

# Rosemount 205 MultiVariable™ Sensor Module



## The proven leader in MultiVariable measurement

- Differential pressure measurement accuracy of  $\pm 0.075\%$  of span
- Static pressure measurement accuracy of  $\pm 0.075\%$  of span
- Process temperature measurement accuracy of  $\pm 1.0\text{ }^{\circ}\text{F}$  ( $0,56\text{ }^{\circ}\text{C}$ )
- SPI based communication through ribbon cable interface
- Small, Lightweight, Coplanar™ design

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## Ordering Information

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See [page 6](#) for more information on Material Selection.

**Table 1. Rosemount 205 MultiVariable Sensor Module**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.  
The Expanded offering is subject to additional delivery lead time.

Model	Product description	
0205	Rosemount 205	
<b>Performance</b>		
E	MultiVariable Sensor Module (0.1% DP Accuracy)	★
P	MultiVariable Sensor Module (0.075% DP Accuracy)	★
<b>Differential pressure range</b>		
1 <sup>(1)</sup>	0-0.5 to 0-25 inH <sub>2</sub> O (0-1,25 to 0-62,2 mbar)	★
2	0-25 to 0-250 inH <sub>2</sub> O (0-6,23 to 0-623 mbar)	★
3	0-10 to 0-1000 inH <sub>2</sub> O (0-0,0249 to 0-2,49 bar)	★
<b>Static pressure range</b>		
3	0.5-8 to 0.5-800 psia (3,447-55,16 to 3,447-5516 kPa)	★
4	0.5-36.26 to 0.5-3,626 psia (3,447-250 to 3,447-25000 kPa)	★
C	0-8 to 0-800 psig (0-55,16 to 0-5516 kPa)	★
D	0-36.26 to 0-3,626 psig (0-250 to 0-25000 kPa)	★
<b>Isolator material/fill fluid</b>		
A <sup>(2)</sup>	316L SST, Silicone	★
B <sup>(2)</sup>	Alloy C-276, Silicone	★
J <sup>(2)(3)</sup>	316L SST, Inert	★
K <sup>(2)(3)</sup>	Alloy C-276, Inert	★
<b>Flange style, material</b>		
A	Coplanar, Carbon Steel	★
B	Coplanar, SST	★
C	Coplanar, Cast C-276	★
E	Coplanar, Carbon Steel, Non-Vented	★
F	Coplanar, SST, Non-Vented	★
J	Traditional, SST, 7/16-20 Bolting	★
0	None (Required for S5 option)	★
<b>Drain/vent material</b>		
A	SST	★
C	Alloy C-276	★
0	None (Required for S5 option)	★

**Table 1. Rosemount 205 MultiVariable Sensor Module**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.

The Expanded offering is subject to additional delivery lead time.

<b>O-rings (wetted)</b>		
1	Glass-filled PTFE	★
<b>Process temperature input</b>		
N	None (no cable, no boss)	★
0	Fixed Process Temperature (no cable)	★
1	RTD Input with 12 ft (3,66 m) Shielded Cable	★
2	RTD Input with 24 ft (7,32 m) Shielded Cable	★
3	RTD Input with 12 ft (3,66 m) Armored, Shielded Cable	★
4	RTD Input with 24 ft (7,32 m) Armored, Shielded Cable	★
<b>Mounting bracket</b>		
0	None	★
1	Coplanar SST, 2-in. Pipe or Panel, SST Bolts	★
<b>Bolting material</b>		
0	Carbon Steel	★
1	Austenitic 316 SST	★
N	None	★

### Options (include with selected model number)

<b>Flange adapters</b>		
DF	Flange Adapters - Adapter Type Determined by Selected Flange Material	★
<b>Integral manifold</b>		
S5 <sup>(4)</sup>	Assemble to 305 Integral Manifold	★
<b>Cleaning</b>		
P2	Special Process Cleaning	★
<b>Material traceability certification</b>		
Q8	Material Traceability	★

(1) Available only with Static Pressure Ranges 3 and C with Isolator Material/Fill Fluid option code A (316L SST, Silicon).

(2) Materials of Construction comply with metallurgical requirements highlighted within NACE MR0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR0103 for sour refining environments.

(3) Only available with Gage Sensor, Static Pressure Range codes C and D.

(4) "Assemble-to" items are specified separately and require a completed model number.

# Specifications

## Functional specifications

### Service

Gas, liquid, or steam

### Differential sensor

Limits

- Range 1: -25 to 25 inH<sub>2</sub>O (-62,2 to 62,2 mbar)
- Range 2: -250 to 250 inH<sub>2</sub>O (-623 to 623 mbar)
- Range 3: -1000 to 1000 inH<sub>2</sub>O (-2,49 to 2,49 bar)

### Absolute sensor

Limits

- Range 3: 0.5 to 800 psia (3,447 to 5516 kPa)
- Range 4: 0.5 to 3,626 psia (3,447 to 25000 kPa)

### Gage sensor

Limits

- Range C: 0 to 800 psig (0 to 5516 kPa)
- Range D: 0 to 3,626 psig (0 to 25000 kPa)

### Calibration

All sensor modules are shipped with 0 to URL trim points.

### Overpressure limit

0.5 psia (3,447 kPa) to two times the static pressure sensor range with a maximum of 3,626 psia (25000 kPa) for differential pressure ranges 2-3 and 2000 psia (13790 kPa) for differential pressure range 1.

### Static pressure limit

Operates within specifications between static line pressures of 0.5 psia (3,447 kPa) and the URL of the absolute pressure sensor.

### Temperature limits

Process (at transmitter isolator flange for atmospheric pressures and above)

- Silicone fill: -40 to 250 °F (-40 to 121 °C)
- Inert fill: 0 to 185 °F (-18 to 85 °C) (Process temperature above 185 °F (85 °C) require derating the ambient limits by a 1.5:1 ratio.)

Ambient:

- Silicon fill: -40 to 185 °F (-40 to 85 °C)
- Inert fill: 0 to 185 °F (-18 to 85 °C)

Storage:

- -40 to 230 °F (-40 to 110 °C)

### Data storage

- Sensor module data is stored in non-volatile EEPROM memory.
- Sensor module characterization data is an integral part of the sensor module.

## Performance specifications

The sensor module performance shall meet the following performance criteria as a minimum. Maximum working pressure of the unit shall be the URL of the absolute sensor.

### Specification conformance

The Rosemount 205 maintains a specification conformance of measured variables to at least  $\pm 3\sigma$  (Sigma).

### Zero stability

Rosemount 205P

DP Range 2-3

- $\pm 0.1\%$  of URL for 12 months at reference conditions

DP Range 1

- $\pm 0.2\%$  of URL for 12 months at reference conditions

AP/GP

- $\pm 0.1\%$  of URL for 12 months at reference conditions

RTD

- $\pm 1.0$  °F (0.56 °C) for 12 months at reference conditions

### Vibration effect

Rosemount 205P sensor outputs shall not shift more than  $\pm 0.1\%$  of upper range limit per g from 5 to 2000 Hz in any axis when tested per IEC 770, Section 6.2.14.

### Differential Pressure (DP)

Range 1

- 0-0.5 to 0-25 inH<sub>2</sub>O (0-1,25 to 0-62,2 mbar)

Range 2

- 0-2.5 to 0-250 inH<sub>2</sub>O (0-6,23 to 0-623 mbar)

Range 3

- 0-10 to 0-1000 inH<sub>2</sub>O (0-0,0249 to 0-2,49 bar)

**Reference accuracy (including linearity, hysteresis, repeatability)**

Rosemount 205P

- ±0.075% of span for spans from 1:1 to 10:1 of URL.

- For spans less than 10:1 of URL,

$$\text{Accuracy} = \pm \left[ 0.025 + 0.005 \left( \frac{URL}{Span} \right) \right] \% \text{ of Span}$$

Rosemount 205E

- ± 0.10% of span

**Absolute/Gage Pressure (AP/GP)**

**Absolute**

Range 3

- 0.5–8 to 0.5–800 psia (3,447–55,16 to 3,447–5516 kPa)

Range 4

- 0.5–36.26 to 0.5–3,626 psia (3,447–250 to 3,447–25000 kPa)

**Gage**

Range C

- 0–8 to 0–800 psig (0–55,16 to 0–5516 kPa)

Range D

- 0–36.26 to 0–3,626 psig (0–250 to 0–25000 kPa)

**Reference accuracy (including linearity, hysteresis, repeatability)**

Rosemount 205P

- ±0.075% of span for spans from 1:1 to 10:1 of URL.

- For spans less than 10:1 of URL,

$$\text{Accuracy} = \pm \left[ 0.03 + 0.0075 \left( \frac{URL}{Span} \right) \right] \% \text{ of Span}$$

Rosemount 205E

- ± 0.10% of span

**Process temperature**

Specification for process temperature is for the Rosemount 205 only. Sensor errors caused by the RTD are not included.

- ±1.0 °F (0.56 °C) for process temperatures from –300 to 1200 °F (–184 to 649 °C)
- For process temperatures above 1200 °F (649 °C), add ±1.0 °F (0.56 °C) per 100 °F (38 °C)

**Physical specifications**

**Material selection**

Emerson provides a variety of Rosemount product with various product options and configurations including materials of construction that can be expected to perform well in a wide range of applications. The Rosemount product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product, materials, options and components for the particular application. Emerson Process Management is not in a position to evaluate or guarantee the compatibility of the process fluid or other process parameters with the product, options, configuration or materials of construction selected.

**Process connections**

Coplanar Process Connection: 1/4–18 NPT on 2 1/8-in. centers 1/2–14 NPT on 2-, 2 1/8-, or 2 1/4-in. centers with optional flange adapters

**Process wetted parts**

Isolating Diaphragms

- 316L SST or Alloy C-276. CF-8M (last version of 316 SST, material per ASTM-A743)

Drain/Vent Valves

- 316 SST or Alloy C-276

Flanges

- Plated carbon steel, 316 SST, or Cast C-276

Wetted O-rings

- Glass-Filled PTFE

**Non-wetted parts**

Bolts

- Plated carbon steel per ASTM A449, Grade 5 or austenitic 316 SST

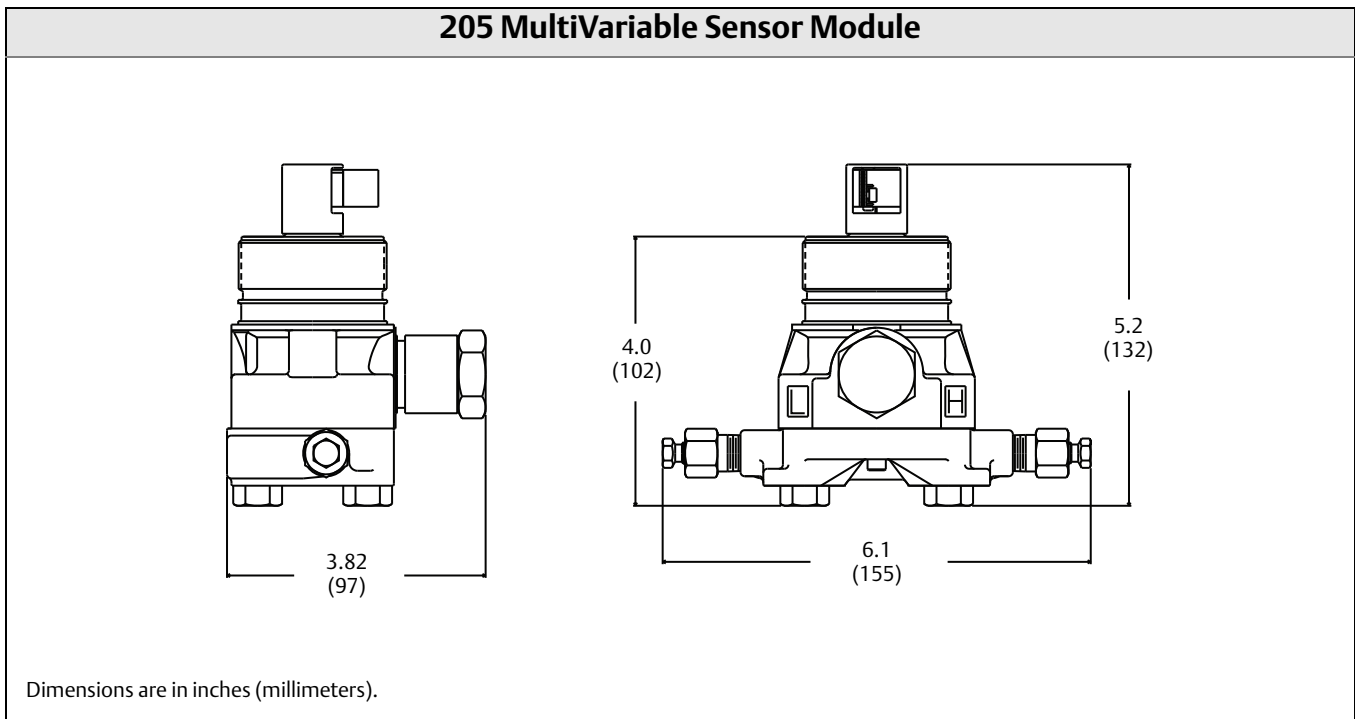
Fill Fluid

- Silicone

**Weight**

Component	Weight in lb (kg)
Rosemount 205 Sensor Module	3.4 (1.5)
SST Mounting Bracket	1.0 (0.4)
12 ft (3.66 m) RTD Shielded Cable	0.5 (0.2)
12 ft (3.66 m) RTD Armored Cable	1.1 (0.5)
24 ft (7.32 m) RTD Shielded Cable	1.0 (0.4)
24 ft (7.32 m) RTD Armored Cable	2.2 (1.0)

# Dimensional Drawings



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