

MVS205 Multi-Variable Sensor

The MVS205 Multi-Variable Sensor provides static pressure, differential pressure, and process temperature inputs to a FloBoss™ Flow Manager or to a Remote Operations Controller (ROC). The inputs from a MVS sensor are used in performing orifice flow calculations. The MVS205 operates as a remote unit which communicates via a serial format.

Functionally, the MVS is a sensor device that measures three flow-related variables simultaneously. These variables are continuously available to the FloBoss or ROC unit that polls the MVS. Two versions of the MVS sensor are available: MVS205P with reference accuracy of 0.075% and MVS205E with reference accuracy of 0.10%.

The MVS consists of a transducer and an interface circuit. The transducer, contained in the sensor body, uses capacitance-cell technology to sense differential pressure and piezoresistive technology to sense the static (absolute or gauge) pressure.

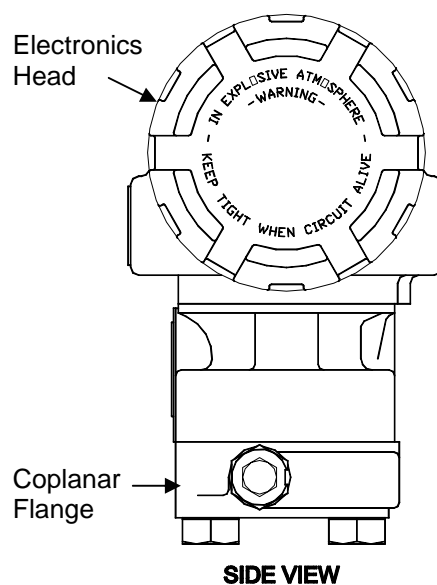
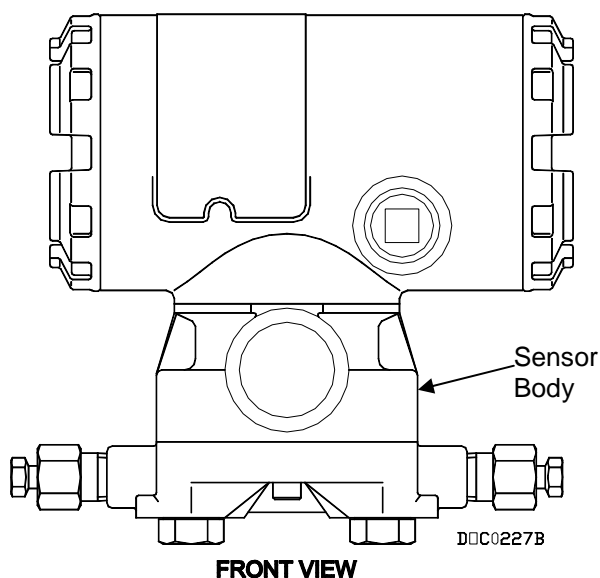
The transducer electronics convert the pressure variables directly into a digital format, allowing accurate correction and compensation. The raw temperature is converted by the interface board into digital format. A microprocessor linearizes and corrects the raw pressure signals (from the sensor) using characterization data stored in non-volatile memory.

The interface circuit allows the MVS to connect to and communicate with a ROC or FloBoss using a serial EIA-485 (RS-485) connection. In a Remote MVS, this interface circuit board is enclosed in a explosion-proof electronics head.

An external three or four-wire RTD is used to sense the process temperature. **The RTD sensor is connected directly to the interface circuit board** of the MVS sensor. A separate RTD cable assembly is required for the connection.

FloBoss 407 units may use a remote or integral MVS205 sensor. ROC300-Series controllers must be equipped with a Remote MVS Interface (CMA8H). FloBoss 500-Series units must be equipped with a CR1 to connect with a Remote MVS.

Attached to the bottom of the sensor body is a Coplanar™ flange. This flange, which provides drain/vent valves, allows the MVS to be mounted on a pipestand, on a wall or panel, or on an integral orifice assembly or manifold valve.



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Specifications

DIFFERENTIAL PRESSURE INPUT

Range: 0 – 6.22 kPa (0 – 25" H₂O),
0 - 62.2 kPa (0 – 250" H₂O), or
0 – 248.8 kPa (0 – 1000" H₂O).

Reference Accuracy:

±0.075% of span (for MVS205P)
±0.10% of span (for MVS205E).
Includes linearity, hysteresis, and repeatability effects for spans up to 10:1 turndown.

Stability: ±0.1% of upper range limit for 12 months.

STATIC PRESSURE INPUT

Range: Either Absolute or Gauge:
0 - 5516 kPa (0 - 800 psia/psig)
0 – 25,000 kPa (0 - 3626 psia/psig)

Reference Accuracy:

±0.075% of span (for MVS205P)
±0.10% of span (for MVS205E).
Includes linearity, hysteresis, and repeatability effects for spans up to 6:1 turndown.

Stability: ±0.1% of upper range limit for 12 months.

PROCESS TEMPERATURE INPUT

Type: For 3 or 4-wire platinum 100-ohm RTD (conforming to IEC 751 Class B), with $\alpha = 0.00385$.

Range: -40 to 400°C (-40 to 752°F).

Reference Accuracy: ±0.28°C (±0.5°F), exclusive of RTD sensor error. Specification includes linearity, hysteresis, and repeatability effects.

Excitation Current: 200 μ A.

OUTPUT (MVS205 REMOTE ONLY)

RS-485 asynchronous serial communication using Modbus protocol for up to 1220 m (4000 ft) distance.

POWER

30 mA dc maximum at 8 to 30 Vdc, supplied by ROC/FloBoss or Remote MVS Interface.

ENVIRONMENTAL

Operating Temperature: -40 to 75°C (-40 to 167°F).

Storage Temperature: -50 to 85°C (-58 to 185°F).

Operating Humidity: 0 to 99%, non-condensing.

WEIGHT

Including head, 3.0 kg (6.7 lb).

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).

CONSTRUCTION

Sensor Body and Coplanar Flange: 316 SST.

Wetted Parts: 316 SST is standard; Hastelloy C (NACE compliant) is available. Wetted O-rings are glass-filled TFE.

Electronics Head (MVS205 Remote): Urethane-painted die-cast aluminum alloy, rated Type 4X.

MOUNTING (MVS205 REMOTE ONLY)

Pipestand: Mounts on 50 mm (2 in.) pipe with U-bolt and optional flange bracket.

Wall/panel: Mounts with optional flange bracket, bolted on 71 mm (2.8 in.) centers.

CONNECTIONS

Conduit: Head has two 1/2-inch NPT connections.

Process: 1/4-18 NPT on 2-1/8 inch centers.

APPROVALS (MVS205 REMOTE ONLY)

Approved by CSA as Models RSE or RSP Series. Product is marked with the following approvals.

CSA Class I, Division 1, Groups C & D, Explosion Proof, C US.¹

CSA Class I, Division 2, Groups A, B, C & D, T5 (T_{Amb}=70°C), T4 T_{Amb}=75°C), C US, with non-incendive output for RTD.²

Approved by the Alberta Boilers Safety Association (approval # 0F0792.2).

1. Note: Installation requires the use of conduit and unarmored cable for RTD connection.

2. Note: When installed in Division 2 areas, the RTD wiring is considered non-incendive. Armored cable without conduit may be used.

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