Micro Motion™ 5700 Transmitters with Configurable Outputs

All Installation Types (Integral, 4-Wire, and 9-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 EU declaration of conformity, with all applicable European directives, and the complete ATEX Installation Drawings and Instructions are available on the internet at www.emerson.com or through your local Micro Motion support center.

Information affixed to equipment that complies with the Pressure Equipment Directive, can be found on the internet at www.emerson.com.

For hazardous installations in Europe, refer to standard EN 60079-14 if national standards do not apply.

Other information

Full product specifications can be found in the product data sheet. Troubleshooting information can be found in the configuration manual. Product data sheets and manuals are available from the Micro Motion web site at www.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. Micro Motion will not accept your returned equipment if you fail to follow Micro Motion procedures.

Return procedures and forms are available on our web support site at www.emerson.com, or by phoning the Micro Motion Customer Service department.

Emerson Flow customer service

Email:
- Worldwide: flow.support@emerson.com
- Asia-Pacific: APflow.support@emerson.com

Telephone:

<table>
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<th>North and South America</th>
<th>Europe and Middle East</th>
<th>Asia Pacific</th>
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<td>Australia</td>
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<tr>
<td>Canada</td>
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<td>New Zealand</td>
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<td>UAE</td>
<td>800 0444 0684</td>
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</tbody>
</table>
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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 5700 transmitter. For information on full configuration, maintenance, troubleshooting, or service of the transmitter, see the 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.

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.

Physical access

NOTICE
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 www.emerson.com.

See any of the following documents for more information:

- Micro Motion 5700 Product Data Sheet
- Micro Motion 5700 Transmitters with Configurable Outputs: Configuration and Use Manual
• Coriolis Flowmeter with Micro Motion Model 5700 Transmitters Safety Manual for Safety Instrumented Systems (SIS)

• 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 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 I/O 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 or transmitter display do not point upward. Installing the transmitter with the conduit openings or transmitter display facing upward risks condensation moisture entering the transmitter housing, which could damage the transmitter.

    Following are examples of possible orientations for the transmitter.

<table>
<thead>
<tr>
<th>Preferred orientation</th>
<th>Alternate orientations</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Preferred orientation" /></td>
<td><img src="image2" alt="Alternate orientation" /></td>
</tr>
</tbody>
</table>

☐ 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):

<table>
<thead>
<tr>
<th>Variable</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tag</td>
<td></td>
</tr>
<tr>
<td>Mass flow units</td>
<td></td>
</tr>
<tr>
<td>Volume flow units</td>
<td></td>
</tr>
<tr>
<td>Density units</td>
<td></td>
</tr>
<tr>
<td>Temperature units</td>
<td></td>
</tr>
<tr>
<td><strong>Channel configuration</strong></td>
<td></td>
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<tr>
<td>mA Outputs 1</td>
<td>— Power (Internal or External):</td>
</tr>
<tr>
<td></td>
<td>— Source:</td>
</tr>
<tr>
<td></td>
<td>— Scaling (LRV, URV):</td>
</tr>
<tr>
<td></td>
<td>— Fault Action:</td>
</tr>
<tr>
<td>mA Outputs 2 (optional)</td>
<td>— Power (Internal or External):</td>
</tr>
<tr>
<td></td>
<td>— Source:</td>
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<tr>
<td></td>
<td>— Scaling (LRV, URV):</td>
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<td></td>
<td>— Fault Action:</td>
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<tr>
<td>Frequency Outputs (optional)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>— Power (Internal or External):</td>
</tr>
<tr>
<td></td>
<td>— Source:</td>
</tr>
<tr>
<td></td>
<td>— Scaling (LRV, URV):</td>
</tr>
<tr>
<td></td>
<td>— Fault Action:</td>
</tr>
<tr>
<td></td>
<td>— Dual output:</td>
</tr>
<tr>
<td>Variable</td>
<td>Setting</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
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<tr>
<td>Discrete Outputs (optional)</td>
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<td>- Source:</td>
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<td>- Scaling (LRV, URV):</td>
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<td>- Fault Action:</td>
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<td>Discrete Input (optional)</td>
<td>- Power (Internal or External):</td>
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<tr>
<td></td>
<td>- Source:</td>
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<td></td>
<td>- Scaling (LRV, URV):</td>
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<td></td>
<td>- Fault Action:</td>
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<tr>
<td>RS-485</td>
<td>Address:</td>
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</table>

**Calibration parameters (for 9-wire installations only)**

<table>
<thead>
<tr>
<th>Flow calibration factor</th>
<th>FCF (Flow Cal or Flow Calibration Factor):</th>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Density calibration factors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>D1:</td>
<td></td>
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<tr>
<td>D2:</td>
<td></td>
</tr>
<tr>
<td>K1:</td>
<td></td>
</tr>
<tr>
<td>K2:</td>
<td></td>
</tr>
<tr>
<td>TC:</td>
<td></td>
</tr>
<tr>
<td>FD:</td>
<td></td>
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</table>

### 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 startup, 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 Ω/ft)
Typical power cable resistance at 68 °F (20.0 °C)

<table>
<thead>
<tr>
<th>Wire gauge</th>
<th>Resistance</th>
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<tbody>
<tr>
<td>14 AWG</td>
<td>0.0050 Ω/ft</td>
</tr>
<tr>
<td>16 AWG</td>
<td>0.0080 Ω/ft</td>
</tr>
<tr>
<td>18 AWG</td>
<td>0.0128 Ω/ft</td>
</tr>
<tr>
<td>20 AWG</td>
<td>0.0204 Ω/ft</td>
</tr>
<tr>
<td>2.5 mm²</td>
<td>0.0136 Ω/m</td>
</tr>
<tr>
<td>1.5 mm²</td>
<td>0.0228 Ω/m</td>
</tr>
<tr>
<td>1.0 mm²</td>
<td>0.0340 Ω/m</td>
</tr>
<tr>
<td>0.75 mm²</td>
<td>0.0460 Ω/m</td>
</tr>
<tr>
<td>0.50 mm²</td>
<td>0.0680 Ω/m</td>
</tr>
</tbody>
</table>

2.3.1 Maximum cable lengths between sensor and transmitter

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

<table>
<thead>
<tr>
<th>Cable type</th>
<th>Wire gauge</th>
<th>Maximum length</th>
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</thead>
<tbody>
<tr>
<td>Micro Motion 4-wire remote mount</td>
<td>Not applicable</td>
<td>• 1,000 ft (305 m) without Ex-approval</td>
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<td></td>
<td></td>
<td>• 500 ft (152 m) with IIC rated sensors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 1,000 ft (305 m) with IIB rated sensors</td>
</tr>
<tr>
<td>Micro Motion 9-wire remote mount</td>
<td>Not applicable</td>
<td>60 ft (18 m)</td>
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<tr>
<td>User-supplied 4-wire</td>
<td>VDC 22 AWG (0.326 mm²)</td>
<td>300 ft (91 m)</td>
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<td></td>
<td>VDC 20 AWG (0.518 mm²)</td>
<td>500 ft (152 m)</td>
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<td></td>
<td>VDC 18 AWG (0.823 mm²)</td>
<td>1,000 ft (305 m)</td>
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<td></td>
<td>RS-485 22 AWG (0.326 mm²) or larger</td>
<td>1,000 ft (305 m)</td>
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</table>
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 no need to connect wiring between the transmitter and the sensor.

3.2 Mounting transmitters

There are two options available for mounting transmitters:

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

3.2.1 Mounting the transmitter to a wall or flat surface

Prerequisites

- Micro Motion recommends 5/16-18 (8 mm–1.25) fasteners that can withstand the process environment. Micro Motion 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, 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).
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, attach the U-bolt mounting piece to the instrument pole.
3.3 Wire a remote-mount transmitter to the sensor

Use this procedure to wire a 4-wire or 9-wire remote-mount transmitter to the sensor.

Prerequisites

- Prepare the 4-wire cable as described in the sensor documentation.
• Prepare the 9-wire cable as described in the Micro Motion 9-Wire Flowmeter 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 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
Terminale 4-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 4-wire cable drain wires to the ground screw located inside the 5700 junction box.

- See Figure 3-10 for 4-wire terminal connections.
- See Figure 3-11 for 9-wire terminal connections.

Figure 3-10: 4-wire transmitter-to-sensor wiring connections

Figure 3-11: 9-wire transmitter-to-sensor wiring connections

Note
Connect the 4 drain wires in the 9-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 lb (1.58 N m) to 15 in lb (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

NOTICE
Improper grounding could cause inaccurate measurements or meter failure.

WARNING
Failure to comply with requirements for intrinsic safety in a hazardous area could result in an explosion causing death or serious injury.

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

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

• Use copper wire, 14 AWG (2.08 mm²) or larger wire size.
• Keep all ground leads as short as possible, less than 1 Ω impedance.
• Connect ground leads directly to earth, or follow plant standards.

Procedure

1. Ground the sensor according to the instructions in the sensor documentation.
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 side of the transmitter located 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: Rotation of the 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

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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

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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](image)

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: Rotation of the sensor wiring 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-attachment of the clamp**
4  Wiring the channels

4.1  Available channels

<table>
<thead>
<tr>
<th>Signal</th>
<th>Channel A</th>
<th>Channel B</th>
<th>Channel C</th>
<th>Channel D</th>
<th>Channel E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wiring terminals</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>mA Inputs and Outputs</td>
<td>mA Output 1 (HART)</td>
<td>mA Output 2</td>
<td>mA Output 3</td>
<td>mA Input</td>
<td>RS-485</td>
</tr>
<tr>
<td>Frequency Outputs</td>
<td>Frequency Output 2(1)</td>
<td>Frequency Output 1</td>
<td>Frequency Output 1</td>
<td>Frequency Output 2(1)</td>
<td></td>
</tr>
<tr>
<td>Discrete Outputs</td>
<td>Discrete Output 1</td>
<td>Discrete Output 2</td>
<td>Discrete Output 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discrete Inputs</td>
<td>Discrete Input 1</td>
<td>Discrete Input 2</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Frequency Inputs</td>
<td>Frequency Input</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(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 I/O wiring terminal block connectors.
2. 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**

![Activated channel identification diagram]

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

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

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

![Channel and wiring configurations label]

### 4.3 Wire the mA Output

Use this section to 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.
4.3.2 Wire the mA Output (externally powered)

Procedure

Wire to the appropriate output terminal and pins.

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
4.4 Wire the mA/HART Output

Use this section to 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 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 Ω resistance
C. HART device
4.4.2 Wire the mA/HART 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 Ω 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 (Ω)
B. External supply voltage (V)

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

Procedure
See the following figure for information on wiring a mA/HART multidrop installation.
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.
4.5.3 Wire the Frequency Output (internally powered) (Channel D)

Procedure
Wire to the appropriate output terminal and pins.

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. **Channel B or C**
C. See **Figure 4-17** for output amplitude versus load resistance
D. **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)**

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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. Channel B or C  
C. 3–30 VDC (maximum)  
D. 500 mA current (maximum)  
E. 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 Ω 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 Ω 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. Channel C or D  
C. 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)

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)

Note
A. Frequency Input
B. Frequency Input device
C. (Optional) 1–10 KΩ 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)

A. Frequency Input
B. Frequency Input device
C. 1–10 KΩ resistance
D. 3–30 VDC

4.11 Wire Channels A and D for SIS applications

Use this procedure to wire Channels A and D for Safety Instrumented Systems (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 (Ω)
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 Flowmeter with Micro Motion Model 5700 Transmitters Safety Manual for Safety Instrumented Systems (SIS)* and the *Micro Motion 5700 Transmitters with Configurable 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), a switch in close proximity to the transmitter is required.

**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](image)

A. Power supply wiring terminals (+ and -)
B. 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).
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 RS232-RS485 adapter terminals to the 5700 terminals.

<table>
<thead>
<tr>
<th>Converter</th>
<th>Terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>K2 ADE</td>
<td>• Wire the K2 ADE terminal 1 to Channel E, RS-485B, terminal 10</td>
</tr>
<tr>
<td></td>
<td>• Wire the K2 ADE terminal 2 to Channel E, RS-485A, terminal 9</td>
</tr>
<tr>
<td>K2</td>
<td>• Wire the K2 terminal 3 to Channel E, RS-485B, terminal 10</td>
</tr>
<tr>
<td></td>
<td>• Wire the K2 terminal 4 to Channel E, RS-485A, terminal 9</td>
</tr>
</tbody>
</table>

Figure 6-1: Wiring between the K2 terminals to the 5700 terminals

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**Important**

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

For more information, see RS485/RS232 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 10 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 10 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 startup 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
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 5700 to 3100 transmitter connections

Use this section as a reference when wiring a 5700 transmitter to a 3100 transmitter.

The following graphic sets Channel B, configured as DO1, to relay 1. If a different channel is assigned to DO, wire any DO to any relay.

- Set up the transmitter channel configuration to DO before wiring.
- Use active high and internal power.
- 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.

- Land each positive power terminal on C14, C16, and C18.

Example: Using the same example as above, land 1 (Channel B) on C14 for relay 1, and 3 (Channel C) on C16 for relay 2.

- Use wire size 24 AWG (0.25 mm²) to 16 AWG (1.5 mm²).

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

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