

# XMV

## Multi-variable transmitter



### Introduction


The ABB XMV (267CS/269CS) measures Static Pressure, Differential Pressure, and Process Temperature in a vapor or liquid media. The XMV (multi-variable transmitter) is a two-wire RS 485 Modbus device with two additional wires required for power. It has a permissible terminal voltage range of 10.5 to 30 V DC. The current draw is approximately 11.7 mA per XMV. This unit is designed to operate with the ABB Totalflow XFC (eXpandable Flow Computer) or XRC (eXpandable Remote Controller). The combination of an XRC and one or more XMVs makes an ideal solution when multi-tube measurement is required or when the transmitters must be located in a Class I, Division 1, Group A, B, C, or D area.

All Totalflow XSeries devices (G3 or G4) can easily be configured to communicate with the XMV. G4 devices utilize an XMV Interface application that makes the interface to XMVs “plug-and-play.” The data from the XMV is then available to be utilized by any of the applications (AGA tube apps, trending, etc.) within the XFC/XRC (see “ABB Multivariable (XMV) with Totalflow XSeries Equipment User’s Setup Manual - 2101562-001” for complete setup details).

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### Features

- Base accuracy:  $\pm 0.075\%$  (267CS)  
 $\pm 0.040\%$  (269CS)
- Available span limits
  - Differential pressure sensors:  
25 in H<sub>2</sub>O (60 mbar), 160 in H<sub>2</sub>O (400 mbar),  
400 in H<sub>2</sub>O (1000 mbar), and 1000 in H<sub>2</sub>O (2500 mbar)
  - Absolute pressure sensors:  
300 psia (20 bar), 1500 psia (100 bar),  
and 6000 psia (410 bar)
- One transmitter replaces three separate transmitters
  - saving initial purchase costs
- Reduced process penetrations
  - saves money and reduces the chance of leaks
- Fewer transmitters, less wiring and fewer shut-off valves
  - reduce installation costs
- Explosion proof: Class I, Division 1, Groups A, B, C, D  
Non incandive: Class I, Division 2, Groups A, B, C, D  
Flame proof:  II 1/2G ; EExd IIC T6 (ATEX)
- Easily configured to communicate with Totalflow XRC (remote controllers) or XFC (flow computers) using Modbus interface
- Optional display (LCD)
  - plug-in and rotatable
  - display current DP, SP, and temperature
  - ability to display any additional information that is available from an XSeries device (orifice plate size, etc.)
- Local control keys (standard)
  - may be used for transmitter configuration (baud rate, Modbus slave address, etc.). Optional display (LCD) is needed to view the configuration.
- Operates on 10.5 to 30 V DC
- MODBUS RS-485 Digital Communications
- Supply current ~10 mA, transmitting supply current does not exceed 25 mA

## Measuring accuracy

Reference conditions according to IEC 60770 apply: ambient temperature of 20° C (68° F), relative humidity of 65 %, atmospheric pressure of 1013 mbar (14.7 psi), mounting position with vertical diaphragm and zero-based range for transmitter with isolating diaphragms in Hastelloy and silicone oil fill.

Unless otherwise specified, errors are quoted as % of span.

In order to optimize performance characteristics, it is recommended to select the transmitter sensor providing the lowest range-down ratio.

## Accuracy rating

Percentage of calibrated span including combined effects of linearity, hysteresis and reproducibility.

Differential Pressure Sensor (267CS)

- $\pm 0.075\%$  for range-down from 1:1 to 10:1

Differential Pressure Sensor (269CS)

- $\pm 0.04\%$  for range-down from 1:1 to 10:1

Absolute Pressure Sensor (267CS/269CS)

- 0.075% of the URL of the absolute pressure sensor

Process Temperature Measurement (Pt 100 RTD)

- $\pm 0.3^{\circ}\text{C}$  ( $0.54^{\circ}\text{F}$ )



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### Available transmitter ranges

The ABB Totalflow base part numbers for the XMV are as follows:

- ± 0.075% accuracy (DP) 267CS
  - 1641026-xxx (with local keys, no display)
  - 1641027-xxx (with local keys, LCD display)
  - 1641025-xxx (with local keys, LCD display, ATEX version)
- ± 0.04% accuracy (DP) 269CS
  - 2104372-xxx (with local keys, no display)
  - 2104373-xxx (with local keys, LCD display)
  - 2104370-xxx (with local keys, LCD display, ATEX version)

Part number	Differential pressure range	Static pressure range
xxxxxxx-001	60 mbar (25" H <sub>2</sub> O)	410 bar (6000 psi)
xxxxxxx-002	60 mbar (25" H <sub>2</sub> O)	20 bar (300 psi)
xxxxxxx-003	60 mbar (25" H <sub>2</sub> O)	100 bar (1500 psi)
xxxxxxx-004	400 mbar (160" H <sub>2</sub> O)	410 bar (6000 psi)
xxxxxxx-005	400 mbar (160" H <sub>2</sub> O)	20 bar (300 psi)
xxxxxxx-006	400 mbar (160" H <sub>2</sub> O)	100 bar (1500 psi)
xxxxxxx-010	1000 mbar (400" H <sub>2</sub> O)	410 bar (6000 psi)
xxxxxxx-011	1000 mbar (400" H <sub>2</sub> O)	20 bar (300 psi)
xxxxxxx-012	1000 mbar (400" H <sub>2</sub> O)	100 bar (1500 psi)
xxxxxxx-007	2500 mbar (1000" H <sub>2</sub> O)	410 bar (6000 psi)
xxxxxxx-008	2500 mbar (1000" H <sub>2</sub> O)	20 bar (300 psi)
xxxxxxx-009	2500 mbar (1000" H <sub>2</sub> O)	100 bar (1500 psi)



## General specifications

<b>Dimensions (approx.)</b>	Width: 5.4 in. (137 mm) with LCD display Height: 7.32 in. (186 mm) Depth: 5.51 in. (140 mm) with electrical and RTD connections	<b>Humidity</b>	Up to 100%; condensation, icing permitted
<b>Weight (approx.)</b>	8 lbs (3.5 kg)	<b>Electromagnetic compatibility (EMC)</b>	Definition: Class 3 RFI suppression: Limit Class B  (according to EN 550011) Meets NAMUR recommendations
<b>Certification</b>	Explosion Proof (approved Div 1 RTD available) Class I, Div1, Groups A, B, C, D, T6 (not including Ether atmospheres) Class II, Div 1, Groups E, F, G; Class III, Div 1  Non Incendive Suitable for Class I, Div 2, Groups A, B, C, D, T4A  Directive 94/9/EC (ATEX) flame proof ⊕ II 1/2G; EExd, IIC, T6; Class I Zone 1 ambient temperature range: -40° F to 167° F (-40° C to 75° C)	<b>Low voltage directive</b>	Meets 73/23/EC
<b>Single seal rated</b>	(ANSI/ISA 12.27.01) PMax = 3000psi; wetted materials meet NACE MR0175/ISO 15156; Process Fluids -62° C to 110° C	<b>Vibration resistance</b>	Acceleration up to 2 g at frequencies up to 1000 Hz (according to IEC 60068-2-26)
<b>Mounting</b>	Wall, pipe or direct	<b>Shock resistance</b>	Acceleration: 50 g Duration: 11 ms  (according to IEC 60068-2-27)
<b>Operating temperature limits</b>	Transmitter: -40° F to 176° F (-40° C to 80° C)  Note: for hazardous atmosphere applications, see the temperature range specified on the relevant certificate/approval  LCD display: -4° F to 158° F (-20° C to 70° C)	<b>Wet and dust-laden atmospheres (protection type)</b>	The transmitter is dust and sand-tight and protected against immersion effects as defined by IEC EN60529 (1989) to IP 67 or by NEMA to 4X or by JIS to C0920. Protection type with plugged connection: IP 65

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### Operating influences

<b>Power supply</b>	Within the specified limits for the voltage/load the total influence is less than 0.001% of URL per volt	<b>Static Pressure Effect (DP Zero)</b>	Up to 100 bar (1450 psi): 0.05% of URL > 100 bar (1450 psi): 0.05% URL per 100 bar (1450 psi)
<b>Electromagnetic fields</b>	Total effect: less than 0.05% of span from 80 to 1000 MHz and for field strengths up to 10 V/m when tested with unshielded conduit, with or without meter	<b>(zero errors can be calibrated out at line pressure)</b>	
<b>Installation position</b>	Rotations in the plane of the transmitter diaphragm have negligible effect. A tilt from vertical causes a zero shift of $\sin \alpha \times 0.35 \text{ kPa}$ (3.5 mbar, 1.4 in H <sub>2</sub> O) of URL which can be corrected with the zero adjustment (No effect on the span.)	<b>Static Pressure Effect (DP Span)</b>	Up to 100 bar (1450 psi): 0.05% of span > 100 bar (1450 psi): 0.05% of span per 100 bar (1450 psi)
<b>Stability</b>	± 0.15% of URL over a twenty four month period		
<b>Vibration effect</b>	± 0.10% of URL (according to IEC 61298-3)		
<b>Ambient temperature effect</b>	<p><b>Between the temperature of -10° C to +60° C (14° F to +140° F)</b></p> <p>Differential pressure sensor:            ± (0.08% URL/Span + 0.065%) span : 267CS            ± (0.06% URL/Span + 0.050%) span : 269CS</p> <p><b>Per 10°C (18°F) change between the limits of -40° C to -20° C (-4° F to -4° F) and 65° C to 80° C (149° F to 179° F)</b></p> <p>Differential pressure sensor:            ± (0.033% URL/Span + 0.040%) span : 267CS            ± (0.025% URL/Span + 0.030%) span : 269CS</p> <p><b>Per 20° C (36° F) change between the limits of -20° C to 65° C (-4° F to 149° F)</b></p> <p>Differential pressure sensor:            ± (0.04% URL + 0.065% span) : 267CS            ± (0.03% URL + 0.050% span) : 269CS</p> <p><b>SP Sensor per 20° C (36° F) change between the limits of -40° C to +80° C (-40° F to +176° F)</b></p> <p>Absolute pressure sensor:            ± (0.08% URL + 0.08% span): 267CS/269CS            Limited to ± (0.1% URL + 0.1% span) per the complete temperature range of 120° C (216° F)</p>		

## Notes

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