Quick Reference Guide
P/N 20001008, Rev. B
August 2005

Model 3700 Transmitter (MVD) or Model 3350 Peripheral

Installation Instructions for Field-Mount

For technical support, phone the support center nearest you:

- In the U.S.A., phone 1-800-522-MASS (1-800-522-6277)
- In Canada and Latin America, phone (303) 527-5200
- In Asia, phone (65) 6770-8155
- In the U.K., phone 0800 - 966 180 (toll-free)
- Outside the U.K., phone +31 (0) 318 495 670

Micro Motion® EMERSON. Process Management

BEFORE YOU BEGIN

This quick reference guide explains basic installation guidelines for installing the Micro Motion® Model 3350/3700 MVD applications platform.

For information on I.S. applications, refer to Micro Motion approval documentation.

For complete instructions about configuration, maintenance, and service, refer to the instruction manual shipped with the transmitter.

⚠ WARNING

Improper installation in a hazardous area can cause an explosion.

For information about hazardous applications, refer to Micro Motion approval documentation, shipped with the transmitter or available from the Micro Motion web site.

⚠ WARNING

Hazardous voltage can cause severe injury or death.

Install transmitter and complete all wiring before supplying power.

⚠ CAUTION

Improper installation could cause measurement error or meter failure.

Follow all instructions to ensure transmitter will operate correctly.

European installations

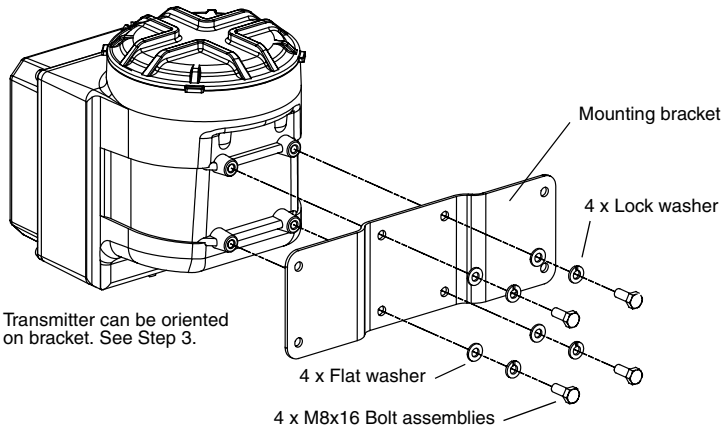
This Micro Motion product complies with all applicable European directives when properly installed in accordance with the instructions in this quick reference guide. Refer to the EC declaration of conformity for directives that apply to this product.

The EC declaration of conformity, with all applicable European directives, and the complete *ATEX Installation Drawings and Instructions* are available on the web at www.micromotion.com/atex or through your local Micro Motion support center.

Installation kit

The Model 3350/3700 installation kit includes the parts shown in Figure 1.

Figure 1. Field-mount installation kit



STEP 1. Choosing a location

Choose a location for the transmitter based on the requirements described below.

⚠ WARNING

Improper installation in a hazardous area could cause an explosion.

Install the transmitter in an area that is compatible with the rating on the approvals tag. See Figure 3.

Environmental requirements

Install the Model 3350/3700 according to specified limits:

- Ambient temperature: –4 to +140 °F (–20 to +60 °C)

Dimensions

See Figures 2, 3, and 4 for Model 3350/3700 dimensions.

Visibility of tags

To ensure personal and system safety, all tags attached to the housing must remain visible. Clean them as often as necessary. Replace tags that are damaged, missing, or worn. See Figure 3 for location of approvals tag.

Figure 2. Dimensions – face view

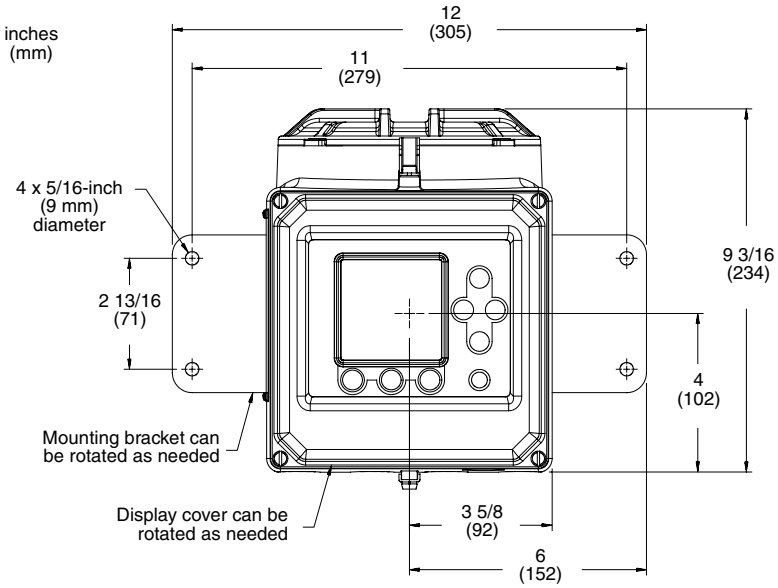


Figure 3. Dimensions – top view

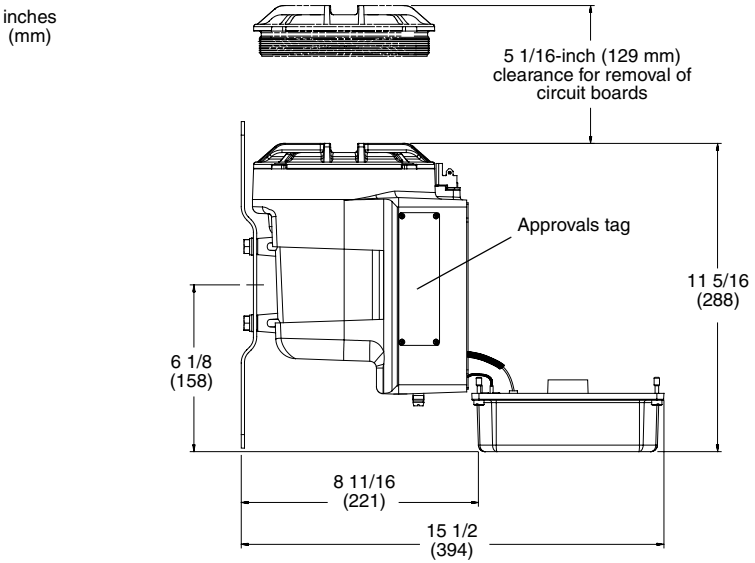
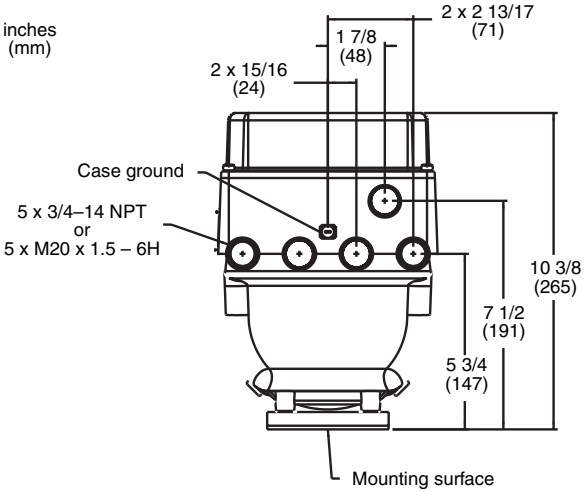


Figure 4. Dimensions – conduit openings view



Cable lengths

Maximum cable length from the sensor to the Model 3700 transmitter depends on the installation type and cable type:

- 4-wire remote transmitter: see Figure 5, then refer to Table 1 for maximum length of the 4-wire cable.
- Remote core processor with remote transmitter: see Figure 6, then refer to Table 1 for maximum length of the 4-wire cable and the 9-wire cable.

If you are installing the Model 3350 applications peripheral in combination with a transmitter, the maximum cable length from the transmitter's frequency output to the Model 3350's frequency input is 500 feet (150 meters).

Figure 5. 4-wire remote transmitter

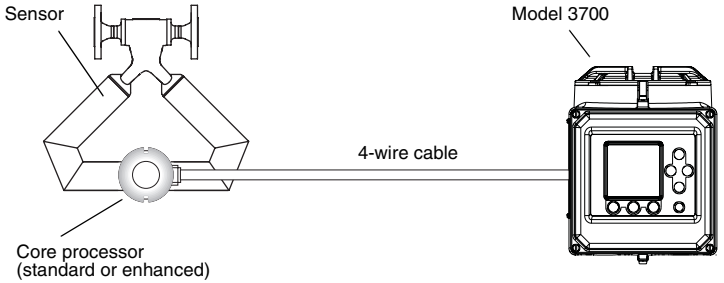


Figure 6. Remote core processor with remote transmitter

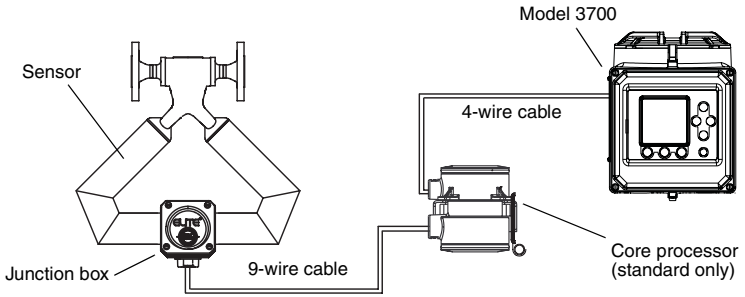


Table 1. Maximum cable lengths

Cable type	Wire gauge	Maximum length
Micro Motion 9-wire	Not applicable	60 feet (20 meters)
Micro Motion 4-wire	Not applicable	1000 feet (300 meters)
User-supplied 4-wire		
• Power wires (VDC)	22 AWG (0,35 mm^2)	300 feet (90 meters)
	20 AWG (0,5 mm^2)	500 feet (150 meters)
	18 AWG (0,8 mm^2)	1000 feet (300 meters)
• Signal wires (RS-485)	22 AWG (0,35 mm^2) or larger	1000 feet (300 meters)
Cable from transmitter's FO to Model 3350's FI[(1)]	Not applicable	500 feet (150 meters)

(1) Applies only to the Model 3300 applications peripheral when receiving frequency input from a remote Micro Motion transmitter such as an IFT9701 or RFT9739.

STEP 2. Preparing conduit openings for ATEX Zone 1

If the Model 3350/3700 carries an ATEX Zone 1 approval:

1. Remove thread protectors from conduit openings (see Figure 7).
2. Install factory-supplied cable glands or user-supplied EExe cable entry devices in conduit openings that are in use.
3. Install EExe plugs in conduit openings that are not in use.

STEP 3. Orienting the Model 3350/3700 (optional)

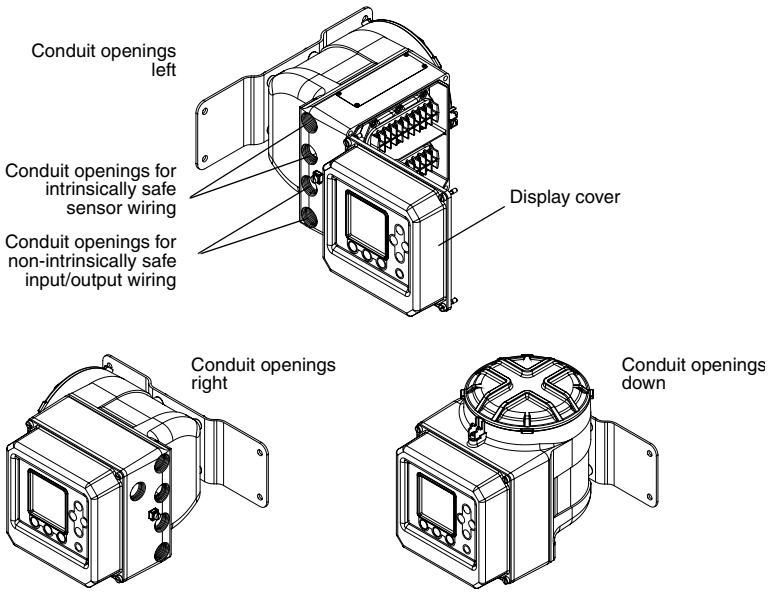
The Model 3350/3700 can be oriented on the mounting bracket as needed, and the display cover can be rotated on the applications platform. Figure 7 provides orientation examples.

To orient the Model 3350/3700:

1. Use the four supplied mounting bolt assemblies.
2. Using a 13 mm hex wrench, install the bolt assemblies to 12 ft-lb (16 Nm) of torque.

To rotate the display cover, if needed, see the transmitter installation manual.

Figure 7. Orientation examples



STEP 4. Mounting the applications platform

For flat-surface mounting, see Figure 8.

For pole mounting, see Figure 9.

Figure 8. Mounting to a flat surface

- Mount all four bolts to the same surface.
- If mounting surface is not flat, use washers to shim the bracket.
- Do not secure bolts to separate beams, girders, wall studs, etc., which can move independently.

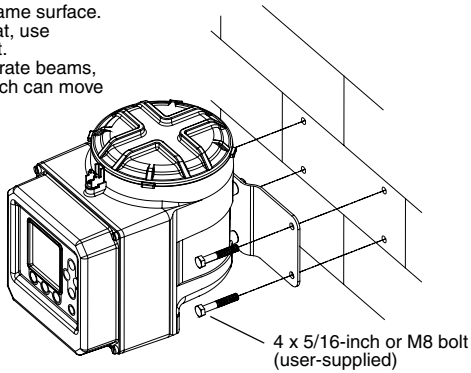
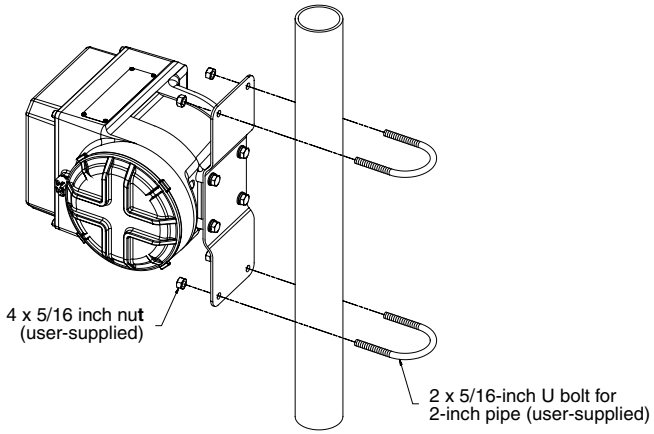


Figure 9. Mounting to a pole

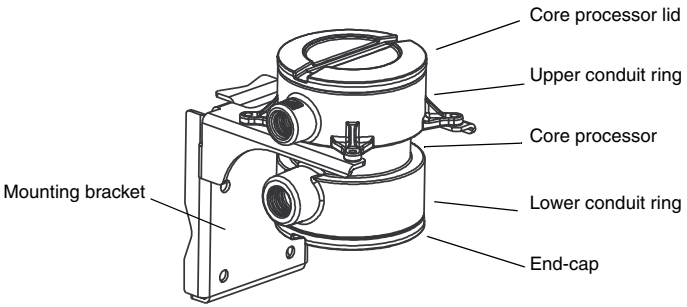


STEP 5. Mounting the core processor

This step is required only for remote core processor with remote transmitter installations (see Figure 6). If you have a 4-wire remote installation, go to Step 6.

Figure 10 shows the remote core processor and mounting bracket. Using the mounting bracket, mount the core processor in a location compatible with the cable length requirements discussed in Step 1.

Figure 10. Remote core processor components



STEP 6. Connecting input and output wiring

Figure 11 shows the location of the wiring terminals on the Model 3350/3700.

1. Using a flat-head screwdriver, loosen the four captive screws that secure the display cover to the housing.
2. Connect input/output wiring to the appropriate terminals on the gray terminal block. Refer to Table 2 and to the label attached to the back of the display cover (shown in Figure 12).
   - Use 22 to 16 AWG (0,35 to 1,5 mm^2) twisted-pair shielded wire.
   - Ground the cable shields at a single point only.
   - If more than two wires must be connected to a single terminal, use a butt splice or spade lug to connect the wires.

Figure 11. Wiring terminals

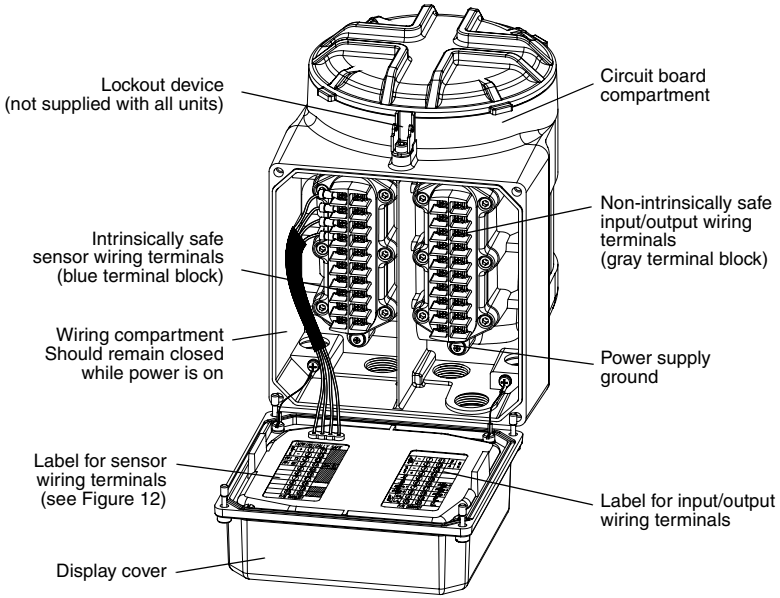
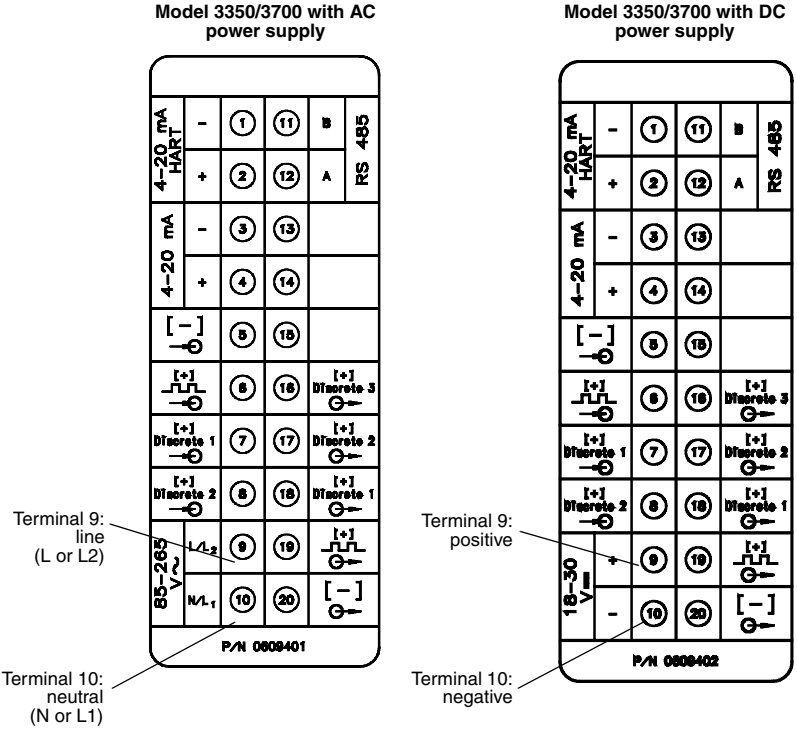


Table 2. Input/output wiring terminals

Terminal number		Designation
1 –	2 +	Primary 4–20 mA output / HART
3 –	4 +	Secondary 4–20 mA output
5 –	6 +	Frequency input
5 –	7 +	Discrete input 1
5 –	8 +	Discrete input 2
11 (B line)	12 (A line)	RS-485 output
20 –	16 +	Discrete output 3
20 –	17 +	Discrete output 2
20 –	18 +	Discrete output 1
20 –	19 +	Frequency output

Figure 12. Wiring terminal labels



STEP 7. Connecting the Model 3700 to the sensor

If you are installing the Model 3350 applications peripheral, this step is not required. Go to Step 8.

To connect the Model 3700 transmitter to a Micro Motion sensor, follow the instructions in this section.

Installation options

The Model 3700 can be wired to the sensor in either of the following configurations:

- 4-wire remote transmitter (requires a 4-wire cable; see Figure 5 and *Wiring instructions for 4-wire remote installations*)
- Remote core processor with remote transmitter (requires both a 4-wire and a 9-wire cable; see Figure 6 and *Wiring instructions for remote core processor with remote transmitter*)

Wiring instructions for 4-wire remote installations

1. Prepare the cable as described in the sensor documentation.
2. Connect the cable to the core processor as described in the sensor documentation.
3. To connect the cable to the transmitter:
   a. Identify the wires in the 4-wire cable. The 4-wire cable supplied by Micro Motion consists of one pair of 18 AWG (0,75 mm^2) wires (red and black), which should be used for the VDC connection, and one pair of 22 AWG (0,35 mm^2) wire (green and white), which should be used for the RS-485 connection.
   b. Connect the four wires from the core processor to the appropriate terminals on the transmitter. See Table 3 and Figure 13 (standard core processor) or Figure 14 (enhanced core processor). No bare wires should remain exposed. Do not ground the shield or drain wire(s) at the transmitter.

Table 3. Transmitter terminals for 4-wire cable

Terminal	Wire color[1]	Function
13	Red	VDC+
14	Black	VDC–
15	White	RS-485A
16	Green	RS-485B

(1) Wire colors apply only to 4-wire cable supplied by Micro Motion.

Figure 13. 4-wire cable to Model 3700 – standard core processor

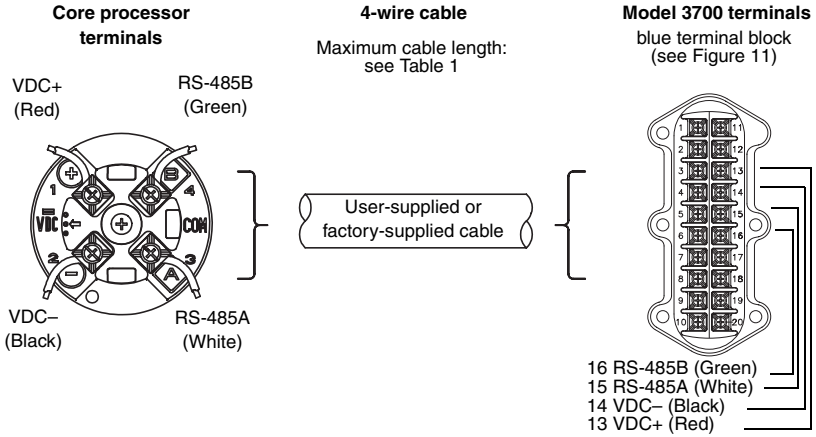
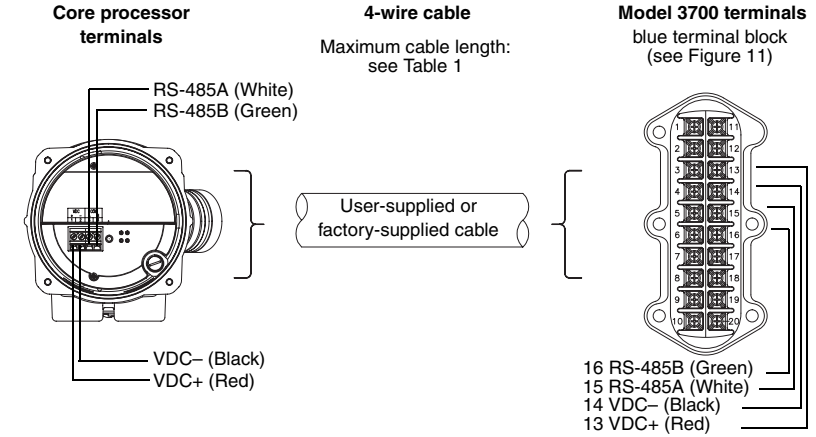


Figure 14. 4-wire cable to Model 3700 – enhanced core processor



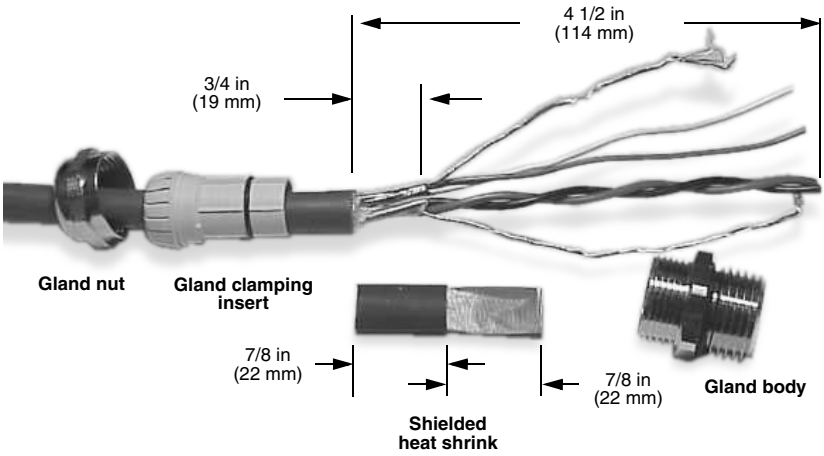
Wiring instructions for remote core processor with remote transmitter

There are two phases to this procedure:

- Wiring the remote core processor to the transmitter
- Wiring the sensor to the remote core processor

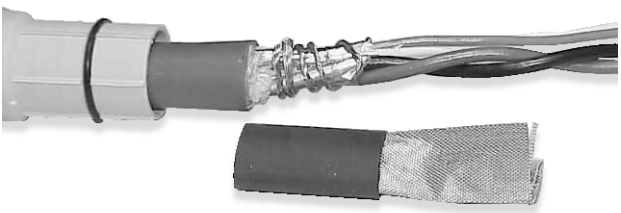
To wire the remote core processor to the transmitter:

1. Use one of the following methods to shield the wiring:
    - If you are installing unshielded wiring in continuous metallic conduit that provides 360° termination shielding for the enclosed wiring, go to Step 6.
    - If you are installing a user-supplied cable gland with shielded cable or armored cable, terminate the shields in the cable gland. Terminate both the armored braid and the shield drain wires in the cable gland. Go to Step 6.
    - If you are installing a Micro Motion-supplied cable gland at the core processor housing:
        - If you are using shielded cable, prepare the cable and apply shielded heat shrink as described in Step 4. The shielded heat shrink provides a shield termination suitable for use in the gland when using cable whose shield consists of foil and not a braid. Go to Step 2.
        - If you are using armored cable, prepare the cable as described in Step 4, but do not apply heat shrink – omit Steps 4d, e, f, and g. Go to Step 2.
2. Identify the components shown in Figure 10. Remove the core processor lid.
3. Slide the gland nut and the clamping insert over the cable.



4. For connection at the core processor housing, prepare shielded cable as follows (for armored cable, omit steps d, e, f, g):
   a. Strip 4 1/2 inches (114 mm) of cable jacket.
   b. Remove the clear wrap that is inside the cable jacket, and remove the filler material between the wires.
   c. Remove the foil shield that is around the insulated wires, leaving 3/4 inch (19 mm) of foil or braid and drain wires exposed, and separate the wires.
   d. Wrap the shield drain wire(s) around the exposed foil twice. Cut off the excess wire.

Shield drain wire(s) wrapped twice around exposed shield foil

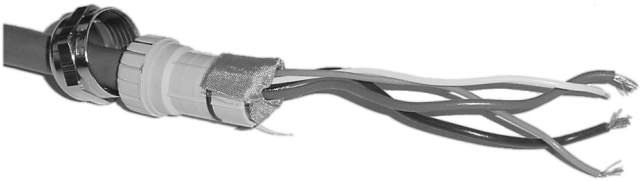


   e. Place the shielded heat shrink over the exposed shield drain wire(s). The tubing should completely cover the drain wires.
   f. Without burning the cable, apply heat (250 °F or 120 °C) to shrink the tubing.

Shielded heat shrink completely covers exposed drain wires

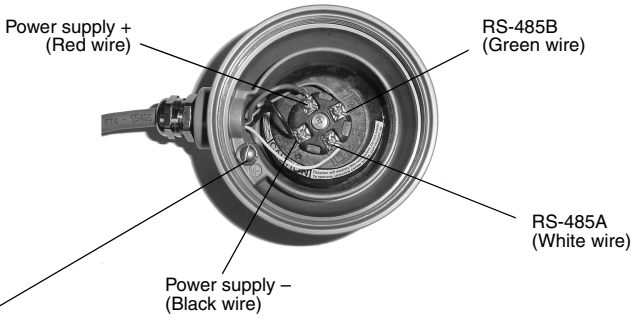
g. Position gland clamping insert so the interior end is flush with the heat shrink.

h. Fold the cloth shield or braid and drain wires over the clamping insert and approximately 1/8 inch (3 mm) past the O-ring.



i. Install the gland body into the core processor housing conduit opening.

5. Insert the wires through the gland body and assemble the gland by tightening the gland nut.
6. Identify the wires in the 4-wire cable. The 4-wire cable supplied by Micro Motion consists of one pair of 18 AWG (0,75 mm^2) wires (red and black), which should be used for the VDC connection, and one pair of 22 AWG (0,35 mm^2) wire (green and white), which should be used for the RS-485 connection. Connect the four wires to the numbered slots on the core processor.



Core processor housing internal ground screw

- For connections to earth ground (if core processor cannot be grounded via sensor piping and local codes require ground connections to be made internally)
- Do not connect shield drain wires to this terminal

7. Reinstall and tighten the core processor lid.

⚠ WARNING

Twisting the core processor will damage the sensor.

Do not twist the core processor.

8. To connect the cable to the transmitter, connect the four wires from the core processor to the appropriate terminals on the transmitter. See Table 3 and Figure 13. No bare wires should remain exposed. Do not ground the shield or drain wire(s) at the transmitter.

To wire the sensor to the remote core processor:

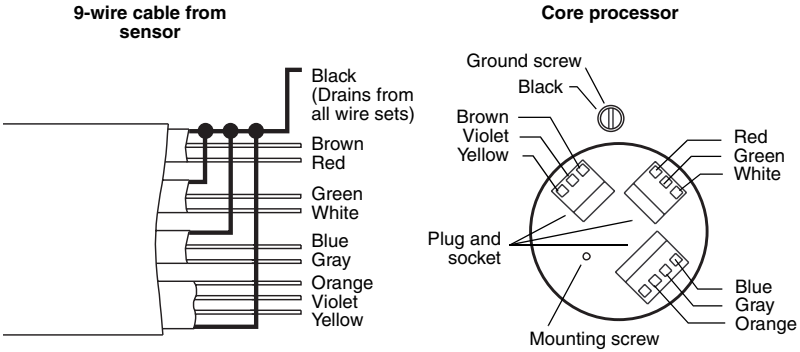
⚠ CAUTION

Allowing the shield drain wires to contact the sensor junction box can cause meter errors.

Do not allow the shield drain wires to contact the sensor junction box.

1. Refer to Micro Motion's *9-Wire Flowmeter Cable Preparation and Installation Guide* for instructions on cable shielding and preparation:
   - At the sensor end, follow the instructions for your cable type.
   - At the core processor end, follow the instructions for your cable type with an MVD transmitter.
2. To connect the wires, refer to Micro Motion's *9-Wire Flowmeter Cable Preparation and Installation Guide* and follow the instructions for your sensor with an MVD transmitter. Additional information for connecting the wires at the core processor is provided below:
   a. Identify the components shown in Figure 10.
   a. Remove the core processor's end-cap.
   b. Insert the 9-wire cable through the conduit opening.
   c. Connect the wires to the plugs supplied with the core processor.
   d. Insert the plugs into the sockets inside the lower conduit ring. See Figure 15.

Figure 15. 9-wire cable to core processor



3. Ground the cable. If using jacketed cable:
   a. Ground the shield drain wires (the black wire) only on the core processor end, by connecting it to the ground screw inside the lower conduit ring. Do not ground to the core processor's mounting screw. Do not ground the cable at the sensor junction box.

If using shielded or armored cable:

a. Ground the shield drain wires (the black wire) only on the core processor end, by connecting it to the ground screw inside the lower conduit ring. Do not ground to the core processor's mounting screw. Do not ground the cable at the sensor junction box.

b. Ground the cable braid on both ends, by terminating it inside the cable glands.

4. Ensure integrity of gaskets, grease all O-rings, then close the junction box housing and core processor end-cap, and tighten all screws.

⚠ CAUTION

Damaging the wires that connect the transmitter to the sensor can cause measurement error or meter failure.

To reduce the risk of measurement error or meter failure, when closing the housings on the sensor and core processor, make sure that the wires are not caught or pinched.

STEP 8. Connecting power supply wiring

⚠ CAUTION

Improper wiring installation can cause device failure or measurement error.

- To avoid device failure or measurement error, do not install power supply wiring in the same cable tray or conduit as input/output wiring.
- Shut off power supply before installing the applications platform.
- Make sure power supply voltage matches voltage that is indicated on power supply wiring terminals. See Figure 12.

Connect the Model 3350/3700 to a power supply as follows:

1. Use 18 to 12 AWG (0,75 to 4,0 mm^2) wire.
2. Using a flat-head screwdriver, loosen the captive screws that secure the display cover to the housing.
3. Ground the transmitter as follows:
    - Connect the ground wire to the green screw (power supply ground; see Figure 11).
    - Connect the power supply ground wire directly to earth ground.
    - Keep all ground leads as short as possible.
    - Ground wiring must have less than 1 ohm impedance.
4. Connect wires to terminals 9 and 10 on the gray terminal block (see Figures 11 and 12).
5. Close the display cover and tighten the screws.
6. A user-supplied switch may be installed in the power supply line. For compliance with low-voltage directive 73/23/EEC (European installations), a switch in close proximity to the Model 3350/3700 is required.

Visit us on the Internet at www.micromotion.com

Micro Motion Inc. USA
Worldwide Headquarters
7070 Winchester Circle
Boulder, Colorado 80301
T (303) 527-5200
(800) 522-6277
F (303) 530-8459

Micro Motion Europe
Emerson Process Management
Veenendaal
The Netherlands
T +31 (0) 318 495 670
F +31 (0) 318 495 689

Micro Motion Asia
Emerson Process Management
1 Pandan Crescent
Singapore 128461
Republic of Singapore
T (65) 6777-8211
F (65) 6770-8003

Micro Motion United Kingdom
Emerson Process Management Limited
Horsfield Way
Bredbury Industrial Estate
Stockport SK6 2SU U.K.
T 0800 966 180
F 0800 966 181

Micro Motion Japan
Emerson Process Management
Shinagawa NF Bldg. 5F
1-2-5, Higashi Shinagawa
Shinagawa-ku
Tokyo 140-0002 Japan
T (81) 3 5769-6803
F (81) 3 5769-6843

Micro Motion

EMERSON
Process Management