121I	I126I	I129I	I122I	I127I	I123I

Voltage Input Range Selection

See table below (voltage inputs) and on the next page (current inputs) to select I/O ranges for your application. It is generally easier to select ranges before installation.

The module side label lists common ranges. See the model/serial number label for module information, options, or if a custom range was specified.

It may also be possible to use the next highest setting and trim the output signal with the zero and span potentiometers.

Switch A: Set to "V" for voltage input

Switch B: Input range

Switch C: Input range

Switch D: Output range

Switch E: Set to "V" for voltage output or "I" for current output

Note that when using a current shunt input, it measures a mV drop across a fixed resistance, typically 50 mV, 75 mV or 100 mV. The correct input setting would be the appropriate mV range for the shunt.

Current Input Range Selection

See table below to select I/O ranges when using a current input. It is generally easier to select ranges before installation.

See the model/serial number label for module information, options, or if a custom range was specified.

The module side label lists common ranges.

It may also be possible to use the next highest setting and trim the output signal with the zero and span potentiometers.

Switch A: Set to "I" for current input

Switch B: Input range

Switch C: Input range

Switch D: Output range

Switch E: Set to "V" for voltage output or "I" for current output

Voltage Output

Set switch E to "V" for a voltage output.

If your receiving device (such as a PLC or a display) uses a voltage input, use terminals 3 and 4 as shown in the wiring diagram.

Current Output

Set switch E to "I" for a current output.

Determine if your receiving device (such as a PLC or a display) 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 input terminals if it provides power to the loop.

If your device does not power the current loop, the APD can provide power using terminals 3 and 4 as shown in the wiring diagram.

If it provides power to the loop or an external supply provides power to the loop, use terminals 2 and 3 as shown in the wiring diagram.

Type of Device for Output	- Terminal	+ Terminal
Measuring/recording device accepts a voltage input.	3 (-)	4 (+) switch E set to "V"
Measuring/recording device accepts a mA (current) input and the input is unpowered or passive. APD module provides the loop power.	3 (-)	4 (+20 V) switch E set to "I"
Measuring/recording device accepts a mA (current) input and provides power to the current loop.	2 (-)	3 (+) switch E set to "I"

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.

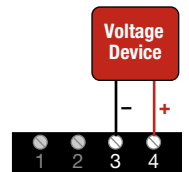


Wire terminal torque
0.5 to 0.6 Nm or
4.4 to 5.3 in-lbs

* Do not make connections to unused terminals!

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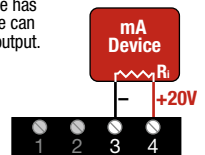
Voltage Output
Switch E set to "V"



mA output: determine if receiving device has a passive or powered input. The module can be wired for a sinking or sourcing mA output.

Current Sourcing Output
Switch E set to "I"

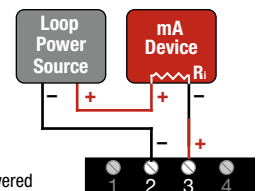
Module powers mA output loop



3- or 4-wire transmitter or 2 wire transmitter with external power supply

Current Sinking Output
Switch E set to "I"

Module mA output is unpowered

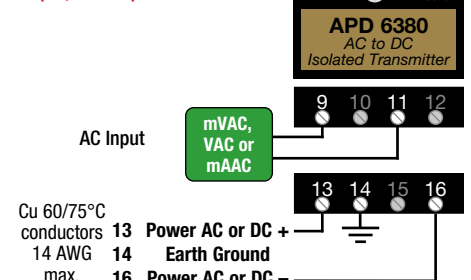


Not used



* Do not make connections to unused terminals!

To maintain full isolation avoid combining power supplies in common with input, output, or unit power.



Cu 60/75°C conductors

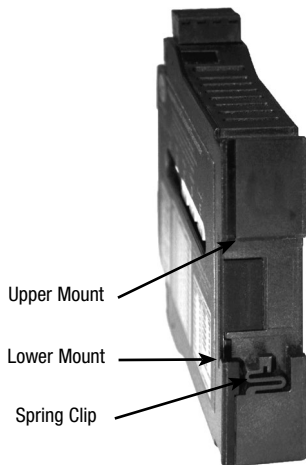
13 AWG max.

14 AWG max.

16 AWG max.

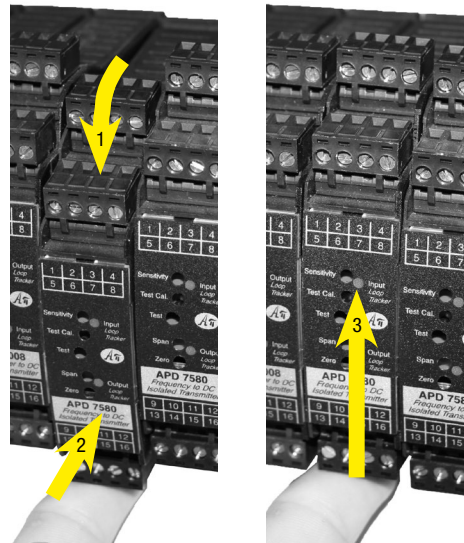
Mounting to a DIN Rail

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.



Upper Mount
Lower Mount
Spring Clip

Installation

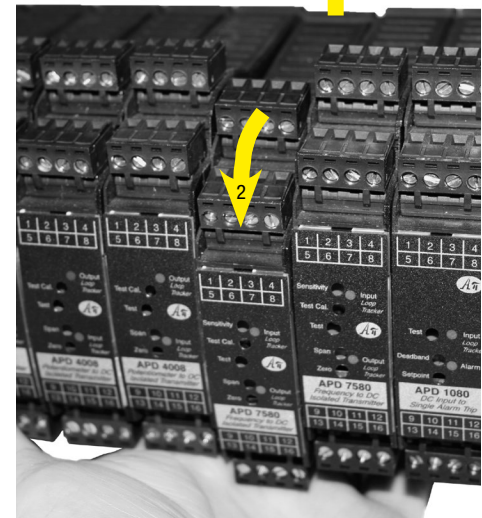


1. Tilt front of module downward and position against DIN rail.
2. Clip Lower Mount to bottom edge of DIN rail.
3. Push front of module upward until Upper Mount snaps into place.

Removal

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

1. Push up on bottom back of module.
2. Tilt 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.

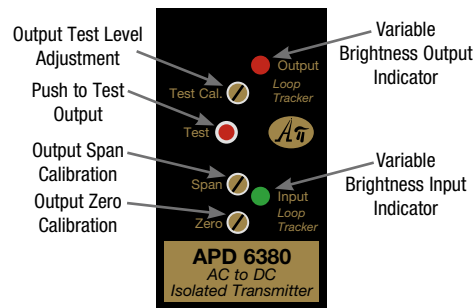


Calibration

Input and output ranges, if specified on your order, are factory pre-configured (at 24°C ±1°C).

Front-mounted Zero and Span potentiometers are used to calibrate the output to compensate for load and lead variations. Note: Perform the following calibration procedure any time switch settings are changed.

1. Apply power to the module and allow a minimum 20 minute warm up time.
2. Using an accurate calibration source, provide an input to the module equal to the minimum input required for the application.
3. Using an accurate measurement device for the output, adjust the Zero potentiometer for the exact minimum output desired. The Zero control should only be adjusted when the input signal is at its minimum. This will produce the corresponding minimum output signal. For example: 4 mA for a 4-20 mA output or -10 V for a ±10V output.
4. Set the input at maximum and adjust the Span pot for the exact maximum output desired. The Span control should only be adjusted when the input signal is at its maximum. This will produce the corresponding maximum output signal. Example: for 4-20 mA output, the Span control will provide adjustment for the 20 mA or high end of the signal.
5. Repeat adjustments for maximum accuracy.



Output Test Function

When the Test button is depressed 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 released, the output will return to normal.

The Test Cal. potentiometer is factory set to approximately 50% output. It can be adjusted to set the test output from 0 to 100% of the output span. Press and hold the Test button and adjust the Test Cal. potentiometer for the desired output level.

Operation

The APD 6380 accepts an AC voltage or current input and provides an optically isolated DC voltage or current output that is linearly related to the input.

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 red LoopTracker output LED provides a visual indication that the output signal is functioning. It becomes brighter as the input and the corresponding output change from minimum to maximum.

For current outputs, the red LED will only light if the output loop current path is complete. For either current or voltage outputs, failure to illuminate or a failure to change in intensity as the process changes may indicate a problem with the module power or signal output wiring.