

# DVS205 Dual-Variable Sensor

The DVS205 Dual-Variable Sensor (DVS) provides static pressure and differential pressure inputs to a FloBoss™ 103, FloBoss 107E, or FloBoss 500-Series Flow Manager. The DVS205 communicates via a serial format with the FloBoss.

## Variables

Functionally, the DVS is a digital transmitter that measures two flow-related variables simultaneously: differential pressure and static pressure. These variables are continuously available to the FloBoss unit that polls the DVS.

## Transducer and Electronics

The DVS contains a transducer and an electronics circuit. The transducer uses capacitance-cell technology to sense differential pressure and piezoresistive technology to sense the static (absolute or gauge) pressure.

The transducer electronics convert the pressure variables directly into a digital format, allowing

accurate correction and compensation. A microprocessor linearizes and corrects the raw pressure signals (from the sensor) using characterization data stored in non-volatile memory.

The electronics also allow the DVS to communicate with a FloBoss using a Serial Peripheral Interface (SPI).

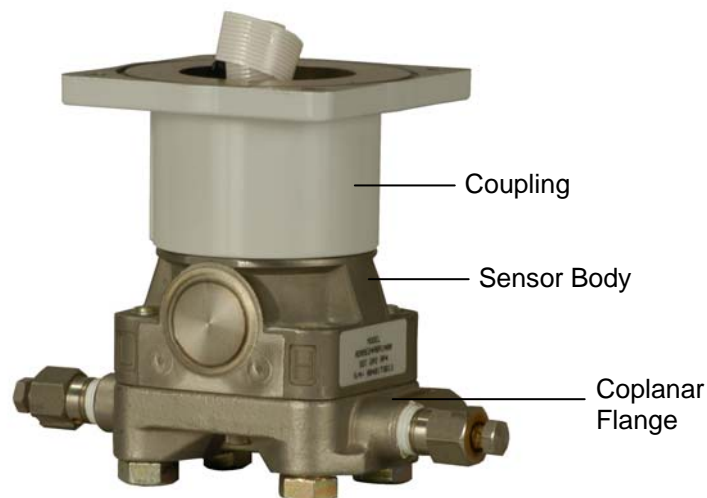
## Accuracy

Two versions of the DVS transmitter are available:

- DVS205P with reference accuracy of 0.075% of the full span.
- DVS205E with reference accuracy of 0.10% of the full span.

## Mounting

The DVS is factory installed on a FloBoss™ 103, FloBoss 107E, or FloBoss 500-Series Flow Manager to comply with agency requirements. Attached to the bottom of the sensor body is a Coplanar™ flange. This flange allows the DVS to mount on an integral orifice assembly or manifold valve.



*DVS205 Dual-Variable Sensor*

**DVS205 Dual-Variable Sensor Specifications**

**DIFFERENTIAL PRESSURE INPUT**

**Range<sup>1</sup>:** (100:1 rangeability allowed)  
0 to 62.2 kPa (0 to 250" H<sub>2</sub>O).  
0 to 248.8 kPa (0 to 1000" H<sub>2</sub>O).

**Reference Accuracy:**

±0.10% of span for turndowns from 1:1 to 10:1 of URL (DVS205E).  
±0.075% of span for turndowns from 1:1 to 10:1 of URL (DVS205P).

For spans less than 10:1 turndown:

Accuracy = ±[0.025 + 0.005(URL/Span)]% of span.

**Stability:** ±0.125% of URL for five years for ±50°F (28°C) ambient temperature changes, and up to 1000 psi (68,9 bar) line pressure.

**Ambient Temperature Effect per 50°F (28°C):**

±(0.025% URL + 0.125% of span) spans from 1:1 to 30:1.  
±(0.035% URL + 0.175% of span) spans from 30:1 to 100:1.

**Static Pressure Effects:**

Zero error = ±0.05% of URL per 1000 psi (68,9 bar).  
Span error = ±0.20% of DP Reading per 1000 psi (68,9 bar).

**Over-Pressure Limit:** 3,626 psi (250 bar) applied on either or both sides without damage to the sensor.

**Burst Pressure Limit:** 10,065 psi (694 bar).

**STATIC PRESSURE INPUT**

**Range:** Either Absolute or Gauge (100:1 rangeability allowed):  
0 to 5516 kPa (0 to 800 psia/psig).  
0 to 25,000 kPa (0 to 3626 psia/psig).

**Reference Accuracy:**

±0.10% of span for turndowns from 1:1 to 10:1 of URL (DVS205E).  
±0.075% of span for turndowns from 1:1 to 10:1 of URL (DVS205P).

For spans less than 10:1 turndown:

Accuracy = ±[0.03 + 0.0075(URL/Span)]% of span.

**STATIC PRESSURE INPUT (continued)**

**Stability:** ±0.125% of URL for five years for ±50°F (28°C) ambient temperature changes.

**Ambient Temperature Effect per 50°F (28°C):**

±(0.05% URL + 0.125% of span) spans from 1:1 to 30:1.  
±(0.06% URL + 0.175% of span) spans from 30:1 to 100:1.

**Over-Pressure Limit:** Same as URL.

**POWER**

**Input at 0 to 75°C (32 to 167°F):** 8 to 30 V dc, 10 mW average.

**Input at -40 to 0°C (-40 to 32°F):** 8.5 to 30 V dc, 10 mW average.

**OUTPUT**

Serial Peripheral Interface (SPI).

**WEIGHT**

3.0 kg (6.7 lb).

**ENVIRONMENTAL**

Same as the FloBoss unit in which it is installed.

**Process Seals per ANSI/ISA 12.27.01**

Meets requirements for a Single Seal device as defined by ANSI/ISA 12.27.01. Installation must adhere to the following process temperature limits.

**Process Temperature (at transmitter isolator flange):**

**Standard Silicone Fill Sensor:** -40 to 100°C (-40 to 212°F).

**Inert Fill Sensor:** -18 to 85°C (0 to 185°F).

**Note:** Process temperatures above 85°C (185°F) require you to lower the product's maximum ambient temperature rating by a 1.5:1 ratio. To determine the adjusted maximum temperature rating, perform the following calculation:

$$\text{Adjusted max } T_{\text{amb}} = \text{Product Max } T_{\text{amb}} - [(\text{Actual Process } T_{\text{amb}} - 85^{\circ}\text{C (185}^{\circ}\text{F)}) * 1.5].$$

Example:

$$\text{Adjusted Max } T_{\text{amb}} = 75^{\circ}\text{C} - [(95^{\circ}\text{C} - 85^{\circ}\text{C}) * 1.5] = 60^{\circ}\text{C}.$$

**DIMENSIONS**

147 mm H by 163 mm W by 84 mm D (5.8 in. H by 6.4 in. W by 3.3 in. D).

**VIBRATION EFFECT**

Sensor outputs will not shift more than +0.1% of URL per g from 5 to 2000 Hz in any axis when tested per IEC 770, Section 6.2.14.

1. Consult factory for special ranges and materials which may be available. For example: 0 to 6.22 kPa (0 to 25" H<sub>2</sub>O) at ±0.10% reference accuracy.

**DVS205 Dual-Variable Sensor Specifications (continued)**

**CONSTRUCTION**

**Standard:** Transducer is all stainless steel construction with silicone fill fluid, 316L diaphragms and glass-filled PTFE o-rings. Coupling is A360 Aluminum with urethane coating.

**Optional:** Transducer includes Hastelloy C-276 wetted parts (construction is NACE compliant per MR0103 and ISO15156/MR0175), inert fill fluid. Coupling is available in 316 stainless steel (CF8M).

**MOUNTING**

Factory-installed on enclosure of FB103, FB107E, and FB503. See respective specification sheet for unit mounting options.

**CONNECTIONS**

**Process:** 1/4-18 NPT on 2-1/8 inch centers (on coplanar flange).

**APPROVALS**

Same as the FloBoss unit in which it is installed.

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**Emerson Process Management**  
**Remote Automation Solutions**  
Marshalltown, IA 50158 U.S.A.  
Houston, TX 77041 U.S.A  
Pickering, North Yorkshire UK Y018 7JA

