

# Micro Motion™ 5700 Transmitters with Configurable Inputs and Outputs

All Installation Types (Integral, four-Wire, and nine-Wire)



### **Safety messages**

Safety messages are provided throughout this manual to protect personnel and equipment. Read each safety message carefully before proceeding to the next step.

### **Safety and approval information**

This Micro Motion product complies with all applicable European directives when properly installed in accordance with the instructions in this manual. Refer to the EU Declaration of Conformity for directives that apply to this product. The following are available: the EU Declaration of Conformity, with all applicable European directives, and the complete ATEX installation drawings and instructions. In addition, the IECEx installation instructions for installations outside of the European Union and the CSA installation instructions for installations in North America are available at [Emerson.com](http://Emerson.com) or through your local Micro Motion support center.

Information affixed to equipment that complies with the Pressure Equipment Directive, can be found at [Emerson.com](http://Emerson.com). For hazardous installations in Europe, refer to standard EN 60079-14 if national standards do not apply.

### **Other information**

Troubleshooting information can be found in the [Configuration Manual](#). Product data sheets and manuals are available from the Micro Motion website at [Emerson.com](http://Emerson.com).

### **Return policy**

Follow Micro Motion procedures when returning equipment. These procedures ensure legal compliance with government transportation agencies and help provide a safe working environment for Micro Motion employees. If you fail to follow Micro Motion procedures, then Micro Motion will not accept your returned equipment.

Return procedures and forms are available on our web support site at [Emerson.com](http://Emerson.com), or by calling the Micro Motion Customer Service department.

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# 1 Before you begin

## 1.1 About this document

This manual provides information on planning, mounting, wiring, and initial setup of the Micro Motion transmitter. For information on full configuration, maintenance, troubleshooting, or service of the transmitter, see the [Micro Motion 5700 Transmitters with Configurable Inputs and Outputs: Configuration and Use Manual](#).

The information in this document assumes that users understand basic transmitter and sensor installation, configuration, and maintenance concepts and procedures.

## 1.2 Hazard messages

This document uses the following criteria for hazard messages based on ANSI standards Z535.6-2011 (R2017).



### **DANGER**

Serious injury or death will occur if a hazardous situation is not avoided.



### **WARNING**

Serious injury or death could occur if a hazardous situation is not avoided.



### **CAUTION**

Minor or moderate injury will or could occur if a hazardous situation is not avoided.

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### **NOTICE**

Data loss, property damage, hardware damage, or software damage can occur if a situation is not avoided. There is no credible risk of physical injury.

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### **Physical access**



### **WARNING**

Unauthorized personnel can potentially cause significant damage and/or misconfiguration of end users' equipment. Protect against all intentional or unintentional unauthorized use.

Physical security is an important part of any security program and fundamental to protecting your system. Restrict physical access to protect users' assets. This is true for all systems used within the facility.

## 1.3 Related documentation

You can find all product documentation on the product documentation DVD shipped with the product or at [Emerson.com](https://www.emerson.com).

See any of the following documents for more information:

- *Micro Motion 5700 Product Data Sheet*
- *Micro Motion 5700 Transmitters with Configurable Inputs and Outputs: Configuration and Use Manual*

- *Coriolis Flow Meter with Micro Motion 5700 Transmitters Safety Manual for Safety Instrumented Systems (SIS)*
- *Micro Motion 5700 Transmitters with a Marine Bunker Transfer Package: Application Manual*
- *Replacing the Junction Box for the 4200 Transmitter and the 5700 Transmitter*
- *Replacing the Sensor Cable for the 4200 Transmitter and the 5700 Transmitter*
- *Sensor installation manual*

## 2 Planning

### 2.1 Installation checklist

- ☐ If possible, install the transmitter in a location that will prevent direct exposure to sunlight. The environmental limits for the transmitter may be further restricted by hazardous area approvals.

- ☐ If you plan to mount the transmitter in a hazardous area:

**! WARNING**

- Verify that the transmitter has the appropriate hazardous area approval. Each transmitter has a hazardous area approval tag attached to the transmitter housing.
- Ensure that any cable used between the transmitter and the sensor meets the hazardous area requirements.
- For ATEX/IECEx installations, strictly adhere to the safety instructions documented in the ATEX/IECEx approvals documentation available on the product documentation DVD shipped with the product or at [Emerson.com](https://www.emerson.com).

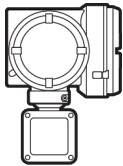
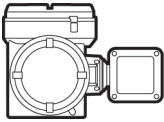
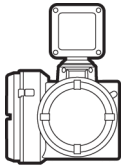
- ☐ Verify that you have the appropriate cable and required cable installation parts for your installation. For wiring between the transmitter and sensor, verify the maximum cable length does not exceed 1,000 ft (305 m).

- ☐ Ensure that you use the following cables for the different connections:
  - A shielded, twisted-pair instrument cable with drain for all in and out connections
  - A twisted-pair shielded cable for the RS-485 (Channel E) connection

- ☐ You can mount the transmitter in any orientation as long as the conduit openings do not point upward.

Installing the transmitter with the conduit openings facing upward risks condensation moisture entering the transmitter housing, which could damage the transmitter.

Following are examples of possible orientations for the transmitter.

Preferred orientation	Alternate orientations	
		

- ☐ Any fittings, adapters, or blanking elements used on either conduit entries or threaded joints that are a part of flame proof joints must comply with the requirements of EN/IEC 60079-1 & 60079-14 or CSA C22.2 No 30 & UL 1203 for Europe/International and North America respectively.

Only qualified personnel can select and install these elements in accordance with EN/IEC 60079-14 for ATEX/IECEx or to NEC/CEC for North America.

- ☐ To maintain the Ingress protection thread sealant, a sealing washer, or O-ring must be applied:
  - For Zone 1 applications thread sealant must also comply with the requirements of EN/IEC 60079-14 and thus must be non-setting, non-metallic, non-combustible, and maintain earthing between the equipment and conduit.
  - For Class I, Groups A, B, C, and D applications thread sealant must also comply with the requirements of UL 1203/CSA C22.2 No. 30.
- ☐ Mount the meter in a location and orientation that satisfies the following conditions:
  - Allows sufficient clearance to open the transmitter housing cover. Install with 8 in (203 mm) to 10 in (254 mm) clearance at the wiring access points.
  - Provides clear access for installing cabling to the transmitter.
  - Provides clear access to all wiring terminals for troubleshooting.

## 2.2 Additional considerations for retrofitting existing installations

- ☐ The transmitter installation may require 3 in (76 mm) to 6 in (152 mm) of additional wiring for the input/output and power connections. This length would be in addition to the currently installed wiring. Confirm you have the additional wiring necessary for the new installation.
- ☐ Before removing the existing transmitter, be sure to record the configuration data for the currently installed transmitter. At initial startup of the newly installed transmitter, you will be prompted to configure the meter via a guided setup. Record the following information (if applicable):

Variable	Setting
Tag	
Mass flow units	
Volume flow units	
Density units	
Temperature units	
<b>Channel configuration</b>	
mA Outputs 1	<ul style="list-style-type: none"> <li>— Power (internal or external):</li> <li>— Source:</li> <li>— Scaling (LRV, URV):</li> <li>— Fault action:</li> </ul>
mA Outputs 2 (optional)	<ul style="list-style-type: none"> <li>— Power (internal or external):</li> <li>— Source:</li> <li>— Scaling (LRV, URV):</li> <li>— Fault action:</li> </ul>



Variable	Setting
Frequency outputs (optional)	<ul style="list-style-type: none"> <li>— Power (internal or external):</li> <li>— Source:</li> <li>— Scaling (LRV, URV):</li> <li>— Fault action:</li> <li>— Dual output:</li> </ul>
Discrete outputs (optional)	<ul style="list-style-type: none"> <li>— Power (internal or external):</li> <li>— Source:</li> <li>— Scaling (LRV, URV):</li> <li>— Fault action:</li> </ul>
Discrete input (optional)	<ul style="list-style-type: none"> <li>— Power (internal or external):</li> <li>— Source:</li> <li>— Scaling (LRV, URV):</li> <li>— Fault action:</li> </ul>
RS-485	Address:
<b>Calibration parameters (for 9-wire installations only)</b>	
Flow calibration factor	FCF (Flow cal or flow calibration factor):
Density calibration factors	<ul style="list-style-type: none"> <li>— D1:</li> <li>— D2:</li> <li>— K1:</li> <li>— K2:</li> <li>— TC:</li> <li>— FD:</li> </ul>

## 2.3 Power requirements

Self-switching AC/DC input, automatically recognizes supply voltage:

- 85 to 240 VAC, 50/60 Hz, 6 watts typical, 11 watts maximum
- 18 to 100 VDC, 6 watts typical, 11 watts maximum

### Note

For DC power:

- Power requirements assume a single transmitter per cable.
- At start-up, the power source must provide a minimum of 1.5 amps of short-term current per transmitter and not pull voltage below 18 VDC.
- Length and conductor diameter of the power cable must be sized to provide 18 VDC minimum at the power terminals, at a load current of 0.7 amps.

### Cable sizing formula

$$M = 18V + (R \times L \times 0.7A)$$

- M: minimum supply voltage

- R: cable resistance
- L: cable length (in  $\Omega/\text{ft}$ )

**Typical power cable resistance at 68 °F (20.0 °C)**

Wire gauge	Resistance
14 AWG	0.0050 $\Omega/\text{ft}$
16 AWG	0.0080 $\Omega/\text{ft}$
18 AWG	0.0128 $\Omega/\text{ft}$
20 AWG	0.0204 $\Omega/\text{ft}$
2.5 mm <sup>2</sup>	0.0136 $\Omega/\text{m}$
1.5 mm <sup>2</sup>	0.0228 $\Omega/\text{m}$
1.0 mm <sup>2</sup>	0.0340 $\Omega/\text{m}$
0.75 mm <sup>2</sup>	0.0460 $\Omega/\text{m}$
0.50 mm <sup>2</sup>	0.0680 $\Omega/\text{m}$

## 2.3.1 Maximum cable lengths between sensor and transmitter

The maximum cable length between the sensor and transmitter, which are installed separately, is determined by cable type.

Cable type	Wire gauge	Maximum length
Micro Motion 4-wire remote mount	Not applicable	<ul style="list-style-type: none"> <li>• 1,000 ft (305 m) without Ex-approval</li> <li>• 500 ft (152 m) with IIC rated sensors</li> <li>• 1,000 ft (305 m) with IIB rated sensors</li> </ul>
Micro Motion 9-wire remote mount	Not applicable	1,000 ft (305 m) <sup>(1)</sup>
User-supplied 4-wire	VDC 22 AWG (0.326 mm <sup>2</sup> )	300 ft (91 m)
	VDC 20 AWG (0.518 mm <sup>2</sup> )	500 ft (152 m)
	VDC 18 AWG (0.823 mm <sup>2</sup> )	1,000 ft (305 m)
	RS-485 22 AWG (0.326 mm <sup>2</sup> ) or larger	1,000 ft (305 m)

<sup>(1)</sup> For Smart Meter Verification, the limit is 60 ft (18 m).

## 3 Mounting and sensor wiring

### 3.1 Mounting and sensor wiring for integral-mount transmitters

There are no separate mounting requirements for integral transmitters, and there is no need to connect wiring between the transmitter and the sensor.

### 3.2 Mounting transmitters

There are two options available for mounting 5700 transmitters:

- Mount the transmitter to a wall or flat surface.
- Mount the transmitter to an instrument pole.

#### 3.2.1 Mount the transmitter to a wall or flat surface

##### Prerequisites

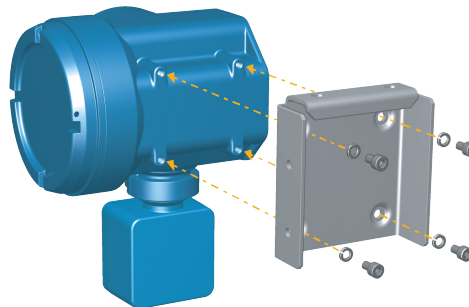
- Emerson recommends 5/16-18 (8 mm–1.25) fasteners that can withstand the process environment. Emerson does not supply bolts or nuts as part of the standard offering (general purpose bolts and nuts are available as an option).
- Ensure that the surface is flat and rigid and that it does not vibrate or move excessively.
- Confirm that you have the necessary tools and the mounting kit shipped with the transmitter.

##### Procedure

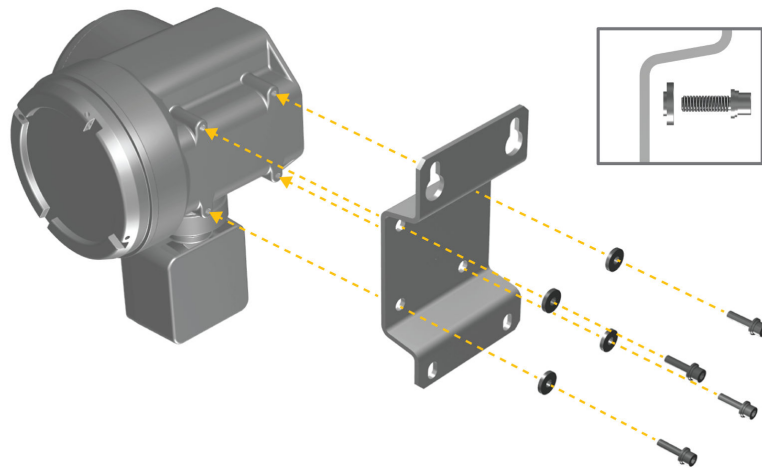
1. Attach the mounting bracket to the transmitter and tighten the screws to 80 in lbf (9.04 N m) to 90 in lbf (10.17 N m).

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**Figure 3-1: Mounting bracket to an aluminum transmitter**

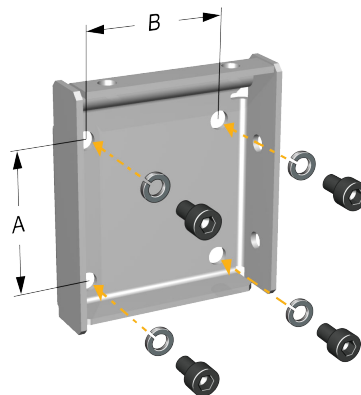


**Figure 3-2: Mounting bracket to a stainless steel transmitter**



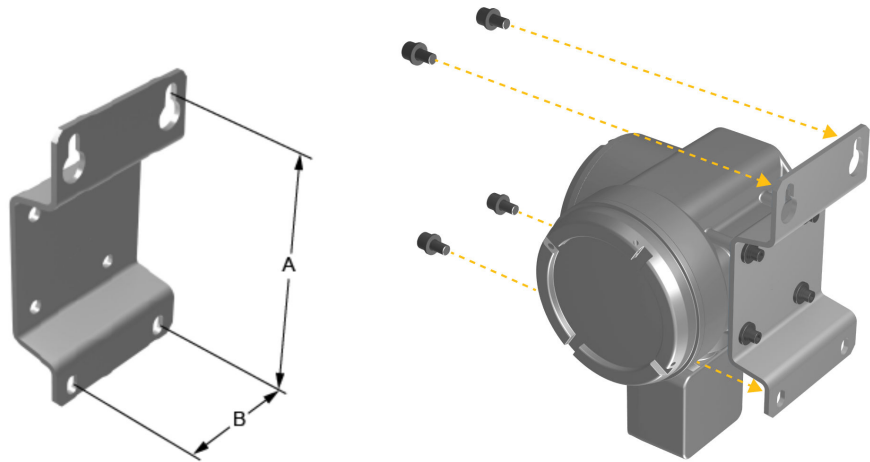
2. For wall-mount installations, secure the mounting bracket to the prepared surface.

**Figure 3-3: Wall-mounting bracket and dimensions for an aluminum transmitter**



- A. 2.8 in (71 mm)  
B. 2.8 in (71 mm)

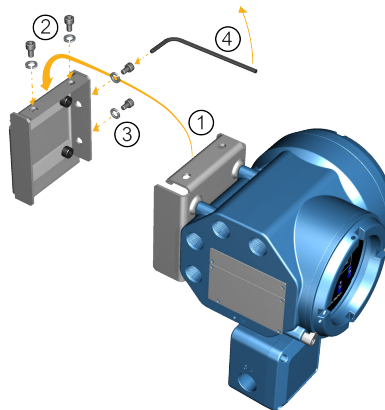
**Figure 3-4: Wall-mounting bracket and dimensions for a stainless steel transmitter**



A. 7.51 in (190.8 mm)  
B. 3.67 in (93.2 mm)

3. For aluminum transmitters, place and attach the transmitter-mounting bracket to the mounting bracket secured to the wall or instrument pole.

**Figure 3-5: Attaching and securing an aluminum transmitter to the mounting bracket**



**Tip**

To ensure the mounting bracket holes are aligned, insert all attachment bolts into place before tightening.

## 3.2.2 Mount the transmitter to a pole

### Prerequisites

- Ensure that the instrument pole extends at least 12 in (305 mm) from a rigid base and is no more than 2 in (51 mm) in diameter.
- Confirm that you have the necessary tools, and the instrument-pole mounting kit shipped with the transmitter.

### Procedure

For pole-mount installations, fit the U-bolt mounting piece to the instrument pole.

**Figure 3-6: Pole-mounting bracket attachment for an aluminum transmitter**

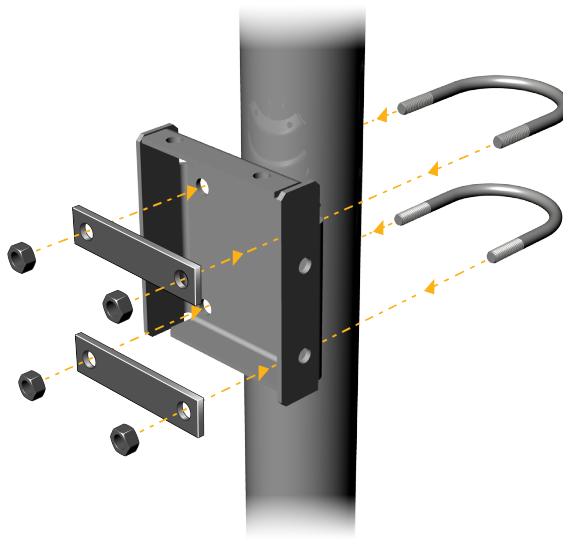
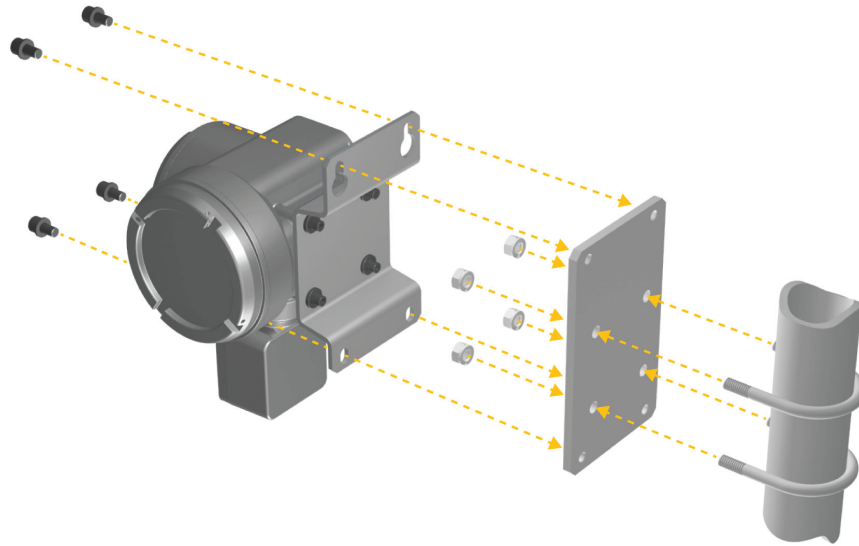


Figure 3-7: Pole-mounting bracket attachment for a stainless steel transmitter



### 3.3 Wire a remote-mount transmitter to the sensor

Use this procedure to wire a four-wire or nine-wire remote-mount transmitter to the sensor.

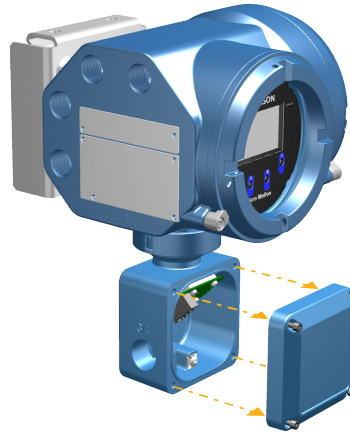
#### Prerequisites

- Prepare the nine-wire cable as described in the [Micro Motion 9-Wire Flow Meter Cable Preparation and Installation Guide](#).
- Connect the cable to the sensor-mounted core processor or junction box as described in the sensor documentation. You can access all product documentation on the documentation DVD shipped with the product or at [Emerson.com](https://www.emerson.com).

### Procedure

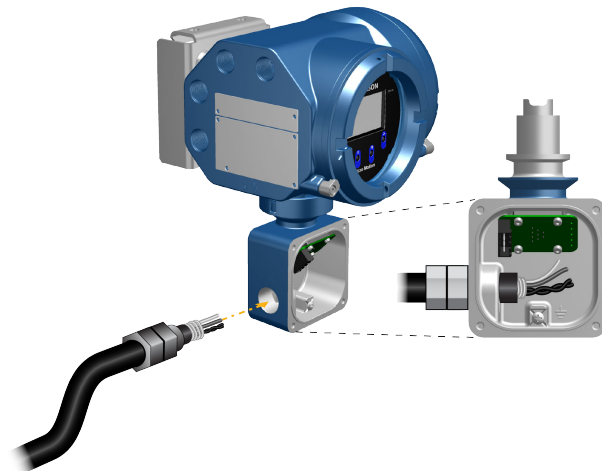
1. Remove the transmitter-to-sensor wiring compartment cover to reveal the terminal connections.

**Figure 3-8: Removal of the transmitter-to-sensor wiring compartment cover**



2. Feed the sensor wiring cable into the transmitter wiring compartment.

**Figure 3-9: Sensor wiring feedthrough**



3. Connect the sensor wires to the appropriate terminals.

### Important

Terminate the four-wire cable drain wires only at the sensor/core processor end of the cable. See the sensor installation manual for more detail. Do not connect the four-wire cable drain wires to the ground screw located inside the junction box.

- See [Figure 3-10](#) for four-wire terminal connections.
- See [Figure 3-11](#) for nine-wire terminal connections.



Figure 3-10: Four-wire transmitter-to-sensor wiring connections

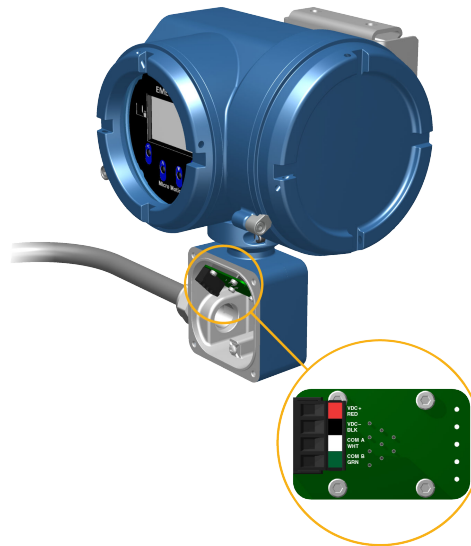
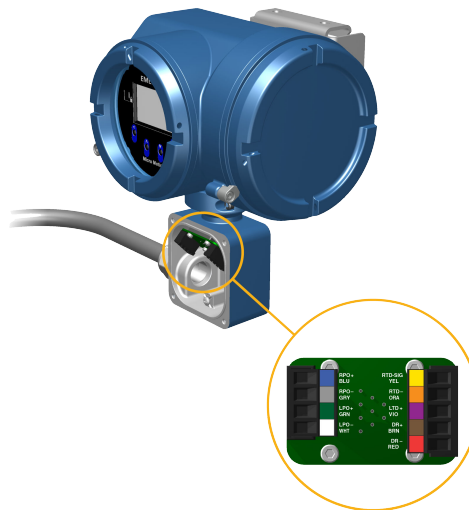


Figure 3-11: Nine-wire transmitter-to-sensor wiring connections



**Note**

Connect the four drain wires in the nine-wire cable to the ground screw located inside the junction box.

4. Replace the transmitter-to-sensor wiring compartment cover and tighten the screws to 14 in lbf (1.58 N m) to 15 in lbf (1.69 N m).

## 3.4 Ground the meter components

In 4-wire or 9-wire remote installations, the transmitter and sensor are grounded separately.

### Prerequisites

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#### NOTICE

Improper grounding could cause inaccurate measurements or meter failure.

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#### WARNING

Improper grounding could result in an explosion causing death or serious injury.

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#### Note

For hazardous area installations in Europe, refer to standard EN 60079-14 or national standards.

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If national standards are not in effect, adhere to the following guidelines for grounding:

- Use copper wire, 14 AWG (2.08 mm<sup>2</sup>) or larger wire size.
- Keep all ground leads as short as possible, less than 1  $\Omega$  impedance.
- Connect ground leads directly to earth, or follow plant standards.

### Procedure

1. Ground the Coriolis sensor according to the instructions in the sensor installation manual for your Coriolis sensor.
2. Ground the transmitter according to applicable local standards, using the transmitter's internal or external ground screw.
  - The earth ground terminal is located inside the power wiring compartment.
  - The external ground screw is located on the outside of the transmitter housing below the transmitter tag.

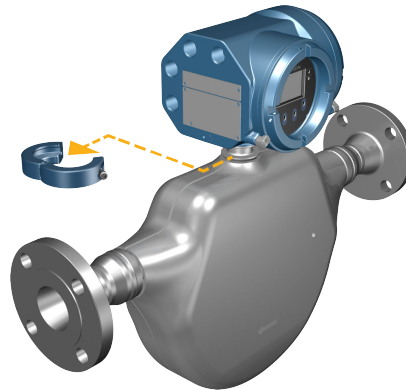
## 3.5 Rotate the transmitter on the sensor (optional)

In integral installations, you can rotate the transmitter on the sensor up to 360° in 45° increments.

### Procedure

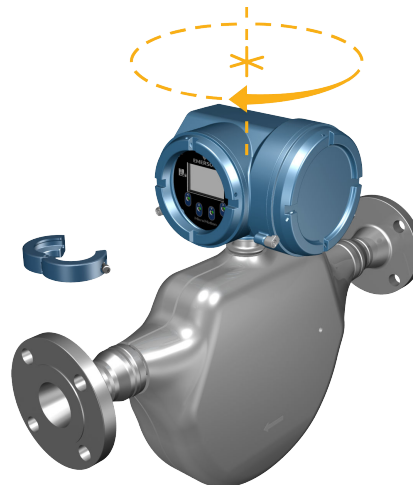
1. Using a 4 mm hex key, loosen and remove the clamp securing the transmitter head in place.

**Figure 3-12: Removal of the sensor clamp**



2. Gently lift the transmitter straight up, and rotate the transmitter to the desired position.  
You can rotate the transmitter to any of the eight positions, but a stop exists that will not allow a full 360° rotation.

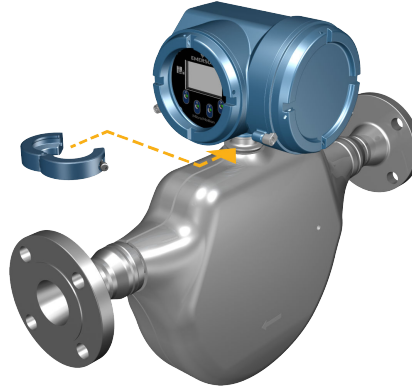
**Figure 3-13: Rotate transmitter head**



3. Gently lower the transmitter onto the base, confirming that the transmitter is in a locked position.

4. Replace the clamp in its original position and tighten the cap screw. Torque to 28 in lbf (3.16 N m) to 30 in lbf (3.39 N m).

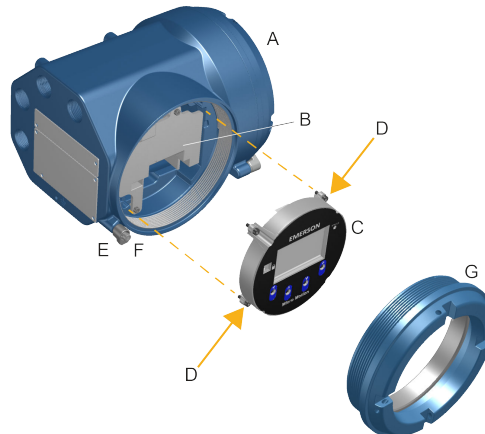
**Figure 3-14: Re-attachment of the sensor clamp**



## 3.6 Rotate the user interface on the transmitter (optional)

The user interface on the transmitter electronics module can be rotated 90°, 180°, or 270° from the original position.

**Figure 3-15: Display components**



- A. Transmitter housing
- B. Sub-bezel
- C. Display module
- D. Display screws
- E. End-cap clamp
- F. Cap screw
- G. Display cover

#### Procedure

1. Shut off power to the unit.



#### **WARNING**

If the transmitter is in a hazardous area, wait five minutes after disconnecting the power. Failure to do so could result in an explosion causing death or injury.

2. Loosen and rotate the end cap clamp so that it does not interfere with the cover.
3. Turn the display cover counterclockwise to remove it from the main enclosure.
4. Carefully loosen the captive display screws while holding the display module in place.
5. Carefully pull the display module out of the main enclosure.
6. Rotate the display module to the desired position.
7. Gently press the display module back onto the connector.
8. Tighten display screws.
9. Place the display cover onto the main enclosure.
10. Turn the display cover clockwise until it is fully seated.
11. Replace the end-cap clamp by tightening the cap screw.
12. Restore power to the transmitter.

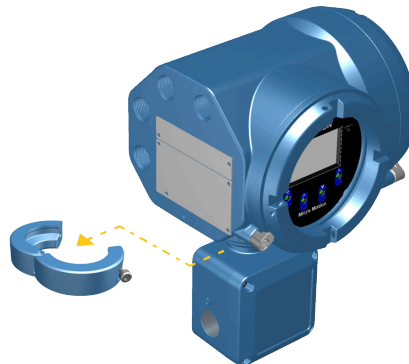
## 3.7 Rotate the sensor wiring junction box on a remote-mount transmitter (optional)

In remote-mount installations, you can rotate the sensor wiring junction box on the transmitter plus or minus 180°.

#### Procedure

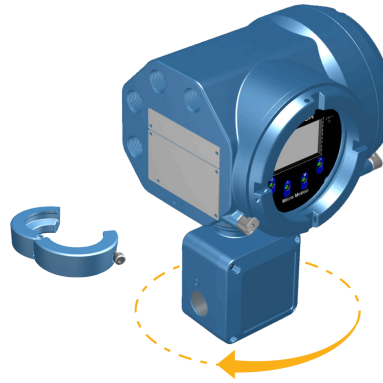
1. Using a 4 mm hex key, loosen and remove the clamp securing the sensor wiring junction box in place.

**Figure 3-16: Removal of the clamp**



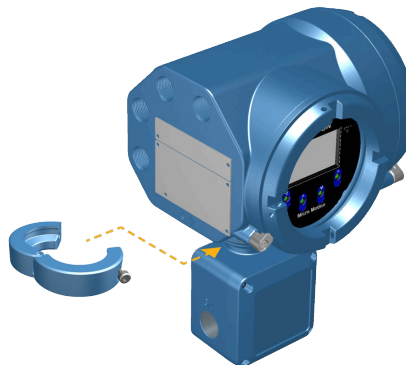
2. Gently rotate the junction box to the desired position.  
You can rotate the junction box plus or minus 180° to any position.

**Figure 3-17: Rotate the transmitter on the junction box**



3. Gently set the junction box into its new position, confirming that the position is locked.
4. Replace the clamp in its original position and tighten the cap screw. Torque to 28 in lbf (3.16 N m) to 30 in lbf (3.39 N m).

**Figure 3-18: Re-attach the clamp**



## 4 Wiring the channels

### 4.1 Available channels

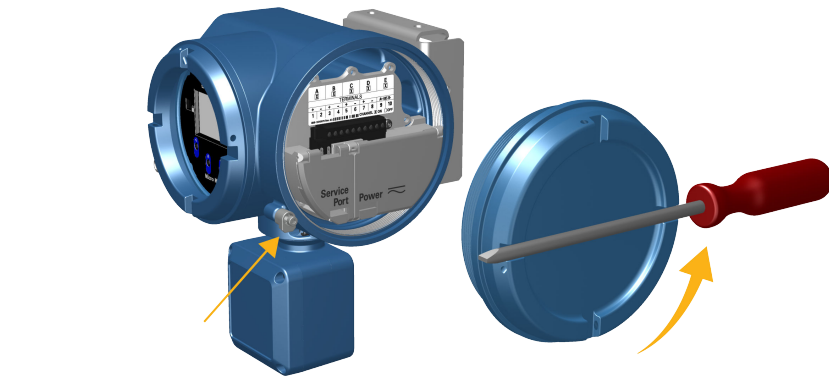
Signal	Channel A		Channel B		Channel C		Channel D		Channel E	
Wiring terminals	1	2	3	4	5	6	7	8	9	10
mA inputs and outputs	mA output 1 (HART®)		mA output 2		mA output 3		mA input		RS-485	
Frequency outputs	N/A		Frequency output 2 <sup>(1)</sup>		Frequency output 1		Frequency output 2 <sup>(1)</sup>		N/A	
Discrete outputs	N/A		Discrete output 1		Discrete output 2		Discrete output 3		N/A	
Discrete inputs	N/A		N/A		Discrete input 1		Discrete input 2		N/A	
Frequency inputs	N/A		N/A		N/A		Frequency input		N/A	

(1) Frequency output 2 can be mapped to Channel B or D. For multiple frequency outputs, use Frequency 1 on Channel C and Frequency 2 on either Channel B or D.

### 4.2 Access the wiring channels

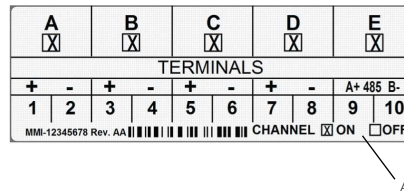
#### Procedure

1. Remove the wiring access cover to reveal the inputs and outputs wiring terminal block connectors.



- Confirm which transmitter channels are activated, or **ON**, and identify the type of configuration you will be wiring to based on the options available.

**Figure 4-1: Activated channel identification**



*A. Key to identify the activated input/outputs*

- Record the channel and wiring configuration on the label provided inside the transmitter housing cover.

**Figure 4-2: Channel and wiring configurations label**

**5700**

AVAILABLE CHANNEL CONFIGURATIONS

Channel	Configuration	Notes
A	<input type="radio"/> mA1 (HART)	
B	<input type="radio"/> mA2 <input type="radio"/> FO2 <input type="radio"/> DO1	
C	<input type="radio"/> mA3 <input type="radio"/> DO2 <input type="radio"/> FO1 <input type="radio"/> DI1	
D	<input type="radio"/> mA in <input type="radio"/> DI2 <input type="radio"/> FO2 <input type="radio"/> DO3 <input type="radio"/> FI1	
E	<input type="radio"/> RS-485	

SERIAL/TAG # :

## 4.3 Wire the mA output

Wire the mA output in explosion-proof, nonincendive, or nonhazardous installations.

### Important

Meter installation and wiring should be performed only by suitably-trained personnel.



### 4.3.1 Wire the mA output (internally powered)

#### Procedure

Wire to the appropriate output terminal and pins.

**Figure 4-3: mA output wiring (internally powered)**



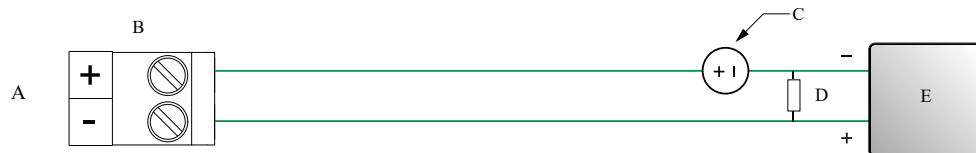
- A. mA output
- B. Channel A, B, or C
- C.  $820\ \Omega$  maximum loop resistance
- D. Signal device

### 4.3.2 Wire the mA output (externally powered)

#### Procedure

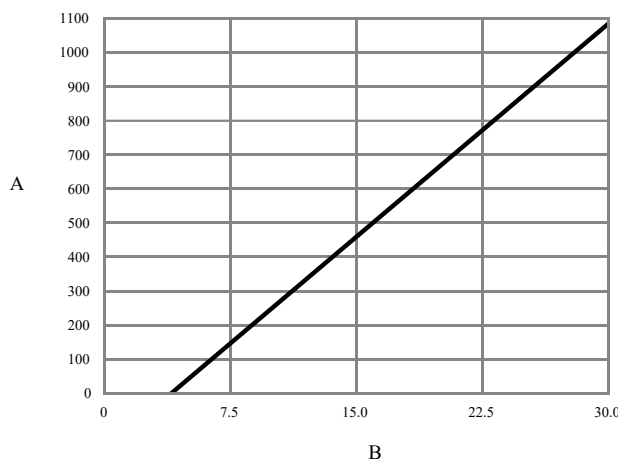
Wire to the appropriate output terminal and pins.

**Figure 4-4: mA output wiring (externally powered)**



- A. mA output
- B. Channel A, B, or C
- C. 5–30 VDC (maximum)
- D. See [Figure 4-5](#) for maximum loop resistance
- E. Signal device

**Figure 4-5: Externally-powered mA output: maximum loop resistance**



- A. Maximum resistance ( $\Omega$ )  
B. External supply voltage (V)

## 4.4 Wire the mA/HART<sup>®</sup> output

Wire the mA/HART output in explosion-proof, nonincendive, or nonhazardous installations.

### Important

Meter installation and wiring should be performed only by suitably-trained personnel.

### 4.4.1 Wire the mA/HART<sup>®</sup> output (internally powered)

#### Procedure

Wire to the appropriate output terminal and pins.

**Figure 4-6: mA/HART output wiring (internally powered)**



- A. mA/HART output  
B. 250–600  $\Omega$  resistance  
C. HART device

### 4.4.2 Wire the mA/HART<sup>®</sup> output (externally powered)

**Procedure**

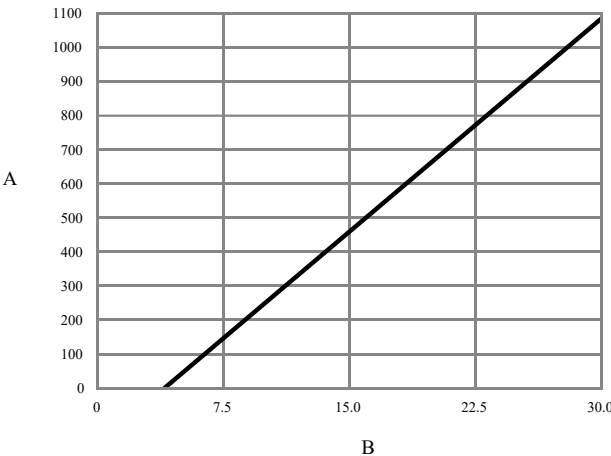
Wire to the appropriate output terminal and pins.

**Figure 4-7: mA/HART output wiring (externally powered)**



- A. mA/HART output
- B. 5–30 VDC (maximum)
- C. 250–600  $\Omega$  resistance (see [Figure 4-8](#) for maximum loop resistance)
- D. HART device

**Figure 4-8: Externally-powered mA/HART output: maximum loop resistance**



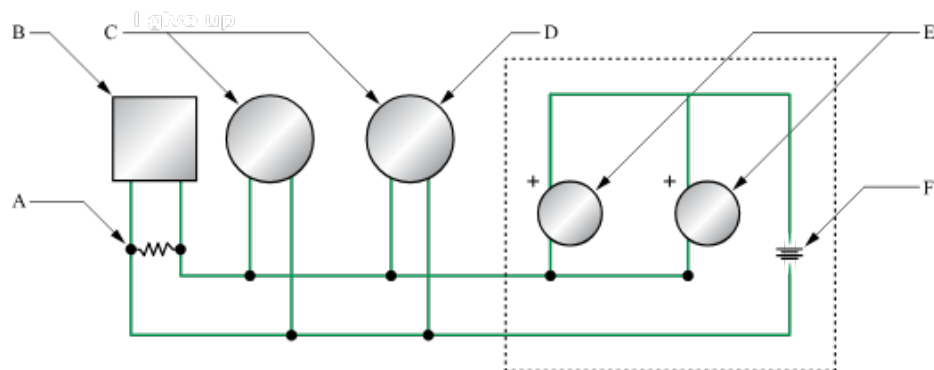
- A. Maximum resistance ( $\Omega$ )
- B. External supply voltage (V)

### 4.4.3 Wire the mA/HART® multidrop installation (internally or externally powered)

#### Procedure

See the [Figure 4-9](#) for information on wiring a mA/HART multidrop installation.

**Figure 4-9: mA/HART multidrop wiring**



- A. 250–600  $\Omega$  resistance
- B. HART-compatible host or controller
- C. HART-compatible transmitter (internally powered)
- D. Micro Motion 5700 transmitter (internally powered) mA/HART connections
- E. SMART FAMILY™ transmitters
- F. 24 VDC loop power supply required for external transmitter

## 4.5 Wire the frequency output

Use this section to wire the frequency output in explosion-proof, nonincendive, or nonhazardous installations.

#### Important

Meter installation and wiring should be performed only by suitably-trained personnel.

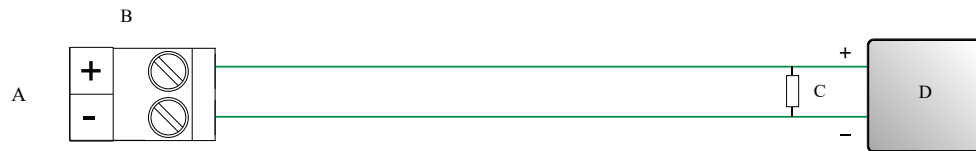
### 4.5.1 Wire the frequency output (internally powered)

Use this procedure to wire the internally-powered frequency output for Channel B or C.

#### Procedure

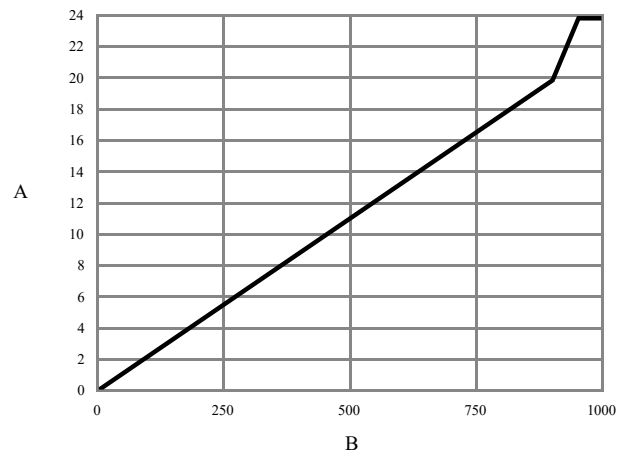
Wire to the appropriate output terminal and pins.

**Figure 4-10: Frequency output wiring (internally powered)**



- A. Frequency output
- B. Channel B or C
- C. See [Figure 4-11](#) for output amplitude versus load resistance
- D. Counter

**Figure 4-11: Internally powered frequency output: output amplitude versus load resistance [24 VDC (Nom) open circuit]**



- A. Output amplitude (V)
- B. Load resistor (Ω)

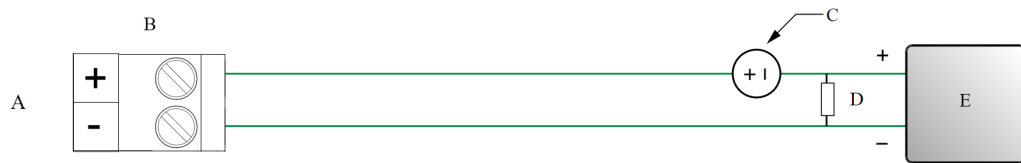
## 4.5.2 Wire the frequency output (externally powered)

Use this procedure to wire the externally-powered frequency output for Channel B or C.

### Procedure

Wire to the appropriate output terminal and pins.

**Figure 4-12: Frequency output wiring (externally powered)**



- A. Frequency output
- B. Channel B or C
- C. 5–30 VDC (maximum)
- D. Current limiting resistor. Close resistor to limit current below 500mA (maximum).  
 $\text{Current} = C (\text{VDC}) / D (\text{ohms})$ .
- E. Counter

### 4.5.3 Wire the frequency output (internally powered) (Channel D)

#### Procedure

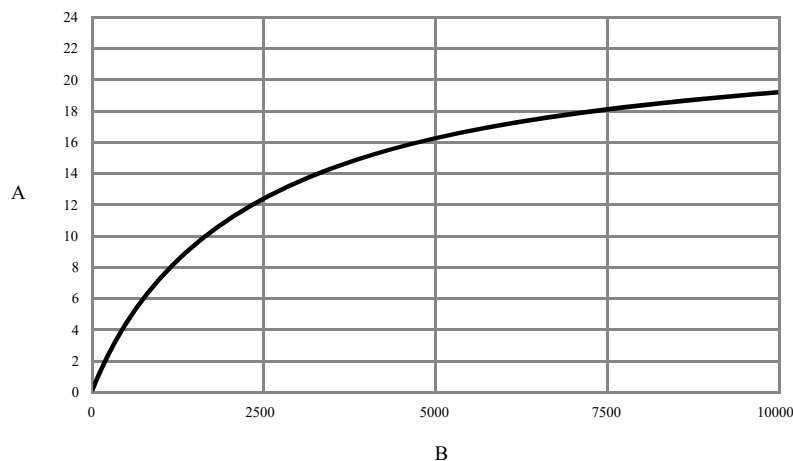
Wire to the appropriate output terminal and pins.

**Figure 4-13: Frequency output wiring (internally powered)**



- A. Frequency output
- B. See [Figure 4-14](#) for output amplitude versus load resistance
- C. Counter

**Figure 4-14: Internally powered frequency output: output amplitude versus load resistance [24 VDC (Nom) open circuit]**



- A. Output amplitude (V)  
B. Load resistor (Ω)

## 4.5.4 Wire the frequency output (externally powered Channel D)

### Procedure

Wire to the appropriate output terminal and pins.

**Figure 4-15: Frequency output wiring (externally powered)**



- A. Frequency output  
B. 3–30 VDC (maximum)  
C. 500 mA current (maximum)  
D. Signal device

## 4.6 Wire the discrete output

Use this section to wire the discrete output in explosion-proof, nonincendive, or nonhazardous installations.

### Important

Meter installation and wiring should be performed only by suitably-trained personnel.

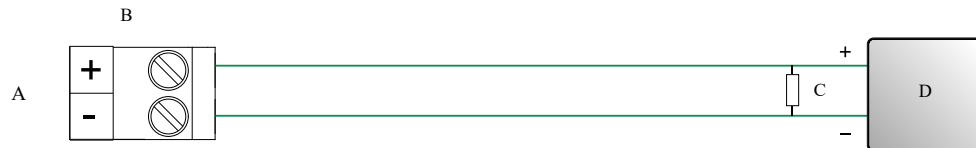
## 4.6.1 Wire the discrete output (internally powered)

Use this procedure to wire the internally-powered discrete output for Channel B or C.

### Procedure

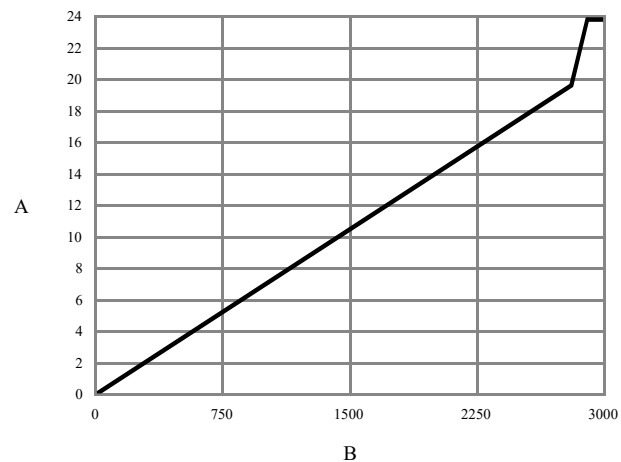
Wire to the appropriate output terminal and pins.

**Figure 4-16: Discrete output wiring (internally powered)**



- A. Discrete output
- B. See [Figure 4-17](#) for output amplitude versus load resistance
- C. Counter

**Figure 4-17: Internally powered discrete output: output amplitude versus load resistance [24 VDC (Nom) open circuit]**



- A. Output amplitude (V)
- B. Load resistor (Ω)

## 4.6.2 Wire the discrete output (externally powered)

Use this procedure to wire the externally-powered discrete output for Channel B or C.

### Procedure

Wire to the appropriate output terminal and pins.



**Figure 4-18: Discrete output wiring (externally powered)**



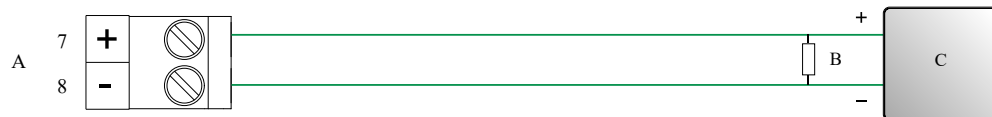
- A. Discrete output
- B. 3–30 VDC (maximum)
- C. 500 mA current (maximum)
- D. Counter

### 4.6.3 Wire the discrete output (internally powered Channel D)

#### Procedure

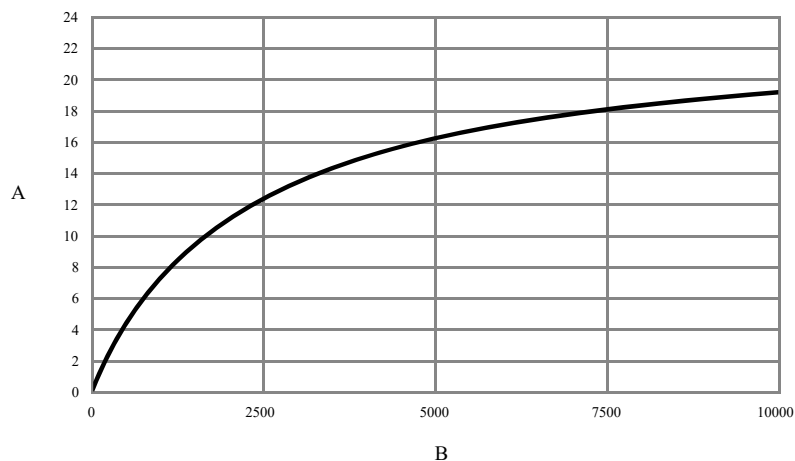
Wire to the appropriate output terminal and pins.

**Figure 4-19: Discrete output wiring (internally powered)**



- A. Discrete output
- B. See [Figure 4-20](#) for output amplitude versus load resistance
- C. Counter

**Figure 4-20: Internally powered discrete output: output amplitude versus load resistance [24 VDC (Nom) open circuit]**



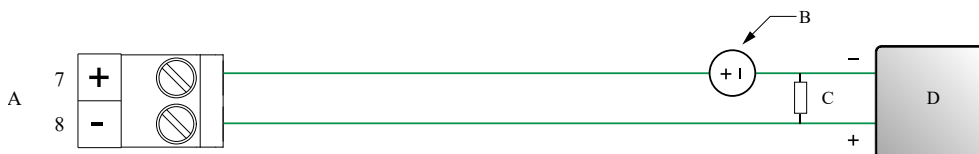
- A. Output amplitude (V)  
B. Load resistor (Ω)

#### 4.6.4 Wire the discrete output (externally powered Channel D)

##### Procedure

Wire to the appropriate output terminal and pins.

**Figure 4-21: Discrete output wiring (externally powered)**



- A. Discrete output  
B. 3–30 VDC (maximum)  
C. 500 mA current (maximum)  
D. Signal device

## 4.7 Wire the RS-485 output

Use this section to wire the RS-485 output in explosion-proof, nonincendive, or nonhazardous installations.

##### Procedure

Wire to the appropriate output terminal and pins.

**Figure 4-22: RS-485 output wiring**



- A. RS-485 output
- B. RS-485/*A*
- C. RS-485/*B*

**Note**

The transmitter does not provide any RS-485 termination resistance.

## 4.8 Wire the mA input

Use this section to wire the mA input in explosion-proof, nonincendive, or nonhazardous installations.

**Important**

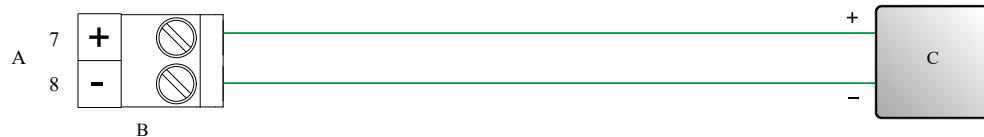
Meter installation and wiring should be performed only by suitably-trained personnel.

### 4.8.1 Wire the mA input (internally powered)

**Procedure**

Wire to the appropriate input terminal and pins.

**Figure 4-23: mA input wiring (internally powered)**



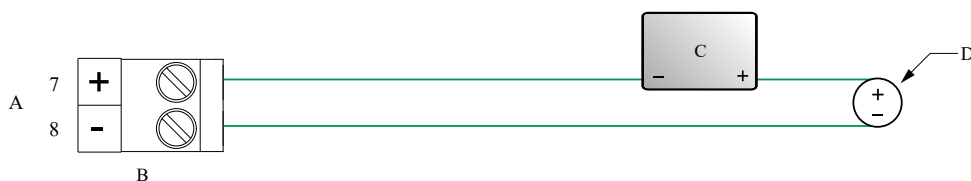
- A. mA input
- B. 100  $\Omega$  input resistance at Channel D
- C. 4–20 mA input device

### 4.8.2 Wire the mA input (externally powered)

**Procedure**

Wire to the appropriate input terminal and pins.

**Figure 4-24: mA input wiring (externally powered)**



- A. mA input
- B. 100  $\Omega$  input resistance at Channel D
- C. 4–20 mA input device
- D. 30 VDC (maximum)

## 4.9 Wire the discrete input

Use this section to wire the discrete input in explosion-proof, nonincendive, or nonhazardous installations.

### Important

Meter installation and wiring should be performed only by suitably-trained personnel.

### 4.9.1 Wire the discrete input (internally powered)

#### Procedure

Wire to the appropriate input terminal and pins.

**Figure 4-25: Discrete input wiring (internally powered)**



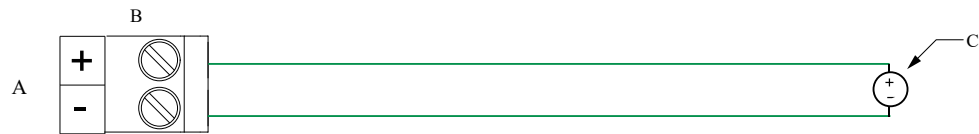
- A. Discrete input
- B. Switch

### 4.9.2 Wire the discrete input (externally powered)

#### Procedure

Wire to the appropriate input terminal and pins.

Figure 4-26: Discrete input wiring (externally powered)



- A. Discrete input
- B. Channel C or D
- C. 30 VDC (maximum)

**Note**

- Maximum positive threshold is 3 VDC.
- Minimum negative threshold is 0.6 VDC.

## 4.10 Wire the frequency input

Use this section to wire the frequency input in explosion-proof, nonincendive, or nonhazardous installations.

**Important**

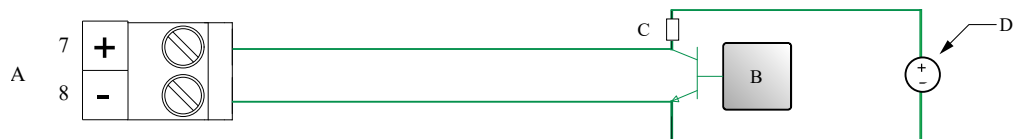
Meter installation and wiring should be performed only by suitably-trained personnel.

### 4.10.1 Wire the frequency input (internally powered)

**Procedure**

Wire to the appropriate input terminal and pins.

Figure 4-27: Frequency input wiring (internally powered)



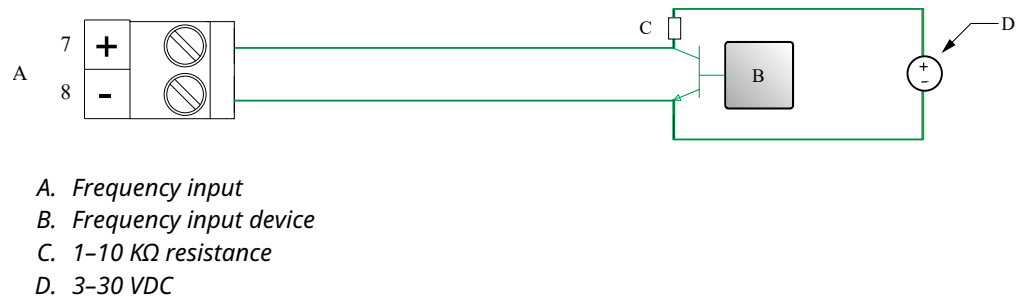
- A. Frequency input
- B. Frequency input device
- C. (Optional) 1–10 K $\Omega$  resistor/open collector
- D. (Optional) 3–30 VDC

### 4.10.2 Wire the frequency input (externally powered)

**Procedure**

Wire to the appropriate input terminal and pins.

Figure 4-28: Frequency input wiring (externally powered)



## 4.11 Wire Channels A and D for Safety Instrumented Systems (SIS) applications

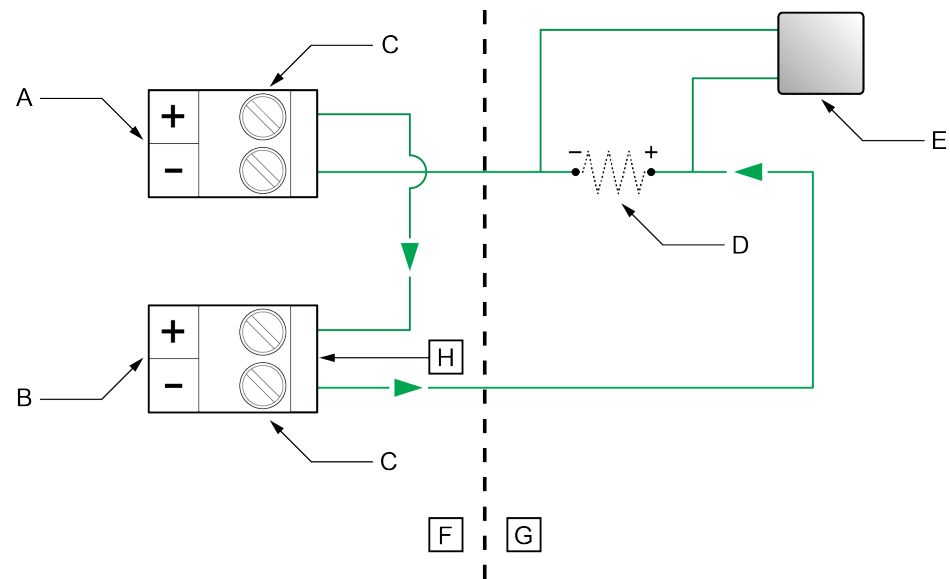
Use this procedure to wire Channels A and D for SIS applications.

### Procedure

Use one of the following power options:

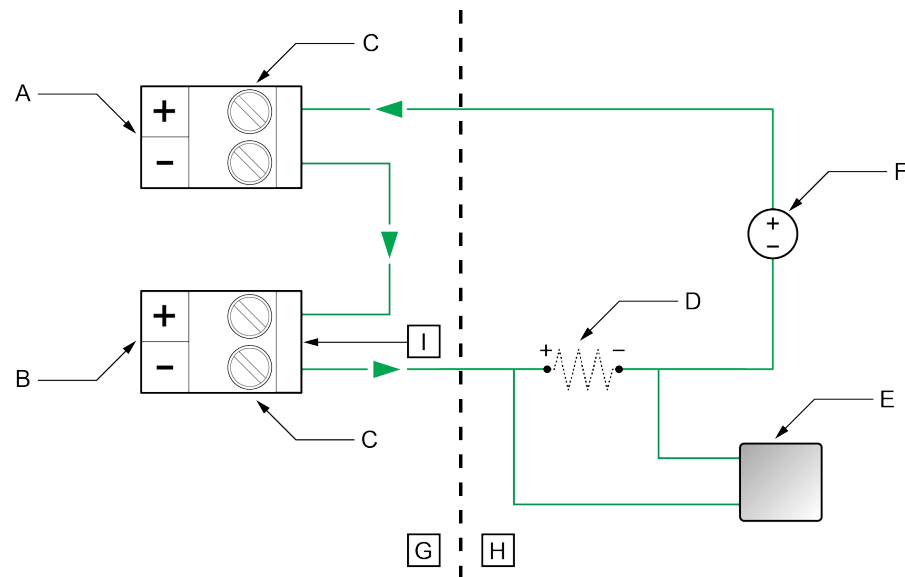
- Channel A active (internal) power and Channel D passive (external) power
- Channel A passive (external) power and Channel D passive (external) power

**Figure 4-29: Channel A active (internal) and Channel D passive (external) power**



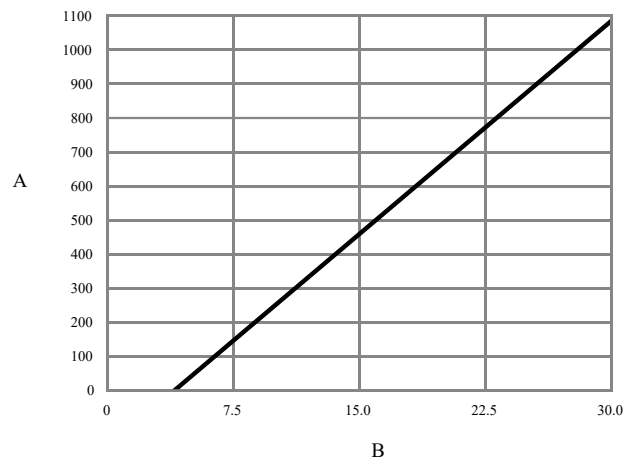
- A. Channel A mA output
- B. Channel D mA input
- C. Terminals
- D. 820 ohm maximum loop resistance including 100 ohms (H) for mA input (250–600 ohm for HART communications)
- E. Signal device
- F. Terminal compartment
- G. External to the 5700
- H. 100 ohm input resistance

**Figure 4-30: Channel A passive (external) and Channel D passive (external) power**



- A. Channel A mA output
- B. Channel D mA input
- C. Terminals
- D. Maximum loop resistance including 100 ohms (I) for mA input — see [Figure 4-31](#).
- E. Signal device
- F. 5–30 VDC (maximum)
- G. Terminal compartment
- H. External to the 5700
- I. 100 ohm input resistance

**Figure 4-31: Externally-powered mA/HART output: maximum loop resistance**



- A. Maximum resistance ( $\Omega$ )
- B. External supply voltage (V)



---

**Note**

The calculation for loop resistance must include 100 ohms for the mA Input.

---

**Postrequisites**

To configure your system for SIS applications, see the *Coriolis Flow Meter with Micro Motion 5700 Transmitters Safety Manual for Safety Instrumented Systems (SIS)* and the *Micro Motion 5700 Transmitters with Configurable Inputs and Outputs: Configuration and Use Manual*.



## 5 Wiring the power supply

You can install a user-supplied switch in the power supply line.

---

### Important

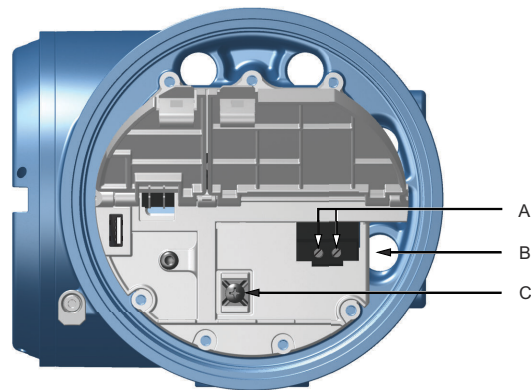
For compliance with the Low Voltage Directive 2014/35/EU (European installations), verify that the transmitter is located in close proximity to a switch.

---

### Procedure

1. Remove the wiring access cover.
  2. Open the **Power** warning flap to locate the power terminals.
- 

**Figure 5-1: Location of power supply wiring terminals and equipment ground**



- A. Power supply wiring terminals (+ and -)
  - B. Conduit connection for power supply wiring
  - C. Equipment ground
- 

3. Connect the power supply wires.
    - For DC power: connect to terminals + and -.
    - For AC power: connect to terminals L/L1 (line) and N/L2 (neutral).
- 

### NOTICE

Do not use the conduit specified for power supply wires for input/output wiring (see [Figure 5-1](#)) to avoid pinched wires when the cover is closed.

---

4. Tighten the two screws holding the power connector in place.
5. Ground the power supply using the equipment ground, also under the **Power** warning flap.



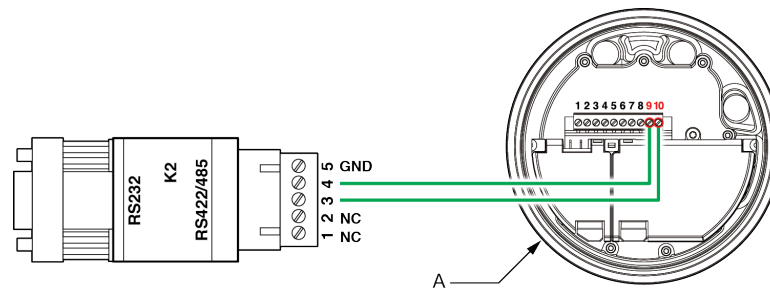
## 6 Wire the printer

## Procedure

Wire the RS-232-RS-485 adapter terminals to the transmitter terminals.

Converter	Terminals
K2 ADE	<ul style="list-style-type: none"> <li>Wire the K2 ADE terminal 1 to Channel E, RS-485B, terminal 10</li> <li>Wire the K2 ADE terminal 2 to Channel E, RS-485A, terminal 9</li> </ul>
K2	<ul style="list-style-type: none"> <li>Wire the K2 terminal 3 to Channel E, RS-485B, terminal 10</li> <li>Wire the K2 terminal 4 to Channel E, RS-485A, terminal 9</li> </ul>

**Figure 6-1: Wiring between the K2 terminals to the transmitter terminals**



### A. Transmitter with end-cap removed

### Important

For a K2 ADE converter, use terminals 1 and 2 on the converter.


For more information, see RS-485/RS-232 adapter instructions supplied by the manufacturer.



## 7 Power up the transmitter

The transmitter must be powered up for all configuration and commissioning tasks, or for process measurement.

### Procedure

1.  **WARNING**  
If the transmitter is in a hazardous area, do not remove the housing cover while the transmitter is powered up. Failure to follow these instructions can cause an explosion resulting in injury or death.

Ensure that all transmitter and sensor covers and seals are closed.

2. Turn on the electrical power at the power supply.  
The transmitter will automatically perform diagnostic routines. The transmitter is self-switching and will automatically detect the supply voltage. When using DC power, a minimum of 1.5 amps of startup current is required. During this period, Alert 009 is active. The diagnostic routines should complete in approximately 30 seconds. The status LED will turn green and begin to flash when the startup diagnostics are complete. If the status LED exhibits different behavior, an alert is active.

### Postrequisites

Although the sensor is ready to receive process fluid shortly after power-up, the electronics can take up to ten minutes to reach thermal equilibrium. Therefore, if this is the initial startup, or if power has been off long enough to allow components to reach ambient temperature, allow the electronics to warm up for approximately ten minutes before relying on process measurements. During this warm-up period, you may observe minor measurement instability or inaccuracy.





## 8 Configuring the transmitter with Guided Setup

At initial start-up of the transmitter, the guided configuration screen appears on the transmitter display. This tool guides you through basic configuration of the transmitter. The guided setup allows you to upload configuration files, set the transmitter display options, configure channels, and review sensor calibration data.

### Procedure

To access the guided setup screen from the display main menu, go to: **Startup Tasks** → **Guided Setup**.



## 9 Using the display controls

The transmitter display interface includes a display (LCD panel) and four optical switches – left, up, down, and right arrow keys – used to access the display menus and navigate the display screens.

### Procedure

1. To activate an optical switch, block the light by holding your thumb or finger in front of the opening.

You can activate the optical switch through the lens. Do not remove the transmitter housing cover.

### Important

The transmitter only detects one switch selection at a time. Be sure to place your thumb or finger directly over a single optical switch, and ensure no other switches are being obstructed.

**Figure 9-1: Proper finger positioning for activating an optical switch**



2. Use the arrow indicators on the display screen to identify which optical switch to use to navigate the screen (see examples 1 and 2).

### Important

When using the arrow keys, you must first activate the optical switch then release the same switch by removing your finger from the glass to move up, down, right, left or to make a selection. To enable auto-scroll when navigating up or down, activate the appropriate switch and continue to hold for one second. Release the switch when the desired selection is highlighted.

Figure 9-2: Example 1: Active arrow indicators on the transmitter display



Figure 9-3: Example 2: Active arrow indicators on the transmitter display



## 10 Available service port connection

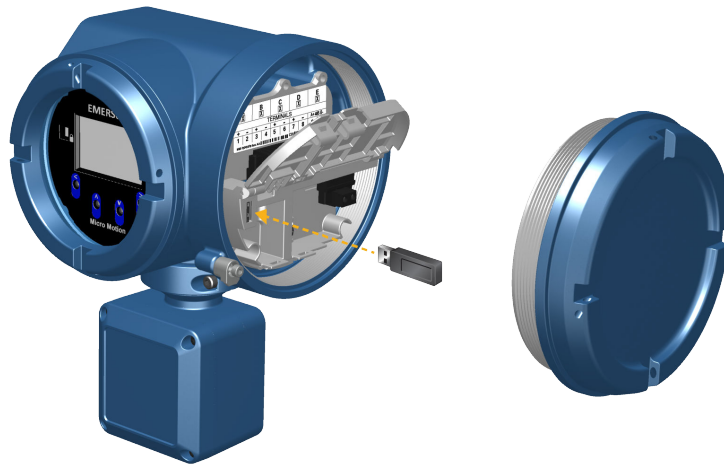
Use the service port connection to download or upload data from/to the transmitter.

To access the service port, you can use commonly-available USB hardware, such as a USB drive, or USB cable.



### WARNING

If the transmitter is in a hazardous area, do not remove the housing cover while the transmitter is powered up. Failure to follow these instructions can cause an explosion resulting in injury or death.



The service port connection is located under the **Service Port** warning flap at the wiring access points.



# A Wire the Micro Motion 5700 to the Micro Motion 3100 transmitter

## Prerequisites

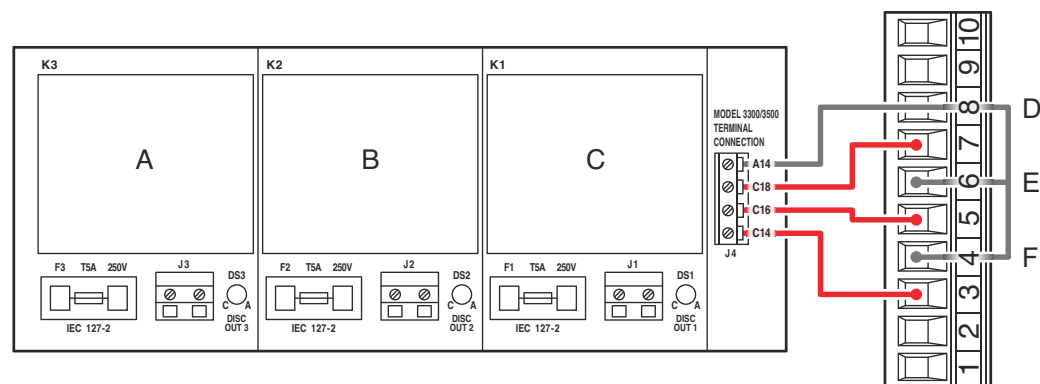
- Set up the transmitter channel configuration to DO before wiring.
- Use active high and internal power.
- Use wire size 24 AWG (0,25 mm<sup>2</sup>) to 16 AWG (1,5 mm<sup>2</sup>).

## Procedure

Tie the three ground pins of the 5700 together and then land on A14 of the 3100. The ground pins are even numbers: 4, 6, and 8.

Example (see the following figure): Use relay 1 (C) and 2 (B) with Channels B and C, then connect terminal 2 and 4 together from 5700 and land on A14.

**Figure A-1: 5700 to 3100 - screw-type or solder-tail connector**



This graphic sets Channel B, configured as digital output (DO) 1, to relay 1. If a different channel is assigned to DO, wire any DO to any relay.

- A. Relay 3, DO 3 pins 6 and 7, C18
- B. Relay 2, DO 2 pins 5 and 6, C16
- C. Relay 1, DO 1 pins 3 and 4, C14
- D. Channel D
- E. Channel C
- F. Channel B



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