SIEMENS

Installation Instructions
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590 Series Differential Pressure Sensor

Product Description

The Series 590 Differential Pressure Sensors convert differential pressure to a proportional electronic output signal. They can be used with any device that accepts a 0 to 10 Vdc or 4 to 20 mA input.

Product Numbers

Product Number	Percent Accuracy	Pressure Range Inches WC (Water Column)	In Conduit Box
590-501	1% FS	5	No
590-502		2	
590-503		1	
590-505		± 0.25	
590-506	1% FS	5	Yes
590-507		2	
590-508		1	
590-510		± 0.25	
590-780	0.4% FS	1	
590-781		0.65	
590-782		0.5	

Caution Notations

CAUTION:	⚠	Equipment damage or loss of data may occur if you do not follow the procedures as specified.

Required Tools

- Wire strippers
- 1/8-inch flat-blade screwdriver
- 1/4-inch nut driver

Expected Installation Time

20 minutes

Prerequisites

- Select a suitable location for mounting the sensor.
- Install field wiring, conduit to the sensor location.
- All wiring must be Class 2 and comply with National Electric Code (NEC) and local regulations.

Media Compatibility

590 Series sensors are designed to be used with air or non-conducting gases.

⚠	**CAUTION:** Use with liquids or corrosive gases will damage the unit.

Environment

The operating and compensated temperature limits are 0°F to 150°F (-18°C to 65°C).

Pressure Fittings

This unit has two factory-installed 1/4-inch OD pressure fittings for the pressure signal connection and typically installed with 1/4-inch push-on tubing. Both the positive (high) pressure port and the reference (low) pressure port are located on the front of the unit, labeled HIGH and LOW, respectively. For best results (shortest response times), follow these guidelines:

Length in Feet (Meters)	Tubing
<100 (30)	3/16-inch ID
<300 (91)	1/4-inch ID
<900 (274)	3/8-inch ID

Installation

1. Remove the shroud from the mounting bracket by squeezing the shroud and lifting it straight off (conduit-mount only).
2. Mount the bracket to a wall, cabinet, etc. using self-tapping screws (not provided). Anchors may be required for concrete and cinder block wall mounting.
3. Do one of the following:
   - For conduit-mount installation: Attach the conduit to the mounting bracket with a coupling (not provided). Feed the field wiring through the conduit to the sensor.
   - For non-conduit-mount installation: Run the field wiring to the sensor and provide strain relief.
4. Connect the field wiring to the sensor terminals. See Table 1 and Figure 1.
5. For conduit-mount installations, provide strain relief by securing the wiring to the mounting bracket and reinstall the shroud. See Figure 1.

Table 1. Wiring Connections (Voltage).

Sensor Terminal	Connection
+EXC	24 Vac
COM	Neutral
OUT	0 to 10 Vdc (Signal +)
COM	Signal/Feedback Negative (-)

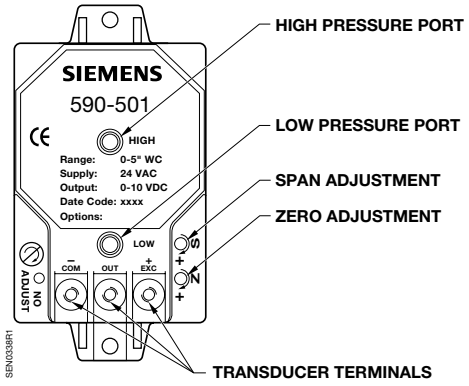
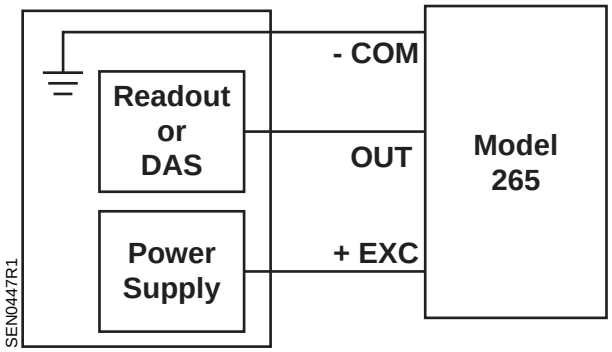


Figure 1.

Voltage Output Units

The voltage output version has a three-wire circuit with three wiring terminals (COM, OUT and EXC). See Figure 1.

The Excitation and Output are commoned on the circuit. The voltage output can operate from 9 to 30 Vdc or 12 to 30 Vac excitation, with 0 to 10 Vdc output. See Figure 2.



+EXC Connected to the positive terminal of the power supply.

-COM Connected as the reference for power supply and output signal.

OUT Connected to the positive terminal of control or pressure monitor.

Figure 2.

Current Output Units

The 4 to 20mA current output version is a two-wire loop-powered unit. The current flows into + terminal and returns back to the power supply through the - terminal. The power supply must be a DC voltage source with a voltage range between 9 and 30V measured between the positive and negative terminals. The unit is calibrated at the factory with a 24 Vdc loop supply voltage and a 250 ohm load. See Figure 3.

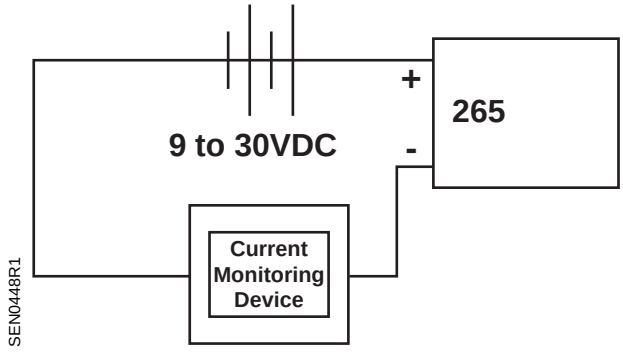


Figure 3.

Calibration

The unit is factory-calibrated and should require no field adjustment. Generally, the mounting position will have a zero shift effect on ranges below one inch WC. If possible, any zero and/or span offsets should be corrected by software adjustment in the user's control system. However, both zero and span adjustments are accessible either on the front of the unit or by removing the optional conduit enclosure. The sensor is calibrated in the vertical position at the factory.

Zero Adjustment

While monitoring the voltage between the positive output (OUT) and common (COM), and with both pressure ports open to atmosphere, the zero may be adjusted by turning the zero adjustment screw. (See Figure 1.) For 0 to 10 Vdc output units, the factory settings are 0.0 Vdc (± 100 mV) for unidirectional pressure ranges, and 5Vdc (± 100 mV) for bi-directional pressure ranges.

Span Adjustment

NOTE: Complete the zero adjustment before setting span.

To adjust span or full-scale output, use only an accurate pressure standard (such as an electronic manometer or digital pressure gauge) with at least twice the accuracy to this unit (<±0.5% FS). With full range pressure applied to the high pressure port (reference port open to atmosphere), adjust the span by turning the SPAN adjustment screw. (See Figure 1.) For 0 to 10 Vdc output units, the factory settings are 10 Vdc (±100 mV) for unidirectional and bi-directional ranges.

The installation is now complete.

Siemens Industry, Inc.
Building Technologies Division
1000 Deerfield Parkway
Buffalo Grove, IL 60089-4513
U.S.A.