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).

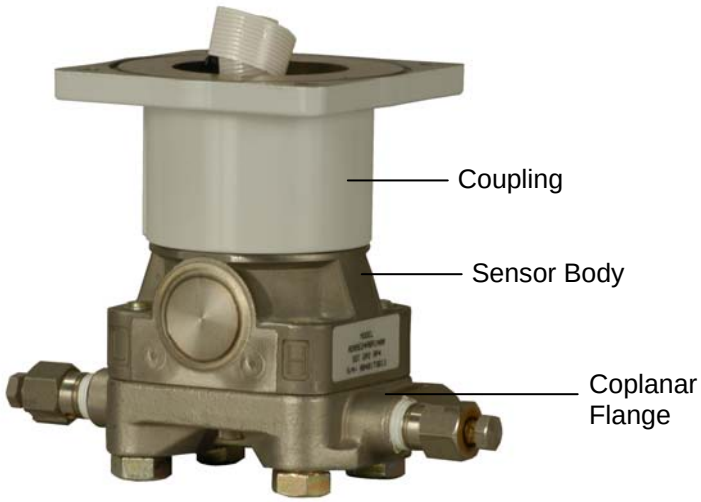
Accuracy

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

D301569X012

DVS205 Dual-Variable Sensor Specifications

DIFFERENTIAL PRESSURE INPUT

Range[1]: (100:1 rangeability allowed)
0 to 62.2 kPa (0 to 250" H_2O).
0 to 248.8 kPa (0 to 1000" H_2O).

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:

Adjusted max T_{amb} = Product Max T_{amb} - [(Actual Process T_{amb} - 85°C (185°F)) * 1.5].

Example:
Adjusted Max T_{amb} = 75°C – [(95°C – 85°C) * 1.5] = 60°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_2O) 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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