**Product Data Sheet**
00813-0100-4205, Rev AA
Catalog 2008 - 2009



# Rosemount 205 MultiVariable™ Sensor Module

***THE PROVEN LEADER IN MULTIVARIABLE MEASUREMENT.***

- *Differential pressure measurement accuracy of ± 0.075% of span*
- *Static pressure measurement accuracy of ± 0.075% of span*
- *Process temperature measurement accuracy of ± 1.0 °F (0,56 °C)*
- *SPI based communication through ribbon cable interface*
- *Small, Lightweight, Coplanar™ design*

## Contents

# Specifications

## FUNCTIONAL

### Service

Gas, liquid, or steam

### Differential Sensor

Limits

- Range 1: -25 to 25 in$H_2O$ (-0,062 to 0,622 bar)
- Range 2: -250 to 250 in$H_2O$ (-0,622 to 0,622 bar)
- Range 3: -1000 to 1000 in$H_2O$ (-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

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 $3\sigma$.

### Zero Stability

Rosemount 205P

DP Range 2-3

- ± 0.1% of URL for 12 months at reference conditions

DP Range 1

- ± 0.2% of URL for 12 months at reference conditions

AP/GP

- ± 0.1% of URL for 12 months at reference conditions

RTD

- ± 1.0 °F (0.56 °C) for 12 months at reference conditions

### Vibration Effect

Rosemount 205P sensor ouputs shall not shift more than ± 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 in$H_2O$ (0-1,25 to 0-62,2 mbar)

Range 2

- 0–2.5 to 0–250 in$H_2O$ (0–6,23 to 0–622,7 mbar)

Range 3

- 0–10 to 0–1000 in$H_2O$ (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.

For 12 and 24 ft. Cables

- ±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)

For 75 ft. cables:

- ±2.0 °F (1.12 °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

### Process Connections

Coplanar Process Connection: ¼–18 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 Hastelloy C-276®. CF-8M (last version of 316 SST, material per ASTM-A743)

Drain/Vent Valves

- 316 SST or Hastelloy C-276

Flanges

- Plated carbon steel, 316 SST, or Hastelloy 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

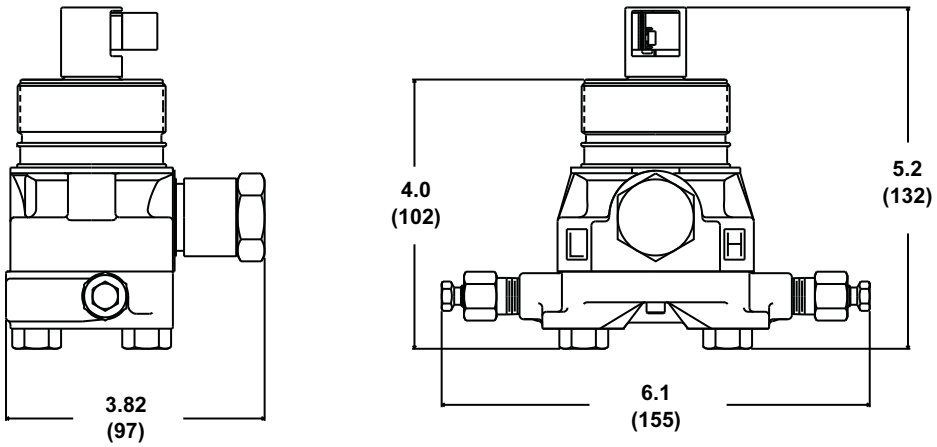
- Silicone

### 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

## 205 MultiVariable Sensor Module




**NOTE: Dimensions are in inches (millimeters).**

# Ordering Information

TABLE 1. Rosemount 205 MultiVariable Sensor Module

| Model | Module |
|---|---|
| 0205 | Rosemount 205 |
| **Code** | **Performance** |
| P | MultiVariable Sensor Module (0.075 % DP Accuracy) |
| E | MultiVariable Sensor Module (0.1% DP Accuracy) |
| **Code** | **Differential Pressure Range** |
| 1(1) | 0-0.5 to 0-25 in$H_2O$ (0-1,25 to 0-62,2 mbar) |
| 2 | 0–25 to 0–250 in$H_2O$ (0–6,23 to 0–622,7 mbar) |
| 3 | 0–10 to 0–1000 in$H_2O$ (0–0,0249 to 0–2,49 bar) |
| **Code** | **Static Pressure Range** |
| 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) |
| **Code** | **Isolator Material/Fill Fluid** |
| A | 316L SST, Silicone |
| B | Hastelloy C-276, Silicone |
| J(2) | 316 SST, Inert |
| K(2) | Hastelloy C-276, Inert |
| **Code** | **Flange Style, Material** |
| A | Coplanar, CS |
| B | Coplanar, SST |
| C | Coplanar, Hastelloy C-276 |
| E | Coplanar, CS, Non-Vented |
| F | Coplanar, SST, Non-Vented |
| J | Traditional, SST, 7/16-20 Bolting |
| 0 | None (Required for S5 option) |
| **Code** | **Drain/Vent Material** |
| A | SST |
| C | Hastelloy C-276 |
| 0 | None (Required for S5 option) |
| **Code** | **O-Rings (Wetted)** |
| 1 | Glass-filled PTFE |
| **Code** | **Process Temperature Input (RTD ordered separately)** |
| 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) Armoured, Shielded Cable |
| 4 | RTD Input with 24 ft (7,32 m) Armoured, Shielded Cable |
| **Code** | **Mounting Bracket** |
| 0 | None |
| 1 | Coplanar SST, 2" Pipe or Panel, SST Bolts |
| **Code** | **Bolt Material** |
| 0 | Carbon Steel |
| 1 | Austenitic 316 SST |
| N | None (Required for S5 option) |

TABLE 1. Rosemount 205 MultiVariable Sensor Module

| Code | Options |
|---|---|
| **Flange Adapters** | |
| DF | Flange Adapters - Adapter type determined by selected Flange Material: Plated CS, SST, Hastelloy C-276 |
| **Integral Manifold** | |
| S5(3) | Assemble to Rosemount 305 Integral Manifold |
| **Cleaning** | |
| P2 | Special Process Cleaning |

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

*(2) Only available with Gage Sensor Modules codes C and D.*

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



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