

Micro Motion® CNG050 Sensors



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 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 internet at www.micromotion.com/atex 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.micromotion.com/documentation.

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 transmitter configuration manual. Product data sheets and manuals are available from the Micro Motion web site at www.micromotion.com/documentation.

Return policy

Micro Motion procedures must be followed when returning equipment. These procedures ensure legal compliance with government transportation agencies and help provide a safe working environment for Micro Motion employees. Failure to follow Micro Motion procedures will result in your equipment being refused delivery.

Information on return procedures and forms is available on our web support system at www.micromotion.com, or by phoning the Micro Motion Customer Service department.

Micro Motion customer service

Location		Telephone number
U.S.A.		800-522-MASS (800-522-6277) (toll free)
Canada and Latin America		+1 303-527-5200 (U.S.A.)
Asia	Japan	3 5769-6803
	All other locations	+65 6777-8211 (Singapore)
Europe	U.K.	0870 240 1978 (toll-free)
	All other locations	+31 (0) 318 495 555 (The Netherlands)
Customers outside the U.S.A. can also send an email to flow.support@emerson.com .		

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1 Planning

Topics covered in this chapter:

- [Installation checklist](#)
- [Best practices](#)
- [Environmental limits](#)

1.1 Installation checklist

- ☐ Make sure that the hazardous area specified on the sensor approval tag is suitable for the environment in which the sensor is installed.
- ☐ Verify that the local ambient and process temperatures are within the limits of the sensor. See [Environmental limits](#).
- ☐ If your sensor has an integral transmitter, no wiring is required between the sensor and transmitter. Follow the wiring instructions in the transmitter installation manual for signal and power wiring.
- ☐ If your transmitter has remote-mounted electronics, follow the instructions in this manual for wiring between the sensor and the transmitter, and then follow the instructions in the transmitter installation manual for power and signal wiring.
- ☐ For the wiring between the sensor and the transmitter, consider maximum cable lengths (see [Table 1-1](#) and [Table 1-2](#)). The maximum distance between the sensor and transmitter depends on the cable type. For all types of wiring, Micro Motion recommends using Micro Motion cable.

Table 1-1: Maximum lengths for Micro Motion cable

Cable type	To transmitter	Maximum length
Micro Motion 4-wire	All 4-wire MVD transmitters	1000 ft (300 m)

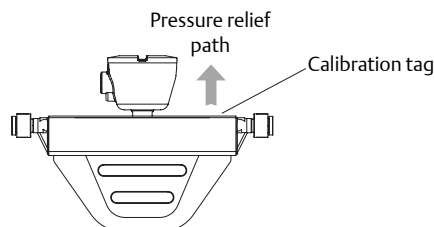
Table 1-2: Maximum lengths for user-supplied 4-wire cable

Wire function	Wire size	Maximum length
Power (VDC)	22 AWG (0,35 mm ²)	300 ft (90 m)
	20 AWG (0,5 mm ²)	500 ft (150 m)
	18 AWG (0,8 mm ²)	1000 ft (300 m)
Signal (RS-485)	22 AWG (0,35 mm ²) or larger	1000 ft (300 m)

- ☐ The sensor will work in any orientation as long as the flow tubes remain full of process fluid.
- ☐ The sensor has a pressure relief feature to evacuate the case in the unlikely event of a tube breach. The pressure relief feature is located underneath the calibration tag.

Orient the sensor so that personnel and equipment will not be exposed to escaping pressurized discharge. See [Figure 1-1](#).

Figure 1-1: Pressure relief feature



⚠ CAUTION!

Failure to properly orient the sensor could result in exposure to pressurized discharge. Orient the sensor in a way that will not expose personnel and equipment to the pressure relief path.

- ☐ Install the sensor so that the flow direction arrow on the sensor matches the actual forward flow of the process.

1.2 Best practices

The following information can help you get the most from your sensor.

- There are no pipe run requirements for Micro Motion sensors. Straight runs of pipe upstream or downstream are unnecessary.
- If the sensor is installed in a vertical pipeline, liquids and slurries should flow upward through the sensor. Gases may flow upward or downward.
- Keep the sensor tubes full of process fluid.
- For halting flow through the sensor with a single valve, install the valve downstream from the sensor.
- Minimize bending and torsional stress on the meter. Do not use the meter to align misaligned piping.
- The sensor does not require external supports. The flanges will support the sensor in any orientation.

1.3 Environmental limits

The environmental limits of the sensor are as follows:

- Process fluid: -40 to $+257$ °F (-40 to $+125$ °C)
- Ambient temperature: -40 to $+140$ °F (-40 to $+60$ °C)

- Temperature limits may be further restricted by hazardous area approvals. Refer to the hazardous area approvals documentation shipped with the sensor or available from the Micro Motion web site (www.micromotion.com).

2 Mounting

2.1 Mount the sensor

Use your common practices to minimize torque and bending load on process connections.

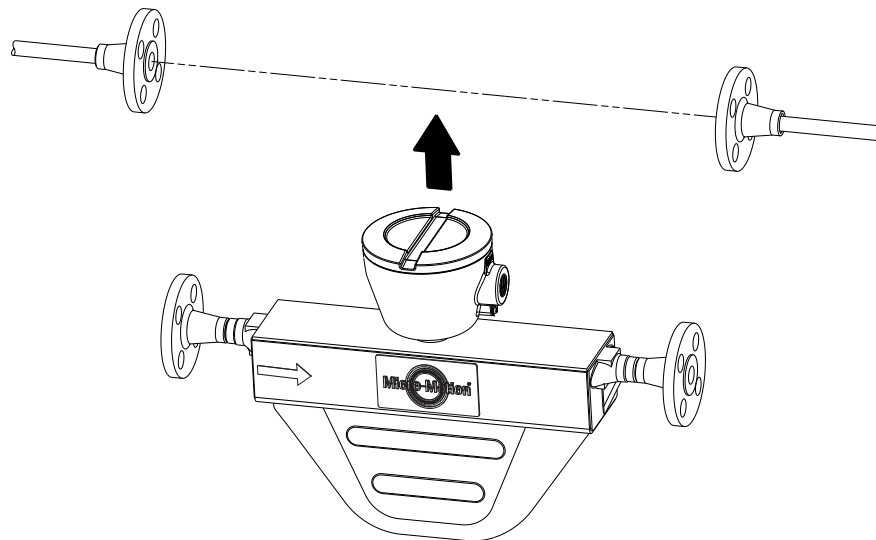
Tip

To reduce the risk of condensation or excessive moisture, the conduit opening should not point upward (if possible). The conduit opening of the core processor can be rotated freely to facilitate wiring.

Procedure

Mount the sensor in the pipeline (see [Figure 2-1](#)).

Figure 2-1: Mounting the sensor

**Notes**

- Do not use the sensor to support the piping.
 - The sensor does not require external supports. The flanges will support the sensor in any orientation.
-

⚠ CAUTION!

Do not lift the sensor by the electronics. Lifting the sensor by the electronics can damage the device.

3 Wiring

Topics covered in this chapter:

- [Options for wiring](#)
- [Connect 4-wire cable](#)

3.1 Options for wiring

The wiring procedure you follow depends on which electronics option you have.

See [Table 3-1](#) for the wiring options for each sensor electronics option.

Table 3-1: Wiring procedures by electronics option

Electronics option	Wiring procedure
Integral transmitter	No wiring required between sensor and transmitter. See the transmitter installation manual for wiring the power and signal cable to the transmitter.
MVD™ Direct Connect™	No transmitter to wire. See the MVD Direct Connect manual for wiring the power and signal cable between the sensor and the direct host.
Core processor	See Connect 4-wire cable .

CAUTION!

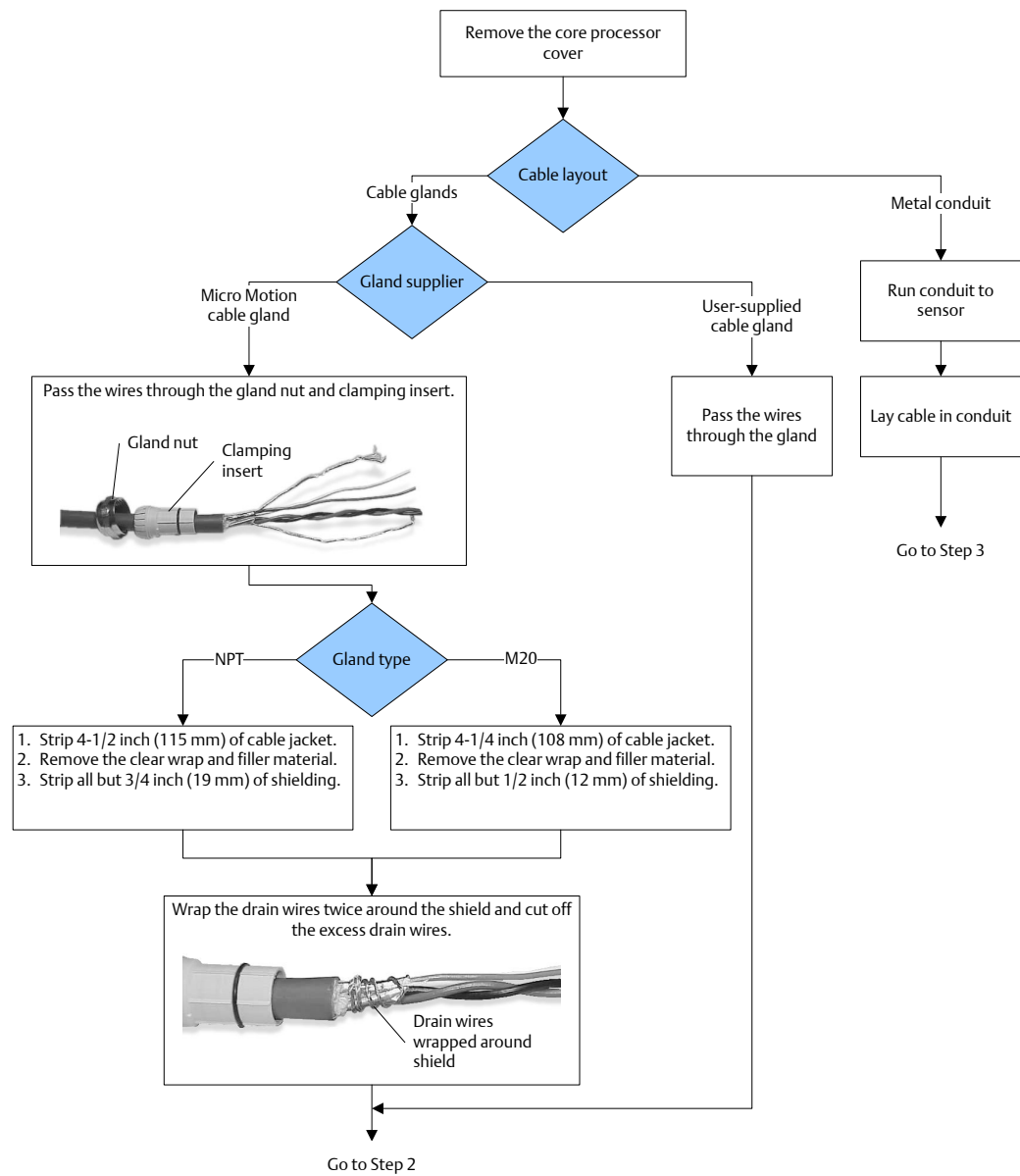
Make sure the hazardous area specified on the sensor approval tag is suitable for the environment in which the sensor will be installed. Failure to comply with the requirements for intrinsic safety in a hazardous area could result in an explosion.

CAUTION!

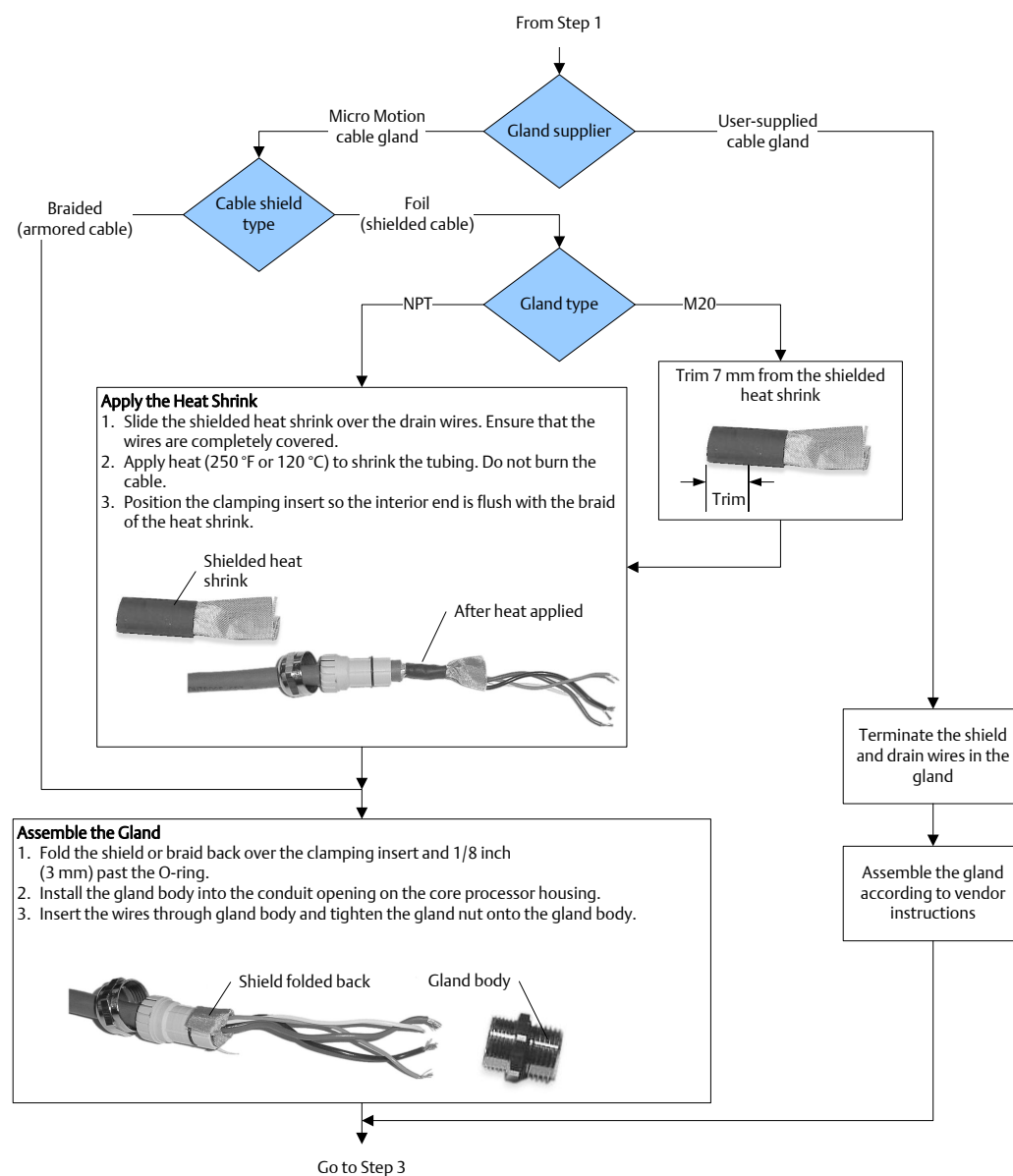
Fully close and tighten all housing covers and conduit openings. Improperly sealed housings can expose electronics to moisture, which can cause measurement error or flowmeter failure. Inspect and grease all gaskets and O-rings.

3.2 Connect 4-wire cable

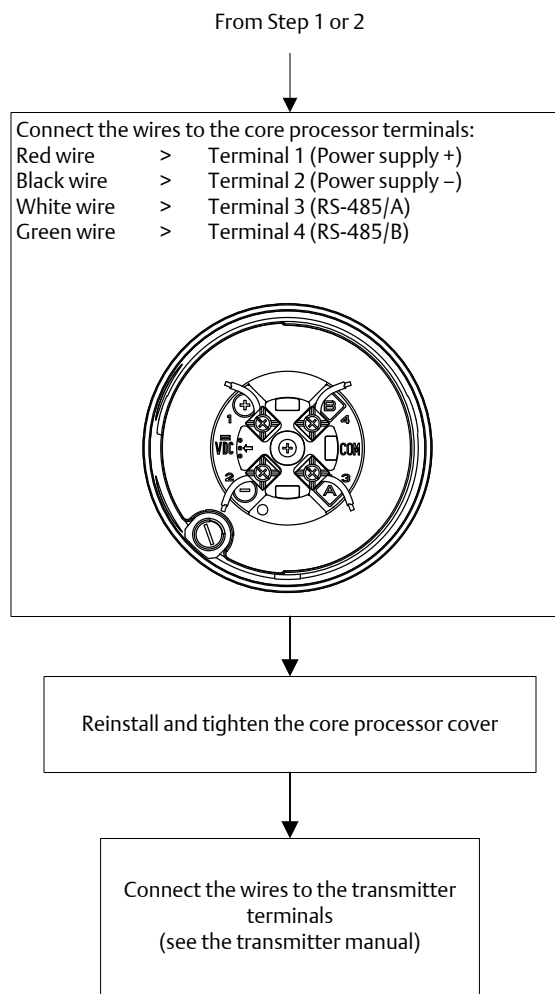
Step 1: Cable preparation



Step 2: Shield termination



Step 3: Terminal connections



4 Grounding

The sensor must be grounded according to the standards that are applicable at the site. The customer is responsible for knowing and complying with all applicable standards.

Prerequisites

Micro Motion suggests the following guides for grounding practices:

- In Europe, IEC 79-14 is applicable to most installations, in particular Sections 12.2.2.3 and 12.2.2.4.
- In the U.S.A. and Canada, ISA 12.06.01 Part 1 provides examples with associated applications and requirements.

If no external standards are applicable, follow these guidelines to ground the sensor:

- Use copper wire, 14 AWG (2,0 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.

CAUTION!

Ground the flowmeter to earth, or follow ground network requirements for the facility. Improper grounding can cause measurement error.

Procedure

Check the joints in the pipeline.

- If the joints in the pipeline are ground-bonded, the sensor is automatically grounded and no further action is necessary (unless required by local code).
- If the joints in the pipeline are not grounded, connect a ground wire to the grounding screw located on the sensor electronics.

Tip

The sensor electronics may be a transmitter, core processor, or junction box. The grounding screw may be internal or external.



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Installation Instructions

P/N 20001965, Rev. E

March 2008

CSA-D-IS Installation Instructions, MVD Transmitters

For installations approved by the
Canadian Standards Association



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Transmitter Output Installation

Analog outputs

MODEL 1700/2700 WITH ANALOG OUTPUTS IN HAZARDOUS LOCATION

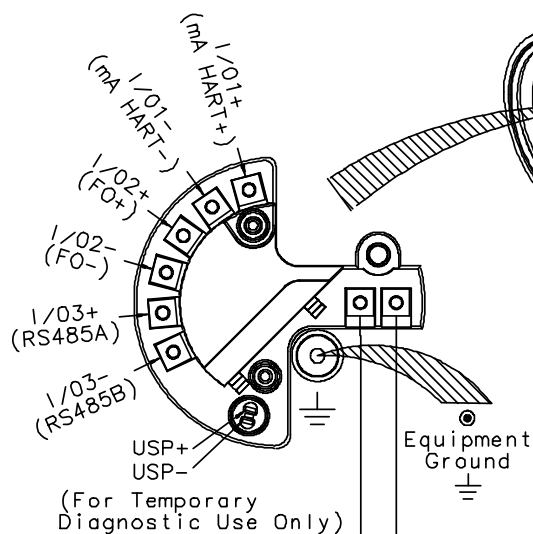
(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

DIV 2 NON-INCENDIVE PARAMETERS		mA HART	FO	RS485
Voc (Vdc)		24	24	3.1
Isc (mA)		25	11	1.0
Po (W)		-	-	-
Ca (μF)	A,B	0.345	0.345	-
	C	2.06	2.06	-
	D	8.25	8.25	-
La (H)	A,B	0.128	0.661	-
	C	0.384	1	-
	D	1	1	-
Vmax (Vdc)		-	30	12
Imax (mA)		-	500	250
Ci (μF)		-	0.0	0.0005
Li (μH)		-	0.0	0.0

Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G
Temp. Code T4A

Note:
Hazardous area classification on an integrally mounted 1700/2700 transmitter can be limited by hazardous area classification of the sensor. Refer to sensor tag.

Warning:
This compartment contains non-intrinsically safe circuits. Use of conduit seals are required within 18 inches of the conduit openings.



85-250 VAC 50/60 Hz	N	L
18-100 VDC	-	+

This unit is provided with an external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

Electronics: 1700/2700 ANALOG

EB-3600479 Rev. C
SHT 1 OF 1

Transmitter Output Installation

Intrinsically safe outputs

MODEL 1700/2700 WITH I.S. OUTPUTS IN HAZARDOUS LOCATION

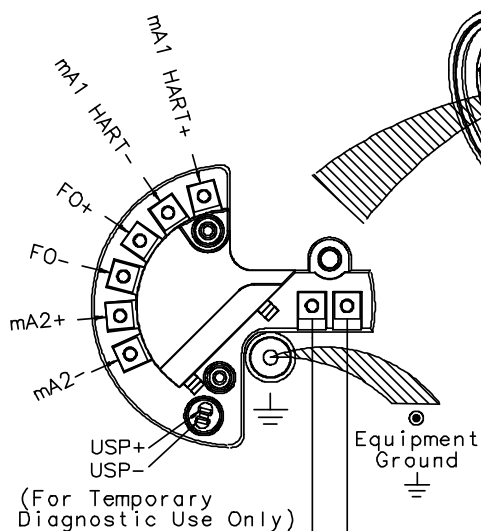
(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

DIVISION 1 I.S. OUTPUT ENTITY PARAMETERS			DIVISION 2 NON-INCENDIVE PARAMETERS		
	mA1 HART, mA2	FO		mA1 HART, mA2	FO
VMAX	30 Vdc	30 Vdc	VMAX	30 Vdc	30 Vdc
I _{max}	300 mA	100 mA			
P _{max}	1.0W	0.75W			
Ci	0.0005μF	0.0005μF	Ci	0.0005μF	0.0005μF
Li	0.0μH	0.0μH	Li	0.0μH	0.0μH

Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G
Temp. Code T4A

Note:
Hazardous area classification on an integrally mounted 1700/2700 transmitter can be limited by hazardous area classification of the sensor. Refer to sensor tag.

Warning:
This compartment contains non-intrinsically safe circuits. Use of conduit seals are required within 18 inches of the conduit openings.



This unit is provided with an external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

85-250 VAC 50/60 Hz	N	L
18-100 VDC	-	+

Electronics: 1700/2700 I.S. OUTPUT

EB-3600629 Rev. D
SHT 1 OF 1

Transmitter Output Installation

Model 2700 with configurable inputs and outputs

MODEL 2700 WITH CONFIG I/O IN HAZARDOUS LOCATION

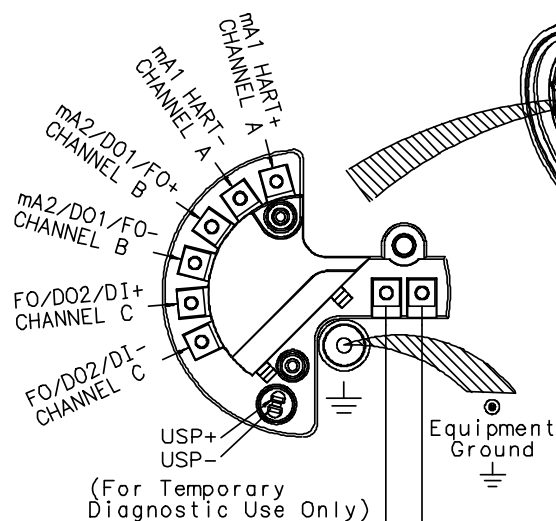
(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

DIV 2 NON-INCENDIVE PARAMETERS		mA HART	CHB	CHC
Voc (Vdc)		24	15	15
Isc (mA)		25	25	7.0
Po (W)		-	-	-
Ca (μ F)	A,B	0.345	2.25	-
	C	2.06	15.15	-
	D	8.25	75	-
La (H)	A,B	0.096	0.096	-
	C	0.384	0.384	-
	D	0.768	0.768	-
Vmax (Vdc)		-	30	30
Imax (mA)		-	500	500
Ci (μ F)		-	0.0011	0
Li (μ H)		-	4.0	4.0

Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G
Temp. Code T4A

Note:
Hazardous area classification on an integrally mounted 1700/2700 transmitter can be limited by hazardous area classification of the sensor. Refer to sensor tag.

Warning:
This compartment contains non-intrinsically safe circuits. Use of conduit seals are required within 18 inches of the conduit openings.



85-250 VAC 50/60 Hz	N	L
18-100 VDC	-	+

This unit is provided with an external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

Electronics: 2700 CONFIG I/O

EB-3600667 Rev. B
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Transmitter Output Installation

Model 2750 with configurable inputs and outputs

MODEL 2750 WITH CONFIG I/O IN HAZARDOUS LOCATION

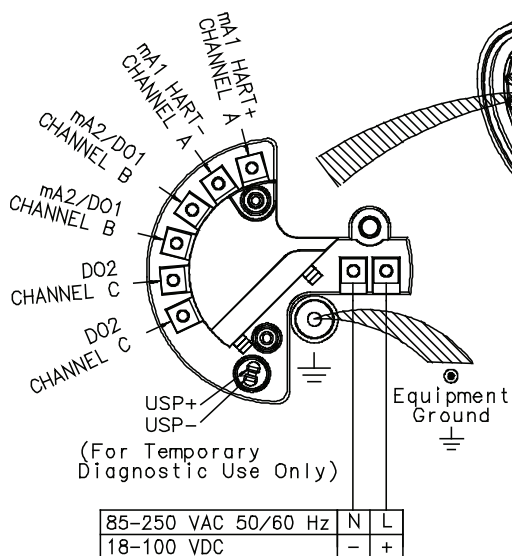
(WARNING; SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

DIV 2 NON-INCENDIVE PARAMETERS		mA HART	CHB	CHC
Voc (Vdc)		24	15	15
Isc (mA)		25	25	7.0
Po (W)		—	—	—
Ca (μ F)	A,B	0.345	2.25	—
	C	2.06	15.15	—
	D	8.25	75	—
La (H)	A,B	0.096	0.096	—
	C	0.384	0.384	—
	D	0.768	0.768	—
Vmax (Vdc)		—	30	30
I _{max} (mA)		—	500	500
CI (μ F)		—	0.0011	0
LI (μ H)		—	4.0	4.0

Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G
Temp. Code T4A

Note:
Hazardous area classification on an integrally mounted 2750 transmitter can be limited by hazardous area classification of the sensor. Refer to sensor tag.

Warning:
This compartment contains non-intrinsically safe circuits. Use of conduit seals are required within 18 inches of the conduit openings.



This unit is provided with an external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

Electronics: 2750 CONFIG I/O

EB-20011794 Rev. A
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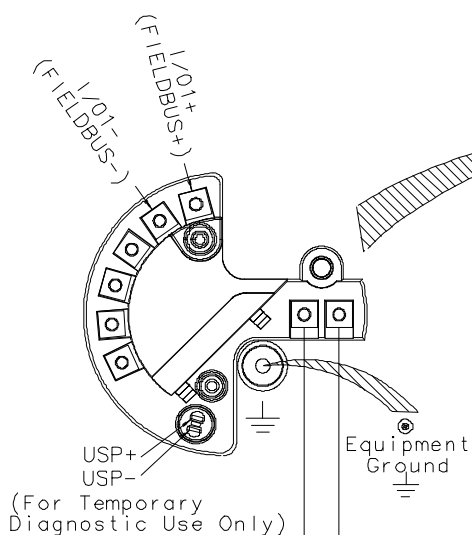
Transmitter Output Installation

FOUNDATION fieldbus™ outputs

MODEL 1700/2700 WITH FIELDBUS IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

DIVISION 1 I.S. FIELDBUS PARAMETERS		DIVISION 2 NON-INCENDIVE FIELDBUS PARAMETERS	
VMAX	30 Vdc	VMAX	30 Vdc
I _{max}	300 mA		
P _{max}	1.3W		
C _i	0.0μF	C _i	0.0μF
L _i	0.0μH	L _i	0.0μH



85-250 VAC 50/60 Hz	N	L
18-100 VDC	-	+

Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G
Temp. Code T4A

Note:
Hazardous area classification on an integrally mounted 1700/2700 transmitter can be limited by hazardous area classification of the sensor. Refer to sensor tag.

Warning:
This compartment contains non-intrinsically safe circuits. Use of conduit seals are required within 18 inches of the conduit openings.

This unit is provided with an external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

Electronics: 1700/2700 FIELDBUS

EB-3600476 Rev. D
SHT 1 OF 1

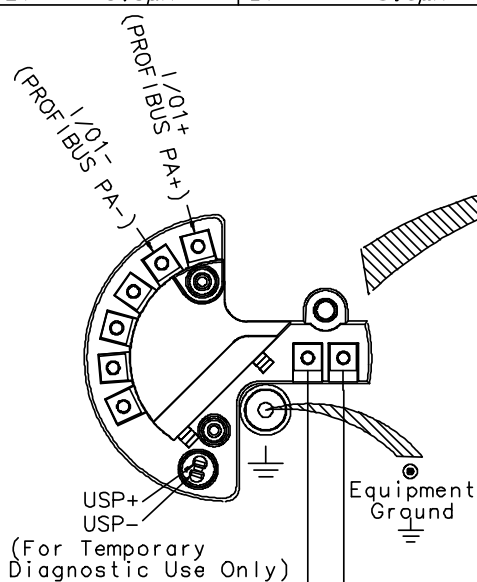
Transmitter Output Installation

Profibus-PA outputs

MODEL 1700/2700 WITH PROFIBUS PA IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

DIVISION 1 I.S. PROFIBUS PA PARAMETERS	DIVISION 2 NON-INCENDIVE PROFIBUS PA PARAMETERS
VMAX 30 Vdc	VMAX 30 Vdc
I _{max} 300 mA	
P _{max} 1.3W	
Ci 0.0μF	Ci 0.0μF
Li 0.0μH	Li 0.0μH



85-250 VAC 50/60 Hz	N	L
18-100 VDC	-	+

Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G
Temp. Code T4A

Note:
Hazardous area classification on an integrally mounted 1700/2700 transmitter can be limited by hazardous area classification of the sensor. Refer to sensor tag.

Warning:
This compartment contains non-intrinsically safe circuits. Use of conduit seals are required within 18 inches of the conduit openings.

This unit is provided with an external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

Electronics: 1700/2700 PROFIBUS PA

EB-3600473 Rev. D
SHT 1 OF 1

Model 1700/2700 4-Wire Installation

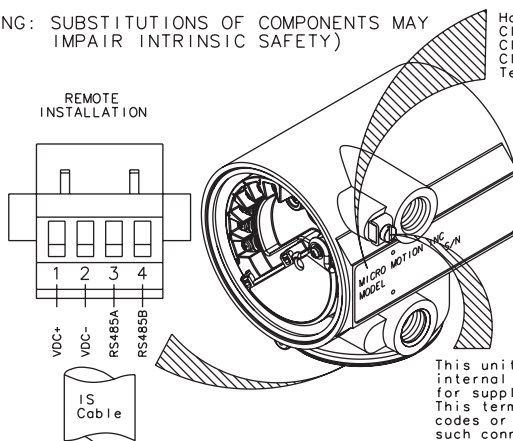
Remote transmitter to enhanced core processor mounted on sensor

REMOTE MOUNT MODEL 1700/2700 IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

For proper installation including I/O, power, gland and hazardous area location, refer to appropriate 1700/2700 output option CSA-D-IS installation instructions

	DIV 1 IS PRMTR	DIV 2 NON-INCND PRMTR
Voc (Vdc)	17.22	17.22
Isc (mA)	484	484
Po (W)	2.05	2.05
Ca (μF)	A,B N/A	1.21
	C 2.06	8.32
	D 8.5	33.75
La (μH)	A,B N/A	252μH
	C 151	1000
	D 607	2100



Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G
Temp. Code T4A

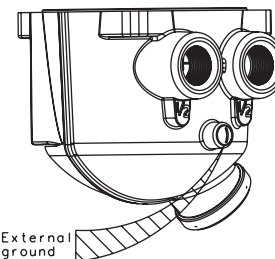
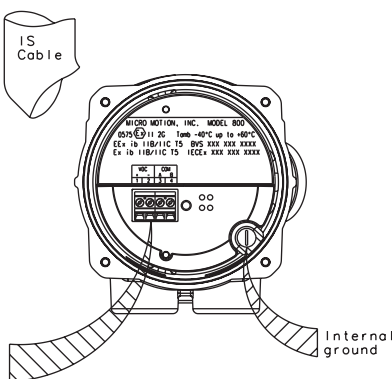
Note:
Hazardous area classification on an integrally mounted 1700/2700 transmitter can be limited by hazardous area classification of the sensor. Refer to sensor tag.

This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

Refer to sensor tag for complete hazardous area classification.

I.S. AND NON-INCENDIVE ENHANCED CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.3 Vdc
Imax	484 mA
Pmax	2.1W
Ci	2200pF
Li	30μH



INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS
Voc < = Vmax
Isc < = Imax
(Voc x Isc) / 4 < = Pmax
*Ca > = Ccable + C11 + C12 + ... + Cin
*La > = Lcable + L11 + L12 + ... + Lin

*The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.

*The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:

Cable Capacitance = 60pF/ft
Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

Micro Motion mass
flowmeter system
connection for
intrinsically safe
operation

Electronics: 1700/2700

EB-20003010 Rev. A
SHT 1 OF 1

Model 1700/2700 4-Wire Installation

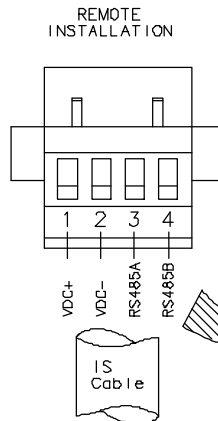
Remote transmitter to core processor mounted on sensor
(except D600 and CMF400 with booster amplifier)

REMOTE MOUNT MODEL 1700/2700 IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

For proper installation including I/O, power, gland and hazardous area location, refer to appropriate 1700/2700 output option CSA-D-IS installation instructions

	DIV 1 IS PRMTR	DIV 2 NON-INCND PRMTR
Voc (Vdc)	17.22	17.22
Isc (mA)	484	484
Po (W)	2.05	2.05
Ca (μF)	A,B C	N/A 2.06 8.32
	D	8.5 33.75
La (μH)	A,B C	N/A 252 1000
	D	607 2100



Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G
Temp. Code T4A

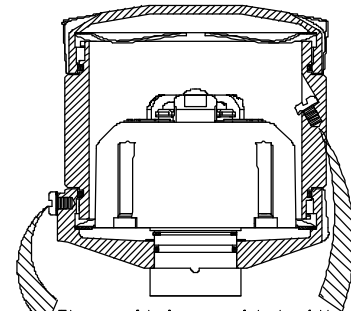
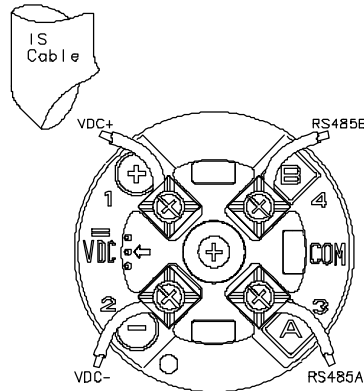
Note:
Hazardous area classification on an integrally mounted 1700/2700 transmitter can be limited by hazardous area classification of the sensor. Refer to sensor tag.

This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

Refer to sensor tag for complete hazardous area classification.

I.S. AND NON-INCENDIVE CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.3 Vdc
Imax	484 mA
Pmax	2.1W
Ci	2200pF
Li	30μH



This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc	< = Vmax
Isc	< = Imax
$(Voc \times Isc) / 4 < = Pmax$	
*Ca	> = Ccable + Ci1 + Ci2 + ... + Cin
*La	> = Lcable + Li1 + Li2 + ... + Lin

*The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.

*The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:

Cable Capacitance = 60pF/ft
Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

Micro Motion mass flowmeter system connection for Intrinsically safe operation

Electronics: 1700/2700

EB-3600482 Rev. B
SHT 1 OF 1

Model 1700/2700 4-Wire Installation

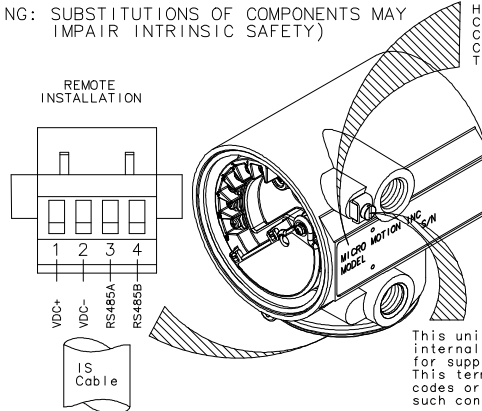
Remote transmitter to core processor mounted on CMF400 sensor with booster amplifier

REMOTE MOUNT MODEL 1700/2700 IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

For proper installation including I/O, power, gland and hazardous area location, refer to appropriate 1700/2700 output option CSA-D-IS installation instructions

	DIV 1 IS PRMTR	DIV 2 NON-INCND PRMTR
Voc (Vdc)	17.22	17.22
Isc (mA)	488	488
Po (W)	2.1	2.1
Ca (μF)	A,B N/A C 2.06 D 8.5	1.21 8.32 33.75
La (μH)	A,B N/A C 151 D 607	252 1000 2100



Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G
Temp. Code T4A

Note:
Hazardous area classification on an integrally mounted 1700/2700 transmitter can be limited by hazardous area classification of the sensor. Refer to sensor tag.

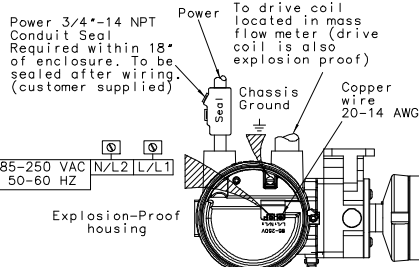
This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

Refer to sensor tag for complete hazardous area classification.

I.S. AND NON-INCENDIVE CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.22 Vdc
Imax	488 mA
Pmax	2.1W
Ci	2200pF
Li	30μH

Allowable process fluid temperature range for integrally mounted booster amplifier is $-40^{\circ}\text{C} \leq T_{\text{fluid}} \leq +60^{\circ}\text{C}$.



This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

Install per Canadian Electrical Code Part 1

Micro Motion mass flowmeter system connection for intrinsically safe operation

For model CMF400M * * * N, followed by P followed by * C * * * *
or
For model CMF400M * * * N, followed by P followed by * A * * * *
see additional installation requirements on drawing
EB-3005974

INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS
Voc < = Vmax
Isc < = Imax
$(Voc \times Isc) / 4 < = Pmax$
$*Ca > = Ccable + Ci1 + Ci2 + \dots + Cin$
$*La > = Lcable + Li1 + Li2 + \dots + Lin$

*The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.

*The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:

Cable Capacitance = 60pF/ft
Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

Electronics: 1700/2700

EB-3005819 Rev. C

Model 1700/2700 4-Wire Installation

Remote transmitter to core processor mounted on D600 sensor

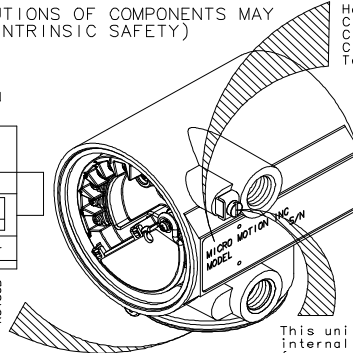
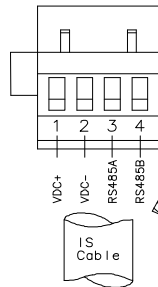
REMOTE MOUNT MODEL 1700/2700 IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

For proper installation including I/O, power, gland and hazardous area location, refer to appropriate 1700/2700 output option CSA-D-IS installation instructions

	DIV 1 IS PRMTR	DIV 2 NON-INCND PRMTR
Voc (Vdc)	17.22	17.22
Isc (mA)	488	488
Po (W)	2.1	2.1
Ca (μF)	A,B N/A	1.21
	C 2.06	8.32
	D 8.5	33.75
La (μH)	A,B N/A	252
	C 151	1000
	D 607	2100

REMOTE INSTALLATION



Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G
Temp. Code T4A

Note:
Hazardous area classification on an integrally mounted 1700/2700 transmitter can be limited by hazardous area classification of the sensor. Refer to sensor tag.

This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

Refer to sensor tag for complete hazardous area classification.

I.S. AND NON-INCENDIVE CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.22 Vdc
Imax	488 mA
Pmax	2.1W
Ca	2200pF
Li	30μH

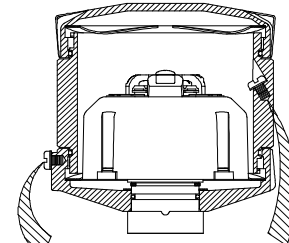
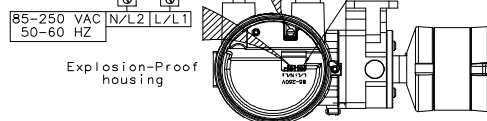
Allowable process fluid temperature range for integrally mounted booster amplifier is $-40^{\circ}\text{C} \leq T_{\text{fluid}} \leq +60^{\circ}\text{C}$.

Power 3/4"-14 NPT
Conduit Seal
Required within 18"
of enclosure. To be
sealed after wiring.
(customer supplied)

To drive coil
located in mass
flow meter (drive
coil is also
explosion proof)
Chassis Ground
Copper
wire
20-14 AWG

85-250 VAC
50-60 HZ

Explosion-Proof
housing



This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

Install per Canadian
Electrical Code
Part 1

Consult factory for
use of spare orange,
red and brown (RTD
and P.O.) wires.
1-800-522-6277
Model D600 Only

Micro Motion mass
flowmeter system
connection for
intrinsically safe
operation

For model D600S *** S, followed by N followed by * C * * * *
or
For model D600S *** S, followed by N followed by * A * * * *
see additional installation requirements on drawing
EB-1005084

INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc <=	Vmax
Isc <=	Imax
(Voc x Isc) / 4 <=	Pmax
*Ca >=	Ccable + C11 + C12 + ... + Cin
*La >=	Lcable + L11 + L12 + ... + Lin

*The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.

*The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:

Cable Capacitance = 60pF/ft
Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

Electronics: 1700/2700

EB-1005083 Rev. B

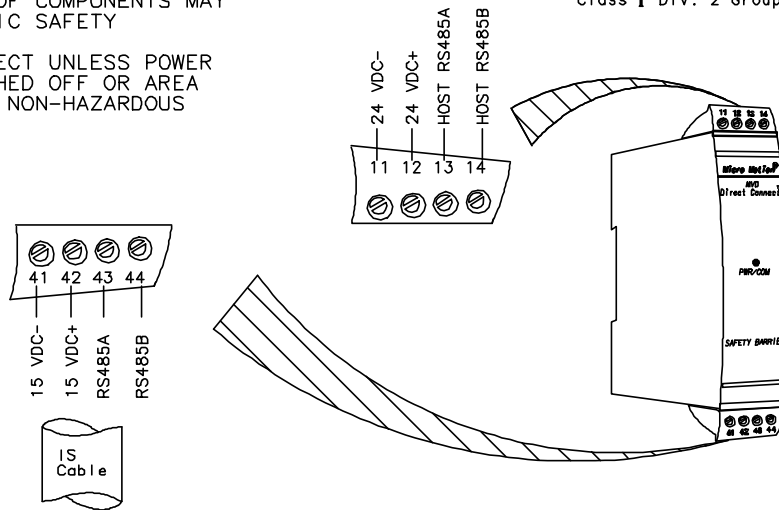
Direct Host 4-Wire Installation

Core processor to direct host through safety barrier

WARNING: SUBSTITUTIONS OF COMPONENTS MAY
IMPAIR INTRINSIC SAFETY

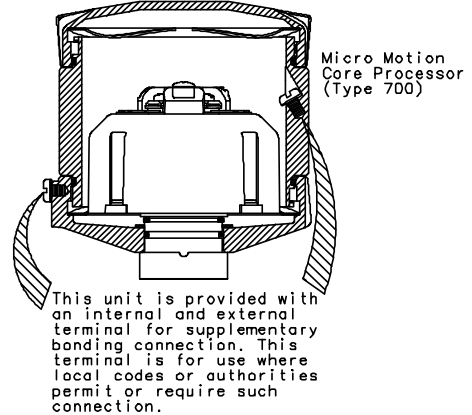
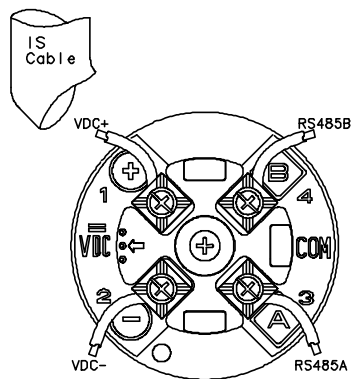
DO NOT DISCONNECT UNLESS POWER
HAS BEEN SWITCHED OFF OR AREA
IS KNOWN TO BE NON-HAZARDOUS

Hazardous Area
Class I Div. 2 Groups A,B,C,D



Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

Refer to sensor tag for complete
hazardous area classification.



Maximum Cable Capacitance = 60pF/ft
Maximum Cable Inductance = 0.20μH/ft

Maximum cable length from core processor to safety barrier is 500 feet.
For cable runs greater than 500 feet, please contact Micro Motion.

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

Micro Motion mass
flowmeter system
connection for
intrinsically safe
operation

Electronics: SAFETY BARRIER

EB-3600799 Rev. C
SHT 1 OF 1

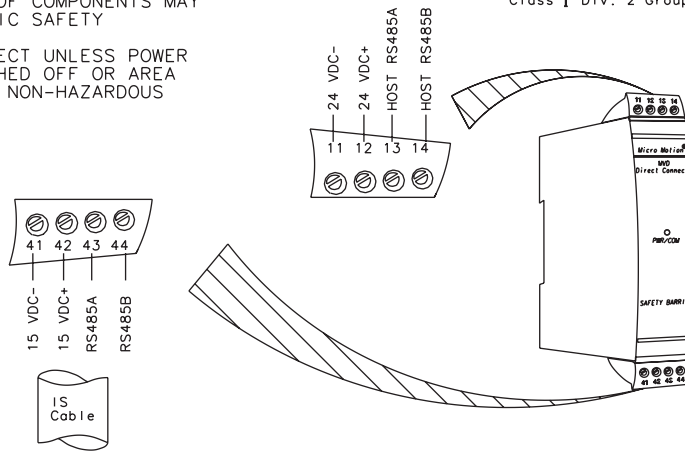
Direct Host 4-Wire Installation

Enhanced core processor to direct host through safety barrier

WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY

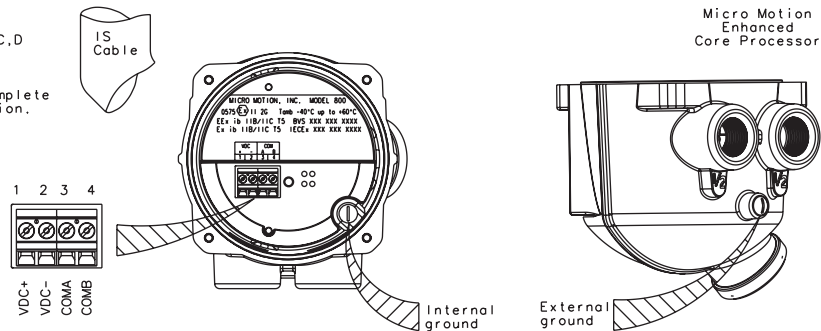
DO NOT DISCONNECT UNLESS POWER HAS BEEN SWITCHED OFF OR AREA IS KNOWN TO BE NON-HAZARDOUS

Hazardous Area
Class I Div. 2 Groups A,B,C,D



Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

Refer to sensor tag for complete hazardous area classification.



Maximum Cable Capacitance = 60pF/ft
Maximum Cable Inductance = 0.20μH/ft

Maximum cable length from core processor to safety barrier is 500 feet.
For cable runs greater than 500 feet, please contact Micro Motion.

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

Micro Motion mass
flowmeter system
connection for
intrinsically safe
operation

Electronics: SAFETY BARRIER

EB-20003013 Rev. A
SHT 1 OF 1

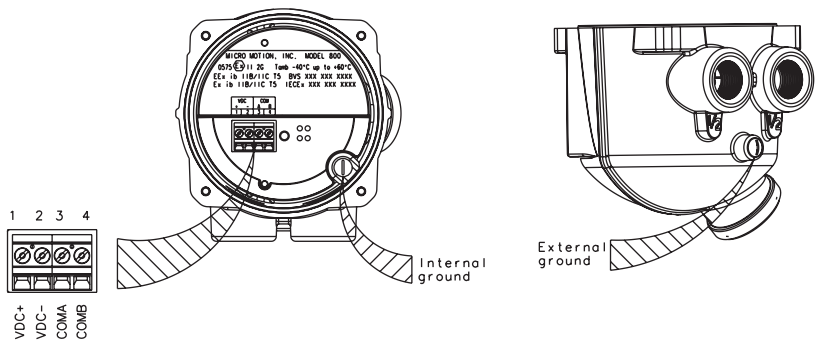
Model 800 Enhanced Core Processor

800 ENHANCED CORE PROCESSOR IN HAZARDOUS LOCATION

Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

I. S. AND NON-INCENDIVE 800 ENHANCED CORE PROCESSOR (INPUT) ENTITY PRMTRS / 4-WIRE TERMINAL	
VMAX	17.22 Vdc
I _{max}	488 mA
P _{max}	2.1W
C _i	2200pF
L _i	30μH

ENHANCED CORE PROCESSOR



This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS
$V_{oc} \leq V_{max}$
$I_{sc} \leq I_{max}$
$(V_{oc} \times I_{sc}) / 4 \leq P_{max}$
$C_a \geq C_{cable} + C_{i1} + C_{i2} + \dots + C_{in}$
$L_a \geq L_{cable} + L_{i1} + L_{i2} + \dots + L_{in}$

- The total C_i is equal to the sum of all C_i 's of all devices on the network. C_{cable} is the total capacitance of all cable on the network.
- The total L_i is equal to the sum of all L_i 's of all devices on the network. L_{cable} is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:
Cable Capacitance = 60pF/ft
Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

Electronics: ENHANCED CORE
PROCESSOR

EB-20003427 Rev. A
SHT 1 OF 1

Model 2750 4-Wire Installation

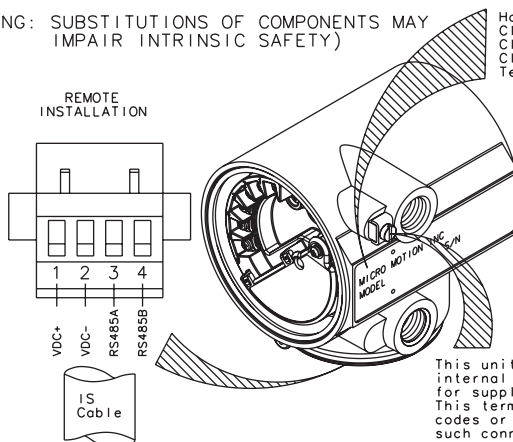
Remote transmitter to enhanced core processor mounted on sensor

REMOTE MOUNT MODEL 2750 IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

For proper installation including I/O, power, gland and hazardous area location, refer to appropriate 2750 output option CSA-D-IS installation instructions

	DIV 1 IS PRMTR	DIV 2 NON-INCND PRMTR
Voc (Vdc)	17.22	17.22
Isc (mA)	484	484
Po (W)	2.05	2.05
Ca (μF)	A,B N/A	1.21
	C 2.06	8.32
	D 8.5	33.75
La (μH)	A,B N/A	252
	C 151	1000
	D 607	2100



Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G
Temp. Code T4A

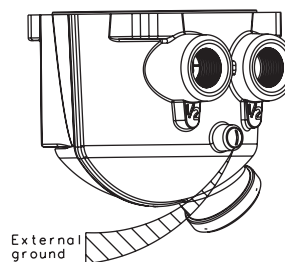
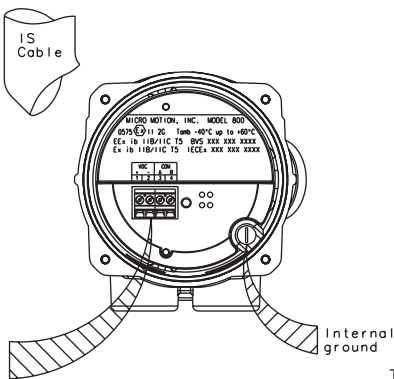
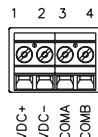
Note:
Hazardous area classification on an integrally mounted 2750 transmitter can be limited by hazardous area classification of the sensor. Refer to sensor tag.

This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

Refer to sensor tag for complete hazardous area classification.

I, S, AND NON-INCENDIVE ENHANCED CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.3 Vdc
Imax	484 mA
Pmax	2.1W
Ci	2200pF
Li	30μH



This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS
Voc < = Vmax
Isc < = Imax
(Voc x Isc) / 4 < = Pmax
*Ca > = Ccable + Ci1 + Ci2 + ... + Cin
*La > = Lcable + Li1 + Li2 + ... + Lin

*The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.

*The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:

Cable Capacitance = 60pF/ft
Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

Micro Motion mass
flowmeter system
connection for
intrinsically safe
operation

Electronics: 2750

EB-20011795 Rev. A
SHT 1 OF 1

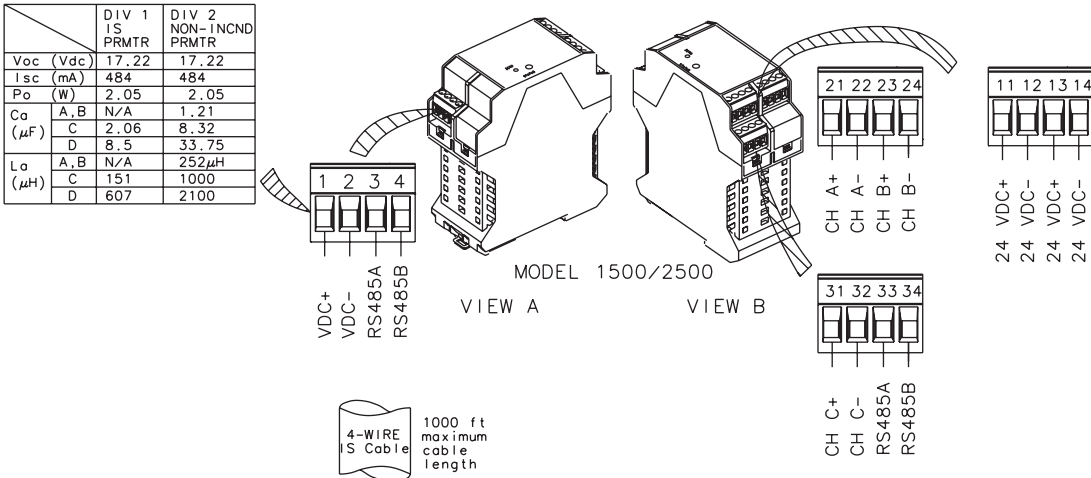
Model 1500/2500 4-Wire Installation

Remote transmitter to enhanced core processor mounted on sensor

MODEL 1500/2500 IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

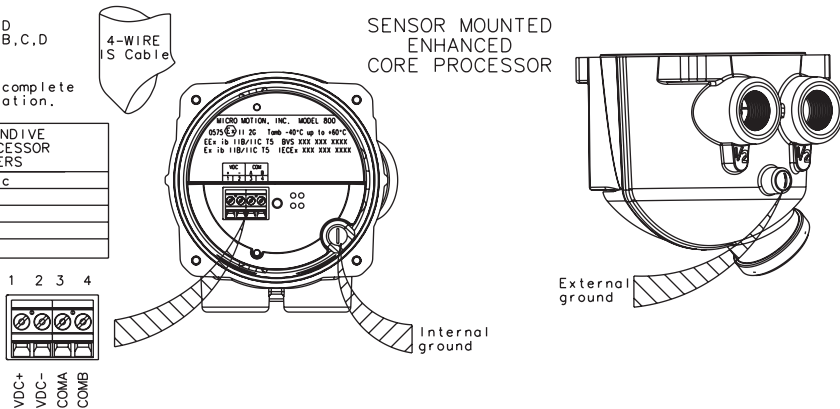
Hazardous Area
Class I Div. 2 Groups A,B,C,D



Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

Refer to sensor tag for complete hazardous area classification.

I.S. AND NON-INCENDIVE ENHANCED CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.3 Vdc
Imax	484 mA
Pmax	2.1W
Ci	2200pF
Li	30μH



INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc	< = Vmax
Isc	< = Imax
(Voc x Isc) / 4	< = Pmax
*Ca	> = Ccable + Ci1 + Ci2 + ... + Cin
*La	> = Lcable + Li1 + Li2 + ... + Lin

*The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.

*The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:

Cable Capacitance = 60pF/ft
Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

Micro Motion mass
flowmeter system
connection for
intrinsically safe
operation

Electronics: 1500/2500

EB-20003009 Rev. A

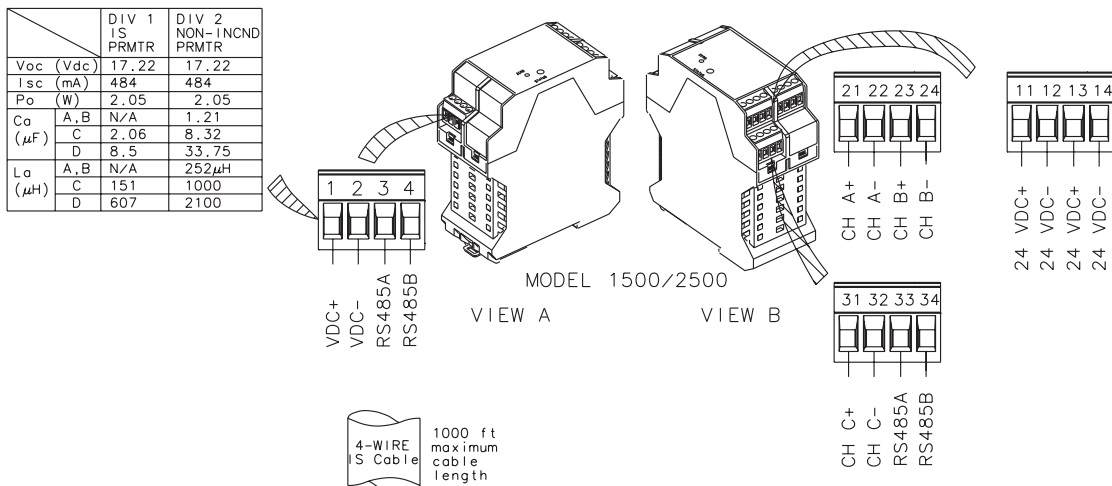
Model 1500/2500 4-Wire Installation

Remote transmitter to core processor mounted on CMF, F, H, R, CNG, and T sensor

MODEL 1500/2500 IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

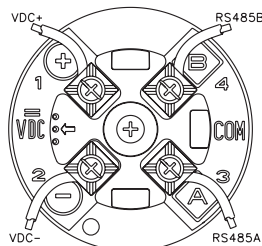
Hazardous Area
Class I Div. 2 Groups A,B,C,D



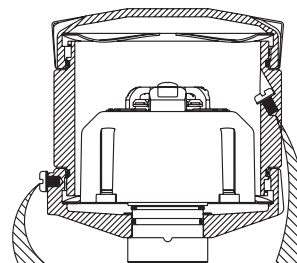
Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

Refer to sensor tag for complete hazardous area classification.

I. S. AND NON-INCENDIVE CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.3 Vdc
I _{max}	484 mA
P _{max}	2.1W
C _i	2200pF
L _i	30μH



SENSOR MOUNTED
CORE PROCESSOR



This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc	< = Vmax
Isc	< = Imax
(Voc x Isc) / 4	< = Pmax
*Ca	> = Ccable + Ci1 + Ci2 + ... + Cin
*La	> = Lcable + Li1 + Li2 + ... + Lin

*The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.

*The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:

Cable Capacitance = 60pF/ft
Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

Micro Motion mass
flowmeter system
connection for
intrinsically safe
operation

Electronics: 1500/2500

EB-20001220 Rev. A

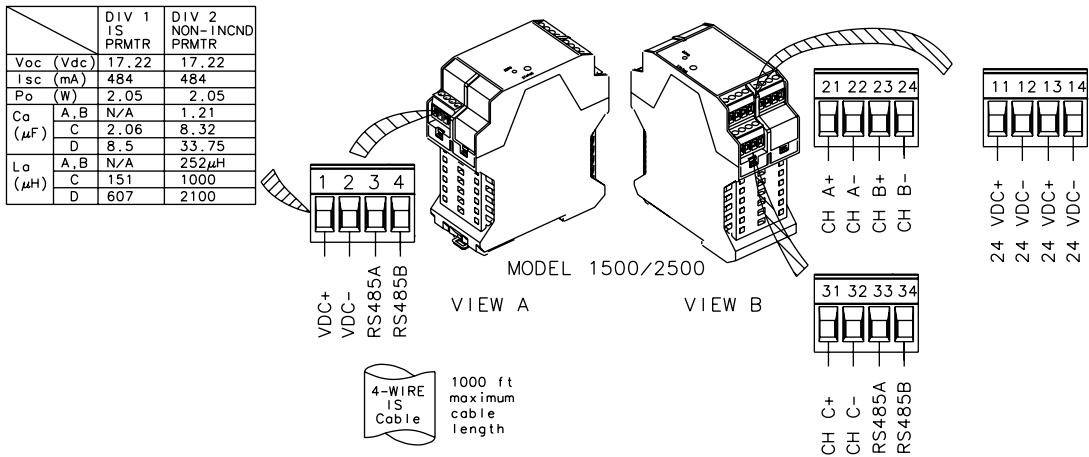
Model 1500/2500 4-Wire Installation

Remote transmitter to core processor mounted on CMF400 sensor with booster amplifier

MODEL 1500/2500 IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

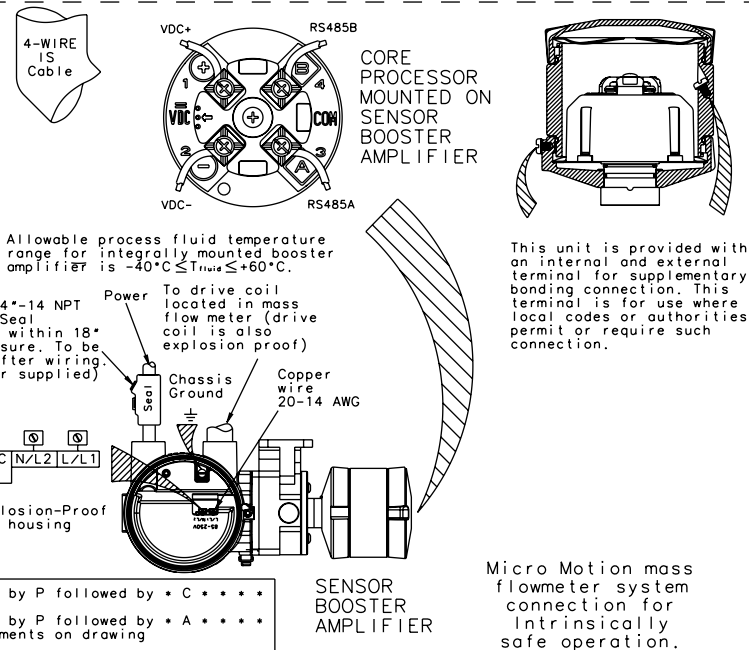
Hazardous Area
Class I Div. 2 Groups A,B,C,D



Hazardous Area
Class I, Div. 1, Groups C,D
Class I, Div. 2, Groups A,B,C,D
Class II, Groups E,F,G

Refer to sensor tag for complete hazardous area classification.

I.S. AND NON-INCENDIVE CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.3 Vdc
Imax	484 mA
Pmax	2.1W
Ci	2200pF
Li	30μH



INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc < =	Vmax
Isc < =	Imax
(Voc x Isc) / 4 < =	Pmax
*Ca > =	Ccable + Ci1 + Ci2 + ... + Cin
*La > =	Lcable + Li1 + Li2 + ... + Lin

*The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.

*The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:

Cable Capacitance = 60pF/ft
Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

Electronics: 1500/2500
Sensor: CMF400

EB-20001219 Rev. A

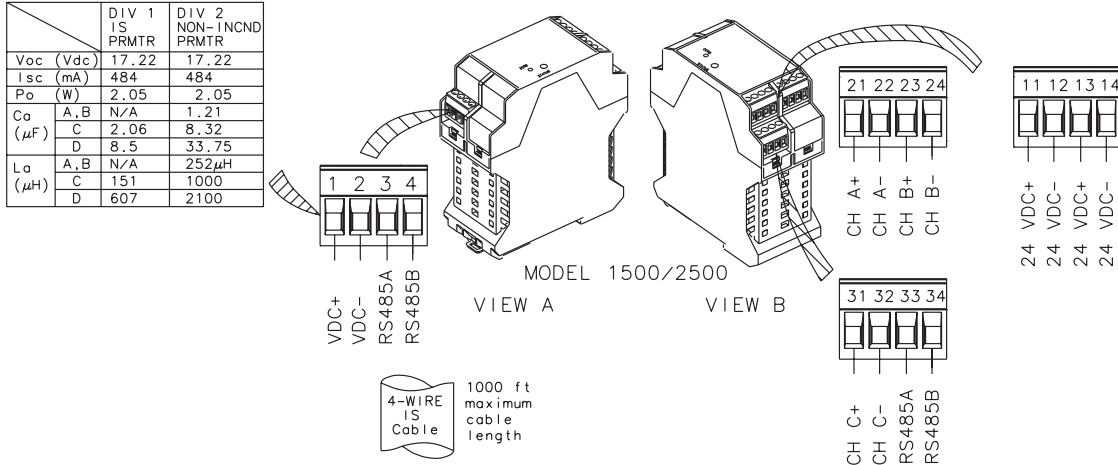
Model 1500/2500 4-Wire Installation

Remote transmitter to core processor mounted on D600 sensor

MODEL 1500/2500 IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

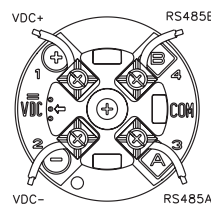
Hazardous Area
Class I Div. 2 Groups A,B,C,D



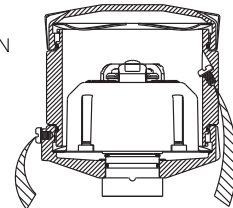
Hazardous Area
Class I, Div. 1, Groups C,D
Class I, Div. 2, Groups A,B,C,D
Class II, Groups E,F,G

Refer to sensor tag for complete hazardous area classification.

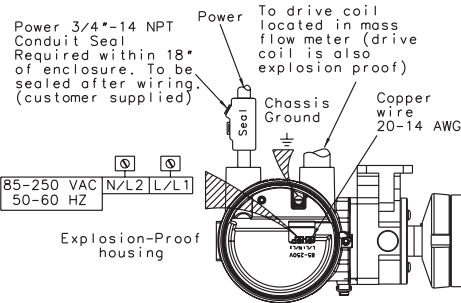
I.S. AND NON-INCENDIVE CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.3 Vdc
Imax	484 mA
Pmax	2.1W
Ci	2200pF
Li	30μH



CORE PROCESSOR MOUNTED ON SENSOR BOOSTER AMPLIFIER



This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.



Allowable process fluid temperature range for integrally mounted booster amplifier is $-40^{\circ}\text{C} \leq T_{\text{fluid}} \leq +60^{\circ}\text{C}$.

Consult factory for use of spare orange, red and brown (RTD and P.O.) wires.
1-800-522-6277
Model D600 Only

For model D600S * * * S, followed by N followed by * C * * * *
or
For model D600S * * * S, followed by N followed by * A * * * *
see additional installation requirements on drawing EB-1005084

SENSOR BOOSTER AMPLIFIER

Micro Motion mass flowmeter system connection for intrinsically safe operation.

INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc	$\leq V_{\text{max}}$
Isc	$\leq I_{\text{max}}$
$(V_{\text{oc}} \times I_{\text{sc}}) / 4$	$\leq P_{\text{max}}$
*Ca	$> C_{\text{cable}} + C_{i1} + C_{i2} + \dots + C_{in}$
*La	$> L_{\text{cable}} + L_{i1} + L_{i2} + \dots + L_{in}$

*The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.

*The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:

Cable Capacitance = 60pF/ft
Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

Electronics: 1500/2500
Sensor: D600

EB-20001218 Rev. A

Model 3700 4-Wire Installation

Remote transmitter to enhanced core processor mounted on sensor

3700 IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

Hazardous Area
Class I, Div. 2, Groups A,B,C,D
Class II, Div. 2, Groups F,G

3700 Intrinsically Safe Terminals (color: blue)

3700 Non-Intrinsically Safe Terminals (color: grey)

VDC+
VDC-
RS485A
RS485B

Chassis Ground

This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

4-WIRE IS Cable 1000 ft maximum cable length

NOTE: Prepare cable per the instructions provided with the cable.

MODEL 3700

	DIV 1 IS PRMTR	DIV 2 NON-INCND PRMTR
Voc (Vdc)	17.22	17.22
Isc (mA)	484	484
Po (W)	2.05	2.05
Co (μF)	A,B N/A C 2.04 D 8.5	1.21 8.32 33.75
Lo (μH)	A,B N/A C 151 D 607	252 1000 2100

	9	10
85-265 VAC	L/L2	N/L1
18-30 VDC	+	-

Hazardous Area
Class I, Div. 1, Groups C,D
Class I, Div. 2, Groups A,B,C,D
Class II, Groups E,F,G

Refer to sensor tag for complete hazardous area classification.

1000 ft maximum cable length

SENSOR MOUNTED ENHANCED CORE PROCESSOR

4-WIRE IS Cable

External ground

Internal ground

1 2 3 4
VDC+
VDC-
COMA
COMB

I.S. AND NON-INCENDIVE ENHANCED CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.3 Vdc
Imax	484 mA
Pmax	2.1W
Ci	2200pF
Li	30μH

INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc <=	Vmax
Isc <=	Imax
(Voc x Isc) / 4 <= Pmax	
*Ca >=	Ccable + C1 + C2 + ... + Cin
*La >=	Lcable + L1 + L2 + ... + Lin

- The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.
 - The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.
- If the electrical parameters of the cable are unknown, then the following values may be used:
Cable Capacitance = 60pF/ft
Cable Inductance = 0.20μH/ft
- This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

Micro Motion mass flowmeter system connection for Intrinsically safe operation.

Electronics: 3700

EB-20003012 Rev. A
SHT 1 OF 1

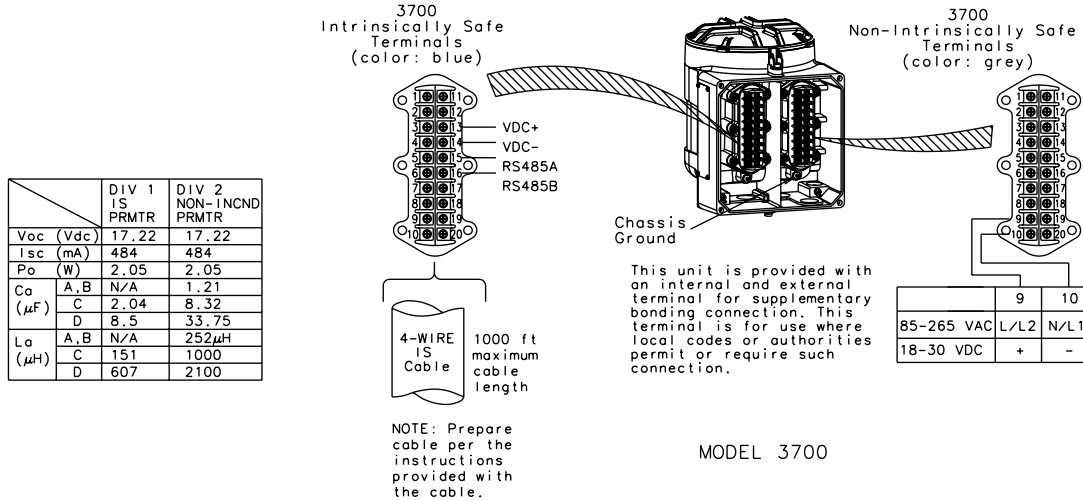
Model 3700 4-Wire Installation

Remote transmitter to core processor mounted on CMF, F, H, R, CNG, and T sensors

3700 IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

Hazardous Area
Class I, Div. 2, Groups A,B,C,D
Class II, Div. 2, Groups F,G



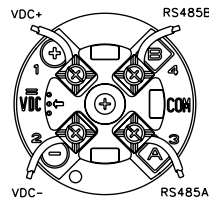
Hazardous Area
Class I, Div. 1, Groups C,D
Class I, Div. 2, Groups A,B,C,D
Class II, Groups E,F,G

Refer to sensor tag for complete hazardous area classification.

I.S. AND NON-INCENDIVE CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.3 Vdc
Imax	484 mA
Pmax	2.1W
Ci	2200pF
Li	30μH

1000 ft
maximum
cable
length

4-WIRE
IS
Cable



SENSOR MOUNTED CORE PROCESSOR

INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc	< = Vmax
Isc	< = Imax
(Voc x Isc) / 4	< = Pmax
*Ca	> = Ccable + Ci1 + Ci2 + ... + Cin
*La	> = Lcable + Li1 + Li2 + ... + Lin

*The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.

*The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:
Cable Capacitance = 60pF/ft
Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

Micro Motion mass flowmeter system connection for Intrinsically safe operation.

Electronics: 3700

EB-20000224 Rev. B
SHT 1 OF 1

Model 3700 4-Wire Installation

Remote transmitter to core processor mounted on CMF400 sensor with booster amplifier

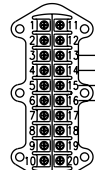
3700 IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

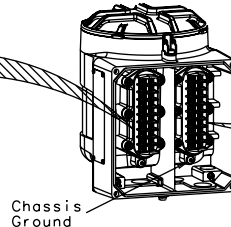
Hazardous Area
Class I, Div. 2, Groups A,B,C,D
Class II, Div. 2, Groups F,G

	DIV 1 IS PRMTR	DIV 2 NON-INCND PRMTR
Voc (Vdc)	17.22	17.22
Isc (mA)	484	484
Po (W)	2.05	2.05
Ca (μF)	A,B N/A	1.21
	C 2.04	8.32
	D 8.5	33.75
La (μH)	A,B N/A	252μH
	C 151	1000
	D 607	2100

3700
Intrinsically Safe
Terminals
(color: blue)



VDC+
VDC-
RS485A
RS485B



3700
Non-Intrinsically Safe
Terminals
(color: grey)

Chassis
Ground

This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

	9	10
85-265 VAC	L/L2	N/L1
18-30 VDC	+	-

NOTE: Prepare cable per the instructions provided with the cable.

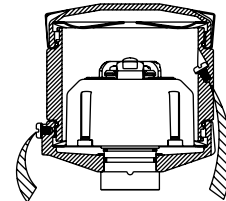
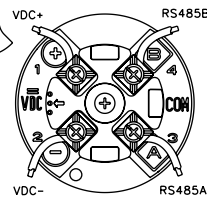
4-WIRE
IS
Cable
1000 ft
maximum
cable
length

Hazardous Area
Class I, Div. 1, Groups C,D
Class I, Div. 2, Groups A,B,C,D
Class II, Groups E,F,G

Refer to sensor tag for complete hazardous area classification.

I.S. AND NON-INCENDIVE CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.3 Vdc
I _{max}	484 mA
P _{max}	2.1W
Ci	2200pF
Li	30μH

1000 ft
maximum
cable
length



This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

Allowable process fluid temperature range for integrally mounted booster amplifier is $-40^{\circ}\text{C} \leq T_{\text{fluid}} \leq +60^{\circ}\text{C}$.

Power 3/4"-14 NPT
Conduit Seal
Required within 18"
of enclosure. To be
sealed after wiring.
(customer supplied)

To drive coil
located in mass
flow meter (drive
coil is also
explosion proof)

Chassis
Ground

Copper
wire
20-14 AWG

85-250 VAC
50-60 HZ

Explosion-Proof
housing

This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

For model CMF400M***N, followed by N followed by *C or A*AZ*, see additional installation requirements on drawing EB-3005974

Micro Motion mass
flowmeter system
connection for
Intrinsically
safe operation.

INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc < =	Vmax
Isc < =	I _{max}
(Voc x Isc) / 4 < =	Pmax
*Ca > =	C _{cable} + C _{i1} + C _{i2} + ... + C _{in}
*La > =	L _{cable} + L _{i1} + L _{i2} + ... + L _{in}

*The total Ci is equal to the sum of all Ci's of all devices on the network. C_{cable} is the total capacitance of all cable on the network.

*The total Li is equal to the sum of all Li's of all devices on the network. L_{cable} is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:

Cable Capacitance = 60pF/ft
Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

Electronics: 3700
Sensor: CMF400

EB-20000218 Rev. B
SHT 1 OF 1

Model 3700 4-Wire Installation

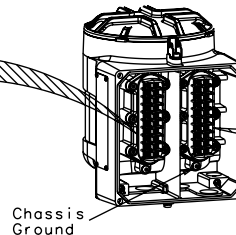
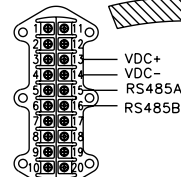
Remote transmitter to core processor mounted on D600 sensor

3700 IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

	DIV 1 IS PRMTR	DIV 2 NON-INCND PRMTR
Voc (Vdc)	17.22	17.22
Isc (mA)	484	484
Po (W)	2.05	2.05
Ca (μF)	A,B 2.04	N/A 8.32
	D 8.5	33.75
La (μH)	A,B N/A	252μH
	C 151	1000
	D 607	2100

3700
Intrinsically Safe
Terminals
(color: blue)



3700
Non-Intrinsically Safe
Terminals
(color: grey)

	9	10
85-265 VAC	L/L2	N/L1
18-30 VDC	+	-

NOTE: Prepare cable per the instructions provided with the cable.

4-WIRE IS Cable
1000 ft maximum cable length

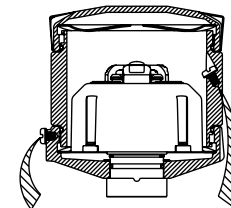
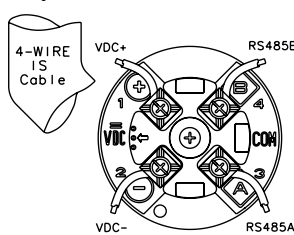
This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

Hazardous Area
Class I, Div. 1, Groups C,D
Class I, Div. 2, Groups A,B,C,D
Class II, Groups E,F,G

Refer to sensor tag for complete hazardous area classification.

I.S. AND NON-INCENDIVE CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.3 Vdc
Imax	484 mA
Pmax	2.1W
Ci	2200pF
Li	30μH

1000 ft maximum cable length



This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

Allowable process fluid temperature range for integrally mounted booster amplifier is $-40^{\circ}\text{C} \leq T_{\text{fluid}} \leq +60^{\circ}\text{C}$.

Power 3/4"-14 NPT
Conduit Seal
Required within 18" of enclosure. To be sealed after wiring. (customer supplied)

To drive coil located in mass flow meter (drive coil is also explosion proof)

Chassis Ground
Copper wire 20-14 AWG

85-250 VAC
50-60 HZ

Explosion-Proof housing

For model D600S***S, followed by N followed by *C or *A*Z* see additional installation requirements on drawing EB-1005084

Micro Motion mass flowmeter system connection for Intrinsically safe operation.

This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc	$\leq V_{\text{max}}$
Isc	$\leq I_{\text{max}}$
$(V_{\text{oc}} \times I_{\text{sc}}) / 4$	$\leq P_{\text{max}}$
$\sum C_i$	$\leq C_{\text{cable}} + C_1 + C_2 + \dots + C_n$
$\sum L_i$	$\leq L_{\text{cable}} + L_1 + L_2 + \dots + L_n$

*The total C_i is equal to the sum of all C_i 's of all devices on the network. C_{cable} is the total capacitance of all cable on the network.

*The total L_i is equal to the sum of all L_i 's of all devices on the network. L_{cable} is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:

Cable Capacitance = 60pF/ft
Cable Inductance = 0.20μH/ft

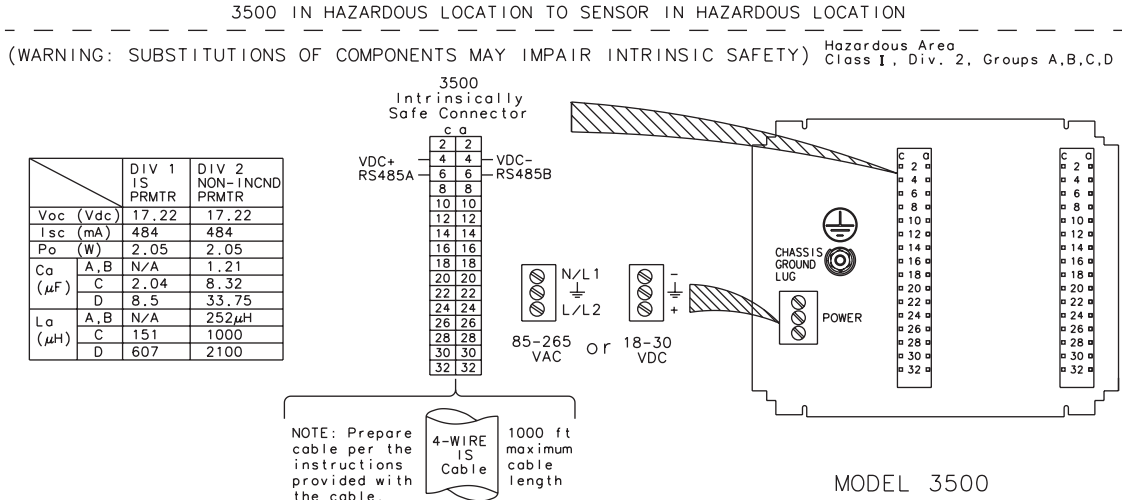
This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

Electronics: 3700
Sensor: D600

EB-20000221 Rev. B
SHT 1 OF 1

Model 3500 4-Wire Installation

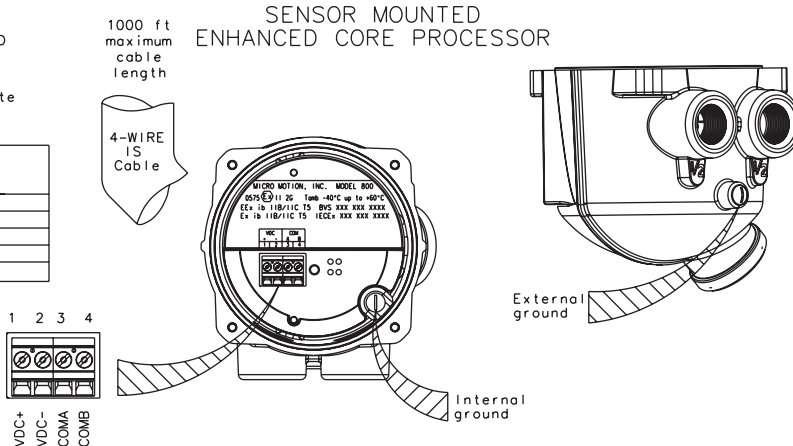
Remote transmitter to enhanced core processor mounted on sensor



Hazardous Area
Class I, Div. 1, Groups C,D
Class I, Div. 2, Groups A,B,C,D
Class II, Groups E,F,G

Refer to sensor tag for complete hazardous area classification.

I.S. AND NON-INCENDIVE ENHANCED CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.3 Vdc
Imax	484 mA
Pmax	2.1W
Ci	2200pF
Li	30μH



INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS
Voc ≤ Vmax
Isc ≤ Imax
(Voc × Isc) / 4 ≤ Pmax
*Ca > = Ccable + Ci1 + Ci2 + ... + Cin
*La > = Lcable + Li1 + Li2 + ... + Lin

•The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.

•The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:
Cable Capacitance = 60pF/ft
Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

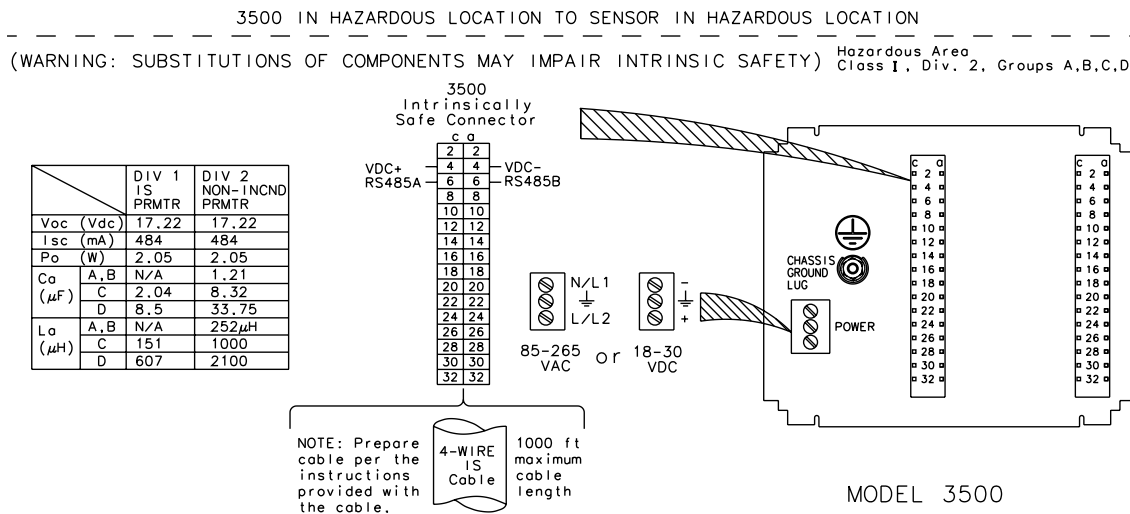
Micro Motion mass flowmeter system connection for Intrinsically safe operation.

Electronics: 3500

EB-20003011 Rev. A
SHT 1 OF 1

Model 3500 4-Wire Installation

Remote transmitter to core processor mounted on CMF, F, H, R, CNG, and T sensors

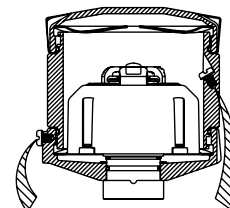
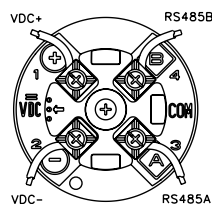
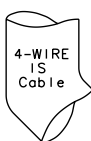


Hazardous Area
Class I, Div. 1, Groups C,D
Class I, Div. 2, Groups A,B,C,D
Class II, Groups E,F,G

Refer to sensor tag for complete hazardous area classification.

I.S. AND NON-INCENDIVE CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.3 Vdc
Imax	484 mA
Pmax	2.1W
Ci	2200pF
Li	30μH

1000 ft maximum cable length



This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

SENSOR MONTED CORE PROCESSOR

INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc	≤ Vmax
Isc	≤ Imax
(Voc x Isc) / 4	≤ Pmax
Ca	≥ Ccable + C11 + C12 + ... + Cin
La	≥ Lcable + L11 + L12 + ... + Lin

*The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.

*The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:
Cable Capacitance = 60pF/ft
Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

Micro Motion mass flowmeter system connection for Intrinsically safe operation.

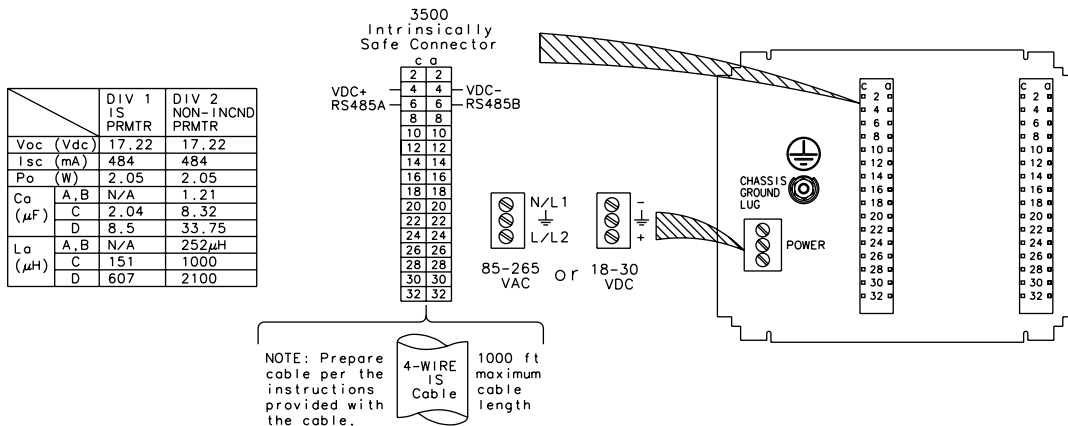
Electronics: 3500

EB-20000250 Rev. B
SHT 1 OF 1

Model 3500 4-Wire Installation

Remote transmitter to core processor mounted on CMF400 sensor with booster amplifier

3500 IN HAZARDOUS LOCATION TO SENSOR IN HAZARDOUS LOCATION
(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY) Hazardous Area Class 1, Div. 2, Groups A,B,C,D

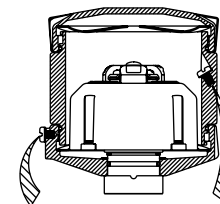
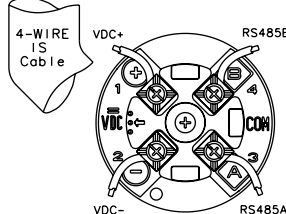


Hazardous Area Class 1, Div. 1, Groups C,D
Class 1, Div. 2, Groups A,B,C,D
Class II, Groups E,F,G

Refer to sensor tag for complete hazardous area classification.

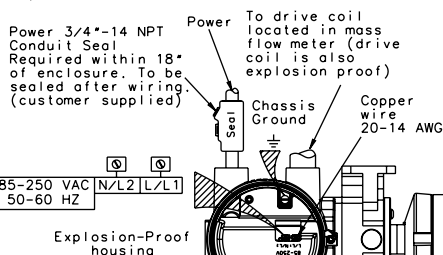
I.S. AND NON-INCENDIVE CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.3 Vdc
Imax	484 mA
Pmax	2.1W
Ci	2200pF
Li	30μH

1000 ft maximum cable length



This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

Allowable process fluid temperature range for integrally mounted booster amplifier is $-40^{\circ}\text{C} \leq T_{\text{fluid}} \leq +60^{\circ}\text{C}$.



For model CMF400M**N, followed by N followed by *C or A*AZ* see additional installation requirements on drawing EB-3005974

Micro Motion mass flowmeter system connection for Intrinsically safe operation.

INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc <=	Vmax
Isc <=	Imax
$(Voc \times Isc) / 4 <= Pmax$	
*Ca >=	Ccable + Ci1 + Ci2 + ... + Cin
*La >=	Lcable + Li1 + Li2 + ... + Lin

*The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.

*The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:

Cable Capacitance = 60pF/ft
Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

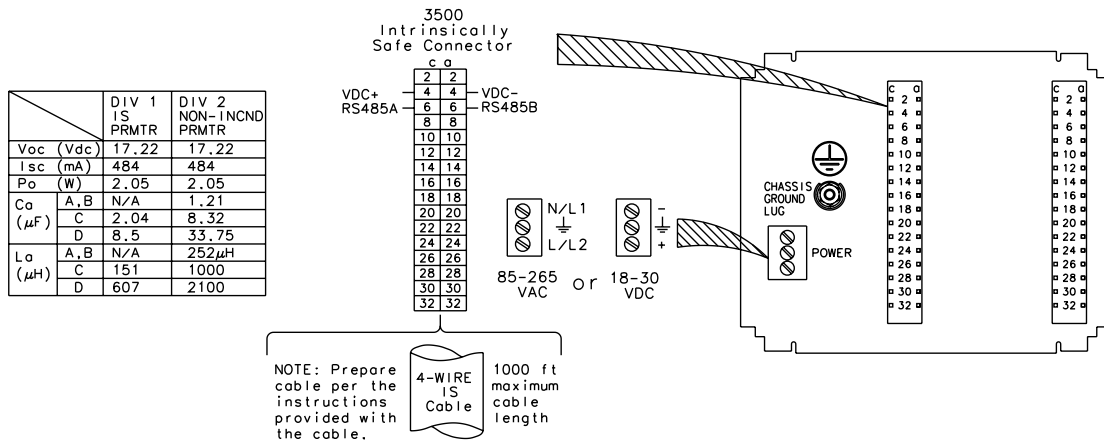
Electronics: 3500
Sensor: CMF400

EB-20000244 Rev. B
SHT 1 OF 1

Model 3500 4-Wire Installation

Remote transmitter to core processor mounted on D600 sensor

3500 IN HAZARDOUS LOCATION TO SENSOR IN HAZARDOUS LOCATION
(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY) Hazardous Area Class I, Div. 2, Groups A,B,C,D

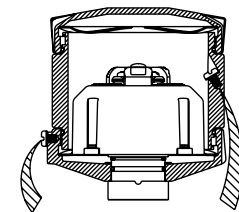
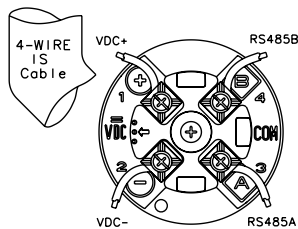


Hazardous Area
Class I, Div. 1, Groups C,D
Class I, Div. 2, Groups A,B,C,D
Class II, Groups E,F,G

Refer to sensor tag for complete hazardous area classification.

I.S. AND NON-INCENDIVE CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.3 Vdc
Imax	484 mA
Pmax	2.1W
Ci	2200pF
Li	30μH

1000 ft maximum cable length



This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

Allowable process fluid temperature range for integrally mounted booster amplifier is $-40^{\circ}\text{C} \leq T_{\text{fluid}} \leq +60^{\circ}\text{C}$.

Power 3/4"-14 NPT Conduit Seal Required within 18" of enclosure. To be sealed after wiring. (customer supplied)



This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

For model D600S***S, followed by N followed by *C or A*AZ* see additional installation requirements on drawing EB-1005084

Micro Motion mass flowmeter system connection for intrinsically safe operation.

INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc	$\leq V_{\text{max}}$
Isc	$\leq I_{\text{max}}$
$(V_{\text{oc}} \times I_{\text{sc}}) / 4$	$\leq P_{\text{max}}$
$*C_{\text{a}} >$	$C_{\text{cable}} + C_{\text{i1}} + C_{\text{i2}} + \dots + C_{\text{in}}$
$*L_{\text{a}} >$	$L_{\text{cable}} + L_{\text{i1}} + L_{\text{i2}} + \dots + L_{\text{in}}$

*The total C_{i} is equal to the sum of all C_{i} 's of all devices on the network. C_{cable} is the total capacitance of all cable on the network.

*The total L_{i} is equal to the sum of all L_{i} 's of all devices on the network. L_{cable} is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:

Cable Capacitance = 60pF/ft
Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

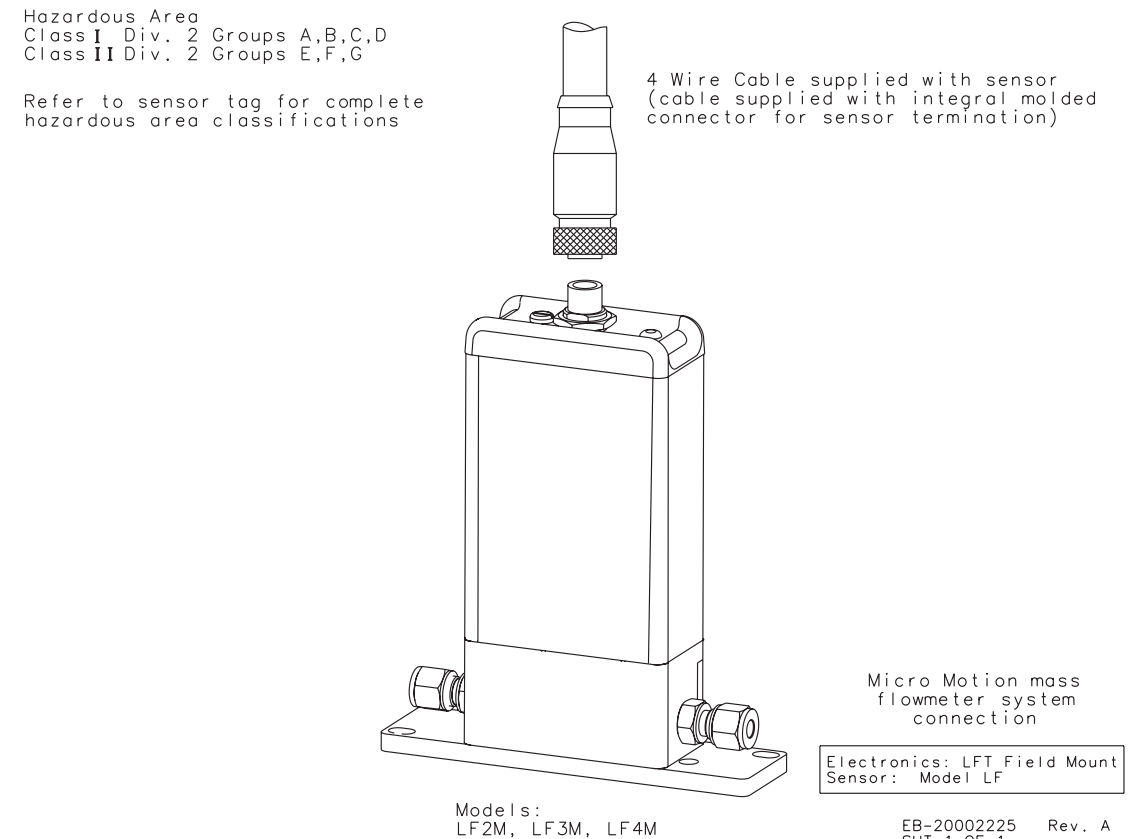
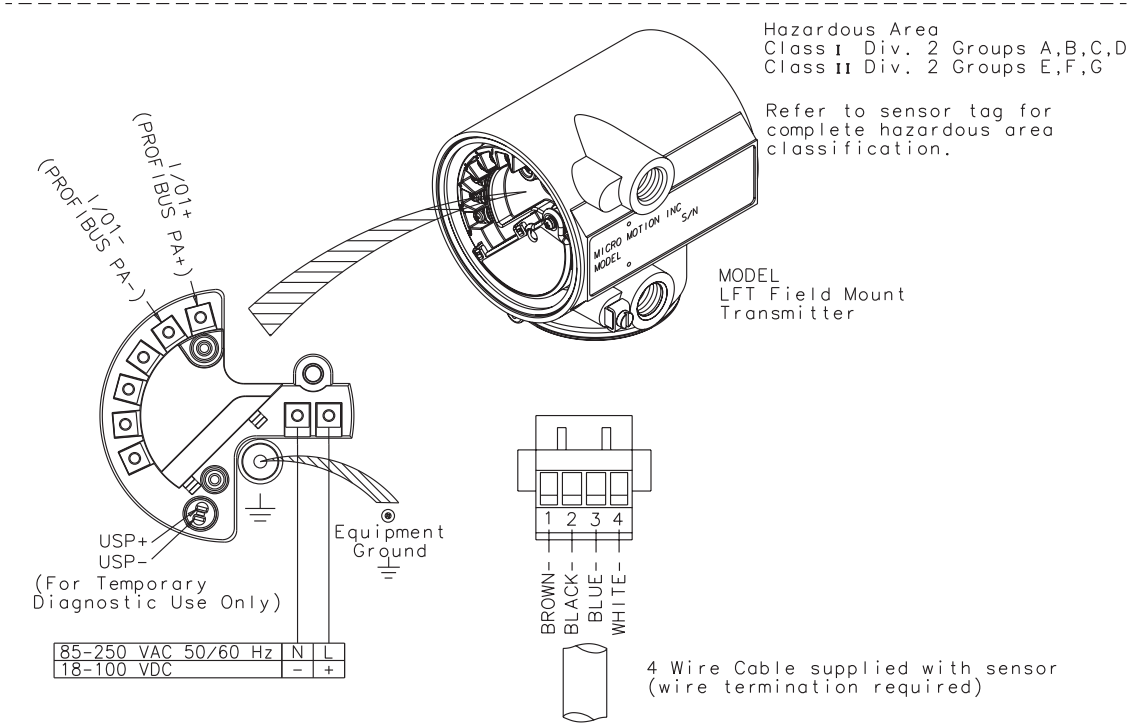
Electronics: 3500
Sensor: D600

EB-20000247 Rev. B
SHT 1 OF 1

Model LFT 4-Wire Installation to LF

Profibus-PA transmitter remotely mounted to LF sensor

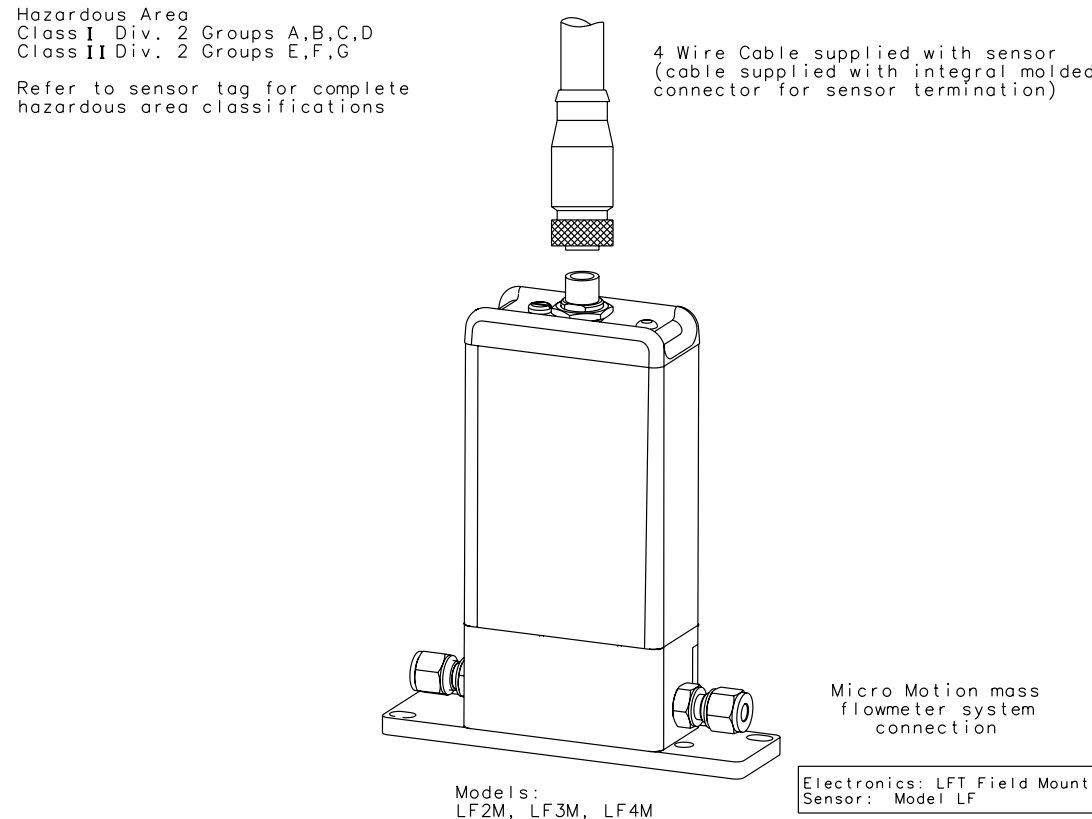
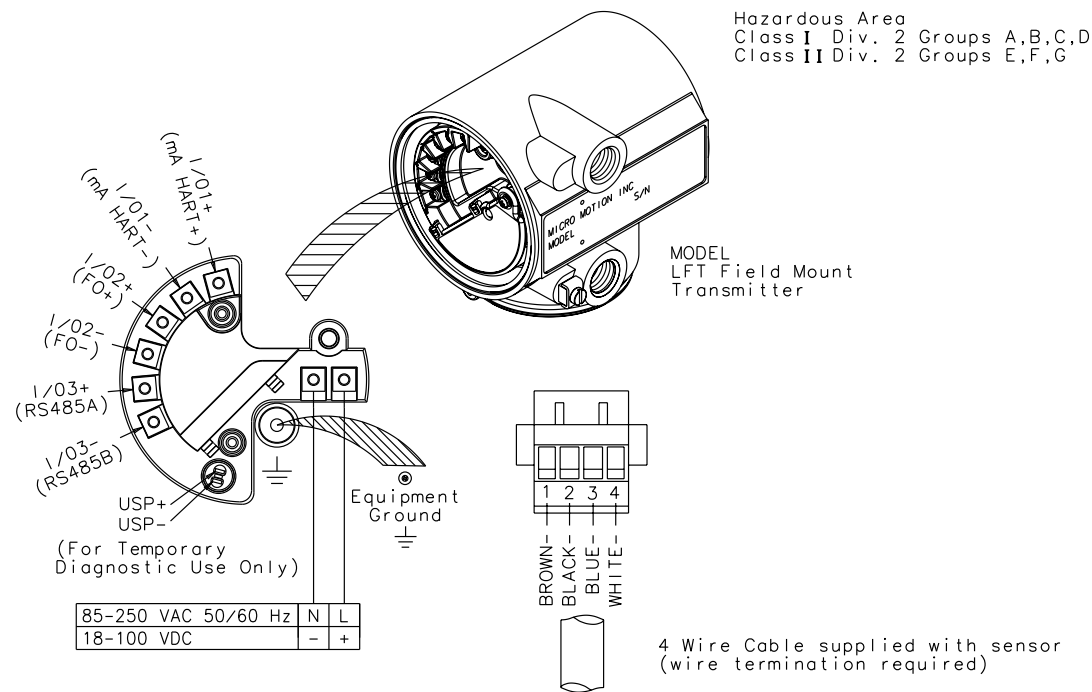
REMOTE MOUNT MODEL LFT IN HAZARDOUS LOCATION



Model LFT 4-Wire Installation to LF

mA/FO transmitter remotely mounted to LF sensor

REMOTE MOUNT MODEL LFT IN HAZARDOUS LOCATION

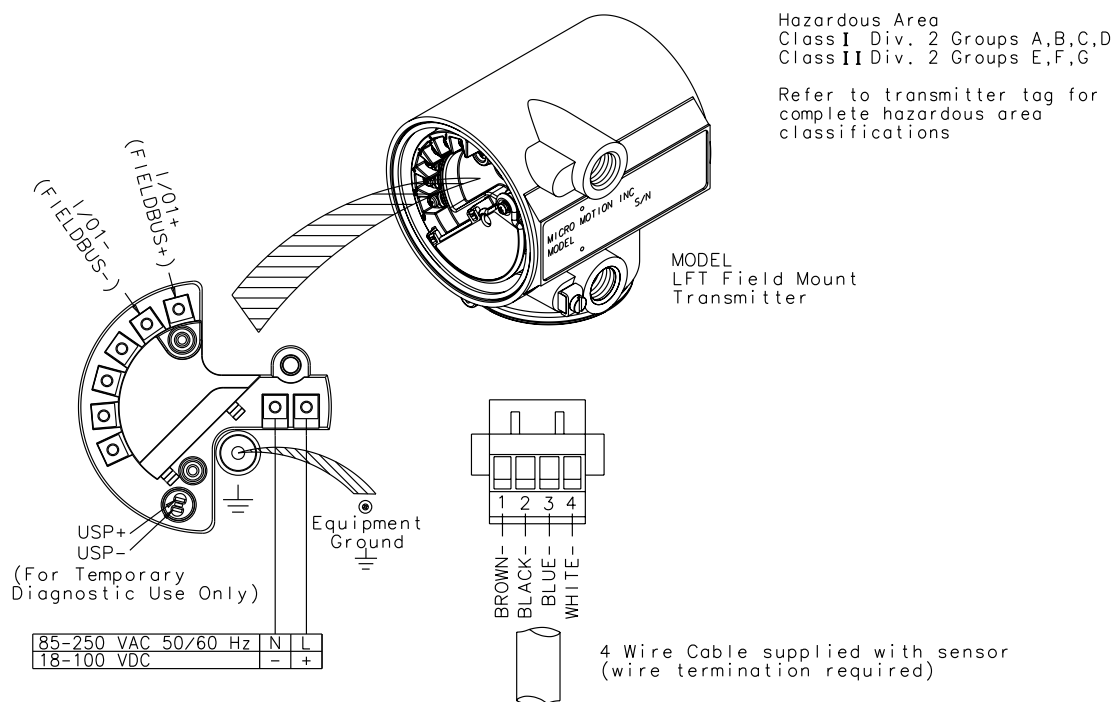


EB-20002227 Rev. A
SHT 1 OF 1

Model LFT 4-Wire Installation to LF

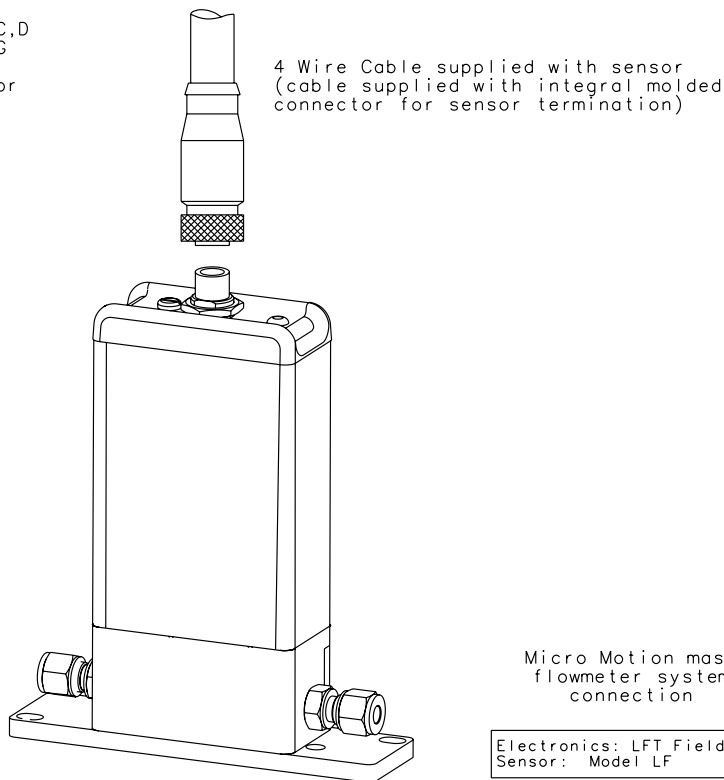
FOUNDATION fieldbus™ transmitter remotely mounted to LF sensor

REMOTE MOUNT MODEL LFT IN HAZARDOUS LOCATION



Hazardous Area
Class I Div. 2 Groups A,B,C,D
Class II Div. 2 Groups E,F,G

Refer to transmitter tag for complete hazardous area classifications



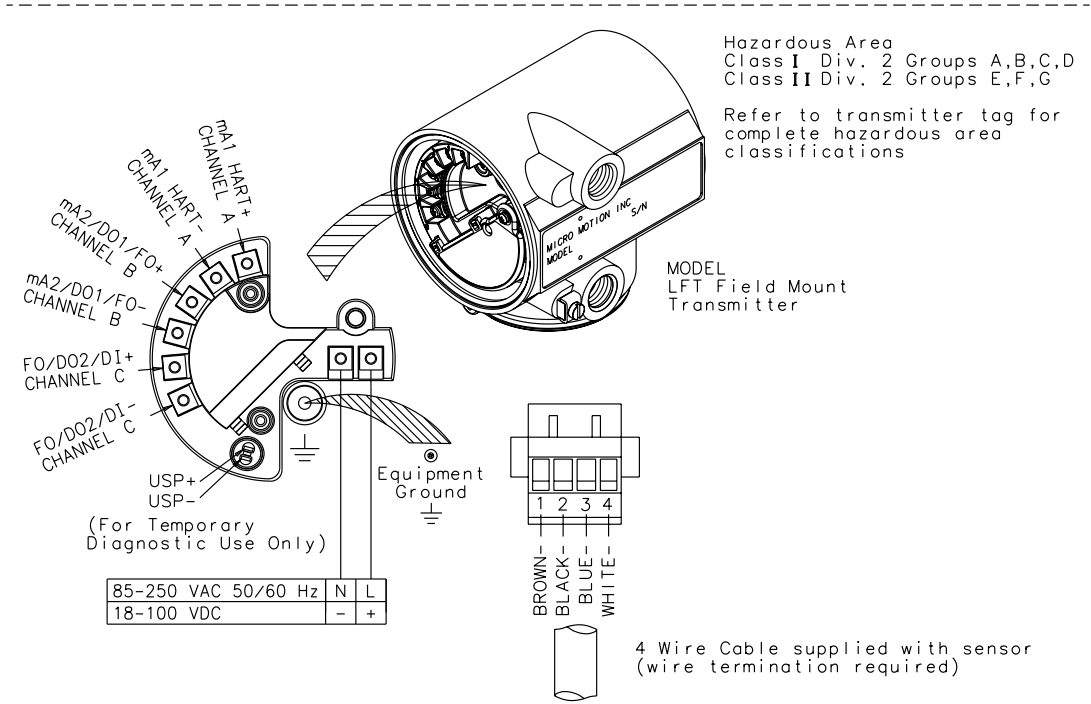
Models:
LF2M, LF3M, LF4M

EB-20002226 Rev. A
SHT 1 OF 1

Model LFT 4-Wire Installation to LF

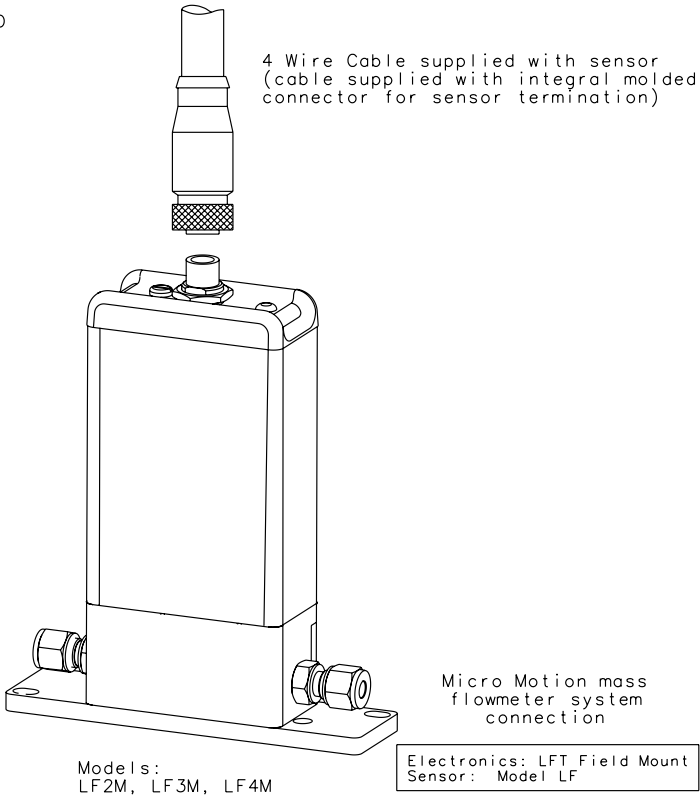
Config I/O transmitter remotely mounted to LF sensor

REMOTE MOUNT MODEL LFT IN HAZARDOUS LOCATION



Hazardous Area
Class I Div. 2 Groups A,B,C,D
Class II Div. 2 Groups E,F,G

Refer to transmitter tag for complete hazardous area classifications

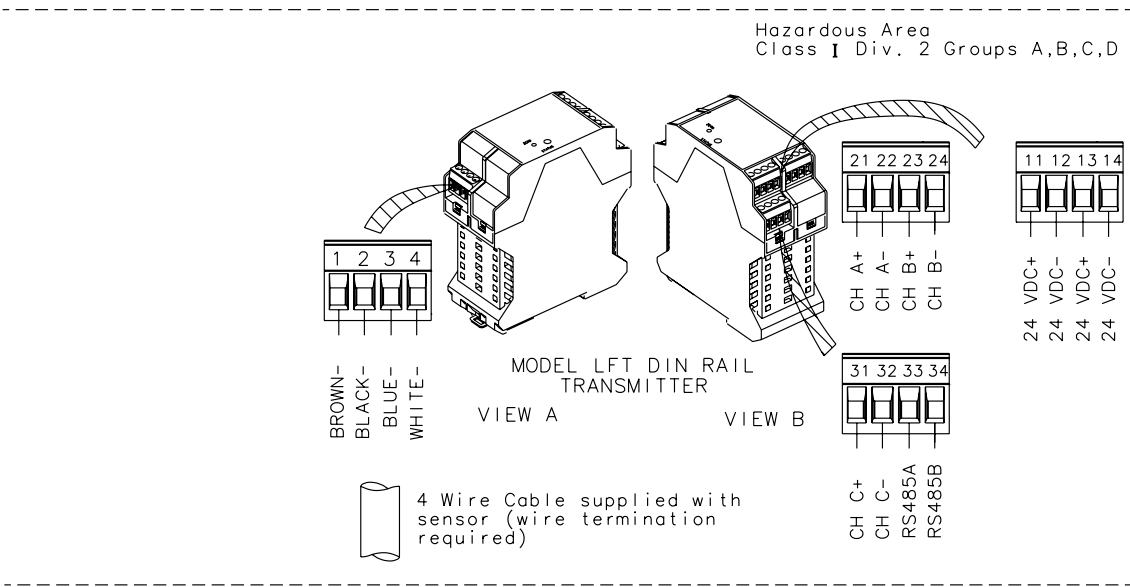


EB-20002229 Rev. A
SHT 1 OF 1

Model LFT 4-Wire Installation to LF

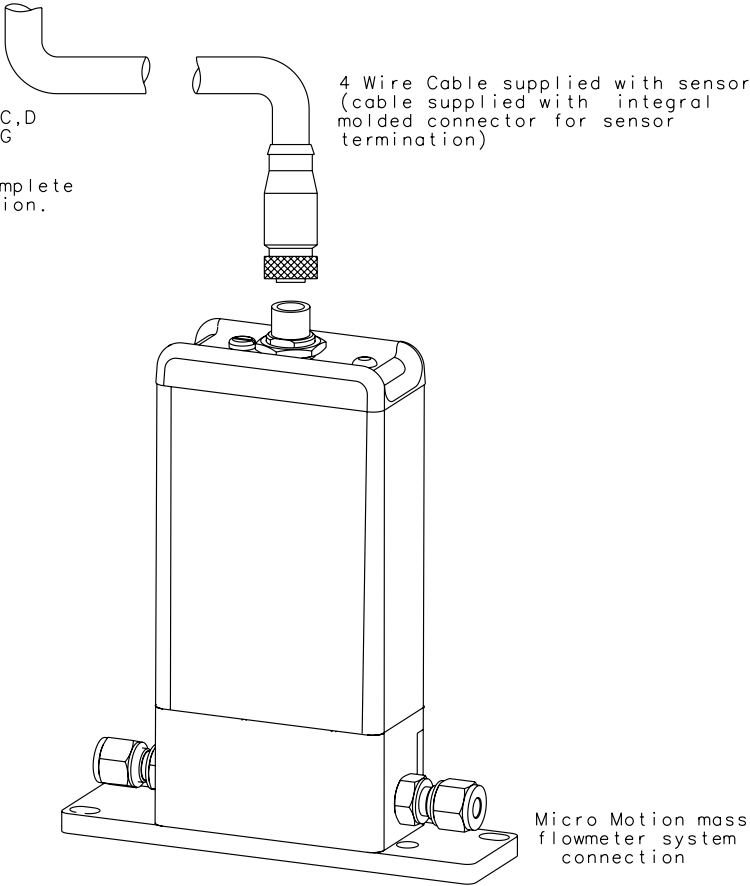
DIN rail transmitter remotely mounted to LF sensor

REMOTE MOUNT MODEL LFT IN HAZARDOUS LOCATION



Hazardous Area
Class I Div. 2 Groups A,B,C,D
Class II Div. 2 Groups E,F,G

Refer to sensor tag for complete hazardous area classification.



Models:
LF2M, LF3M, LF4M

Electronics: LFT DIN Rail Mount
Sensor: Model LF

EB-20002223 Rev. A
SHT 1 OF 1

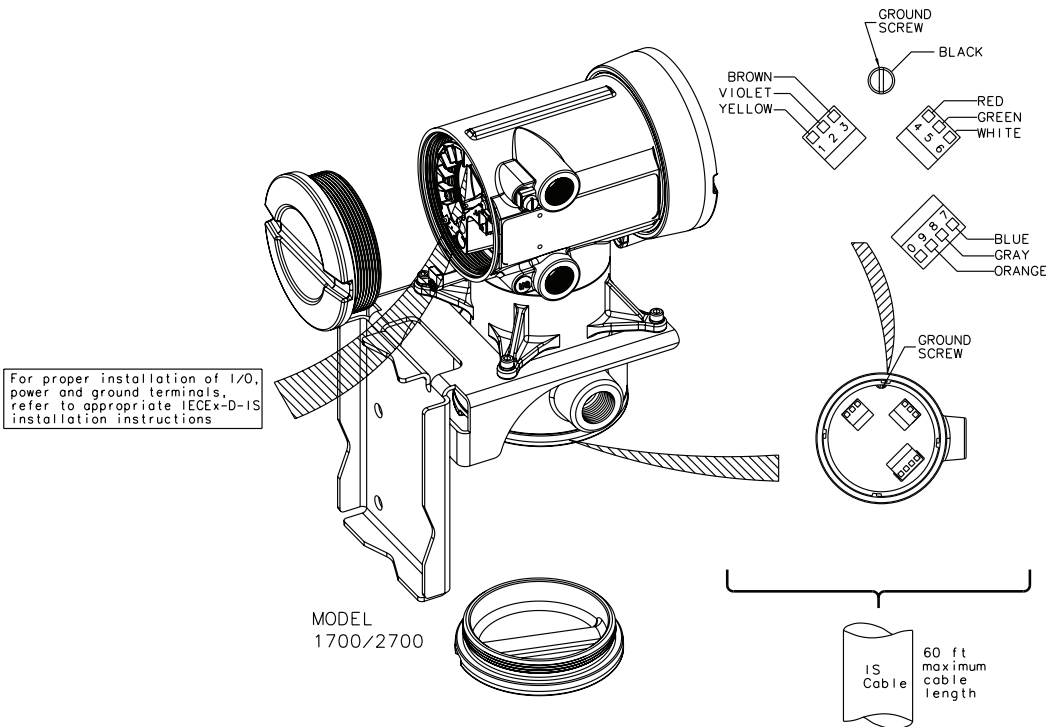
Model 1700/2700 9-Wire Installation

Transmitter with integrally mounted core processor to junction box on
CMF (except CMF400 with booster amplifier), F, H, T, D (except D600), and DL sensors

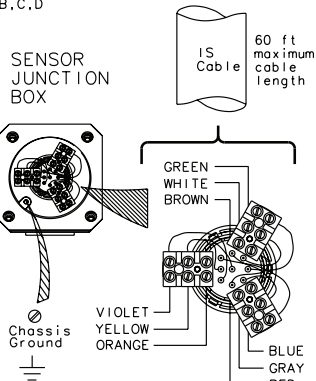
MODEL 1700/2700 IN HAZARDOUS LOCATION TO SENSOR IN HAZARDOUS LOCATION

Hazardous Area
Class I Div. 1 Groups C and D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)



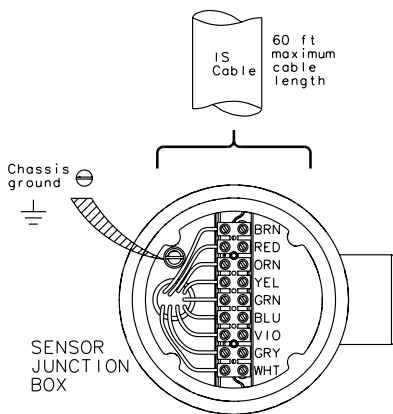
Hazardous Area
Class I Div. 1 Groups C and D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G



MODELS			
CMF	F	T	H

Supplied as intrinsically safe

Hazardous Area
Class I Div. 1 Groups C and D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G



MODEL
D, DL (EXCEPT D600)

Supplied as intrinsically safe

Electronics: 1700/2700

EB-20001058 Rev. C

Model 1700/2700 9-Wire Installation

Transmitter with integrally mounted core processor to junction box on
CMF400 sensor with booster amplifier

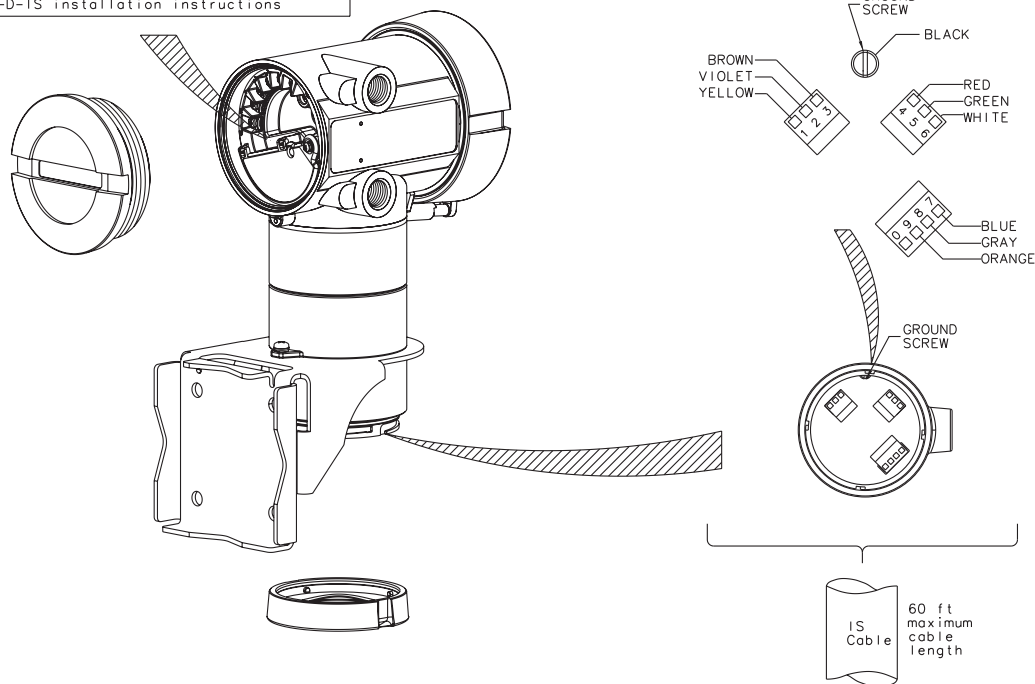
MODEL 1700/2700 IN HAZARDOUS LOCATION TO SENSOR IN HAZARDOUS LOCATION

Hazardous Area

Class I Div. 1 Groups C and D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

For proper installation of I/O, power and ground terminals, refer to appropriate CSA-D-IS installation instructions



Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

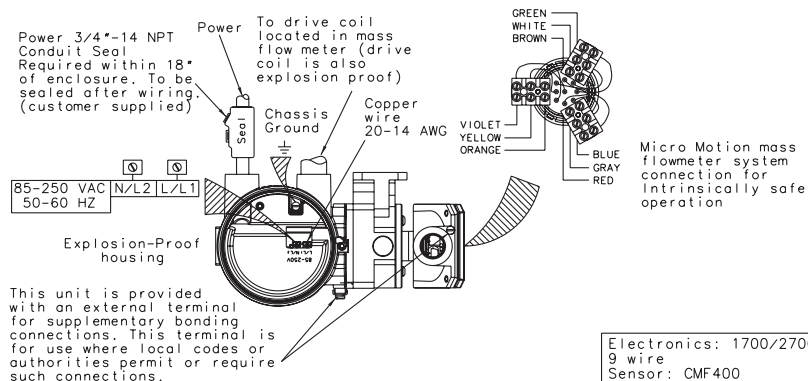
For model CMF400M * * * N, followed by P followed by * C * * * *
or
For model CMF400M * * * N, followed by P followed by * A * * * *
see additional installation requirements on drawing
EB-3005821

60 ft
maximum
cable
length

CAUTION:
To maintain intrinsic
safety, the intrinsically
safe wiring must be
separated from all other
wiring, and the
Transmitter and Sensor
must be properly grounded.

Install per Canadian
Electrical Code
Part 1

Allowable process fluid temperature
range for integrally mounted booster
amplifier is $-40^{\circ}\text{C} \leq T_{\text{fluid}} \leq +60^{\circ}\text{C}$.



Model: CMF400

Electronics: 1700/2700
9 wire
Sensor: CMF400

EB-3006199 Rev. C

Model 1700/2700 9-Wire Installation

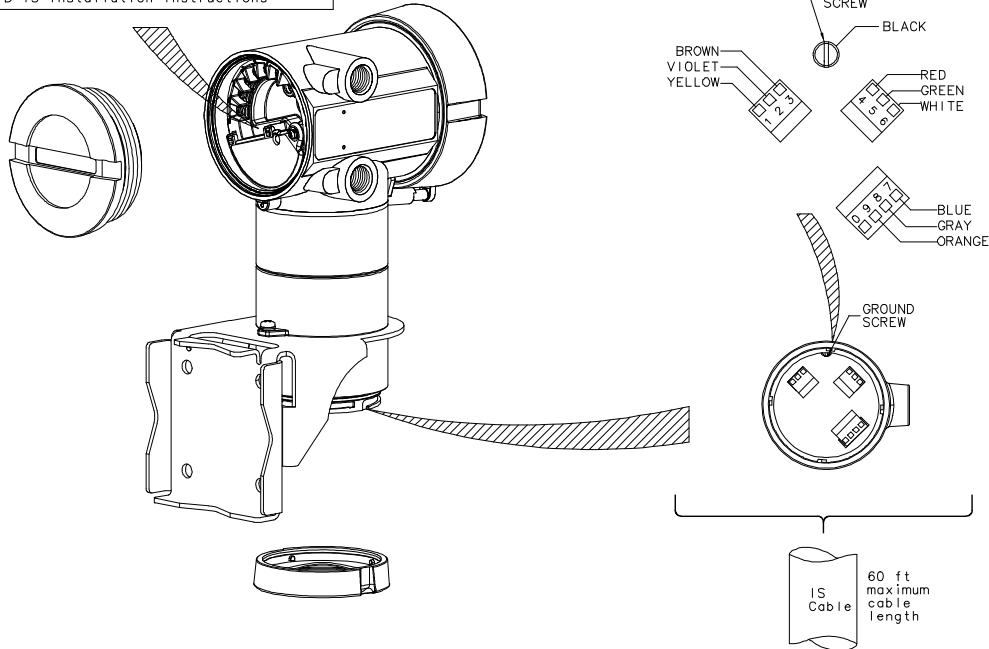
Transmitter with integrally mounted core processor to junction box on D600 sensor

MODEL 1700/2700 IN HAZARDOUS LOCATION TO SENSOR IN HAZARDOUS LOCATION

Hazardous Area
Class I Div. 1 Groups C and D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

For proper installation of I/O, power and ground terminals, refer to appropriate CSA-D-IS installation instructions



Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

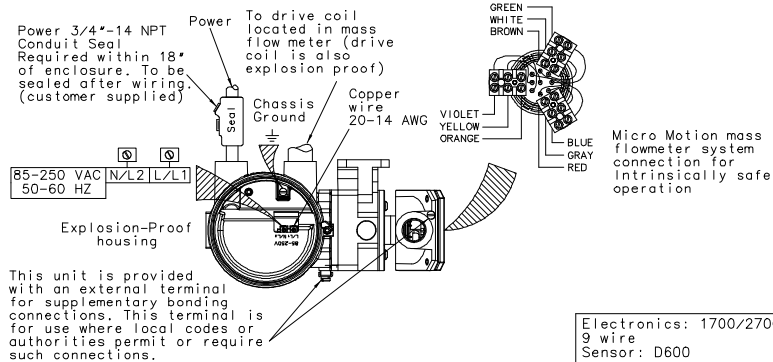
For model D600S * * * S, followed by P followed by * C * * * * *
or
For model D600S * * * S, followed by P followed by * A * * * * *
see additional installation requirements on drawing
EB-1005085

60 ft
maximum
cable
length

CAUTION:
To maintain intrinsic safety, the intrinsically safe wiring must be separated from all other wiring, and the Transmitter and Sensor must be properly grounded.

Install per Canadian Electrical Code Part 1

Allowable process fluid temperature range for integrally mounted booster amplifier is $-20^{\circ}\text{C} \leq T_{\text{fluid}} \leq +60^{\circ}\text{C}$.



EB-1005117 Rev. B

Model 1700/2700 9-Wire Installation

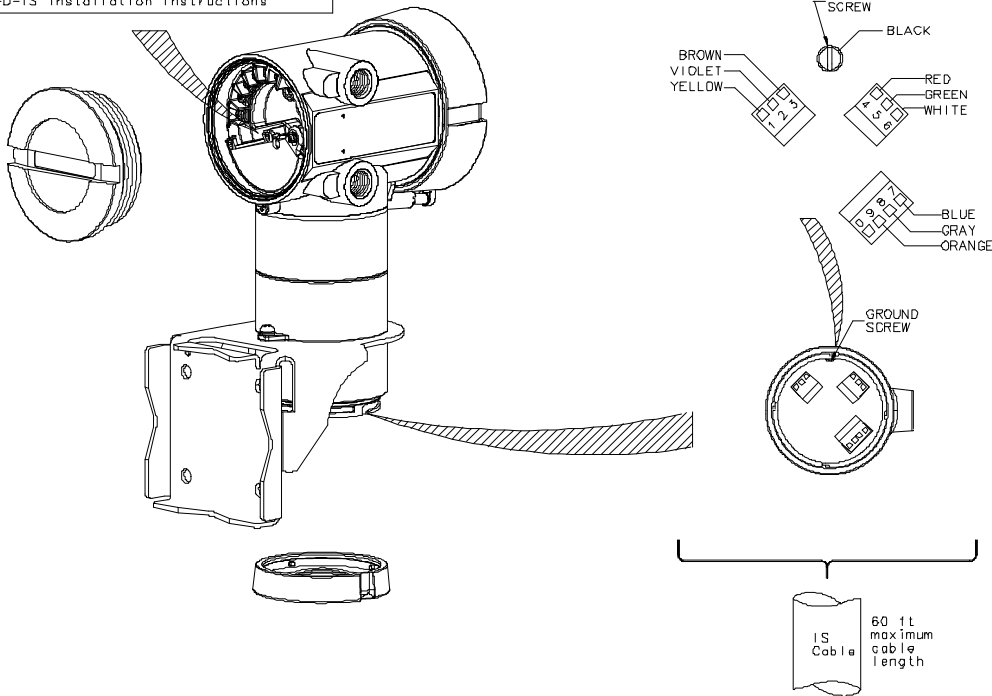
Transmitter with integrally mounted core processor to junction box on DT sensor

MODEL 1700/2700 IN HAZARDOUS LOCATION TO SENSOR IN HAZARDOUS LOCATION

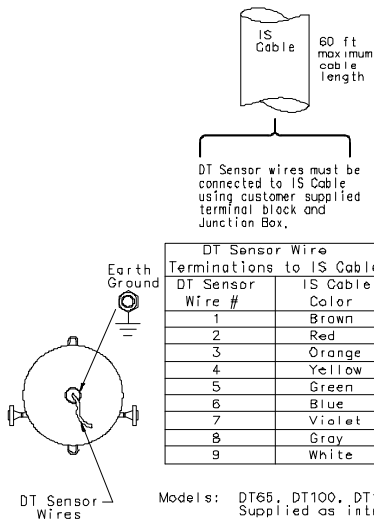
Hazardous Area
Class I Div. 1 Groups C and D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

For proper installation of I/O, power and ground terminals, refer to appropriate CSA-D-IS installation instructions



Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G



CAUTION:
To maintain intrinsic safety, the intrinsically safe wiring must be separated from all other wiring, and the Transmitter and Sensor must be properly grounded.

Micro Motion mass flowmeter system connection for Intrinsically safe operation

Electronics: 1700/2700

EB-3600538 Rev. B
SHT 1 OF 1

Model 1700/2700 9-Wire Installation

Transmitter to remote core processor to 9-wire junction box on
CMF (except CMF400 with booster amplifier), F, H, T, D (except D600), and DL sensors

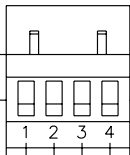
REMOTE MOUNT MODEL 1700/2700 IN HAZARDOUS LOCATION TO SENSOR IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY
IMPAIR INTRINSIC SAFETY)

For proper installation including I/O, power, gland and hazardous area location, refer to appropriate 1700/2700 output option CSA-D-IS installation instructions

	DIV 1 IS PRMTR	DIV 2 NON-INCND PRMTR
Voc (Vdc)	17.22	17.22
Isc (mA)	484	484
Po (W)	2.05	2.05
Co (μF)	A,B N/A	1.21
	C 2.06	8.32
	D 8.5	33.75
Lo (μH)	A,B N/A	252μH
	C 151	1000
	D 607	2100

REMOTE
INSTALLATION



4-WIRE
IS Cable

1000 ft
maximum
cable
length

MODEL 1700/2700

Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G
Temp. Code T4A

This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS

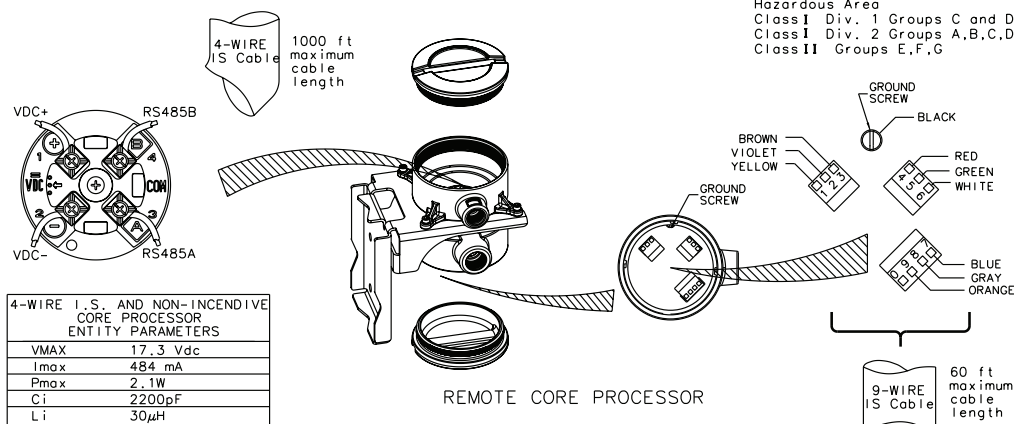
Voc < = Vmax
Isc < = Imax
(Voc x Isc) / 4 < = Pmax
Co > = Ccable + C1 + C2 + ... + Cin
Lo > = Lcable + L1 + L2 + ... + Lin

*The total Ci is equal to the sum of all Ci's of all devices on the network.
Ccable is the total capacitance of all cable on the network.

*The total Li is equal to the sum of all Li's of all devices on the network.
Lcable is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:
Cable Capacitance = 60pF/ft Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

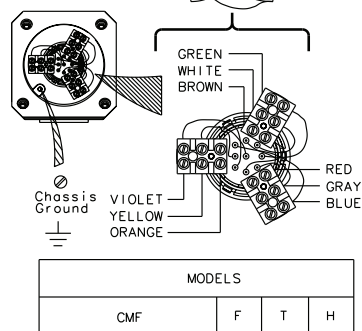


Hazardous Area
Class I Div. 1 Groups C and D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

4-WIRE I-S. AND NON-INCENDIVE CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.3 Vdc
Imax	484 mA
Pmax	2.1W
C1	2200pF
L1	30μH

Hazardous Area
Class I Div. 1 Groups C and D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

SENSOR
JUNCTION
BOX

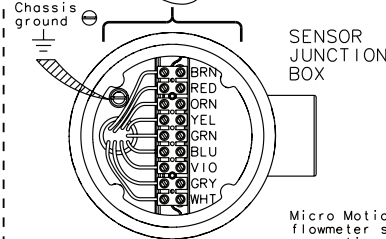


MODELS			
CMF	F	T	H

Supplied as intrinsically safe

60 ft
maximum
cable
length

9-WIRE
IS Cable



MODEL
D, DL (EXCEPT D600)

Supplied as intrinsically safe

Hazardous Area
Class I Div. 1 Groups C and D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

SENSOR
JUNCTION
BOX

Micro Motion mass
flowmeter system
connection for
intrinsically safe
operation.

Electronics:1700/2700

EB-20001060 Rev. B

Model 1700/2700 9-Wire Installation

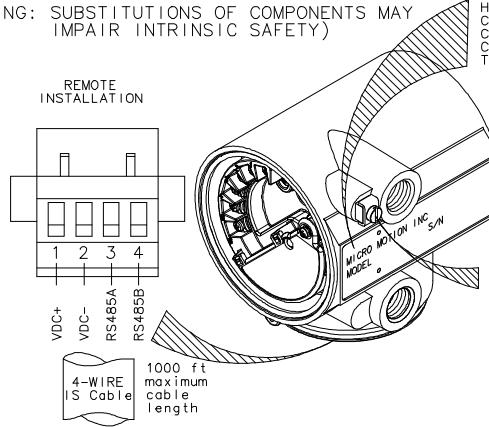
Transmitter to remote mount core processor to 9-wire junction box on
CMF400 sensor with booster amplifier sensor

REMOTE MOUNT MODEL 1700/2700 IN HAZARDOUS LOCATION TO SENSOR IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY
IMPAIR INTRINSIC SAFETY)

For proper installation including I/O, power, gland and hazardous area location, refer to appropriate 1700/2700 output option CSA-D-IS installation instructions

	DIV 1 IS PRMTR	DIV 2 NON-INCND PRMTR
Voc (Vdc)	17.22	17.22
Isc (mA)	484	484
Po (W)	2.05	2.05
Ca (μF)	A,B N/A	1.21
	C 2.06	8.32
	D 8.5	33.75
La (μH)	A,B N/A	252μH
	C 151	1000
	D 607	2100



Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G
Temp. Code T4A

This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS

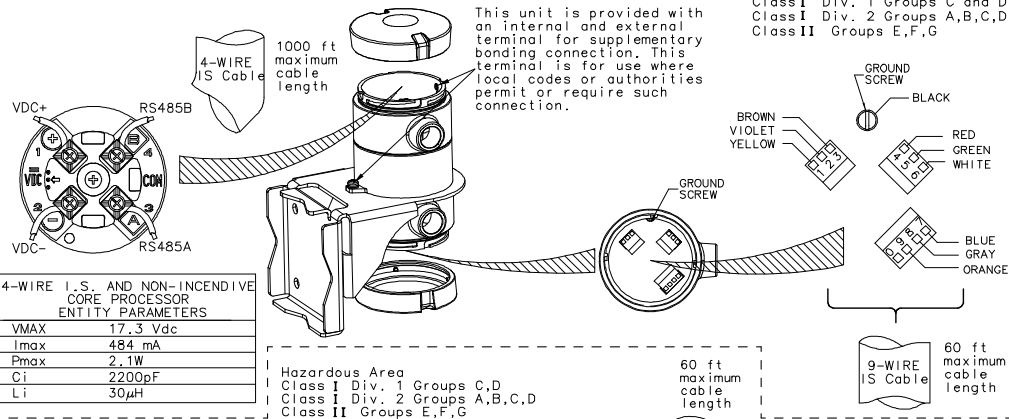
Voc < = Vmax
Isc < = Imax
(Voc x Isc) / 4 < = Pmax
*Ca > = Ccable + Ci1 + Ci2 + ... + Cin
*La > = Lcable + Li1 + Li2 + ... + Lin

*The total Ci is equal to the sum of all Ci's of all devices on the network.
Ccable is the total capacitance of all cable on the network.

*The total Li is equal to the sum of all Li's of all devices on the network.
Lcable is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:
Cable Capacitance = 60pF/ft Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

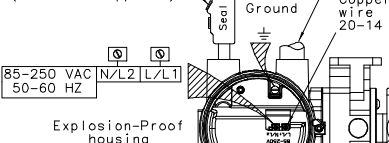


4-WIRE I.S. AND NON-INCENDIVE CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.3 Vdc
Imax	484 mA
Pmax	2.1W
Ci	2200pF
Li	30μH

For model CMF400M * * * N, followed by P followed by * C * * * *
or
For model CMF400M * * * N, followed by P followed by * A * * * *
see additional installation requirements on drawing
EB-3005821

Allowable process fluid temperature
range for integrally mounted booster
amplifier is -40°C ≤ Tfluid ≤ +60°C.

Power 3/4"-14 NPT
Conduit Seal
Required within 18"
of enclosure. To be
sealed after wiring.
(customer supplied)



This unit is provided
with an external terminal
for supplementary bonding
connections. This terminal is
for use where local codes or
authorities permit or require
such connections.

Model: CMF400

CAUTION:
To maintain intrinsic
safety, the intrinsically
safe wiring must be
separated from all other
wiring, and the
Transmitter and Sensor
must be properly grounded.

Install per Canadian
Electrical Code
Part 1

Micro Motion mass
flowmeter system
connection for
intrinsically safe
operation

Electronics: 1700/2700
Sensor: CMF400

EB-3007061 Rev. B

Model 1700/2700 9-Wire Installation

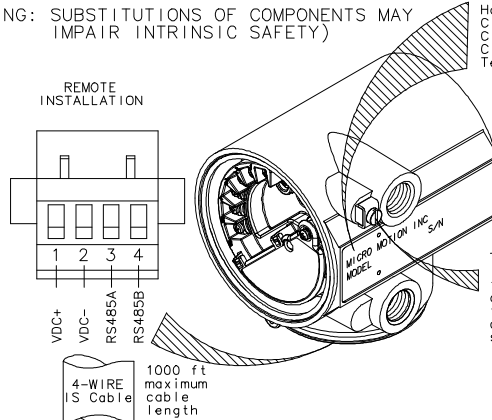
Transmitter to remote mount core processor to 9-wire junction box on D600 sensor

REMOTE MOUNT MODEL 1700/2700 IN HAZARDOUS LOCATION TO SENSOR IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

For proper installation including I/O, power, gland and hazardous area location, refer to appropriate 1700/2700 output option, CSA-D-IS installation instructions

	DIV 1 IS PRMTR	DIV 2 NON-INCND PRMTR
Voc (Vdc)	17.22	17.22
Isc (mA)	484	484
Po (W)	2.05	2.05
Ca (μF)	A, B N/A	1.21
	C 2.06	8.32
	D 8.5	33.75
La (μH)	A, B N/A	252μH
	C 151	1000
	D 607	2100



Hazardous Area
Class I Div. 1 Groups C, D
Class I Div. 2 Groups A, B, C, D
Class II Groups E, F, G
Temp. Code T4A

This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

INSTALLATION NOTES:

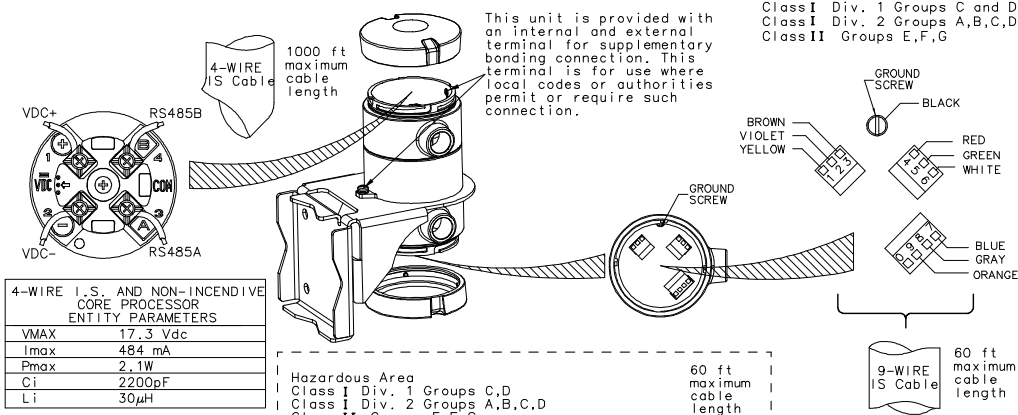
ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc < = Vmax	
Isc < = Imax	
$(Voc \times Isc) / 4 < = Pmax$	
$*Ca > = Ccable + Ci1 + Ci2 + \dots + Cin$	
$*La > = Lcable + Li1 + Li2 + \dots + Lin$	

*The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.

*The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:
Cable Capacitance = 60pF/ft Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

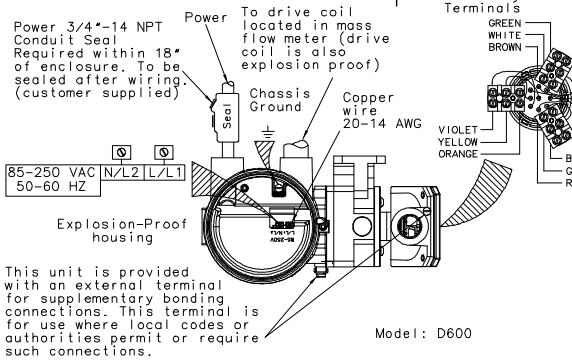


4-WIRE I.S. AND NON-INCENDIVE CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.3 Vdc
Imax	484 mA
Pmax	2.1W
Ci	2200pF
Li	30μH

Hazardous Area
Class I Div. 1 Groups C, D
Class I Div. 2 Groups A, B, C, D
Class II Groups E, F, G

For model D600S *** S, followed by P followed by * C * * * *
For model D600S *** S, followed by P followed by * A * * * *
see additional installation requirements on drawing
EB-1005085

Allowable process fluid temperature range for integrally mounted booster amplifier is -20°C ≤ Tfluid ≤ +60°C.



CAUTION:
To maintain intrinsic safety, the intrinsically safe wiring must be separated from all other wiring, and the Transmitter and Sensor must be properly grounded.
Install per Canadian Electrical Code Part 1

Micro Motion mass flowmeter system connection for intrinsically safe operation

Electronics: 1700/2700
Sensor: D600

EB-1005119 Rev. B

Model 1700/2700 9-Wire Installation

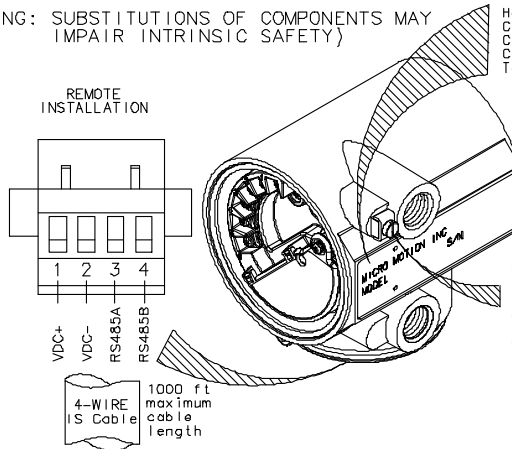
Transmitter to remote core processor to 9-wire junction box on DT sensor

REMOTE MOUNT MODEL 1700/2700 IN HAZARDOUS LOCATION TO SENSOR IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

For proper installation including I/O, power, gland and hazardous area location, refer to appropriate 1700/2700 output option CSA-D-IS installation instructions

	DIV 1 IS PRMTR	DIV 2 NON-INCND PRMTR
Voc (Vdc)	17.22	17.22
Isc (mA)	484	484
Po (W)	2.05	2.05
Ca (μF)	A,B N/A	1.21
	C 2.06	6.32
	D 8.5	33.75
La (μH)	A,B N/A	252μH
	C 151	1000
	D 607	2100



Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G
Temp. Code T4A

This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

INSTALLATION NOTES:

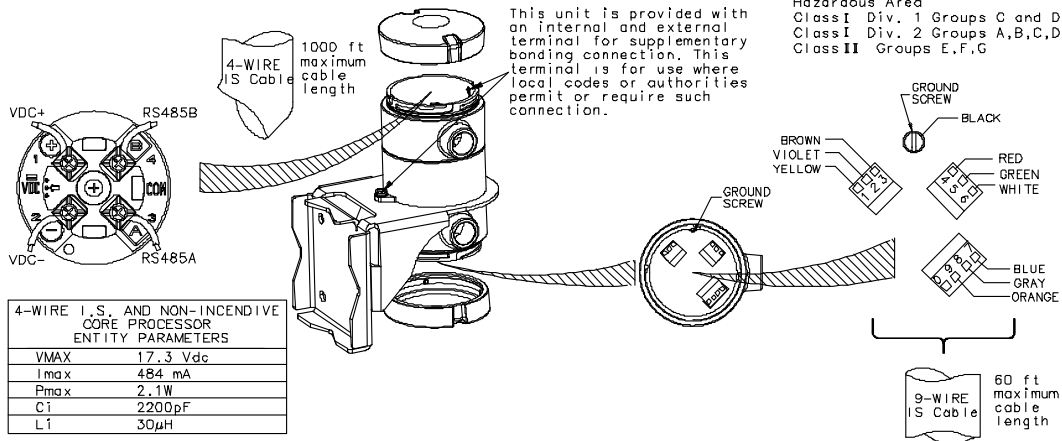
ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc < - Vmax	
Isc < - Imax	
(Voc x Isc) / 4 < - Pmax	
*Ca > - Ccable + C1 + C2 + ... + Cin	
*La > - Lcable + L1 + L2 + ... + Lin	

*The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.

*The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:
Cable Capacitance = 60pF/ft Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.



Hazardous Area
Class I Div. 1 Groups C and D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

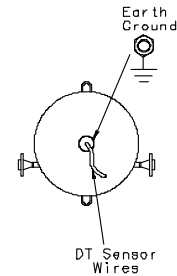
This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

4-WIRE I.S. AND NON-INCENDIVE CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.3 Vdc
Imax	484 mA
Pmax	2.1W
C1	2200pF
L1	30μH

Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

9-WIRE
IS Cable
60 ft
maximum
cable
length

CAUTION:
To maintain intrinsic safety, the intrinsically safe wiring must be separated from all other wiring, and the Transmitter and Sensor must be properly grounded.



Models:
DT65, DT100, DT150
Supplied as intrinsically safe.

DT Sensor wires must be connected to IS Cable using customer supplied terminal block and Junction Box.

DT Sensor Wire Terminations to 9-Wire IS Cable	
DT Sensor Wire #	IS Cable Color
1	Brown
2	Red
3	Orange
4	Yellow
5	Green
6	Blue
7	Violet
8	Gray
9	White

Micro Motion mass flowmeter system connection for intrinsically safe operation.

Electronics:1700/2700

EB-3600674 Rev. C
SHT 1 OF 1

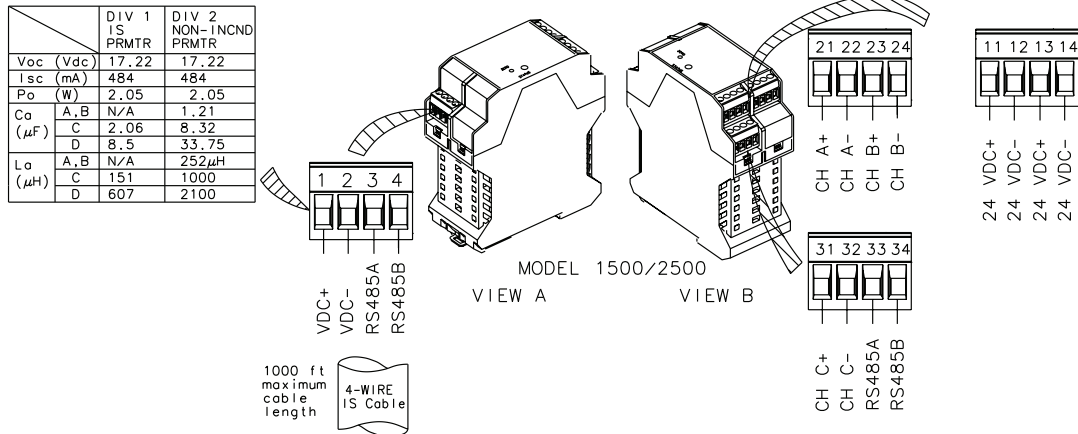
Model 1500/2500 9-Wire Installation

Transmitter to remote mount core processor to 9-wire junction box on
CMF, D (except D600), DL, F, H, and T sensors

MODEL 1500/2500 IN HAZARDOUS LOCATION TO SENSOR IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY
IMPAIR INTRINSIC SAFETY)

Hazardous Area
Class I Div. 2 Groups A,B,C,D



INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS

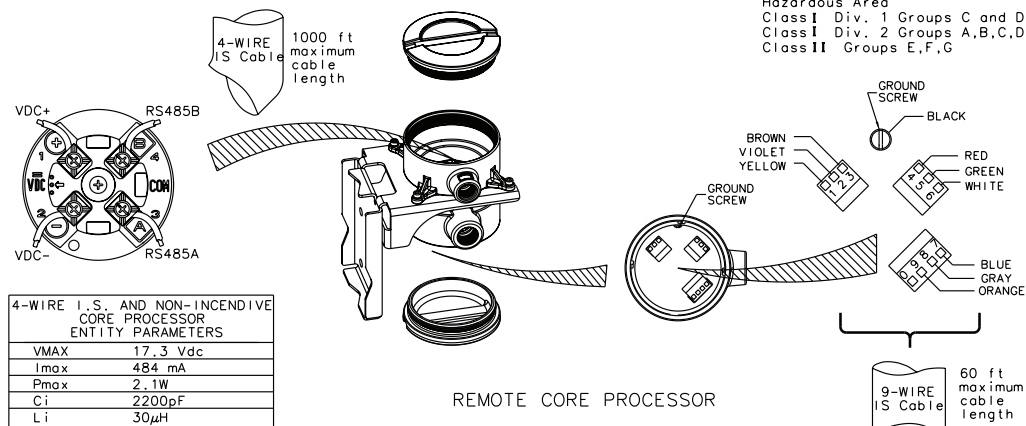
Voc <= Vmax
Isc <= Imax
(Voc x Isc) / 4 <= Pmax
*Co >= Ccable + Ci1 + Ci2 + ... + Cin
*Lo >= Lcable + Li1 + Li2 + ... + Lin

*The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.

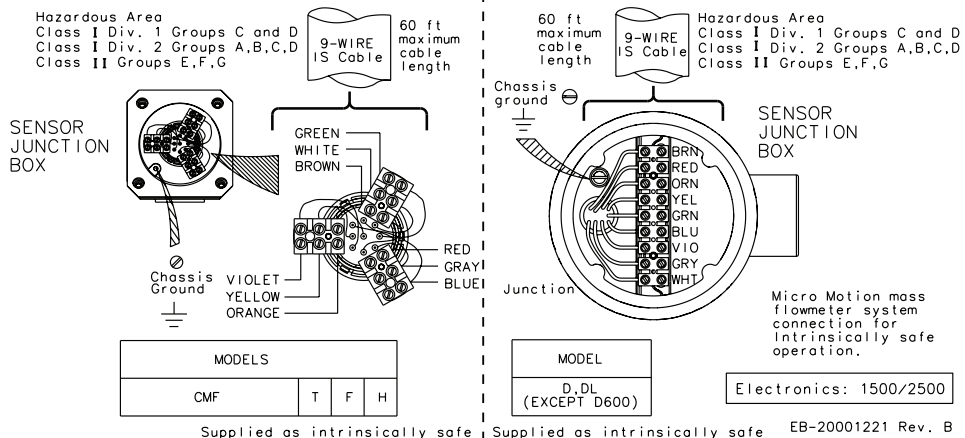
*The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:
Cable Capacitance = 60pF/ft Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.



Hazardous Area
Class I Div. 1 Groups C and D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G

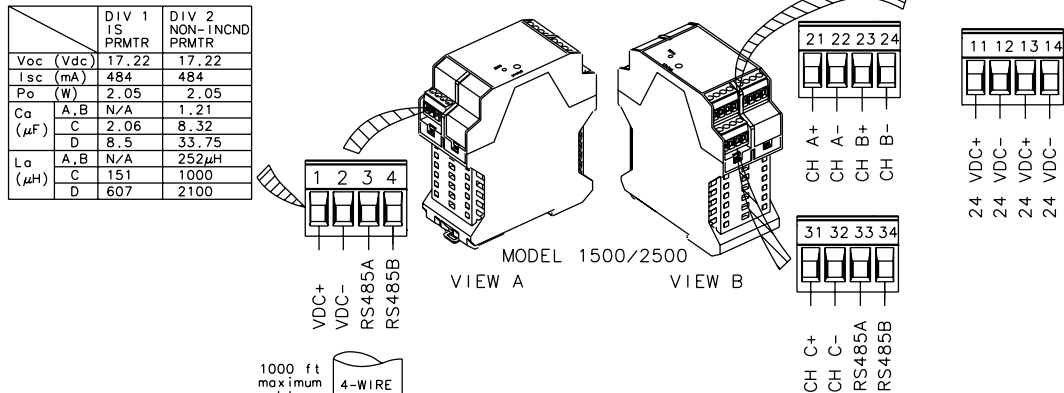


Model 1500/2500 9-Wire Installation

Transmitter to remote mount core processor to 9-wire junction box on CMF400 sensor with booster amplifier

MODEL 1500/2500 IN HAZARDOUS LOCATION TO SENSOR IN HAZARDOUS LOCATION

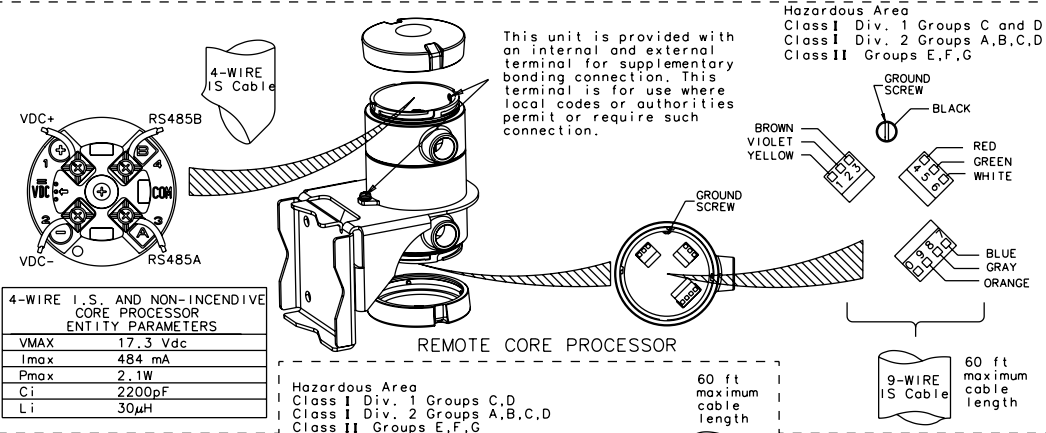
(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)



INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc <=	Vmax
Isc <=	Imax
(Voc x Isc) / 4 <=	Pmax
*Ca >=	Ccable + Ci1 + Ci2 + ... + Cin
*La >=	Lcable + Li1 + Li2 + ... + Lin

- *The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.
 - *The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.
- If the electrical parameters of the cable are unknown, then the following values may be used:
 Cable Capacitance = 60pF/ft Cable Inductance = 0.20μH/ft
- This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.



For model CMF400M * * * N, followed by P followed by * C * * * or
 For model CMF400M * * * N, followed by P followed by * A * * *
 see additional installation requirements on drawing
 EB-3005821

Allowable process fluid temperature range for integrally mounted booster amplifier is -40°C ≤ T_{fluid} ≤ +60°C.

Power 3/4"-14 NPT Conduit Seal
 Required within 18" of enclosure. To be sealed after wiring (customer supplied)

To drive coil located in mass flow meter (drive coil is also explosion proof)
 Chassis Ground
 Copper wire 20-14 AWG

This unit is provided with an external terminal for supplementary bonding connections. This terminal is for use where local codes or authorities permit or require such connections.

SENSOR BOOSTER AMPLIFIER

CAUTION:
 To maintain intrinsic safety, the intrinsically safe wiring must be separated from all other wiring, and the Transmitter and Sensor must be properly grounded.
 Install per Canadian Electrical Code Part 1

Micro Motion mass flowmeter system connection for intrinsically safe operation

Electronics: 1500/2500
 Sensor: CMF400

EB-20001223 Rev. A

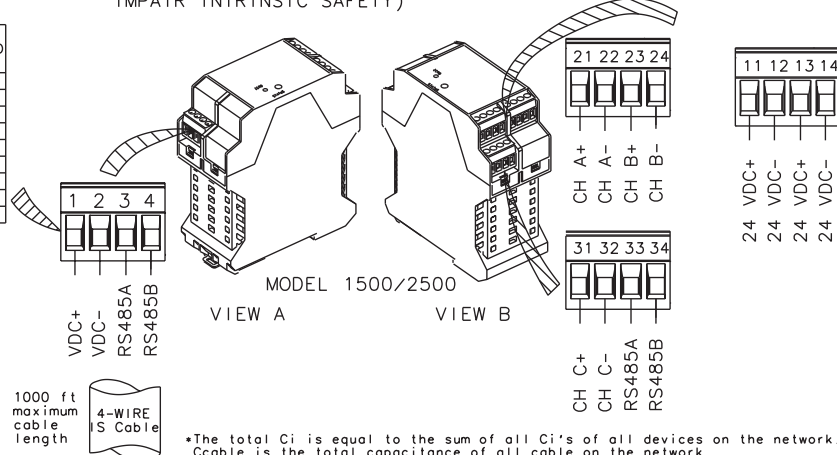
Model 1500/2500 9-Wire Installation

Transmitter to remote mount core processor to 9-wire junction box on D600 sensor

MODEL 1500/2500 IN HAZARDOUS LOCATION TO SENSOR IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

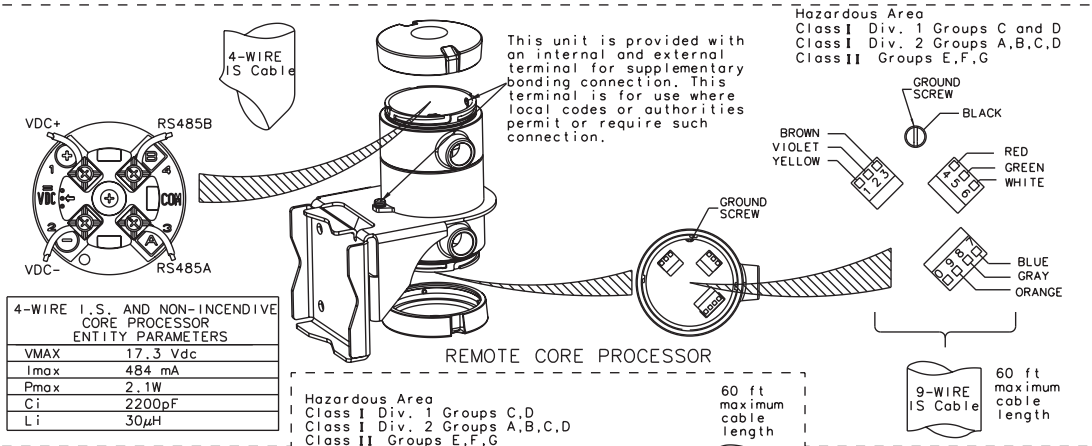
	DIV 1 IS PRMTR	DIV 2 NON-INCND PRMTR
Voc (Vdc)	17.22	17.22
Isc (mA)	484	484
Po (W)	2.05	2.05
Ca (μF)	A, B N/A	1.21
	C	2.06
	D	8.5
		33.75
La (μH)	A, B N/A	252
	C	151
	D	1000
		2100



INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc < =	Vmax
Isc < =	Imax
$(Voc \times Isc) / 4 < = Pmax$	
$Ca > = Ccable + Ci1 + Ci2 + \dots + Cin$	
$La > = Lcable + Li1 + Li2 + \dots + Lin$	

- The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.
 - The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.
- If the electrical parameters of the cable are unknown, then the following values may be used:
Cable Capacitance = 60pF/ft Cable Inductance = 0.20μH/ft
- This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.



For model D600S * * * S, followed by P followed by * C * * * *
Or
For model D600S * * * S, followed by P followed by * A * * * *
see additional installation requirements on drawing
EB-1005085

Allowable process fluid temperature range for integrally mounted booster amplifier is $-20^{\circ}\text{C} \leq T_{\text{fluid}} \leq +60^{\circ}\text{C}$.

Power 3/4"-14 NPT
Conduit Seal
Required within 18"
of enclosure. To be
sealed after wiring.
(customer supplied)

To drive coil
located in mass
flow meter (drive
coil is also
explosion proof)

Chassis Ground

Copper wire 20-14 AWG

85-250 VAC
50-60 HZ

N/L2 [L/L1]

Explosion-Proof housing

This unit is provided with an external terminal for supplementary bonding connections. This terminal is for use where local codes or authorities permit or require such connections.

SENSOR BOOSTER AMPLIFIER

Intrinsically Safe Terminals

GREEN WHITE BROWN

VIOLET YELLOW ORANGE

BLUE GRAY RED

CAUTION:
To maintain intrinsic safety, the intrinsically safe wiring must be separated from all other wiring, and the Transmitter and Sensor must be properly grounded.

Install per Canadian Electrical Code Part 1

Micro Motion mass flowmeter system connection for intrinsically safe operation

Electronics: 1500/2500
Sensor: D600

EB-20001222 Rev. A

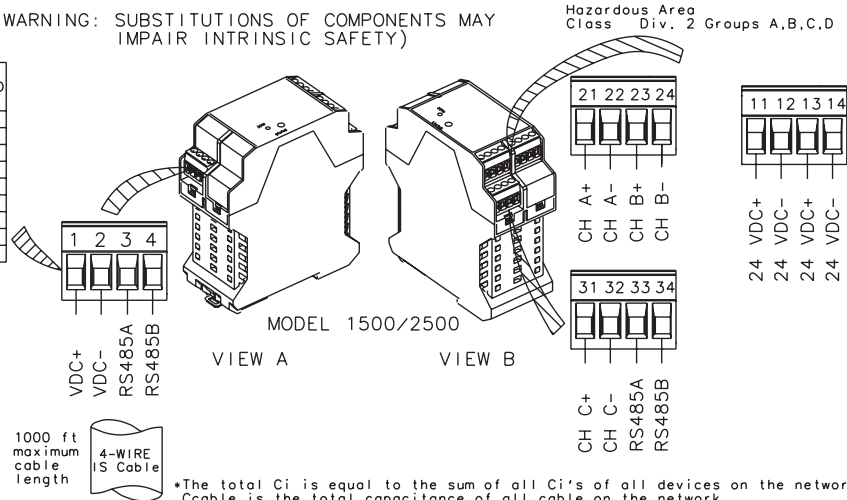
Model 1500/2500 9-Wire Installation

Transmitter to remote mount core processor to 9-wire junction box on DT sensor

MODEL 1500/2500 IN HAZARDOUS LOCATION TO SENSOR IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

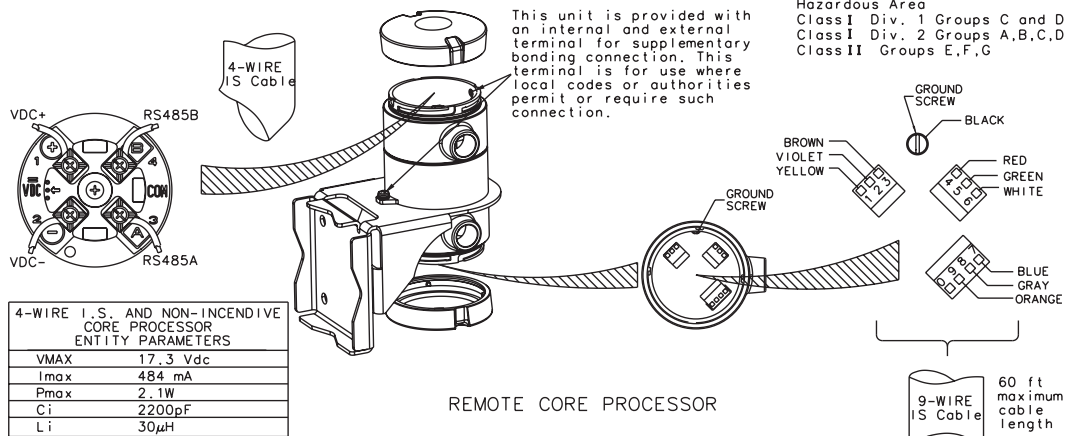
	DIV 1 IS PRMTR	DIV 2 NON-INCND PRMTR
Voc (Vdc)	17.22	17.22
Isc (mA)	484	484
Pa (W)	2.05	2.05
Ca (μF)	A,B N/A C 2.06 D 8.5	1.21 8.32 33.75
Lo (μH)	A,B N/A C 151 D 607	252 1000 2100



INSTALLATION NOTES:

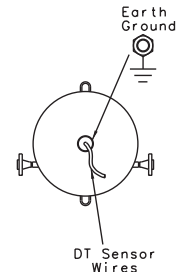
ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc <=	Vmax
Isc <=	Imax
(Voc x Isc) / 4 <=	Pmax
Ca >=	Ccable + Ci1 + Ci2 + ... + Cin
Lo >=	Lcable + Li1 + Li2 + ... + Lin

- The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.
 - The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.
- If the electrical parameters of the cable are unknown, then the following values may be used:
 Cable Capacitance = 60pF/ft Cable Inductance = 0.20μH/ft
- This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.



Hazardous Area
 Class I Div. 1 Groups C,D
 Class I Div. 2 Groups A,B,C,D
 Class II Groups E,F,G

60 ft maximum cable length



Models:
 DT65, DT100, DT150
 Supplied as intrinsically safe.

DT Sensor Wire Terminations to 9-Wire IS Cable	
DT Sensor Wire #	IS Cable Color
1	Brown
2	Red
3	Orange
4	Yellow
5	Green
6	Blue
7	Violet
8	Gray
9	White

CAUTION:
 To maintain intrinsic safety, the intrinsically safe wiring must be separated from all other wiring, and the Transmitter and Sensor must be properly grounded.

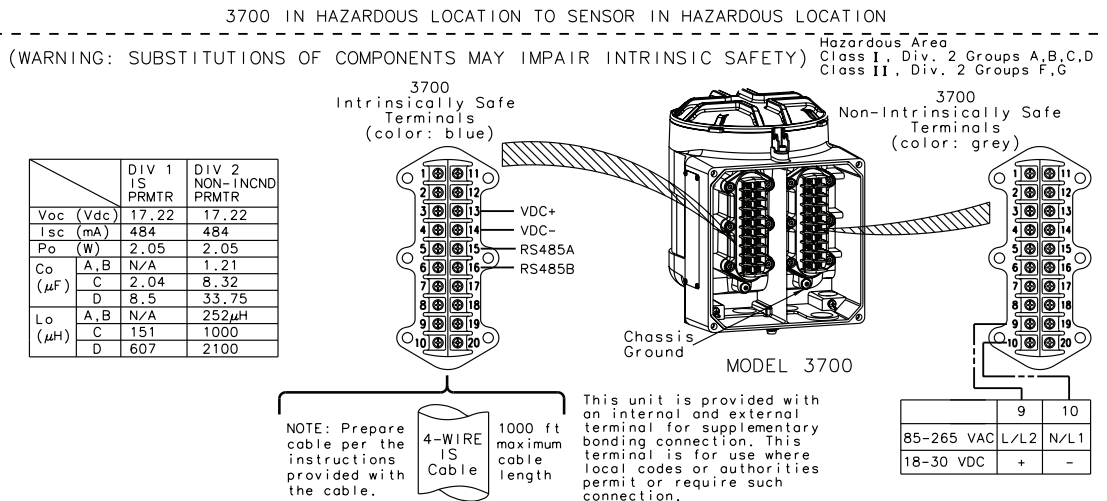
Micro Motion mass flowmeter system connection for intrinsically safe operation.

Electronics: 1500/2500
 Sensor: DT

EB-20001225 Rev. A

Model 3700 9-Wire Installation

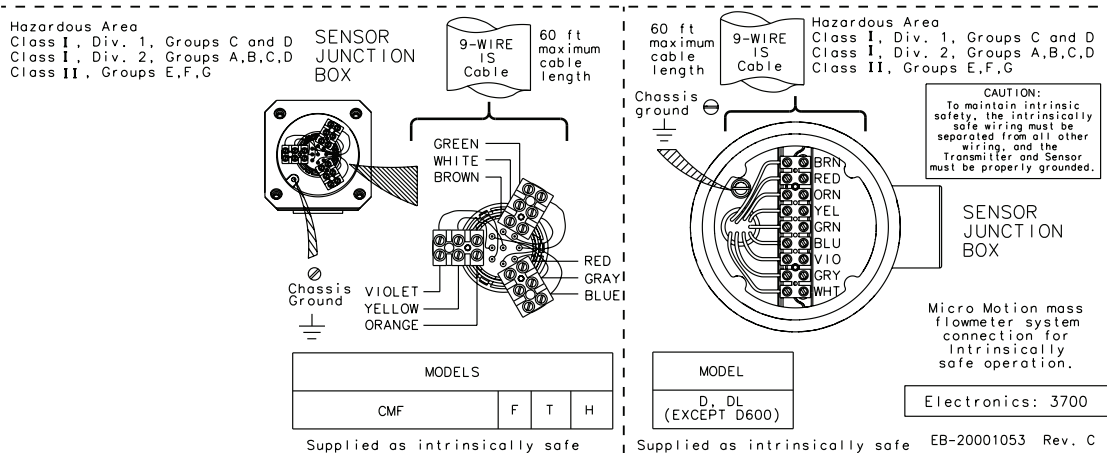
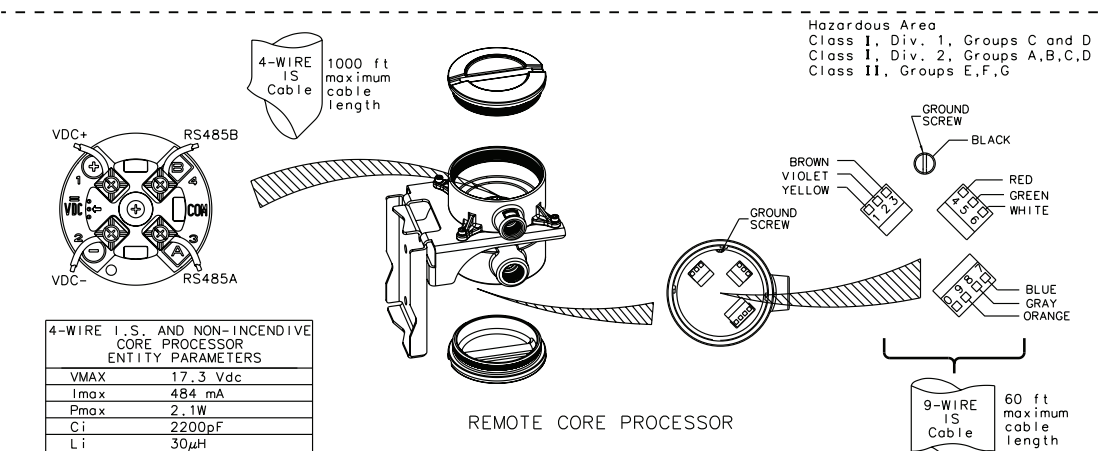
Transmitter to remote mount core processor to 9-wire junction box on CMF, D (except D600), DL, F, H, and T sensors



INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc < =	Vmax
Isc < =	Imax
(Voc x Isc) / 4 < =	Pmax
Co > =	Ccable + Ci1 + Ci2 + ... + Cin
Lo > =	Lcable + Li1 + Li2 + ... + Lin

- The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.
 - The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.
- If the electrical parameters of the cable are unknown, then the following values may be used:
 Cable Capacitance = 60pF/ft Cable Inductance = 0.20μH/ft
- This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.



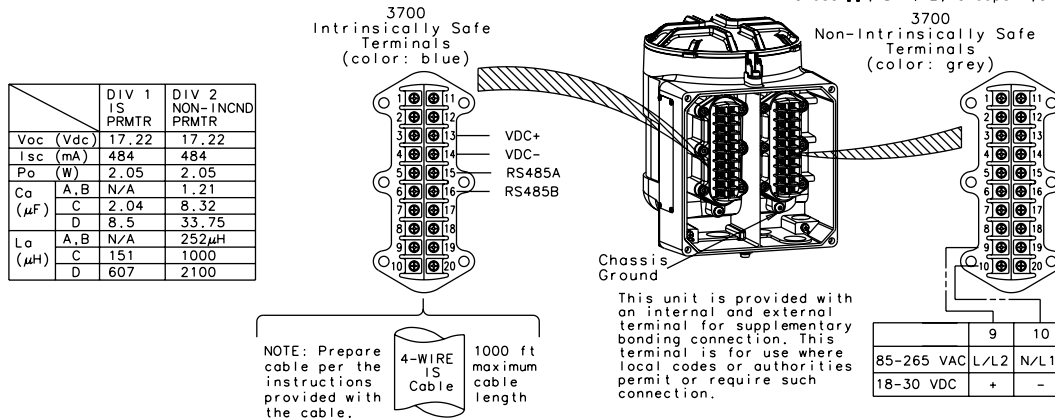
Model 3700 9-Wire Installation

Transmitter to remote mount core processor to 9-wire junction box on CMF400 sensor with booster amplifier

3700 IN HAZARDOUS LOCATION TO SENSOR IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

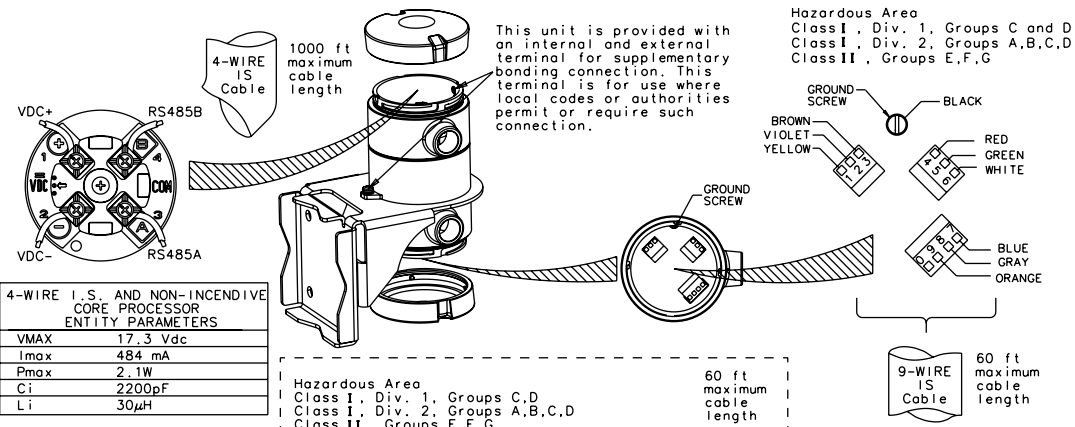
Hazardous Area
Class I, Div. 2, Groups A,B,C,D
Class II, Div. 2, Groups E,F,G



INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc <= Vmax	
Isc <= Imax	
(Voc x Isc) / 4 <= Pmax	
Ca >= Ccable + Ci1 + Ci2 + ... + Cin	
La >= Lcable + Li1 + Li2 + ... + Lin	

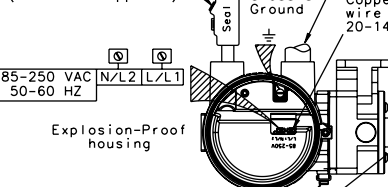
- The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.
- The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.
- If the electrical parameters of the cable are unknown, then the following values may be used:
Cable Capacitance = 60pF/ft Cable Inductance = 0.20μH/ft
- This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.



For model CMF400M***N, followed by P followed by *C OR A*AZ* see additional installation requirements on drawing EB-3005821

Allowable process fluid temperature range for integrally mounted booster amplifier is -40°C ≤ Tfluid ≤ +60°C.

Power 3/4"-14 NPT Conduit Seal Required within 18" of enclosure. To be sealed after wiring. (customer supplied)



CAUTION:
To maintain intrinsic safety, the intrinsically safe wiring must be separated from all other wiring, and the Transmitter and Sensor must be properly grounded.

Micro Motion mass flowmeter system connection for Intrinsically safe operation.

Electronics: 3700
Sensor: CMF400

EB-20000203 Rev. B
SHT 1 OF 1

Transmitter to remote mount core processor to 9-wire junction box on D600 sensor

(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)

Hazardous Area
Class I, Div. 2, Groups A,B,C,D
Class II, Div. 2, Groups E,F

3700
Intrinsically Safe
Terminals
(color: blue)

3700
Non-Intrinsically Safe
Terminals
(color: grey)

VDC+
VDC-
RS485A
RS485B

Chassis
Ground

NOTE: Prepare cable per the instructions provided with the cable.

4-WIRE
IS
Cable

1000 ft
maximum
cable
length

	9	10
85-265 VAC	L/L2	N/L1
18-30 VDC	+	-

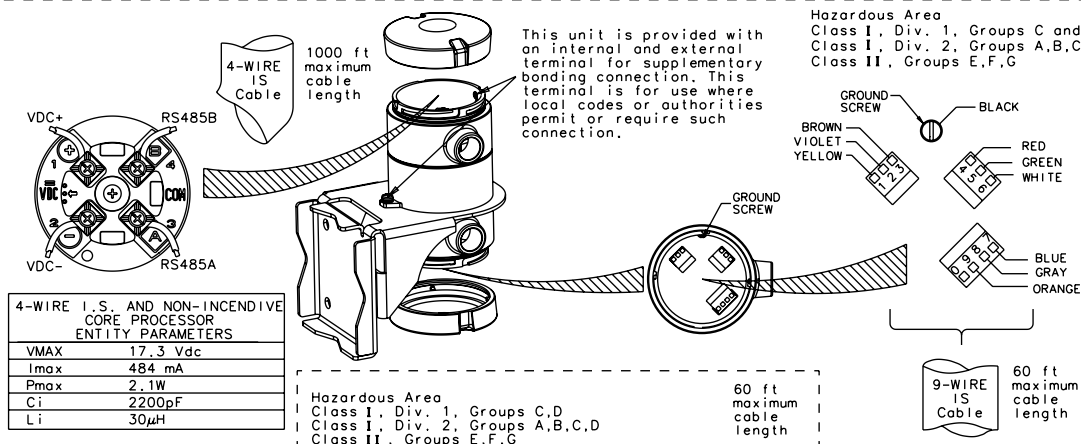
ASSOCIATED APPARATUS PARAMETER LIMITS
$V_{oc} \leq V_{max}$
$I_{sc} \leq I_{max}$
$(V_{oc} \times I_{sc}) / 4 \leq P_{max}$
$C_a \geq C_{cable} + C_{i1} + C_{i2} + \dots + C_{in}$
$L_a \geq L_{cable} + L_{i1} + L_{i2} + \dots + L_{in}$

*The total C_i is equal to the sum of all C_i 's of all devices on the network.
Cable is the total capacitance of all cable on the network.

*The total Li is equal to the sum of all Li's of all devices on the network.
Lcable is the total inductance of all cable on the network.

If the electrical parameters of the cable are unknown, then the following values may be used:
Cable Capacitance = 60pF/ft Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.



For model D600S***S, followed by P
followed by *C OR A*AZ* see additional
installation requirements on drawing
ER-1005085

Allowable process fluid temperature range for integrally mounted booster amplifier is $-20^{\circ}\text{C} \leq T_{\text{fluid}} \leq +60^{\circ}\text{C}$.

Power 3/4"-14 NPT
Conduit Seal
Required within 18"
of enclosure. To be
sealed after wiring
(customer supplied)

power to drive coil
located in mass
flow meter (drive
coil is also
explosion proof)

85-250 VAC	N/L2	L1
50-60 HZ		

Explosion-Proof housing

Model : D600

CAUTION:
To maintain intrinsic safety, the intrinsically safe wiring must be separated from all other wiring, and the Transmitter and Sensor must be properly grounded.

Micro Motion mass
flowmeter system
connection for
Intrinsically
safe operation.

Electronics: 3700
Sensor: D600

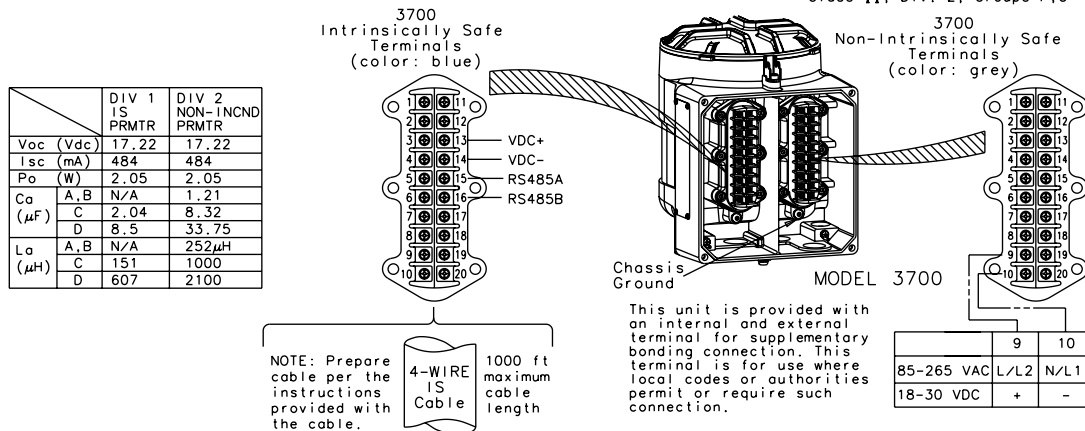
EB-20000206 Rev. B
SHT 1 OF 1

This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

Model 3700 9-Wire Installation

Transmitter to remote mount core processor to 9-wire junction box on DT sensor

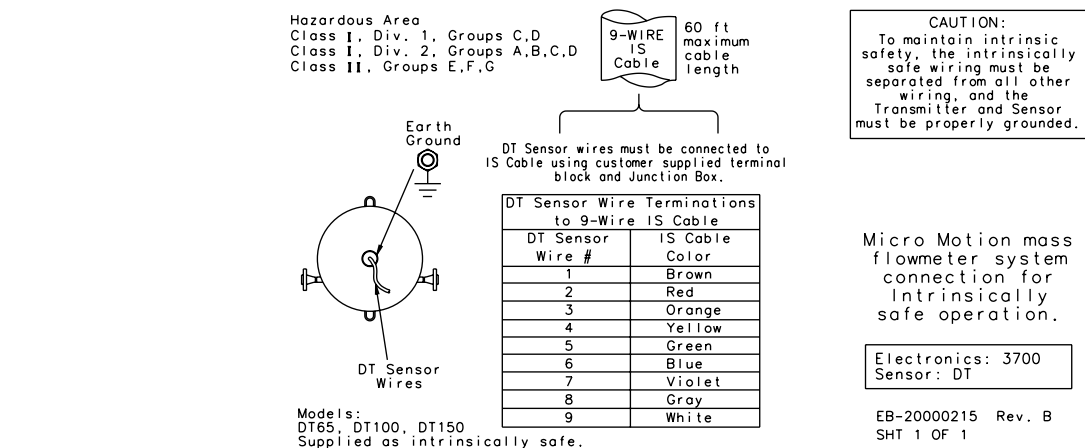
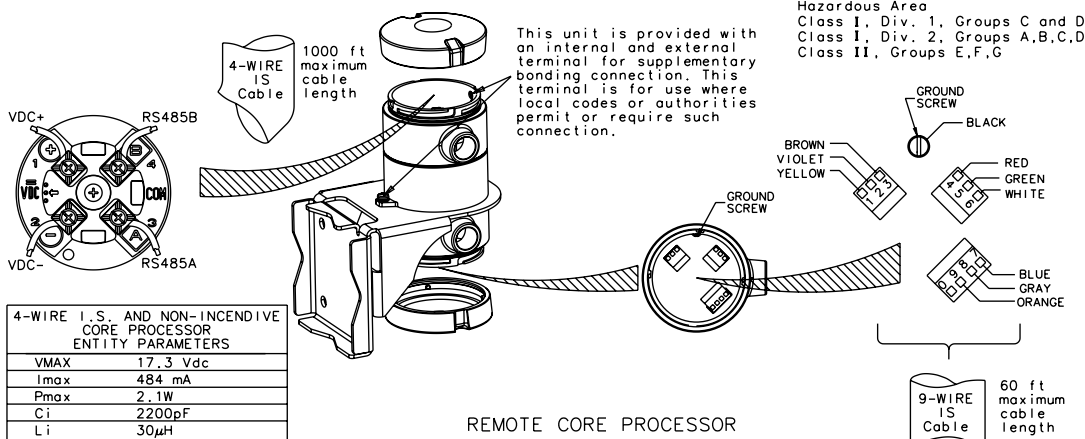
3700 IN HAZARDOUS LOCATION TO SENSOR IN HAZARDOUS LOCATION
(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY)



INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc <=	Vmax
Isc <=	Imax
$(Voc \times Isc) / 4 <= Pmax$	
*Ca >=	Ccable + Ci1 + Ci2 + ... + Cin
*La >=	Lcable + Li1 + Li2 + ... + Lin

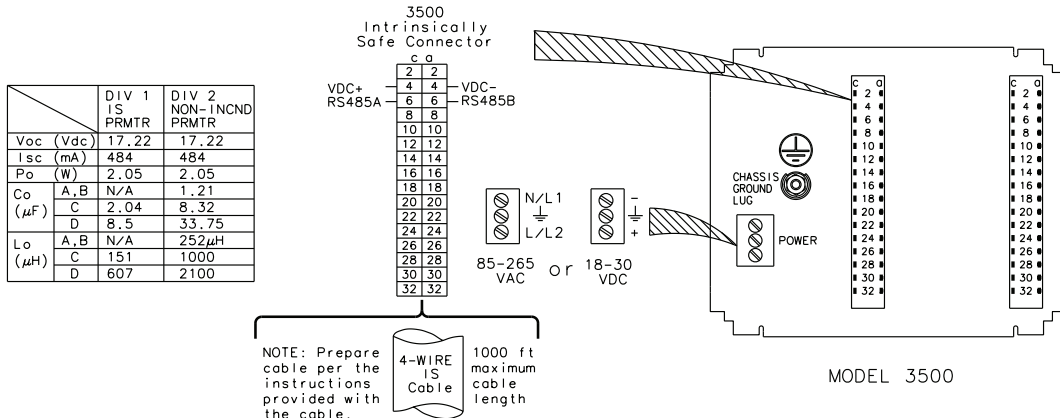
- *The total Ci is equal to the sum of all Ci's of all devices on the network. Lcable is the total capacitance of all cable on the network.
 - *The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.
- If the electrical parameters of the cable are unknown, then the following values may be used:
Cable Capacitance = 60pF/ft Cable Inductance = 0.20μH/ft
- This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.



Model 3500 9-Wire Installation

Transmitter to remote mount core processor to 9-wire junction box on
CMF, D (except D600), DL, F, H, and T sensors

3500 IN HAZARDOUS LOCATION TO SENSOR IN HAZARDOUS LOCATION
(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY) Class I, Div. 2, Groups A,B,C,D



INSTALLATION NOTES:

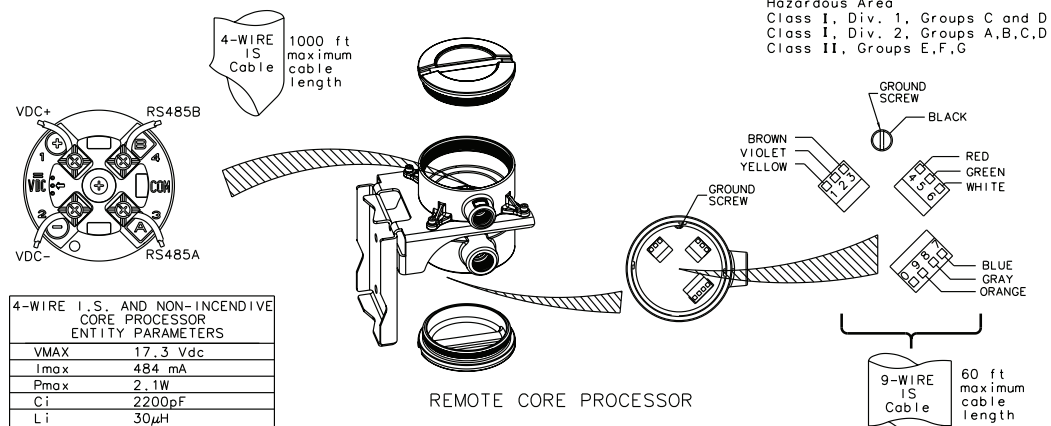
ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc <= Vmax	
Isc <= Imax	
(Voc x Isc) / 4 <= Pmax	
*Co >= Ccable + Ci1 + Ci2 + ... + Cin	
*Lo >= Lcable + Li1 + Li2 + ... + Lin	

*The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.

*The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.

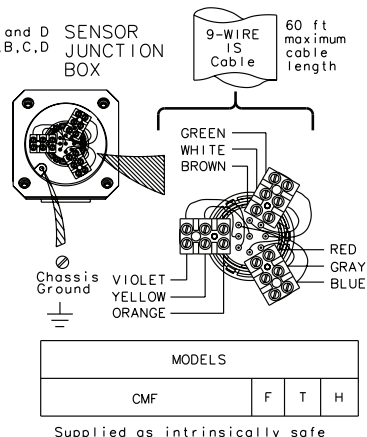
If the electrical parameters of the cable are unknown, then the following values may be used:
Cable Capacitance = 60pF/ft Cable Inductance = 0.20μH/ft

This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.

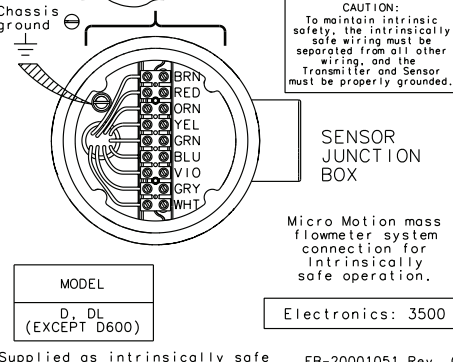


Hazardous Area Class I, Div. 1, Groups C and D Class I, Div. 2, Groups A,B,C,D Class II, Groups E,F,G

SENSOR JUNCTION BOX



Hazardous Area Class I, Div. 1, Groups C and D Class I, Div. 2, Groups A,B,C,D Class II, Groups E,F,G



Supplied as intrinsically safe

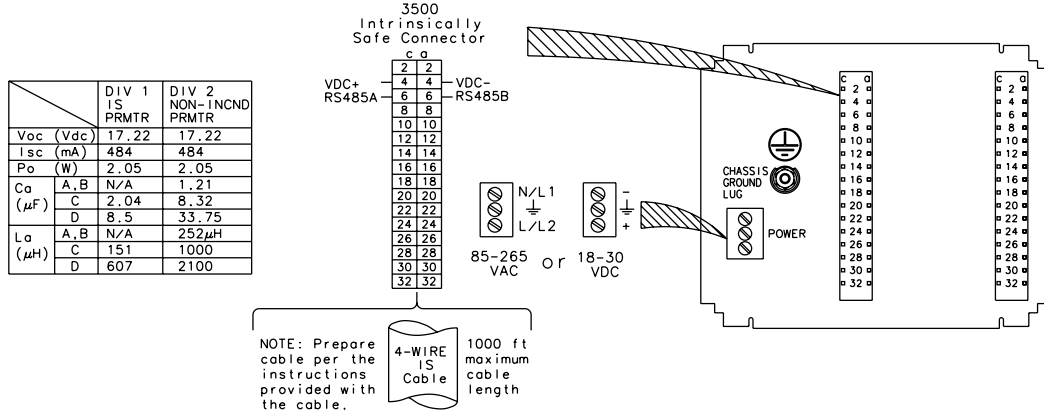
Supplied as intrinsically safe

EB-20001051 Rev. C

Model 3500 9-Wire Installation

Transmitter to remote mount core processor to 9-wire junction box on
CMF400 sensor with booster amplifier

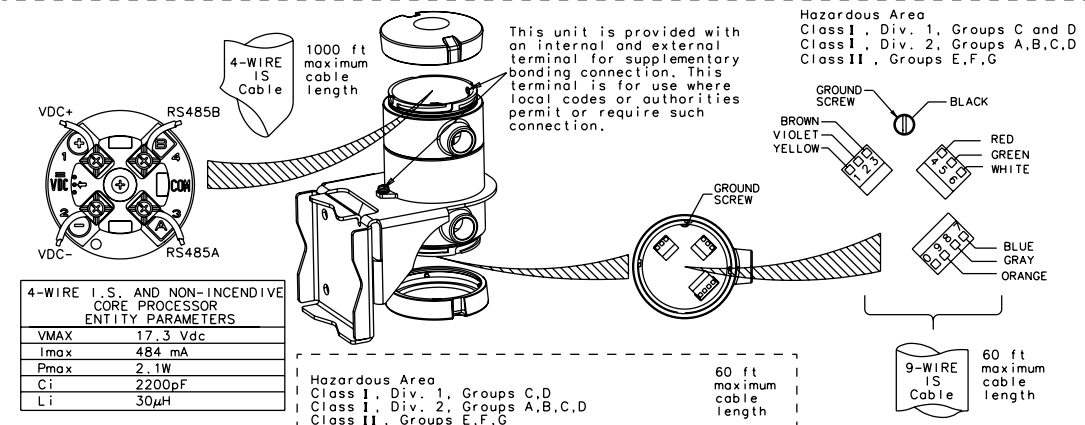
3500 IN HAZARDOUS LOCATION TO SENSOR IN HAZARDOUS LOCATION
(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY) Class I, Div. 2, Groups A,B,C,D



INSTALLATION NOTES:

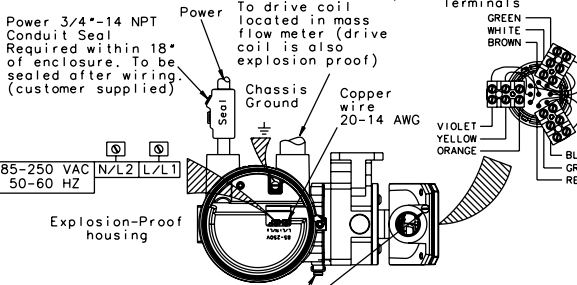
ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc < =	Vmax
Isc < =	Imax
(Voc x Isc) / 4 < =	Pmax
Ca > =	Ccable + Ci1 + Ci2 + ... + Cin
La > =	Lcable + Li1 + Li2 + ... + Lin

- The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.
- The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.
- If the electrical parameters of the cable are unknown, then the following values may be used:
Cable Capacitance = 60pF/ft Cable Inductance = 0.20μH/ft
- This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.



For model CMF400M**N, followed by P followed by *C OR A*A2* see additional installation requirements on drawing EB-3005821

Allowable process fluid temperature range for integrally mounted booster amplifier is -40°C ≤ T_{fluid} ≤ +60°C.



CAUTION:
To maintain intrinsic safety, the intrinsically safe wiring must be separated from all other wiring, and the Transmitter and Sensor must be properly grounded.

Micro Motion mass flowmeter system connection for intrinsically safe operation.

This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

Model: CMF400

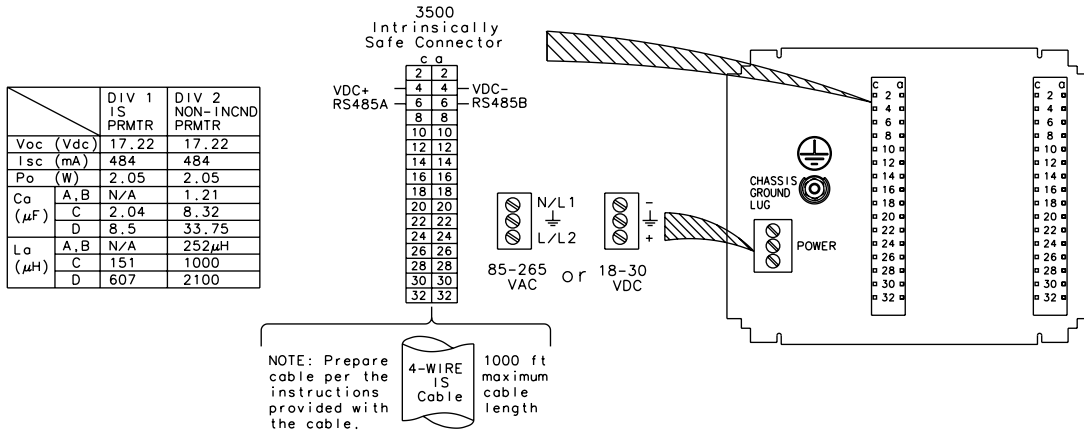
Electronics: 3500
Sensor: CMF400

EB-20000229 Rev. B
SHT 1 OF 1

Model 3500 9-Wire Installation

Transmitter to remote mount core processor to 9-wire junction box on D600 sensor

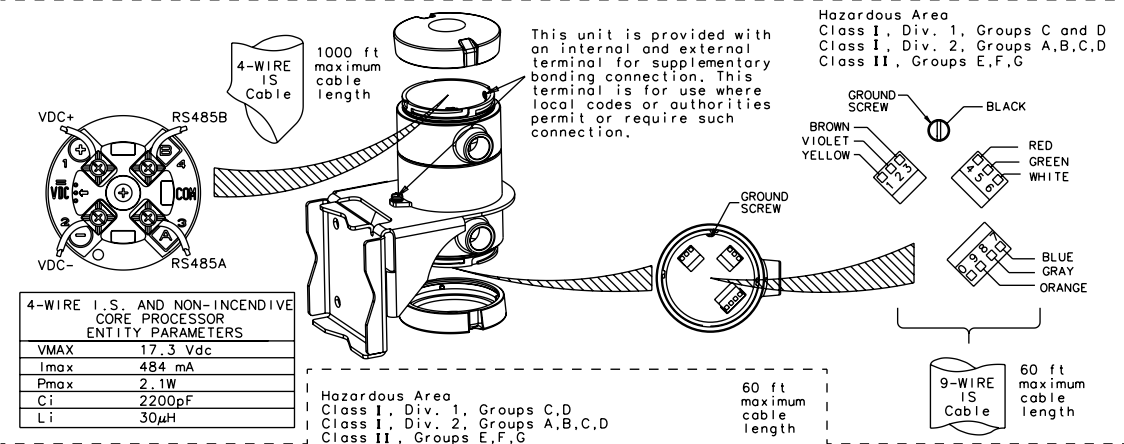
3500 IN HAZARDOUS LOCATION TO SENSOR IN HAZARDOUS LOCATION
(WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY) Hazardous Area Class I, Div. 2, Groups A,B,C,D



INSTALLATION NOTES:

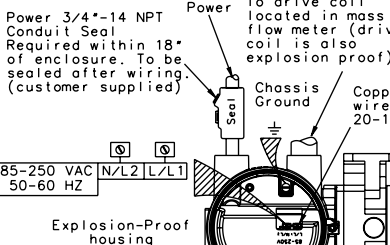
ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc < =	Vmax
Isc < =	Imax
(Voc x Isc) / 4 < =	Pmax
*Ca > =	Ccable + Ci1 + Ci2 + ... + Cin
*La > =	Lcable + Li1 + Li2 + ... + Lin

- *The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.
 - *The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.
- If the electrical parameters of the cable are unknown, then the following values may be used:
Cable Capacitance = 60pF/ft Cable Inductance = 0.20μH/ft
- This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.



For model D600S***S, followed by P followed by *C OR *A*AZ* see additional installation requirements on drawing EB-1005085

Allowable process fluid temperature range for integrally mounted booster amplifier is -20°C ≤ Tfluid ≤ +60°C.



CAUTION:
To maintain intrinsic safety, the intrinsically safe wiring must be separated from all other wiring, and the Transmitter and Sensor must be properly grounded.

Micro Motion mass flowmeter system connection for Intrinsically safe operation.

This unit is provided with an internal and external terminal for supplementary bonding connection. This terminal is for use where local codes or authorities permit or require such connection.

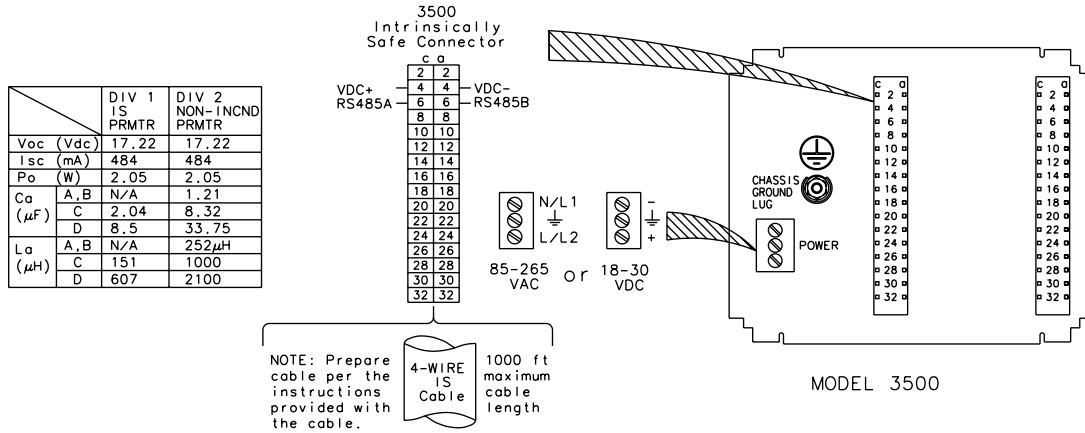
Model: D600

Electronics: 3500
Sensor: D600
EB-20000232 Rev. B
SHT 1 OF 1

Model 3500 9-Wire Installation

Transmitter to remote mount core processor to 9-wire junction box on DT sensor

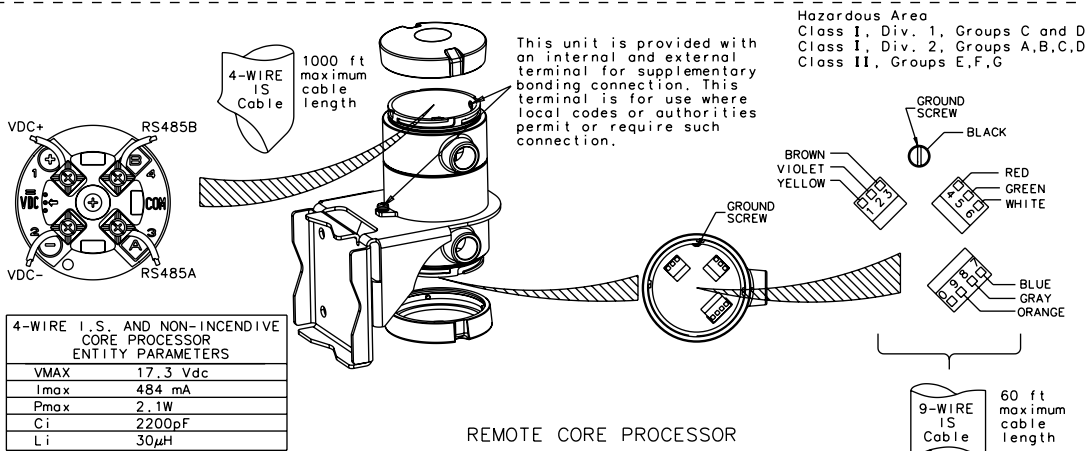
3500 IN HAZARDOUS LOCATION TO SENSOR IN HAZARDOUS LOCATION
 (WARNING: SUBSTITUTIONS OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY) Class I, Div. 2, Groups A,B,C,D



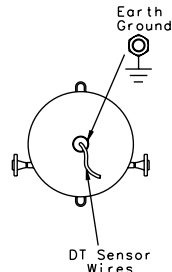
INSTALLATION NOTES:

ASSOCIATED APPARATUS PARAMETER LIMITS	
Voc <=	Vmax
Isc <=	Imax
$(Voc \times Isc) / 4 <= Pmax$	
*Ca >=	Ccable + Ci1 + Ci2 + ... + Cin
*La >=	Lcable + Li1 + Li2 + ... + Lin

- The total Ci is equal to the sum of all Ci's of all devices on the network. Ccable is the total capacitance of all cable on the network.
 - The total Li is equal to the sum of all Li's of all devices on the network. Lcable is the total inductance of all cable on the network.
- If the electrical parameters of the cable are unknown, then the following values may be used:
 Cable Capacitance = 60pF/ft Cable Inductance = 0.20μH/ft
- This device must not be connected to any associated apparatus which uses or generates more than 250Vrms with respect to earth ground.



Hazardous Area
 Class I, Div. 1, Groups C,D
 Class I, Div. 2, Groups A,B,C,D
 Class II, Groups E,F,G



Models:
 DT65, DT100, DT150
 Supplied as intrinsically safe.

DT Sensor Wire Terminations to 9-Wire IS Cable	
DT Sensor Wire #	IS Cable Color
1	Brown
2	Red
3	Orange
4	Yellow
5	Green
6	Blue
7	Violet
8	Gray
9	White

CAUTION:
 To maintain intrinsic safety, the intrinsically safe wiring must be separated from all other wiring, and the Transmitter and Sensor must be properly grounded.

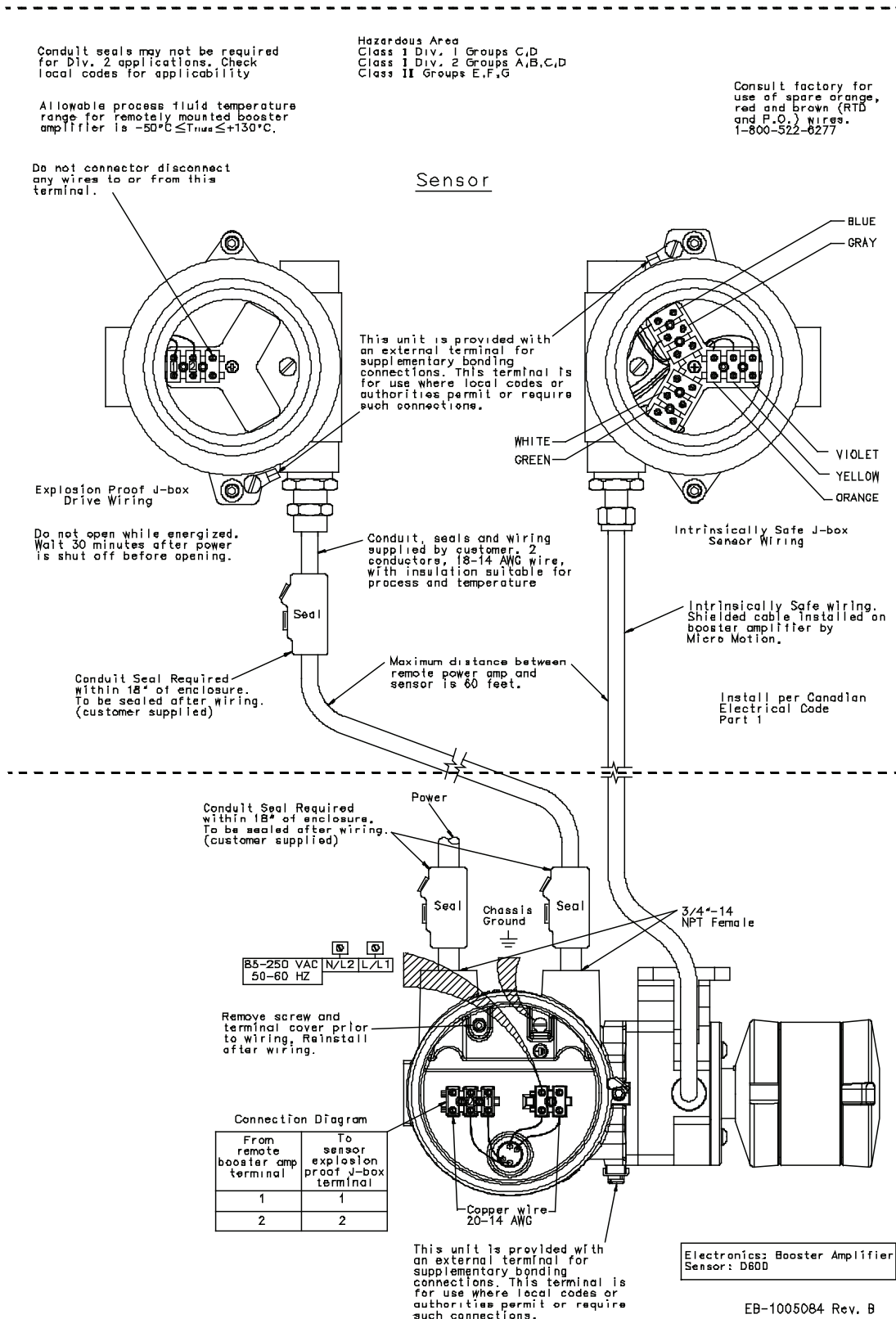
Micro Motion mass flowmeter system connection for Intrinsically safe operation.

Electronics: 3500
 Sensor: DT

EB-20000241 Rev. B
 SHT 1 OF 1

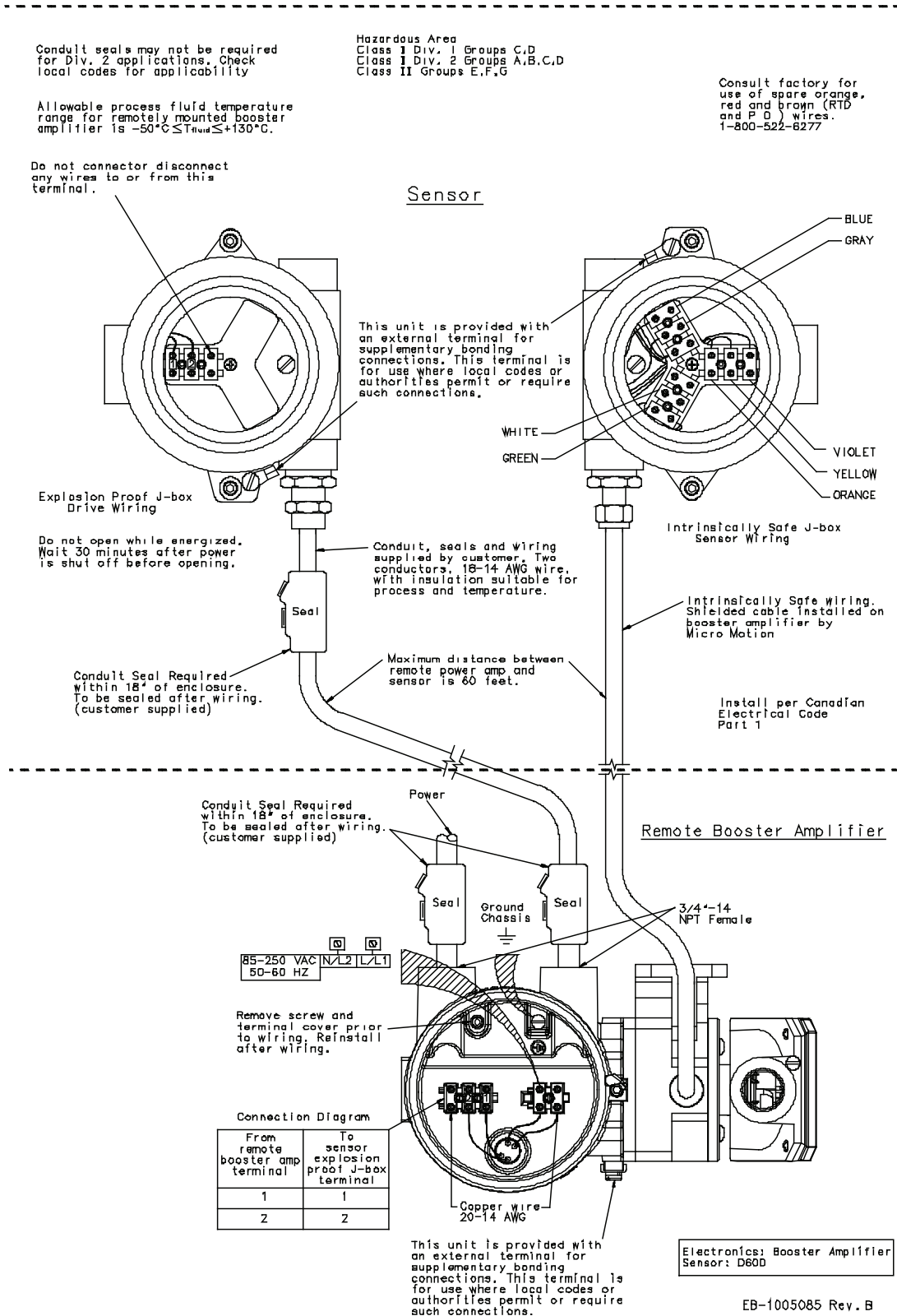
D600 Remote Booster Amplifier Installation

Booster amplifier with core processor remotely mounted from sensor and transmitter



D600 Remote Booster Amplifier Installation

Booster amplifier with junction box remotely mounted from sensor and transmitter



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**For the latest Micro Motion product specifications, view the
PRODUCTS section of our web site at www.micromotion.com**

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Instruction Manual

P/N 20002273, Rev. A
August 2005

**Micro Motion[®]
MVD[™] Direct Connect[™]
Meters**

Installation Manual



Before You Begin

This manual provides installation information for Micro Motion® MVD™ Direct Connect™ meters. MVD Direct Connect meters may or may not include the MVD Direct Connect I.S. barrier. Both installation types are discussed here.

Additionally, this manual provides basic information for establishing communication between the MVD Direct Connect meter and the remote host system.

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Locating the components	page 7
Installing the core processor	page 8
Wiring the core processor to the sensor	page 10
4-wire cable preparation and core processor wiring	page 11
Installing the MVD Direct Connect I.S. barrier	page 14
Wiring at the MVD Direct Connect I.S. barrier	page 14
Wiring to the remote host	page 15
Wiring to the power supply	page 16
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MVD Direct Connect Communications	page 17
Return Policy	page 18

Customer service

For technical assistance, phone the Micro Motion Customer Service Department:

- 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

European installations

This Micro Motion product complies with all applicable European directives when properly installed in accordance with the instructions in this manual. 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 internet at **www.micromotion.com/atex** or through your local Micro Motion support center.

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Safety

For information on I.S. applications, refer to Micro Motion ATEX, UL, or CSA installation instructions.

WARNING

Improper installation in a hazardous area can cause an explosion.

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

CAUTION

Excess voltage can damage the core processor.

To avoid damaging the core processor, use only low-voltage DC power.

Product Overview and Architecture

MVD Direct Connect meters are used to supply Micro Motion sensor data directly to a remote Modbus-capable host, rather than to a Micro Motion transmitter. Because there is no transmitter component, MVD Direct Connect systems are not intrinsically safe unless the MVD Direct Connect I.S. barrier is included in the installation.

WARNING

MVD Direct Connect systems without the MVD Direct Connect I.S. barrier are not intrinsically safe.

Installation options

All MVD Direct Connect systems include a sensor and a core processor. Either the standard core processor or the enhanced core processor may be installed.

- The standard core processor may be mounted integrally with the sensor, or remotely.
- The enhanced core processor must be mounted integrally with the sensor; it cannot be mounted remotely.

If the MVD Direct Connect I.S. barrier is installed, a separate barrier is required for each core processor.

See Figures 1 and 2 for illustrations of MVD Direct Connect installations without the MVD Direct Connect I.S. barrier. See Figures 3 and 4 for illustrations of MVD Direct Connect installations with the MVD Direct Connect I.S. barrier.

Figure 1 MVD Direct Connect installations – Integral core processor, no I.S. barrier

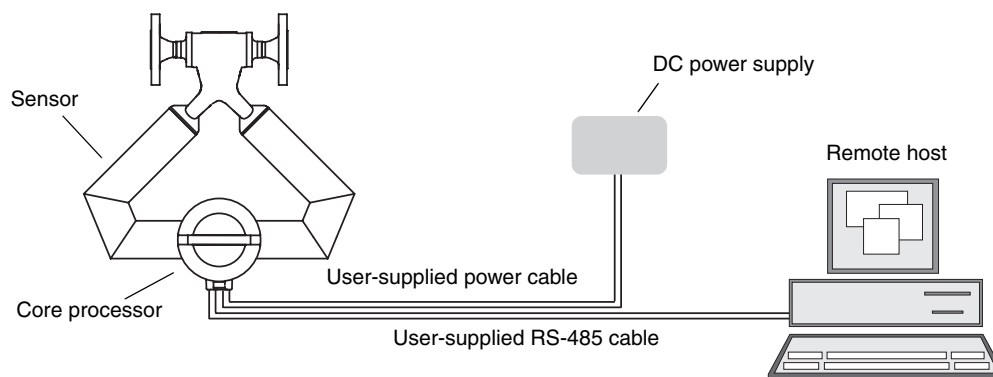


Figure 2 MVD Direct Connect installations – Remote core processor, no I.S. barrier

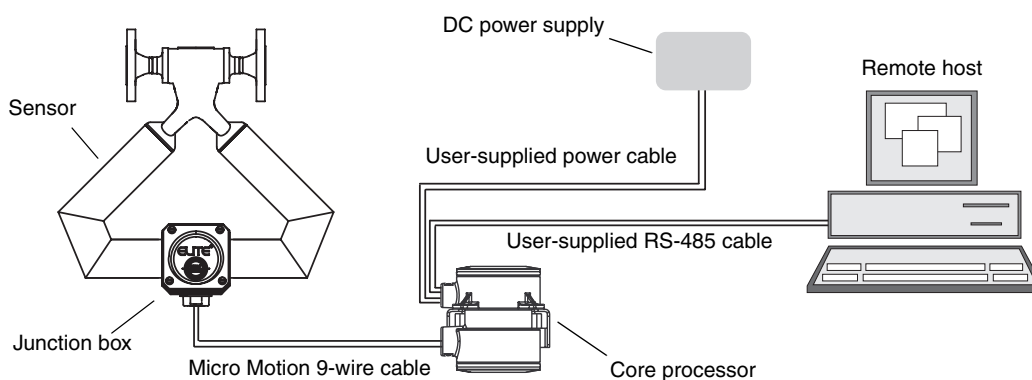


Figure 3 MVD Direct Connect installations – Integral core processor, I.S. barrier

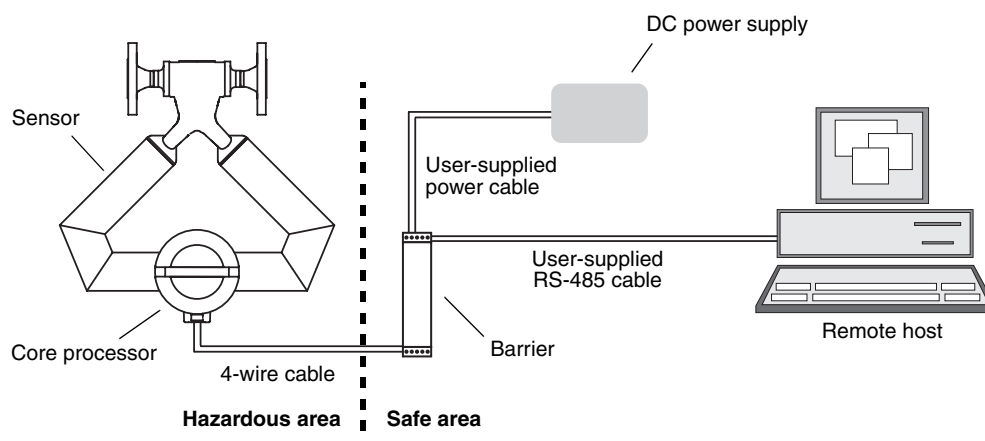
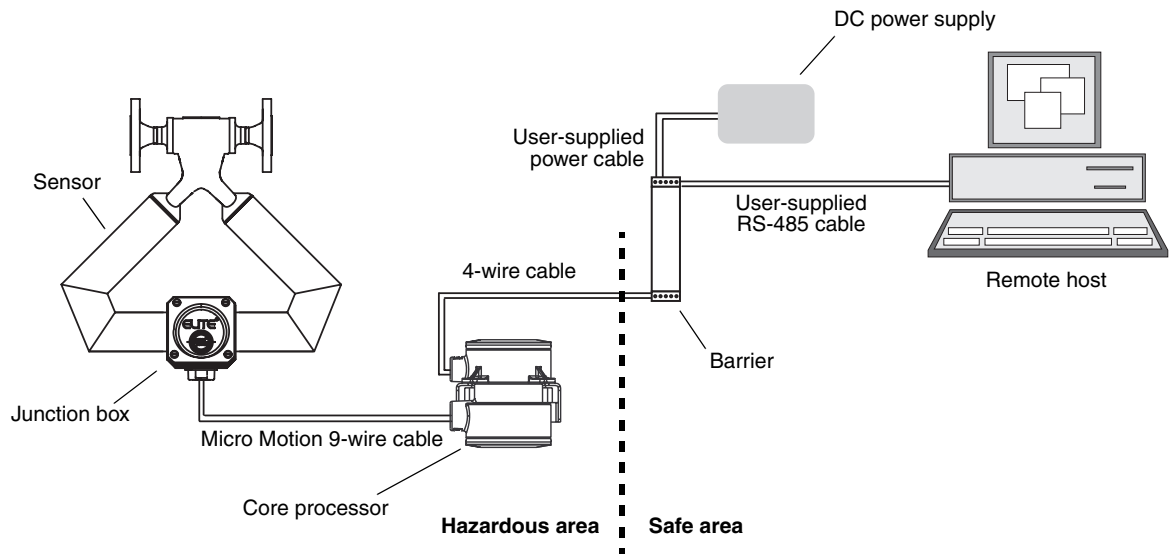


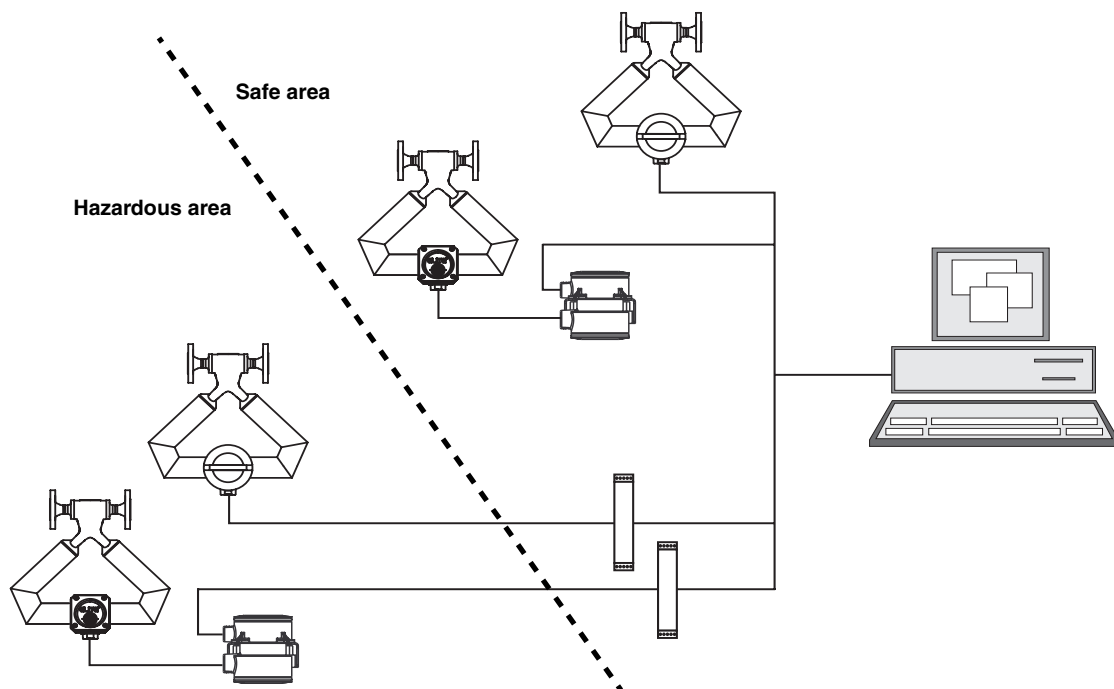
Figure 4 MVD Direct Connect installations – Remote core processor, I.S. barrier



Multidrop installation

Up to fifteen MVD Direct Connect installations can be networked to a single remote host. If I.S. barriers are used, one barrier is required for each core processor. Figure 5 shows the four options for a multidrop installation.

Figure 5 Multidrop installation options



Installation

Supplying power

Power supply requirements depend on your installation type:

- MVD Direct Connect without the MVD Direct Connect I.S. barrier (see Figures 1 and 2)
- MVD Direct Connect with the MVD Direct Connect I.S. barrier (see Figures 3 and 4)

MVD Direct Connect installations without the MVD Direct Connect I.S. barrier

In MVD Direct Connect installations without the I.S. barrier, power is supplied directly to the core processor. The core processor supplies power to the sensor. The power supply must meet the following requirements:

- Power must be supplied from a common floating regulated power supply with the correct voltage.
- The voltage requirement for a single core processor is 15–26 VDC. The maximum power consumption of a single core processor is approximately 3 W.
- The power supply may be used to power any number of core processors, but must not be used to power other devices.
- Use shielded wiring.
- The power supply must not allow power surges or conducted radio frequency interference (RFI) to propagate through to its output.
- The power supply must not be grounded.

CAUTION

Grounding the power supply to the core processor can cause damage to the core processor or the remote host.

To avoid damaging the core processor or the remote host, ensure that the power supply to the core processor is not grounded.

- In EU countries, the power supply must meet the requirements of the EMC directive.
- The power supply cable must comply with the size and length requirements listed in Table 2. A minimum DC input of 15 V is required for each core processor. At startup, the power source must provide a minimum of 0.2 A of short-term current per core processor. The maximum steady state current is 0.15 A. For assistance in sizing the power supply cable, refer to Table 1 and use the equation below:

$$\text{MinimumSupplyVoltage} = 15\text{V} + (\text{CableResistance} \times \text{CableLength} \times 0.15\text{A})$$

Example

The core processor is mounted 350 feet from a DC power supply. If you want to use 18 AWG cable, calculate the required voltage at the DC power supply as follows:

$$\text{MinimumSupplyVoltage} = 15\text{V} + (\text{CableResistance} \times \text{CableLength} \times 0.15\text{A})$$

$$\text{MinimumSupplyVoltage} = 15\text{V} + (0.0128 \text{ ohms/ft} \times 350 \text{ ft} \times 0.15\text{A})$$

$$\text{MinimumSupplyVoltage} = 15.7\text{V}$$

Table 1 Typical power cable resistances at 68 °F (20 °C)

Gauge	Resistance ⁽¹⁾
14 AWG	0.0050 Ω/foot
16 AWG	0.0080 Ω/foot
18 AWG	0.0128 Ω/foot
20 AWG	0.0204 Ω/foot
22 AWG	0.0328 Ω/foot
2,5 mm ²	0,0136 Ω/meter
1,5 mm ²	0,0228 Ω/meter
1 mm ²	0,0340 Ω/meter
0,75 mm ²	0,0460 Ω/meter
0,5 mm ²	0,0680 Ω/meter

(1) These values include the resistance of both high and low conductors in a cable.

MVD Direct Connect installations with the MVD Direct Connect I.S. barrier

In MVD Direct Connect installations with the I.S. barrier, power is supplied to the barrier. The barrier supplies power to the core processor, and the core processor supplies power to the sensor. The power supply must meet the following requirements:

- The power supply can be either floating or grounded.
- The voltage requirement for a single barrier is 24 VDC ±20%. The maximum power consumption of a single barrier plus core processor is approximately 3.5 W.
- The power supply cable must comply with the size and length requirements listed in Table 3. A minimum DC input of 19.2 V is required at the barrier terminals. At startup, the power source must provide a minimum of 0.2 A of short-term current per core processor. The maximum steady state current is 0.15 A. For assistance in sizing the power supply cable, refer to Table 1 and use the equation below:

$$\text{MinimumSupplyVoltage} = 19.2\text{V} + (\text{CableResistance} \times \text{CableLength} \times 0.15\text{A})$$

Example

A single MVD Direct Connect I.S. barrier is mounted 350 feet from a DC power supply. If you want to use 18 AWG cable, calculate the required voltage at the DC power supply as follows:

$$\text{MinimumSupplyVoltage} = 19.2\text{V} + (\text{CableResistance} \times \text{CableLength} \times 0.15\text{A})$$

$$\text{MinimumSupplyVoltage} = 19.2\text{V} + (0.0128 \text{ ohms/ft} \times 350 \text{ ft} \times 0.15\text{A})$$

$$\text{MinimumSupplyVoltage} = 19.9\text{V}$$

Locating the components

See the sensor installation manual for information on locating the sensor or the sensor/core processor assembly. If the core processor is installed remotely from the sensor, see the sensor installation manual for information on the maximum distance between these two components.

Installation

Maximum distance between the core processor, the power supply, the remote host, and the I.S. barrier (if your installation includes the barrier) depends on the wire size and type. Ensure that your installation complies with these requirements.

- Table 2 lists the wire size and length requirements for MVD Direct Connect installations without the I.S. barrier.
- Table 3 lists the wire size and length requirements for MVD Direct Connect installations with the I.S. barrier.

Table 2 Wire sizes and lengths – MVD Direct Connect installations without I.S. barrier

Span	Cable type	Wire size	Max length
Core processor to remote host	RS-485	22 AWG (0,35 mm ²) or larger	500 feet (150 meters)
Core processor to power supply	Power ⁽¹⁾	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)	500 feet (150 meters)

(1) Wire must be sized to provide a minimum of 15 V at the core processor. See the discussion in the preceding section.

Table 3 Wire sizes and lengths – MVD Direct Connect installations with I.S. barrier

Span	Cable type	Wire size	Max length
Core processor to barrier	RS-485	22 AWG (0,35 mm ²) or larger	500 feet (150 meters)
	Power ⁽¹⁾	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)	500 feet (150 meters)
Barrier to host	RS-485	22 – 18 AWG (0,35 – 0,8 mm ²)	1000 ft (300 meters)
Barrier to power supply	Power ⁽²⁾	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)	500 feet (150 meters)

(1) Wire must be sized to provide a minimum of 15 V at the core processor. See the discussion in the preceding section.

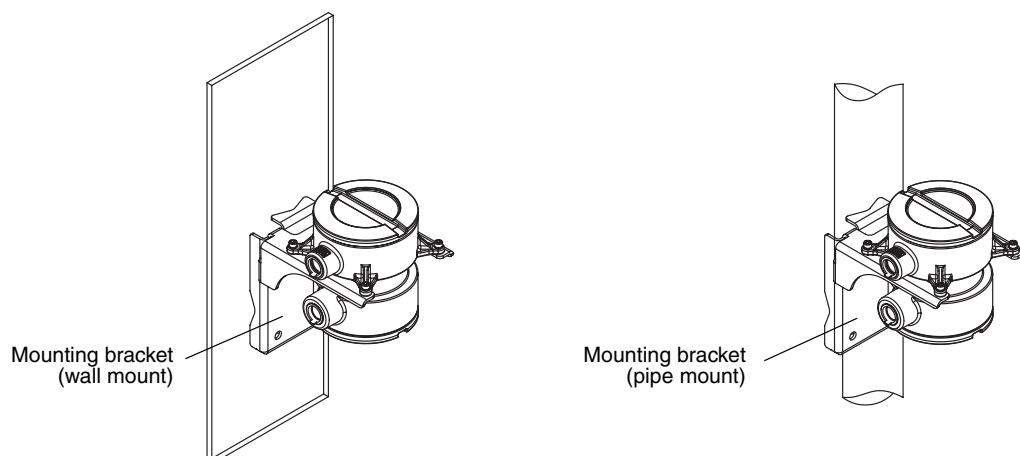
(2) Wire must be sized to provide a minimum of 19.2 V at the barrier. See the discussion in the preceding section.

Installing the core processor

Note: This step is required only if the core processor is mounted separately from the sensor. Refer to Figures 2 and 4.

See Figure 6 for a diagram of the mounting bracket supplied with the core processor. Both pipe mounting and wall mounting are shown.

Figure 6 Remote core processor – Wall mount or pipe mount



To mount the core processor:

1. Identify the components shown in Figure 7. For dimensions, see Figure 8.
2. If desired, reorient the core processor housing on the bracket.
 - a. Loosen each of the four cap screws (4 mm).
 - b. Rotate the bracket so that the core processor is oriented as desired.
 - c. Tighten the cap screws, torquing to 30 to 38 in-lbs (3 to 4 N-m).
3. Attach the mounting bracket to an instrument pole or wall. For pipe mount, two user-supplied U-bolts are required. Contact Micro Motion to obtain a pipe-mount installation kit if required.

Figure 7 Remote core processor components

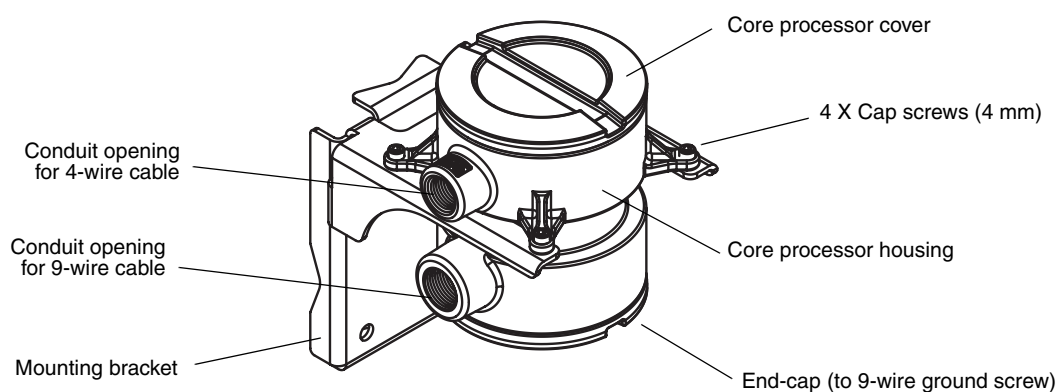


Figure 8 Dimensions – Remote core processor

Note: This step is required only if the core processor is mounted separately from the sensor. Refer to Figures 2 and 4.

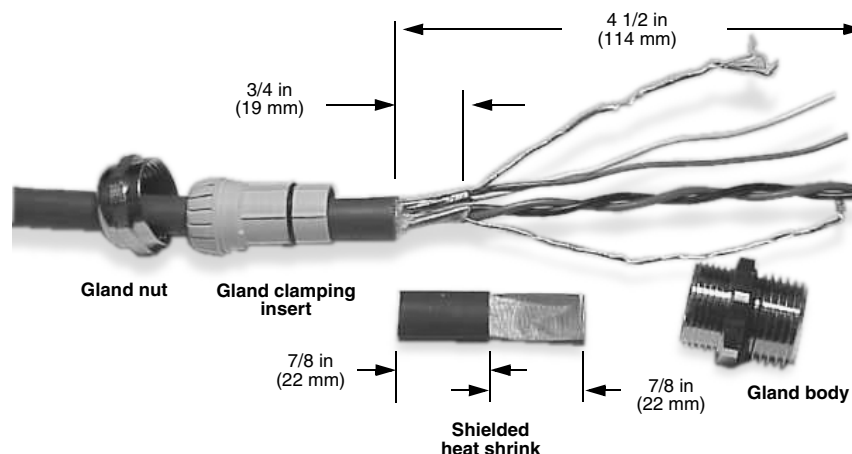
Micro Motion MVD Direct Connect Meters

4-wire cable preparation and core processor wiring

Note: This step is required for all MVD Direct Connect installations.

1. Ensure that the cables meet the following requirements:
 - Twisted-pair construction
 - The size and length requirements described in the preceding sections
2. Use one of the following methods to shield the wiring from the core processor:
 - If you are installing unshielded cable, the cable must be installed in continuous metallic conduit that provides 360° termination shielding for the enclosed wiring. Go to Step 7.
 - If you are installing shielded or armored cable with a user-supplied cable gland, terminate the shield or braid and drain wires in the cable gland. Never connect the drain wires to the internal ground screw of the core processor. Go to Step 7.
 - If you are installing shielded or armored cable with a Micro Motion-supplied cable gland:
 - With shielded cable (where the shield consists of foil), prepare the cable and apply shielded heat shrink as described in Steps 3 through 6. The shielded heat shrink provides a shield termination suitable for use in the gland.
 - With armored cable (where the shield consists of braid), prepare the cable as described as described in Steps 3 through 6. Do not apply heat shrink (omit Steps 5d through 5g).
3. Remove the cover from the core processor.
4. Slide the gland nut and the clamping insert over the cable.

Figure 9 Micro Motion cable gland and heat shrink

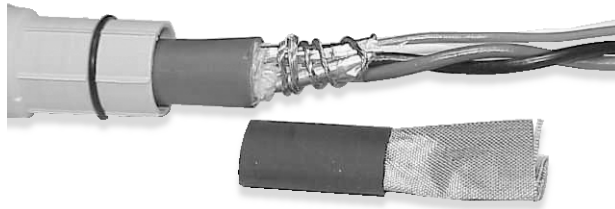


5. For connection at the core processor housing, prepare cable as follows (for armored cable, omit Steps 5d through 5g):
 - a. Strip 4 1/2 inches (114 mm) of cable jacket.
 - b. Remove the clear wrap that is inside the cable jacket, and remove the filler material between the wires.
 - c. Remove the foil 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.

Installation

Figure 10 Wrapping the shield drain wires

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.

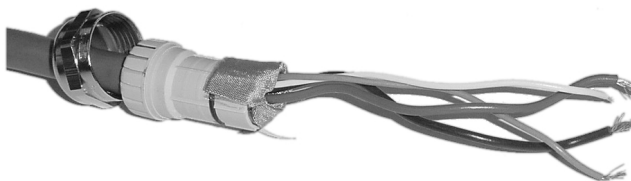
Figure 11 Applying the heat shrink

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.

Figure 12 Folding the cloth shield



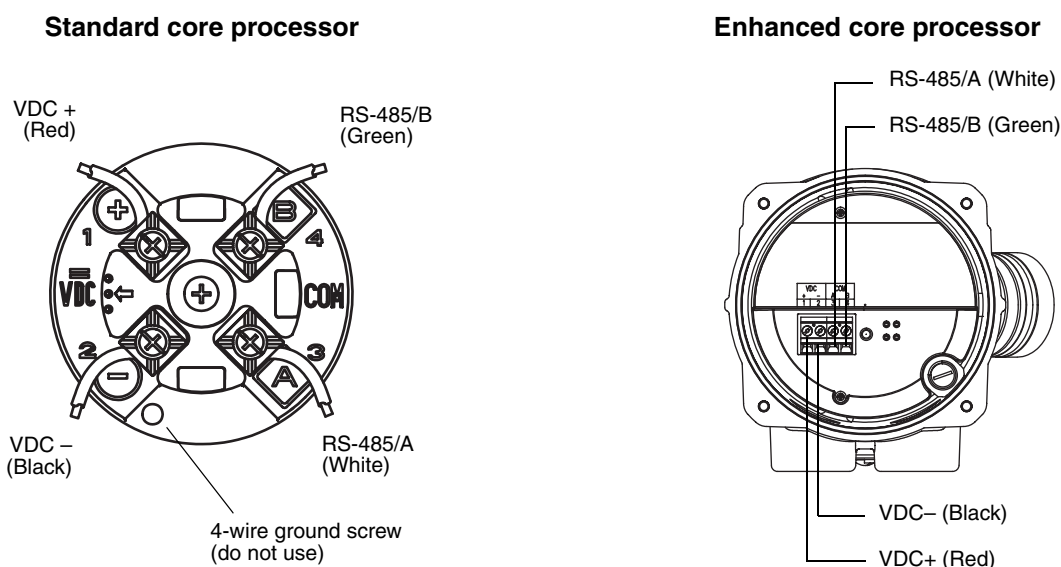
- i. Install the gland body into the core processor housing conduit opening.

Figure 13 Gland body and core processor housing



6. Insert the wires through the gland body and assemble the gland by tightening the gland nut.
7. Connect signal wires to the RS-485 terminals on the core processor (see Figure 14). If you are using Micro Motion 4-wire cable, use the green and white wires.

Figure 14 Connecting the wires at the core processor



8. Connect power supply wires to the VDC terminals on the core processor (see Figure 14). If you are using Micro Motion 4-wire cable, use the red and black wires.
9. Reattach the core processor cover.

⚠ CAUTION

If the core processor is mounted integrally with the sensor, twisting the core processor will damage the sensor.

To avoid damaging the sensor, do not twist the core processor.

CAUTION

**Damaging the RS-485 wires can cause measurement error or meter failure.
Damaging the power supply wires can cause meter failure.**

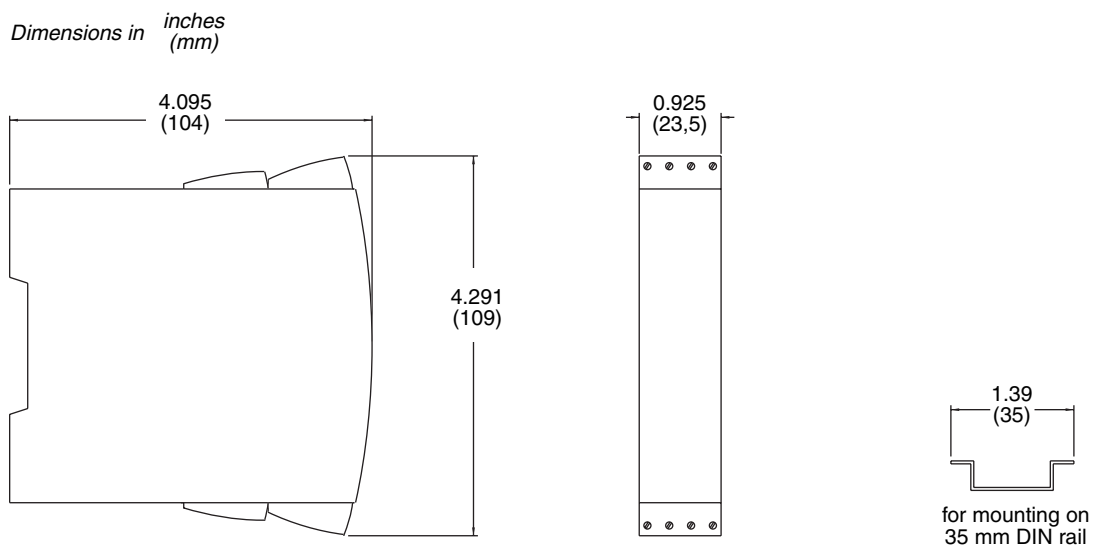
When replacing the core processor cover, make sure that the wires are not caught or pinched.

Installing the MVD Direct Connect I.S. barrier

Note: This step is required only for installations that include the MVD Direct Connect I.S. barrier. Refer to Figures 3 and 4.

The barrier is designed to snap onto a 35 mm DIN rail. Dimensions are shown in Figure 15. To remove the barrier from the rail, lift the bottom lock.

Figure 15 Barrier dimensions



Wiring at the MVD Direct Connect I.S. barrier

Note: This step applies only to installations that include the MVD Direct Connect I.S. barrier. Refer to Figures 3 and 4.

1. Connect the core processor to the barrier:
 - a. Connect the RS-485 wires from the core processor to the I.S. RS-485 terminals at the barrier (terminals 43 and 44), matching A and B. See Table 4 and Figure 16. If you are using Micro Motion 4-wire cable, you can identify the wires by color.
 - b. Connect the power supply wires from the core processor to the I.S. VDC terminals at the barrier (terminals 42 and 41), matching positive and negative (+ and -). See Table 4 and Figure 16. Do not terminate the shields at the barrier.

Table 4 Core processor terminals and barrier I.S. terminals

Function	Wire color (Micro Motion 4-wire cable)	Core processor terminals	Barrier I.S. terminals
RS-485 A	White	3	43
RS-485 B	Green	4	44
VDC +	Red	1	42
VDC –	Black	2	41

2. Connect RS-485 wires to the non-I.S. RS-485 terminals at the barrier (terminals 13 and 14). See Figure 16. These wires will be used in the next step to connect the barrier to the remote host. Do not terminate the shields at the barrier.
3. Connect power supply wires to the non-I.S. VDC terminals at the barrier (terminals 11 and 12). See Figure 16. These wires will be used in the next step to connect the barrier to the power supply.

Figure 16 Barrier terminals

Wiring to the remote host

Note: This step is required for all MVD Direct Connect installations.

1. At the remote host, open the wiring compartment and identify the RS-485 terminals. Refer to the vendor documentation if required.
2. If you are connecting the RS-485 wires directly from the core processor (see Figures 1 and 2):
 - a. Connect the RS-485 wires from the core processor (see Figure 14) to the RS-485 terminals at the remote host.
 - b. Do not terminate the shield, braid, or drain wire(s) at the remote host.
 - c. Do not terminate the RS-485 lines using the standard 60-ohm termination resistor. If possible, do not terminate the RS-485 lines at all. If the RS-485 cable is 1000 feet (300 meters) long or longer, and termination is required, the total termination must be 175 ohm or above.

If you are connecting the RS-485 wires from the I.S. barrier (see Figures 3 and 4):

- a. Connect the RS-485 wires from the barrier (see Figure 16) to the RS-485 terminals at the remote host.
 - b. Terminate the shields at the remote host.
 - c. The barrier contains internal pull-up/pull-down and termination resistors. Do not add external resistors.
3. Close the wiring compartment.

Installation

Wiring to the power supply

Note: This step is required for all MVD Direct Connect installations.

1. You may connect multiple MVD Direct Connect installations to a single power supply, as long as each installation receives sufficient power.
2. If you are connecting the power supply wires directly from the core processor (see Figures 1 and 2):
 - a. Do not connect any other equipment to the power supply used for MVD Direct Connect installations.
 - b. Connect the power supply wires from the core processor (see Figure 14), matching positive and negative (+ and –).

If you are connecting the power supply wires from the I.S. barrier (see Figures 3 and 4):

- a. The power supply may be used to power other equipment.
- b. Connect the power supply wires from the barrier (see Figure 16), matching positive and negative (+ and –).

Grounding

Note: This step is required for all MVD Direct Connect installations.

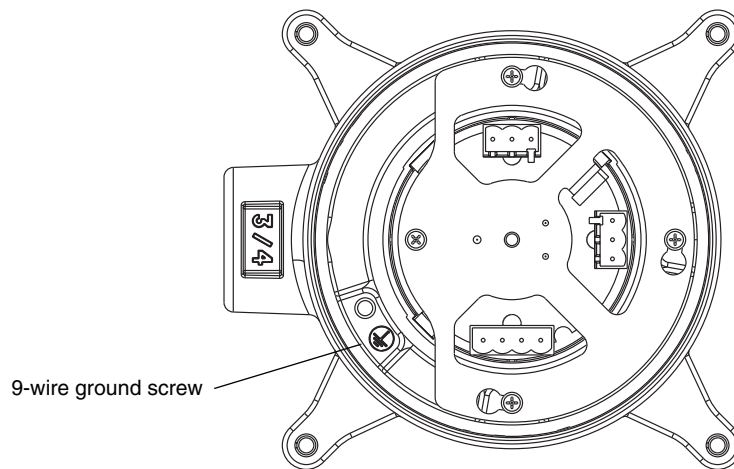
 CAUTION
Improper grounding could cause measurement error. To reduce the risk of measurement error: • Ground the meter to earth, or follow ground network requirements for the facility. • For installation in an area that requires intrinsic safety, refer to the appropriate Micro Motion approval documentation. • For hazardous area installations in Europe, refer to standard EN 60079-14 if national standards do not apply.

The sensor/core processor assembly (see Figures 1 and 3) or the sensor alone (see Figures 2 and 4) must be grounded. To ground these components, see the sensor installation manual.

If your installation includes a remote core processor (see Figures 2 and 4), it must be grounded. To ground the remote core processor:

- The core processor has two internal ground screws: one 4-wire ground screw and one 9-wire ground screw. Do not use the 4-wire ground screw. The 9-wire ground screw may be used (see Figure 17). To access the 9-wire ground screw, remove the core processor end-cap (see Figure 7).
- Use copper wire, 14 AWG (2,0 mm²) or larger, for grounding.
- Keep all ground leads as short as possible, less than 1 ohm impedance.
- Connect ground leads directly to earth, or follow plant standards.

If your installation includes the MVD Direct Connect I.S. barrier (see Figures 3 and 4), the barrier is not grounded. Do not ground the barrier.

Figure 17 Core processor 9-wire ground screw

MVD Direct Connect Communications

For communication with the remote host, the core processor uses an industry-standard RS-485 half-duplex communication line driver. Supported communication settings are described in Table 5. The remote host can use any supported setting and the core processor will automatically detect and switch.

Table 5 Supported communication settings

Parameter	Option
Protocol	Modbus RTU (8-bit) Modbus ASCII (7-bit)
Baud rate	Standard rates between 1200 and 38,400
Parity	Even, odd, none
Stop bits	1, 2

Addresses

When addressing specific registers in the core processor, certain remote hosts require the program to subtract 1 from the address. For more information, see the manual entitled *Modbus Mapping Assignments for Micro Motion Transmitters*.

Response time

The core processor's default response time to a valid query is 1.2 milliseconds. If required, a delay may be programmed into the core processor (see the manual entitled *Modbus Mapping Assignments for Micro Motion Transmitters*).

The core processor may be queried as often as once every 10 milliseconds. If you are sending queries at this rate at 38,400 baud, a maximum of three floating-point values can be returned per query.

Core processors may be multidropped, with a maximum of 15 per segment. Communication throughput is improved with fewer units per segment.

Return Policy

Byte order in floating-point values

Four bytes are used to transmit floating-point values. When the core processor leaves the Micro Motion factory, its default byte order is either 1–2–3–4 (typical) or 3–4–1–2. For contents of bytes, see Table 6.

Table 6 Byte contents in Modbus commands and responses

Byte	Bits	Definitions
1	S E E E E E E E	S = Sign E = Exponent
2	E M M M M M M M	E = Exponent M = Mantissa
3	M M M M M M M M	M = Mantissa
4	M M M M M M M M	M = Mantissa

If the core processor is attached to a transmitter for any reason (for example, for field testing), the byte order is automatically set to 1–2–3–4. It may be necessary to reset the byte order before resuming MVD Direct Connect operation. Byte order is controlled by the value in register 521. The byte order codes and associated byte orders are listed in Table 7.

Table 7 Byte order codes and byte orders

Byte order code	Byte order
0	1–2–3–4
1	3–4–1–2
2	2–1–4–3
3	4–3–2–1

Additional information

For more information on programming a remote host for use with MVD Direct Connect systems, see the manual entitled *Modbus Mapping Assignments for Micro Motion Transmitters*.

Return Policy

Micro Motion procedures must be followed when returning equipment. These procedures ensure legal compliance with government transportation agencies and help provide a safe working environment for Micro Motion employees. Failure to follow Micro Motion procedures will result in your equipment being refused delivery.

Information on return procedures and forms is available on our web support system at www.micromotion.com, or by phoning the Micro Motion Customer Service department (see page 2).

New and unused equipment

Only equipment that has not been removed from the original shipping package will be considered new and unused. New and unused equipment requires a completed Return Materials Authorization form.

Used equipment

All equipment that is not classified as new and unused is considered used. This equipment must be completely decontaminated and cleaned before being returned.

Used equipment must be accompanied by a completed Return Materials Authorization form and a Decontamination Statement for all process fluids that have been in contact with the equipment. If a Decontamination Statement cannot be completed (e.g., for food-grade process fluids), you must include a statement certifying decontamination and documenting all foreign substances that have come in contact with the equipment.

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