

# Micro Motion™ 4200 2-Wire Transmitter



The Micro Motion 4200 2-wire transmitter enables the use of reliable and accurate Micro Motion Coriolis meters virtually anywhere in your plant. The 2-wire Coriolis meter delivers measurement accuracy, repeatability, and operational savings on a level not previously possible in loop-powered applications.

- Replace existing 2-wire flow devices with minimal effort and without incurring additional power or cabling costs
- Wireless THUM™ option maximizes installation and operation flexibility
- Low energy, loop-powered design enables easy integration of Coriolis into existing processes for improved measurement and reduced maintenance for an even greater number of flow points
- Reduce the complexity and improve the performance of new process plants with loop-powered mA output and HART® protocol 2-wire Coriolis
- Compact, integral 2-wire transmitter design saves electrical cost and space for use on integrated systems and skids
- Direct mass measurement improves process control while reducing number of measurement devices required
- Accurate, repeatable measurement ensures higher quality production and overall improved process profitability
- Certified for SIL2 and SIL3 Safety applications per IEC 61508

## Overview 4200 2-wire transmitter

The Micro Motion 2-wire Coriolis meter delivers multivariable and diagnostic information through HART® communications. Comprised of a cutting-edge 4200 transmitter and the proven best-in-class performance of a Micro Motion Coriolis meter, the Micro Motion 2-wire meter brings reduced costs through improved process consistency and maximized up time. Micro Motion 2-wire Coriolis is ideally suited for use in the chemical, petrochemical and refining industries, and for continuous process and mass balance applications.

### Access information when you need it with asset tags

Newly shipped devices include a unique QR code asset tag that enables you to access serialized information directly from the device. With this capability, you can:

- Access device drawings, diagrams, technical documentation, and troubleshooting information in your MyEmerson account
- Improve mean time to repair and maintain efficiency
- Ensure confidence that you have located the correct device
- Eliminate the time-consuming process of locating and transcribing nameplates to view asset information

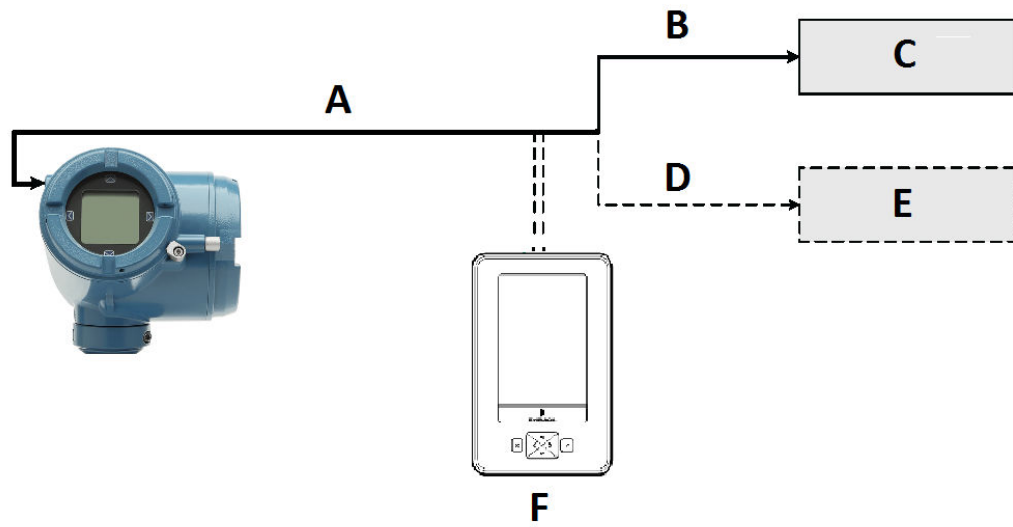
## Installation types for the 4200 transmitter



### WARNING

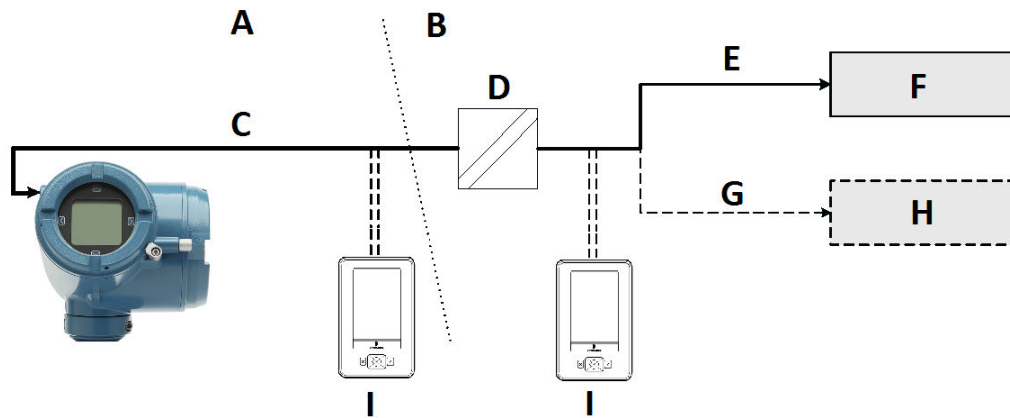
If you are installing the transmitter in a hazardous area, refer to Micro Motion approval instructions, shipped with the product or available from the Emerson web site ( [Emerson.com/flowmeasurement](https://www.emerson.com/flowmeasurement)). Improper installation in a hazardous area can cause an explosion.

General configuration



- A. 2-wire cable power and signal
- B. 4-20 mA
- C. mA receiving device
- D. HART® variables
- E. Distributed Control System (DCS)
- F. Emerson AMS Trex communicator

### Connection example for cases where a barrier is required



- A. Hazardous area
- B. Safe area
- C. 2-wire cable power and signal
- D. Barrier
- E. 4-20 mA
- F. mA receiving device
- G. HART variables
- H. Distributed Control System (DCS)
- I. Emerson AMS Trex communicator

## Applications

Applications are custom-designed software available to offer additional functionality and performance to transmitters. These applications are available through options in the transmitter model code. See [Ordering information](#) for details.

### Smart Meter Verification

- Provides a quick, complete assessment of a Coriolis meter, determining whether the meter has been affected by erosion, corrosion, or other influences affecting meter calibration
- A basic version of Smart Meter Verification is included with the 4200 transmitter that provides simple pass/fail results.

### Petroleum measurement and API correction option

- Accepts inputs from temperature and pressure devices
- Calculates values as per May, 2004 API Chapter 11.1
  - Relative density (specific gravity and API gravity) at reference temperature from observed density and temperature
  - Volume corrected to reference temperature and pressure
- Calculates flow-weighted average temperature and flow-weighted average observed density (specific gravity and API gravity)

### Concentration measurement

Provides concentration measurement based on either industry-specific or liquid-specific units and relationships. Standard measurement options include:

- Industry-specific:
  - °Brix
  - °Plato
  - °Balling
  - °Baumé at SG60/60
  - Specific gravity
- Liquid-specific:
  - % HFCS
  - Concentration derived from reference density
  - Concentration derived from specific gravity

Additionally, the application can be customized for site-specific concentration measurement (such as %HNO<sup>3</sup>, %NaOH).

## Electrical connections

Connection type	Transmitter
Input/Output	<ul style="list-style-type: none"> <li>■ Two pairs of wiring terminals for transmitter input/output, digital communications, and power</li> <li>■ Screw terminals accept solid or stranded conductors, 26 AWG (0.129 mm<sup>2</sup>) to 14 AWG (2.08 mm<sup>2</sup>).</li> <li>■ Note that all power to the electronics is supplied over the primary 4 - 20 mA signal wiring (Channel A).</li> </ul>
Digital communications administrative connection	<ul style="list-style-type: none"> <li>■ Two clips inside the terminal cover for a temporary connection to HART/Bell 202 terminals.</li> <li>■ Loop resistance is required and must be present in the main I/O loop, but not physically on the main terminal block.</li> </ul>

## Input/output signal detail

Transmitter code	Descriptions
Channel A	<p>One passive 4-20mA output with HART®</p> <ul style="list-style-type: none"> <li>■ Isolated to ±50 VDC from earth ground</li> <li>■ Maximum load limit: 600 Ω</li> <li>■ External power: 17.8 to 30 VDC.</li> <li>■ Can report mass flow, volume flow, gas standard volume flow, temperature, or density</li> <li>■ Milliamp output is NE-43 compliant</li> <li>■ Note that all power to the electronics is supplied over the primary 4 - 20 mA signal wiring (Channel A).</li> </ul>

Transmitter code	Descriptions
Channel B	<p>One passive 4-20mA or frequency or discrete output (Optional Licensed Channel)</p> <ul style="list-style-type: none"> <li>▪ Isolated to <math>\pm 50</math> VDC from earth ground</li> <li>▪ Maximum load limit: 600 <math>\Omega</math></li> <li>▪ External power: 7 to 30 VDC</li> <li>▪ Can report mass flow, volume flow, gas standard volume flow, temperature, or density</li> <li>▪ Milliamp output is NE-43 compliant</li> <li>▪ Note that Channel B requires its own power source independent from Channel A.</li> </ul>

## Digital communications

Connection type	Transmitter
HART® Bell 202	<p>The HART signal is superimposed on the milliamp output, and is available for host system interface:</p> <ul style="list-style-type: none"> <li>▪ Frequency: 1.2 and 2.2 kHz</li> <li>▪ Amplitude: up to 1.0 mA</li> <li>▪ 1200 baud, one stop bit, odd parity</li> <li>▪ Address: 0 (default), configurable</li> <li>▪ Requires 250 to 600 Ohms resistance</li> </ul>

## Environmental limits

### Aluminum housing

Type	Ambient temperature limits
Operating	-40 °F (-40.0 °C) to 149 °F (65.0 °C)
Storage	-40 °F (-40.0 °C) to 185 °F (85.0 °C)

### Stainless steel housing

Type	Ambient temperature limits
Operating	-40 °F (-40.0 °C) to 140 °F (60.0 °C)
Storage	-40 °F (-40.0 °C) to 185 °F (85.0 °C)

### Vibration limits

Meets IEC 60068-2-6, endurance sweep, 5 to 2000 Hz up to 1.0 g.

### Housing rating

Type	Value
Transmitter	NEMA 4X ( IP66/67/69k) polyurethane-painted cast aluminum

**Humidity limits**

The humidity limits are 5 to 95% relative humidity, non-condensing between -40 °F (-40.0 °C) to 149 °F (65.0 °C).

## Environmental effects

**EMI effects**

- Complies with EMC directive 2014/30/EU per EN 61326 Industrial
- Complies with NAMUR NE-21 (2017-08-01)

**Note**

For more information, please contact the factory for the certificate of conformance.


- These standards include surge and transient testing. The 4700 incorporates internal protection against surge and transient events.



**Ambient temperature effect**

- On analog outputs: ±0.0025% of span per °C change from the temperature at which the outputs were trimmed.

## Hazardous area classifications

### Hazardous area classifications

Approval Type	Approval	
CSA C-US		XP: <ul style="list-style-type: none"> <li>■ CLASS I, DIV. 1, Groups C, D</li> <li>■ CLASS I, DIV. 2, Groups A, B, C, D</li> <li>■ CLASS II, Div. 1, Groups E, F, and G</li> </ul> IS: <ul style="list-style-type: none"> <li>■ CLASS I, DIV. 1, Groups A, B, C, D</li> <li>■ CLASS I, DIV. 2, Groups A, B, C, D</li> <li>■ CLASS II, Div. 1, Groups E, F, and G</li> </ul> NI: <ul style="list-style-type: none"> <li>■ CLASS I, DIV. 2, Groups A, B, C, D</li> <li>■ CLASS II, Div. 2, Groups F, and G</li> </ul>

Approval Type	Approval	
ATEX		<ul style="list-style-type: none"> <li>▪ II 2(1)G Ex db [ia Ga] IIC T6 Gb</li> <li>▪ II 2(1)D Ex tb [ia Da] IIIC T72°C Db</li> <li>▪ IP66/IP67</li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>▪ II 2(1)G Ex db eb [ia Ga] IIC T6 Gb</li> <li>▪ II 2(1)D Ex tb [ia Da] IIIC T72°C Db</li> <li>▪ IP66/IP67</li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>▪ II 1G Ex ia IIC T4 Ga</li> <li>▪ II 1D Ex ia IIIC T77°C Da</li> <li>▪ IP66/IP67</li> </ul>
		<ul style="list-style-type: none"> <li>▪ II 3(1)G Ex ec [ia Ga] IIC T6 Gc</li> <li>▪ II 3(1)D Ex tc [ia Da] IIIC T72°C Dc</li> <li>▪ IP66/IP67</li> </ul>
IECEX	<p>IECEX Z1 Ex d:</p> <ul style="list-style-type: none"> <li>▪ Ex db [ia Ga] IIC T6 Gb</li> <li>▪ Ex tb [ia Da] IIIC T72°C Db</li> <li>▪ IP66/IP67</li> </ul> <p>IECEX Z1 Ex de:</p> <ul style="list-style-type: none"> <li>▪ Ex db eb [ia Ga] IIC T6 Gb</li> <li>▪ Ex tb [ia Da] IIIC T72°C Db</li> <li>▪ IP66/IP67</li> </ul> <p>IECEX Z0/1 Ex ia:</p> <ul style="list-style-type: none"> <li>▪ Ex ia IIC T4 Ga</li> <li>▪ Ex ia IIIC T77°C Da</li> <li>▪ IP66/IP67</li> </ul> <p>IECEX Z2 Ex ec:</p> <ul style="list-style-type: none"> <li>▪ Ex ec [ia Ga] IIC T6 Gc</li> <li>▪ Ex tc [ia Da] IIIC T72°C Dc</li> <li>▪ IP66/IP67</li> </ul>	


Marine approval	Country
American Bureau of Shipping	USA

## Physical specifications

### Transmitter

Specification	Value
Housing	NEMA 4X (IP66/67) polyurethane-painted cast aluminum or 316L stainless steel. Available with ½ in NPT or M20 conduit connections

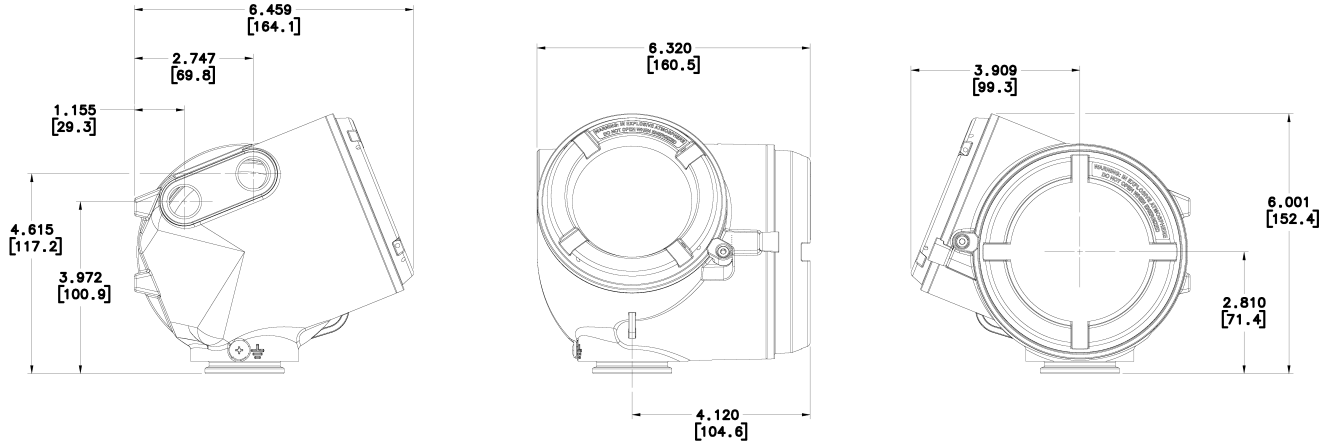


Specification	Value
Weight	See the sensor product data sheet for combined weight of the flowmeter: <ul style="list-style-type: none"> <li>▪ Integral mount version 6.48 lb (2.939 kg)</li> <li>▪ Remote mount version 8.21 lb (3.724 kg)</li> <li>▪ Stainless steel integral mount version 14.5 lb (6.58 kg)</li> <li>▪ Stainless steel remote version without mounting bracket 19.7 lb (8.94 kg)</li> <li>▪ Stainless steel remote mount version 21.7 lb (9.84 kg)</li> </ul>
Cable gland entrances	Two ½ in -NPT or M20 x1.5 female conduit port
Mounting	<ul style="list-style-type: none"> <li>▪ Available integrally mounted to the following Coriolis sensors:               <ul style="list-style-type: none"> <li>— CMF200 - CMF350<sup>(1)</sup></li> <li>— CMFS007 - CMFS150</li> <li>— F025-F400</li> <li>— H025-H400</li> <li>— R025-R300</li> <li>— T025-T150</li> </ul> </li> <li>▪ Available as a remote mount transmitter for the following Coriolis sensors:               <ul style="list-style-type: none"> <li>— CMF010 - CMF350</li> <li>— CMFS007- CMFS150</li> <li>— F025 - F400</li> <li>— H025 - H400</li> <li>— R025-R300</li> <li>— T075 - T150</li> </ul> </li> <li>▪ Available as a stainless steel transmitter for the following Coriolis sensors:               <ul style="list-style-type: none"> <li>— CMFS007- CMFS150</li> <li>— F025 - F400</li> <li>— H025 - H400</li> <li>— R025-R300</li> <li>— T075 - T150</li> </ul> </li> <li>▪ High temperature sensors are not compatible with the 4200 transmitter.</li> <li>▪ The transmitter can be rotated on the mounting in 45 degree increments.</li> </ul>
Interface/display 	Standard user interface with LCD panel <ul style="list-style-type: none"> <li>▪ Suitable for hazardous area installation</li> <li>▪ User interface module can rotate 360° in 90° increments by software selection</li> <li>▪ Four capacitive buttons for local operation without removing transmitter housing cover</li> <li>▪ Display can be configured to scroll through displayed variables at user-specified rate</li> <li>▪ Display update rate is user-configurable: 500 to 10,000 milliseconds</li> </ul>

(1) Aluminum housing only.

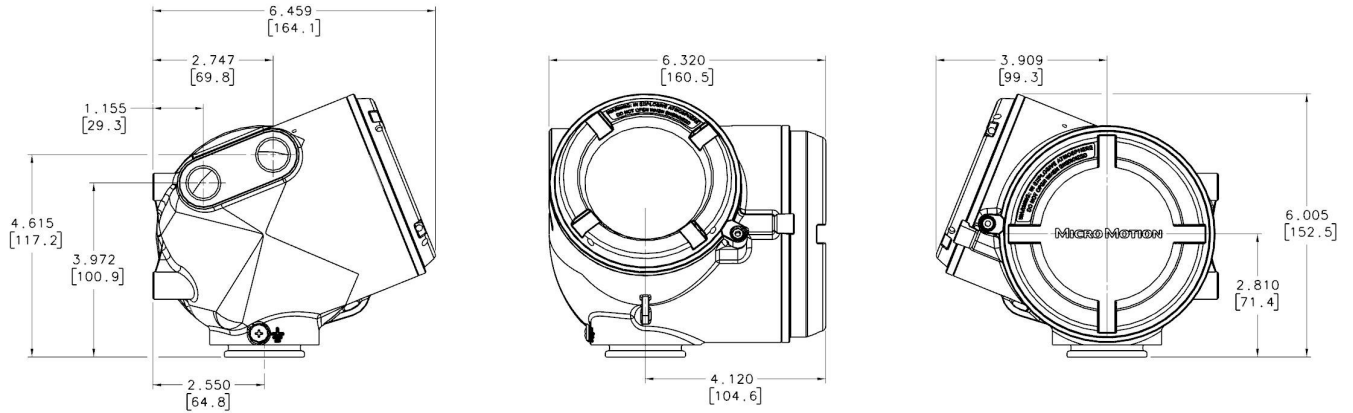
## Dimensions

### 4200 transmitter aluminum painted housing integral installation



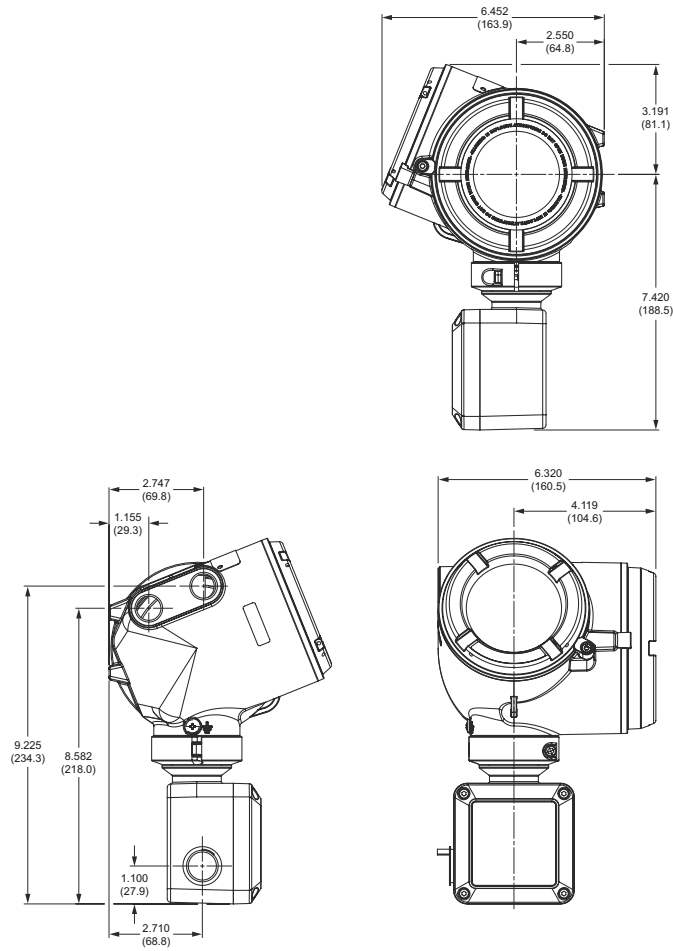
Dimensions are in inches [mm]

### 4200 transmitter stainless steel housing integral installation



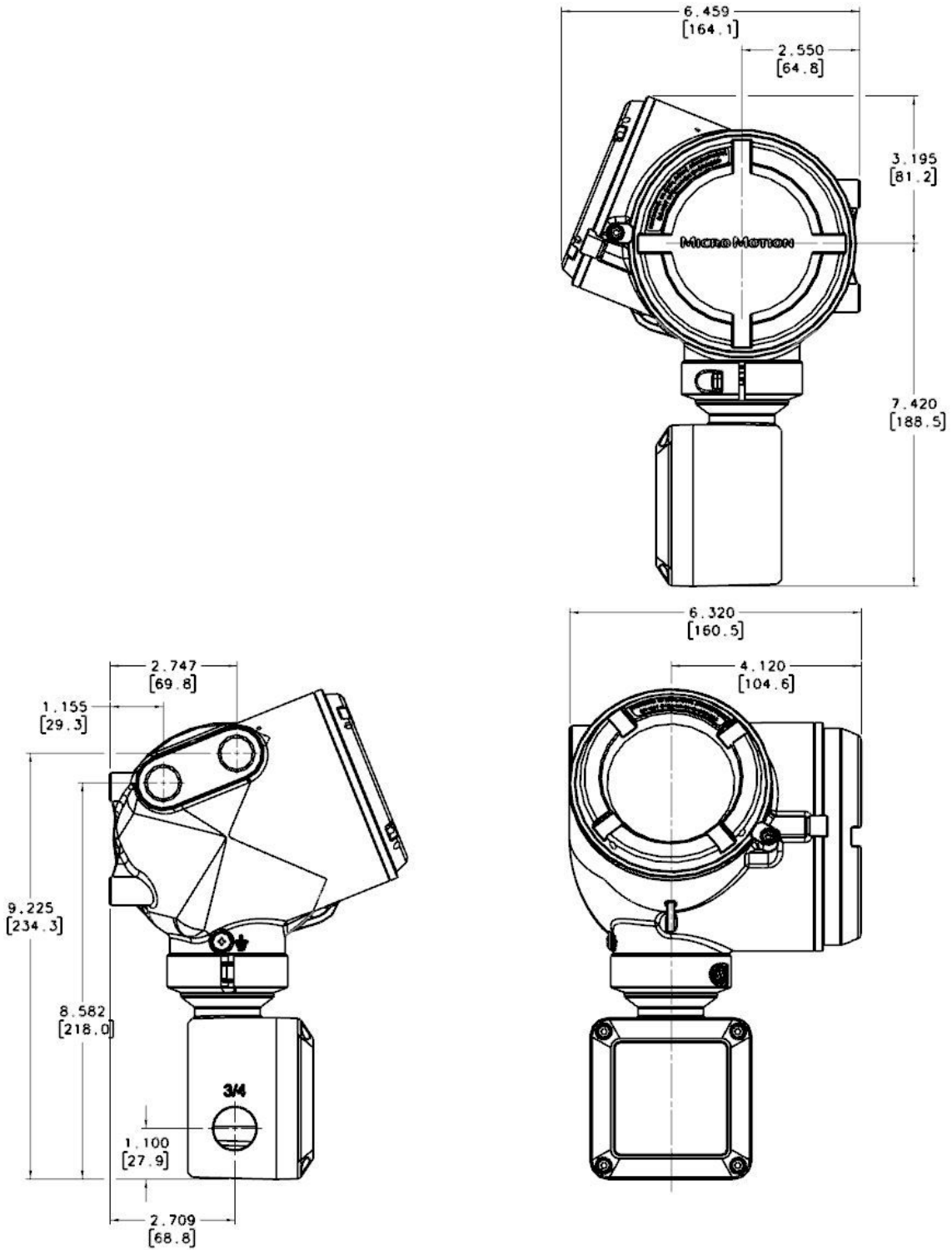
Dimensions are in inches [mm]

4200 transmitter aluminum painted housing remote installation



Dimensions are in inches [mm]

4200 transmitter stainless steel housing remote installation



Dimensions are in inches [mm]

## 4200 with Smart Wireless THUM™ Adapter

The 4200 transmitter is available with the Smart Wireless THUM Adapter using order option code NI (THUM ordered separately and not assembled to the 4200 transmitter). Refer to the [Add on options](#) table.

## Ordering information

### 4200

#### Base model

Model	Product description
4200	4200 Micro Motion Field Mount Loop-Powered Transmitter

#### Mounting

Code	Options for 4200
I	Integral mount transmitter (polyurethane-painted aluminum housing)
C	9-wire remote mount transmitter (polyurethane-painted aluminum housing), 316 stainless steel bracket for wall or pipe mounting and hardware for 2" (50.8 mm) pipe mount; Includes 10ft. (3M) of CFEPS cable
J	Integral mount transmitter (316L stainless steel housing)
P	9-wire remote mount transmitter (316L stainless steel housing), 316 stainless steel bracket for wall or pipe mounting and hardware for 2" (50.8 mm) pipe mount; Includes 10ft. (3M) of CFEPS cable

#### Power

Code	Power options
1	Loop Powered

#### Display

Code	Transmitter display options
<b>Available with all approval codes</b>	
2	Dual-line display for process variables and totalizer reset
3	No display
<b>Available with approval code MA</b>	
7	Non-glass dual-line display for process variables and totalizer reset

#### Output Hardware Board

Code	Output Hardware Board
A	4-20mA (Loop Powered)

**Conduit connection**

Code	Conduit connection options
B	1/2-inch NPT -- no gland
C	1/2-inch NPT with brass nickel cable gland
D	1/2-inch NPT with stainless steel cable gland
E	M20 -- no gland
F	M20 with brass nickel cable gland
G	M20 with stainless steel cable gland
K	JISB0202 1/2G -- no gland
L	Japan -- brass nickel cable gland
M	Japan -- stainless steel cable gland

**Approval**

Code	Approval options
MA	Micro Motion Standard (no approval)
AA	CSA (US and Canada): Class I, Div. 1 Ex Proof
AB	CSA (US and Canada): Class I, Div. 1 Intrinsically Safe
ZA	ATEX: II 2G, Ex de, Zone 1 and II 2D Ex tb, Zone 21
FA	ATEX: II 2G, Ex d, Zone 1 and II 2D Ex tb, Zone 21
ZB	ATEX: II 1G, Ex ia, Zone 0/Zone 1 and II 1D, Ex ia, Zone 20/Zone 21
IA	IECEX: EPL Gb, Ex d, Zone 1 and EPL Db, Ex tb, Zone 21
EA	IECEX: EPL Gb, Ex de, Zone 1 and EPL Db, Ex tb, Zone 21
EB	IECEX: EPL Ga, Ex ia, Zone 0/Zone 1 and EPL Da, Ex ia, Zone 20/Zone 21
2A	CSA (US and Canada): Class I, Div. 2
VA	ATEX: II 3G, Ex ec, Zone 2 and II 3D Ex tc Zone 22
3A	IECEX: EPL Gc, Ex ec, Zone 2 and EPL Dc, Ex tc Zone 22
R1	EAC: Ex de, Zone 1
R2	EAC: Ex d, Zone 1
R3	EAC: nA, Zone 2
R5	EAC: Ex ia, Zone 1

**Transmitter option 1**

Code	Transmitter Option 1
Z	Standard

**Transmitter option 2**

Code	Transmitter Option 2
Z	Standard

**Factory options**

Code	Factory options for 4200
Z	Standard product
X	ETO product

**Output channel A assignment**

Code	Output channel A assignment
<b>Available with A Output Hardware Board</b>	
A	Channel A : 4-20mA/HART® (Loop Powered)

**Output channel B assignment**

Code	Output channel B assignment
<b>Available with A Output Hardware Board</b>	
A	Channel B : One passive 4-20mA output, or frequency output, or discrete output (optional)
Z	Channel OFF

**Add on Options**

Code	Add on options (all are optional, none mandatory)
<b>Instrument Tagging</b>	
TG	Instrument -- customer information required (maximum 24 characters)
<b>Meter Verification</b>	
MV	Smart Meter Verification Available with all mounting options, but Mounting C is limited to 60 ft (20m) of 9-wire cable and only available when purchased with a new 9-wire sensor
<b>Enhanced Measurement (select only one from this group)</b>	
PS	API Referral Software
CM	Concentration Measurement Software
<b>Additional Certifications, Requires "A" option</b>	
SI	Safety certification of 4-20 mA output per IEC 61508 Only Channel A is certified.
<b>Smart Wireless 775 THUM™ Ready, Requires "A" board option</b>	
NI	Smart Wireless 775 THUM Ready -- 775 ordered separately and not assembled to the 4200 transmitter

For more information: [Emerson.com/global](https://emerson.com/global)

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