

1.1 Description

The Series 505 Analog Input (PPX:505–6108A and PPX:505–6108B), and Output (PPX:505–6208A and PPX:505–6208B) Modules are single-wide versions of the Analog I/O Modules (PPX:505–6108 and PPX:505–6208), and can replace the double-wide models without any wiring changes. The Input Modules (PPX:505–6108A and PPX:505–6108B) offer the additional benefit of an optional ± 10 V input range, and they do not require external user-supplied power. The Output Modules (PPX:505–6208A, and PPX:505–6208B), like the double-wide PPX:505–6208, require user-supplied 24 VDC power to maintain low power consumption from the base.

The Series 505 Analog I/O Modules (Figure 1-1) connect the controller with devices which monitor or control pressure, position, flow, temperature, or speed using voltage or current signals. The input module translates an analog input signal from a monitoring device into an equivalent digital word and transmits that data to the controller for processing. The output module translates a digital word from the controller into an equivalent analog signal and transmits that data to an output device that controls pressure, position, flow, temperature, or speed.

A Module Good LED on the front of each module indicates the status of the power, self-diagnostics, and the fuse (for the output module). Figure 1-1 shows the location of the Module Good LED indicator of the PPX:505–6108B and PPX:505–6208B.

If the LED is on:

- System and user power are good
- Fuse is good
- Module has passed self-diagnostics

If the LED is off, one of the above has failed. See Chapter 3 for instructions on using the LED to troubleshoot.

Analog Input Operation (continued)

Current or Voltage Input

The analog input module has eight inputs. You can select each of the eight inputs to receive either voltage or current as the incoming analog signal. Since the inputs are single-ended, the source for a current signal must be a true current-sourcing transmitter, not a current-sinking transmitter.

- For a voltage input, the incoming signal may range from –5 to +5 V, or from –10 to +10 V. The optional voltage input range of ± 10 V is available via jumper selection on the circuit board. The voltage range selected applies to all eight input channels. Refer to Figure 3-2.
- For a current input, the incoming signal may range from 0 to 20 mA.

NOTE: The module is factory-calibrated and shipped configured for the ± 5 V input range, which is required for current input using the internal sense resistors. If your application requires ± 10 V, recalibrate the module with the ± 10 V setting selected.

Choosing Resistors

The input module has eight (one per point) built-in, precision resistors (250 Ω , 0.1%). The resistor changes input current to voltage, which is what the module monitors internally. The built-in resistor allows a current range from 0 to 20 mA. You may use other external resistor values for other current ranges. If you install an external resistor, be sure that it meets the ± 5 V input constraint and connects between Voltage In and Return for the selected channel. Follow proper safety guidelines when you install resistors. To determine the resistor needed, use the following equation.

$$\text{Resistor needed } (\Omega) = \frac{5 \text{ V}}{\text{max current in amps}}$$

1.4 Power Sources

The output module requires both user-supplied and base-supplied power.

Table 1-1 shows the input module response at power-up and power-down.

Table 1-1 Analog Input Module Power Cycling

Base Power	User Power	Module
Transition on	Not applicable	Module resumes converting and controller resumes reading from module
Transition off	Not applicable	Module and controller power down. All input data cleared

Table 1-2 shows the output module response at power up and power down.

Table 1-2 Analog Output Module Power Cycling

Base Power	User Power	Module
On	Transition off	Off—module sets fail bit
On	Transition on	Resumes prior state until next update
Transition off	On	Freezes last value
Transition on	On	Holds last value until next update
Off	Transition on	Off