Description of Controls

1. ***Diagnostic LED***. This GREEN Light 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. Note: If the LED fails to illuminate, or fails to change in intensity as the process changes, this may indicate a problem with module power or Signal Input Wiring. This LED has also been designed to give the operator important feedback on system performance through a series of "blinks" of LED flashes.

EXAMPLE: Two Flashes indicates the unit is under ranged or the sensor is shorted.

For more information on Flash Codes refer to the General Calibration Section.

2. ***Test Pushbutton*** When held depressed, will generate a continuous Output Signal independent of the Input Signal. When released, the Output will return to normal. This Output is field adjustable from 0 to 100% of the calibrated Output range via the "Test Range Adjustment" pot. This feature can be used as a system diagnostic aid during initial start-up or during troubleshooting.

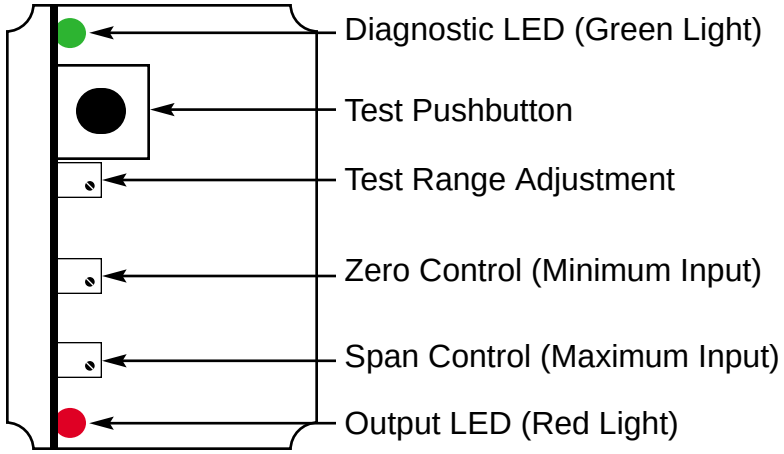


Figure 2

API 4000 G

3. ***Test Range Adjust*** Turning this Multi-turn Potentiometer while holding the Test Pushbutton depressed varies the Output Signal from 0 to 100% of the calibrated Output Range.

4. ***Zero Control*** Allows for fine adjustments of the ***Minimum*** Output Signal. The Zero Control should only be adjusted when the Input Signal is at it's minimum potential. This will produce the corresponding minimum Output Signal from your API unit. **Example**: If you desire a 4-20 mA Output Signal, the Zero Control will provide adjustment for the 4 mA signal.

5. ***Span Control*** Allows for fine adjustments of the ***Maximum*** Output Signal. The Span Control should only be adjusted when the Input Signal is at it's maximum potential. This will produce the corresponding maximum Output Signal from your API unit. **Example**: If you desire a 4-20 mA Output Signal, the Span Control will provide adjustment for the 20 mA signal.

6. ***Output LED*** This RED Light provides a visual indication that a signal is being sensed by the units output circuitry. It also indicates the signal strength by changing in intensity as the input changes from minimum to maximum. ***Note:*** If a Current Output is selected, the RED LED will only light if the 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. **Example**: If you have selected a 4-20 mA output to go to a chart recorder and you have no indications on the recorder, or if you see no Red LED indication on your API unit, you can suspect an open circuit in the output loop or incorrect wiring.

Ranging Switches

Located on the side of your API unit are four rotary switches and two slide switches which are used to select your desired Input and Output Ranges. There is NEVER a need to open the case. In addition, the module contains Range Tables and Labels designed to assist you in ranging your module.

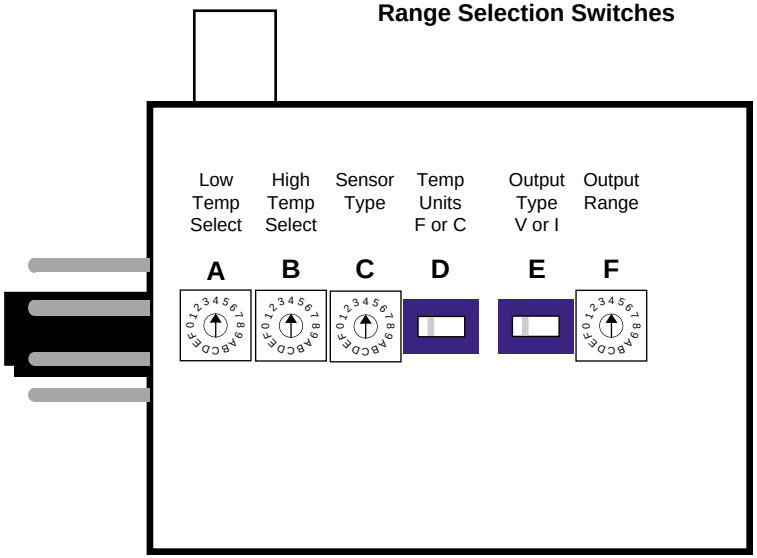
1. ***Ranging Slide Switches.*** The API 4000G has Two Slide Switches located on the side of the unit. Switch D, the Temp Units switch allows the operator to select either degrees F or degrees C.

The Output Type (Switch E) slide switch allows the operator to select either a Voltage or Current Output.

2. ***Rotary Range Selector Switches.*** These switches will provide the selected amount of amplification or attenuation to accomplish the desired range. **Example:** We will set the switches for 0-500 C Type J Thermocouple with a 4-20 mA DC Output. Refer to the Ranging Tables located on the side of the unit. Place switch **"A"** to the **4** position. Place switch **"B"** to the **7** position. Place switch **"C"** to the **5** position. Place switch **"D"** to the **C** position. Place switch **"E"** to the **I** position. Place switch **"F"** to the **0** position. The ranging process is now complete and, the unit is ready for final Calibration and Installation.

Sensor Type	Temp. in Degrees C	Temp. in Degrees F	Minimum Span
RTD's			
100 DIN	-200 to +700 C	-250 to +1200 F	50C/50F
100 American	-200 to +800 C	-250 to +1300 F	50C/50F
10 ohm Cu	-200 to +200 C	-250 to +500 F	100C/150F
1000 Ni-Fe	0 to +200 C	0 to +500 F	50C/50F
120 Ni	-50 to +300 C	-100 to +600 F	50C/50F
T/C Types			
J	-200 to +700 C	-250 to +1300 F	100C/200 F
K	-250 to +1200 C	-250 to +1300 F	100C/200 F
T	-200 to +400 C	-250 to +700 F	100C/200 F
E	-250 to +900 C	-250 to +1300 F	100C/150 F
R	0 to +1300 C	0 to +1300 F	450C/850 F
S	0 to +1300 C	0 to + 1300 F	450C/800 F
Platinel II	0 to +1200 C	+50 to +1300 F	150C/300 F

Range Selection Switches



General Information

The API Field-Rangeable Temperature Transmitter will accept either RTD or Thermocouple Inputs and provide a Linearized and Isolated DC Voltage or Current Output. The API 4000G will accept type J,K,T,E,R,S or Platinel II Thermocouples. RTD types include 100 ohm DIN and American Curves as well as 10 ohm Copper, 120 ohm Nickel and 1000 ohm Nickel Iron. The RTD's can be either a two or three wire configuration. In addition, Special Thermocouple configurations such as Type N or Type C are possible. Consult the factory for assistance.

The API 4000G also incorporates many unique features including the use of a diagnostic LED which can give the operator valuable system information via a series of "Flashes". **2** Flashes indicates an Under Range condition or a Shorted Sensor. **3** Flashes indicates an Over Range condition or an Open Sensor. **4** Flashes indicates an Invalid Sensor Selection. **5** Flashes indicates an Invalid Sensor Range. **6** Flashes indicates Insufficient Span. **7** Flashes indicates excessive Low End to Span Ratio.(The Offset selected is greater than the Span)

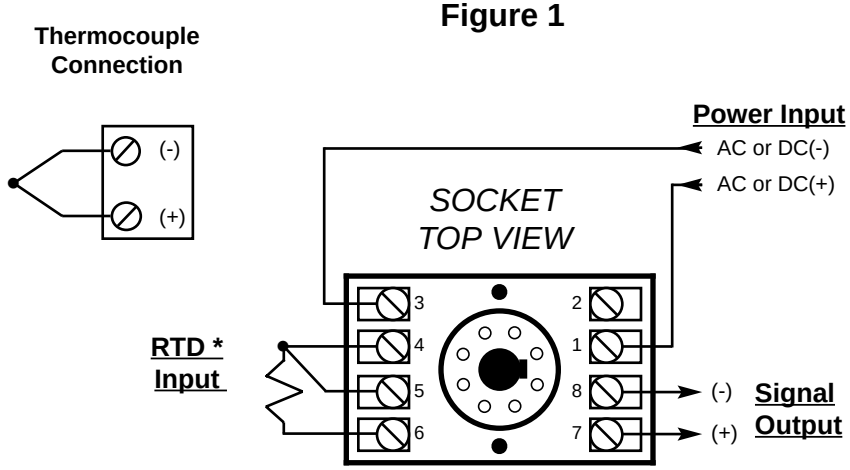
General Calibration

The first step in calibrating the API 4000G is to determine the correct switch settings for your desired range. Using the Ranging Tables located on the module, select the desired switch code and rotate switches A, B, C, and F to their corresponding positions. Place Slide Switches D and E in the correct positions for Degrees F or C and the correct Output Type for Voltage or Current. Using a precision calibrator or other accurate source, provide a signal to the module representing the Minimum Input desired. Adjust the “Zero Control” (refer to Fig. 2) for the desired Minimum Output. Next, provide a signal to the module representing the Maximum Input and adjust the “Span Control” (refer to Fig. 2) for the desired Maximum Output. The Zero and Span Controls are Non-Interactive.

If, at any time during this calibration procedure, you should require assistance, please feel free to call our toll free number for assistance

NOTE: DO NOT ATTEMPT TO CONNECT AN RTD AND A THERMOCOUPLE TO THE UNIT AT THE SAME TIME, THIS WILL CAUSE DAMAGE TO THE UNIT.

Figure 1



* For a 2 Wire RTD, Install a Jumper from Pin 4 to 5

Electrical Connection

All of us at Absolute Process Instruments place the highest importance on Electrical Safety. To ensure the safety of our customers and their satisfaction with our products, we suggest that all wiring be performed by qualified personnel only. The Electrical Connections are referenced to an Industry standard 8-pin octal socket.

Power Input Terminals. Terminals 1 and 3 are wired with the desired AC Power. The white label on the side of your API unit will have the power requirements listed as specified on your purchase order.

Signal Input Terminals. Terminals 4,5 and 6 provide connections for RTD Inputs. Thermocouple connections are located on the side of the module. The Thermocouple connection block has provisions for cold junction compensation.

NOTE: DO NOT ATTEMPT TO CONNECT AN RTD AND A THERMOCOUPLE TO THE UNIT AT THE SAME TIME, THIS WILL CAUSE DAMAGE TO THE UNIT.

Signal Output Terminals. Terminals 7 and 8 provide connections for the appropriate Output Signal. Polarity must be observed when connecting the Signal Output to the load. The Positive connection (+) is connected to terminal 7 and the Negative (-) is connected to terminal 8.