

Installation Instructions

P/N MMI-20011710, Rev. AA

July 2009

**ATEX Installation
Instructions for
Micro Motion[®] Model
9701/9703 Transmitters**



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

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

If you require the information given in this manual in a different language, please contact Micro Motion Customer Service.

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Model IFT9701/IFT9703 Transmitters

Installation Drawings and Instructions

- For installing the following Micro Motion transmitters:
 - Model IFT9701
 - Model IFT9703



Subject: Equipment type

Transmitter type IFT9701*** and IFT9703*C*******

Manufactured and submitted for examination

Micro Motion, Inc.

Address

Boulder, Co. 80301, USA

Standard basis

EN 50014:1997 +A1-A2 General requirements
EN 50018:2000 Flameproof enclosure 'd'
EN 50019:2000 Increased safety 'e'
EN 50020:2002 Intrinsic safety 'i'

Code for type of protection

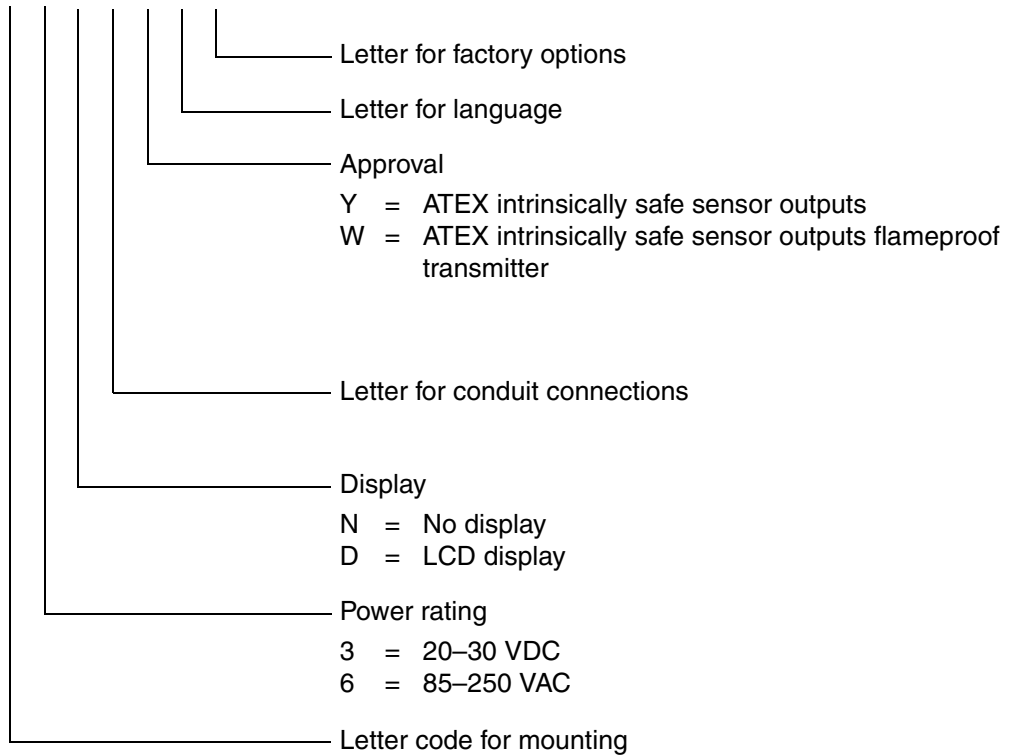
[EExib] IIB/IIC
EEx de [ib] IIB/IIC T6

1) **Subject and type**

Transmitter type IFT9701*****

The options denoted by * are as follows:

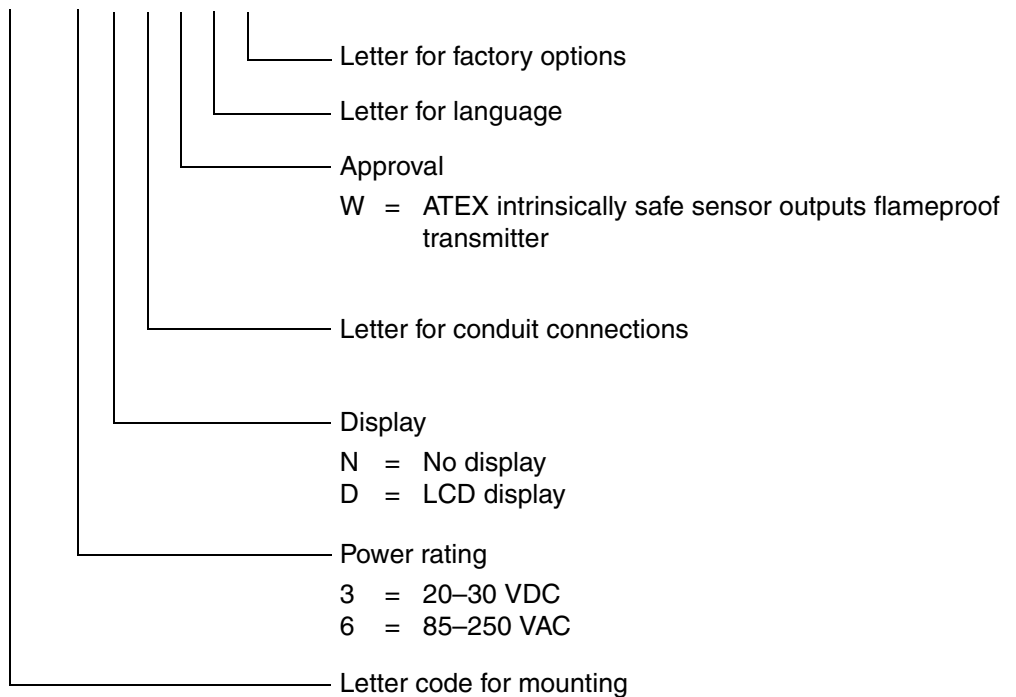
I F T 9 7 0 1 * * * * *



Transmitter type IFT9703*****

The options denoted by * are as follows:

I F T 9 7 0 3 * C * * * * *



2) Description

The transmitter is, in combination with a sensor, used for measurement of mass flow and data transmission. For the transmitter two variations are available:

1. Mounted inside the hazardous area type IFT9701**N*W** and IFT9703*C*N*W**.
2. Mounted outside the hazardous area type IFT9701**(N or D)*Y** and IFT9703*C*(N or D)*Y**.

The electrical components of the transmitter are securely fixed in a light metal housing.

In the variation type IFT9701**N*W** and IFT9703*C*N*W**, the housing consists of a junction box with type of protection “Increased Safety” for the connection of the non intrinsically safe power supply and signal circuits, a compartment with type of protection “Flameproof Enclosure” and a junction box for the connection of the intrinsically safe sensor circuits.

3) Parameters

3.1) Mains circuit (terminals 7 and 8)

for type IFT9701*3***** and IFT9703*C3*****

Voltage		DC	20–30	V
Max. voltage	Um	DC	30	V

for type IFT9701*6***** and IFT9703*C6*****

Voltage		AC	85–250	V
Max. voltage	Um	AC	250	V

3.2) Non intrinsically safe outputs

for type IFT9701***** and IFT9703*C*****
mA terminals (terminals 6 and 5)

Voltage	Um	DC	20	V
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Frequency output terminals (terminals 2 and 1)

Max. voltage	Um	DC	30	V
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3.3) Intrinsically safe circuits type of protection EEx ib IIC / EEx ib IIB

The circuits designed for connecting sensors are classified initially in Group IIC. However, when certain sensors are connected, they can also be assigned to Group IIB.

3.3.1) Drive circuit (terminals 1 and 2)

Max. voltage	Um	DC	11,4	V
Max. current	Im		1,14	A
Nominal fuse			250	mA
Max. power	Pm		1,2	W
Internal resistance	Ri		10	Ω

Type of protection EEx ib IIC				
Max. external inductance	Lo		27,4	μH
Max. external capacitance	Co		1,7	μF
Max. inductance/resistance ratio	Lo/Ro		<10,9	μH/Ω

Type of protection EEx ib IIB				
Max. external inductance	Lo		109	μH
Max. external capacitance	Co		11,7	μF
Max. inductance/resistance ratio	Lo/Ro		<43,7	μH/Ω

The maximum external inductance L (sensor coil) can be calculated with the following term:

$$L = 2 \times E \times (R_i + R_o / 1,5 \times U_o)^2$$

Whereby E= 40 μJ for group IIC and E = 160 μJ for group IIB and Ri = 10 Ω and Uo = 11,4 V will be inserted and Ro is the total resistance (coil resistance + series resistance).

3.3.2) Pick-off circuits (terminals 5, 9 and 6, 8)

Voltage	Umax	DC	15,6	V
Current	Imax		10	mA
Power	Pmax		40	mW

Type of protection EEx ib IIC				
Max. external inductance	Lo		355	mH
Max. external capacitance	Co		500	nF

Type of protection EEx ib IIB				
Max. external inductance	Lo		1,4	H
Max. external capacitance	Co		3,03	μF

3.3.3) Temperature circuit (terminals 3, 4, 7)

Voltage	Umax	DC	15,6	V
Current	Imax		10	mA
Power	Pmax		40	mW

Type of protection EEx ib IIC				
Max. external inductance	Lo		355	mH
Max. external capacitance	Co		500	nF

Type of protection EEx ib IIB				
Max. external inductance	Lo		1,4	H
Max. external capacitance	Co		3,03	μF

3.4) Ambient temperature range

IFT9701*****	Ta	-40 °C up to +55 °C
IFT9703*C*****	Ta	-40 °C up to +55 °C

4) **Marking**

 II 2 G or II (2) G

-40 °C ≤ Ta ≤ +55 °C

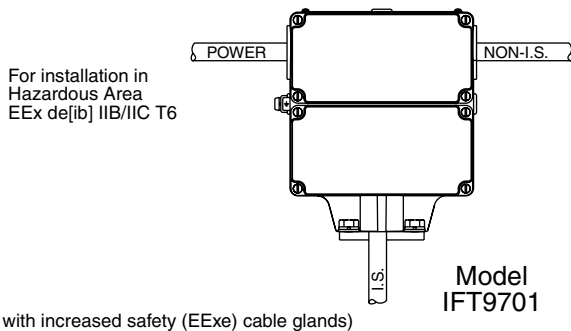
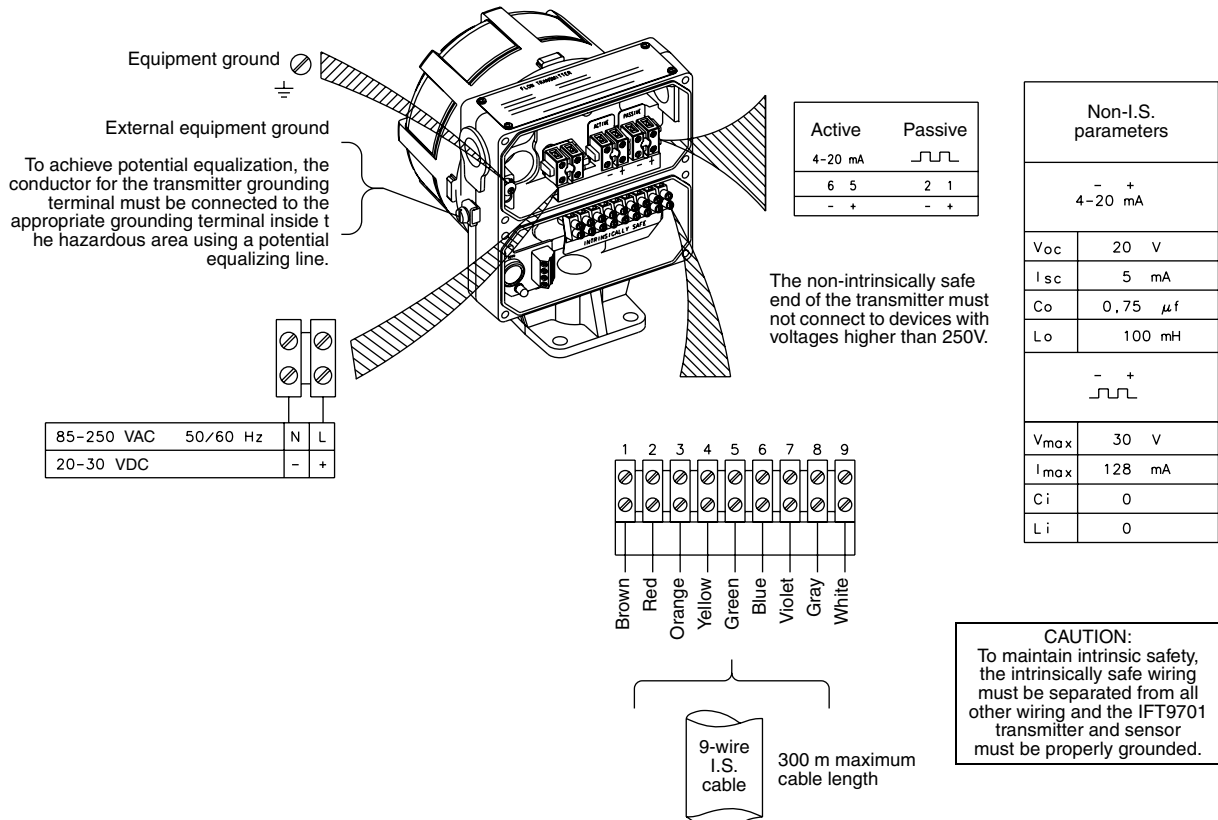
- type	- type of protection
IFT9701**N*W**	EEx de [ib] IIB/IIC T6
IFT9701**(N or D)*Y**	[EEx ib] IIB/IIC
IFT9703*C*N*W**	EEx de [ib] IIB/IIC T6
IFT9703*C*(N or D)*Y**	[EEx ib] IIB/IIC

5) **Special conditions for safe use / Installation instructions for IFT9701 or IFT9703.**

- 5.1) For the application of the transmitter in an ambient temperature of less than -20°C suitable cable and cable entries or conduit entries certified for this condition shall be used.
- 5.2) For installation outside the hazardous area, it is allowed to use cable entry fittings that are not increased safety EEx e.
- 5.3) To achieve potential equalization, the conductor for the transmitter grounding terminal must be connected to the appropriate grounding terminal inside the hazardous area using a potential equalizing line.
- 5.4) The non-intrinsically safe end of the transmitter must only be connected to devices where there are no voltages higher than 250V.
- 5.5) For types IFT9701**N*W** and IFT9703*C*N*W**
Warning — Do not open EEx d within 2 minutes after power is disconnected.

Model IFT9701 to CMF (except CMF400), H (except H300) and F (except F300) sensors with junction box

IFT9701 IN HAZARDOUS AREA OR SAFE AREA TO SENSOR IN HAZARDOUS LOCATION

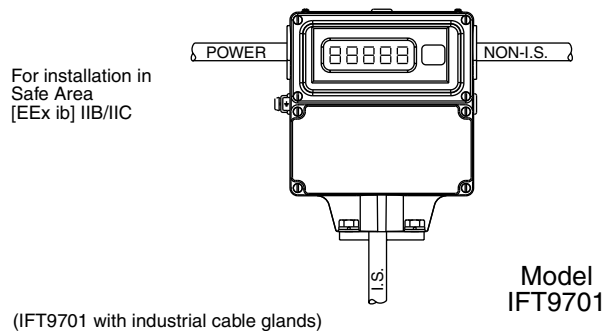


(IFT9701 with increased safety (EExe) cable glands)

For type IFT9701**N**W** transmitter in an ambient temperature of less than Below -20 °C ambient, use cable and cable entries or conduit entries certified for that temperature.

For type IFT9701*6N*W**
WARNING: Do not open EEx d within 2 minutes after power is disconnected.

Refer to sensor tag for complete hazardous area classification.



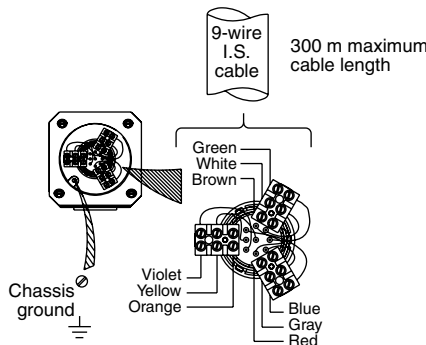
(IFT9701 with industrial cable glands)

For installation outside the hazardous area, it is allowed to use cable entry fittings that are not increased safety EExe.

Hazardous Area
EEx ib IIB / IIC

Refer to sensor tag for complete hazardous area classification.

MODELS		
CMF	F (except F300 and F300A)	H (except H300)
Supplied as intrinsically safe		



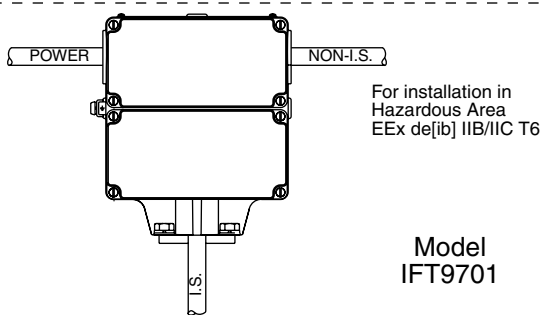
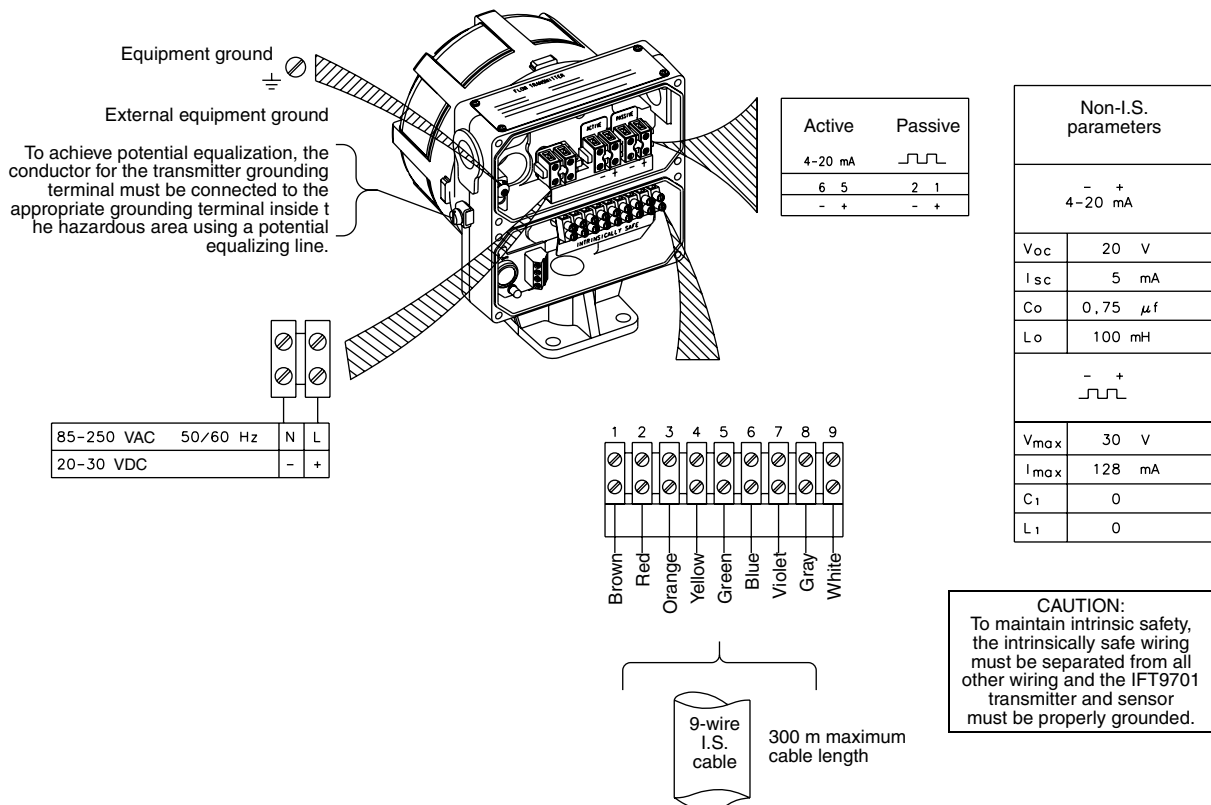
CAUTION:
To maintain intrinsic safety, the intrinsically safe wiring must be separated from all other wiring and the IFT9701 transmitter and sensor must be properly grounded.

Electronics: IFT9701
Sensor: CMF, F, H

EB-20001039 Rev. E

Model IFT9701 to D (except D600) and DL sensors with junction box

IFT9701 IN HAZARDOUS AREA OR SAFE AREA TO SENSOR IN HAZARDOUS LOCATION

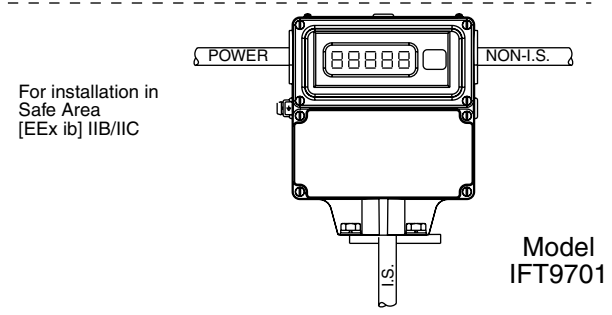


(IFT9701 with increased safety (EExe) cable glands)

For type IFT9701**N*W** transmitter in an ambient temperature of less than Below -20 °C ambient, use cable and cable entries or conduit entries certified for that temperature.

For type IFT9701*6N*W**
WARNING: Do not open EEx d within 2 minutes after power is disconnected.

Refer to sensor tag for complete hazardous area classification.



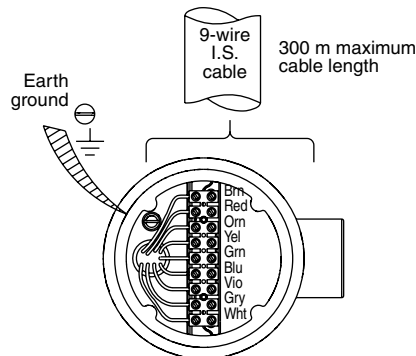
(IFT9701 with industrial cable glands)

For installation outside the hazardous area, it is allowed to use cable entry fittings that are not increased safety EExe.

Hazardous Area
EEx ib IIB / IIC

Refer to sensor tag for complete hazardous area classification.

MODELS
D, DL
Supplied as intrinsically safe

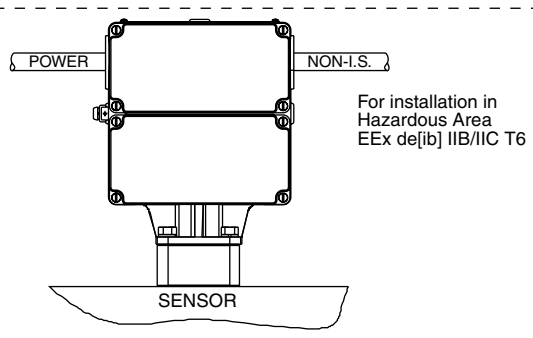
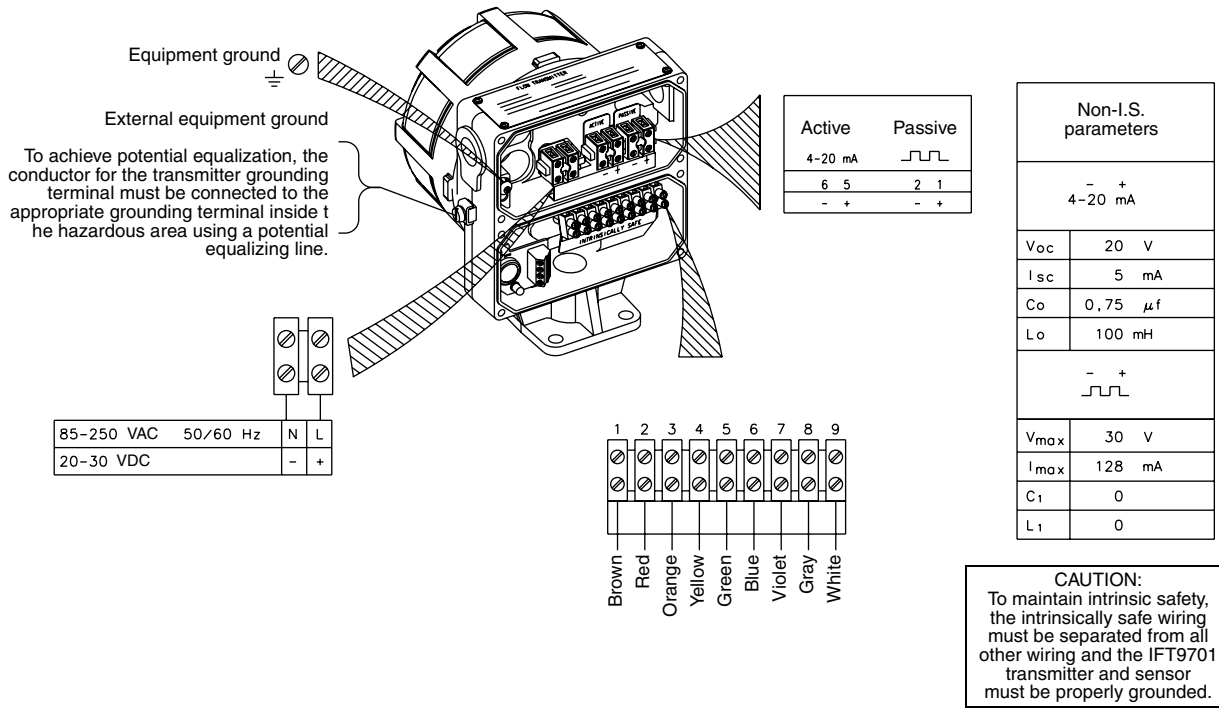


CAUTION:
To maintain intrinsic safety, the intrinsically safe wiring must be separated from all other wiring and the IFT9701 transmitter and sensor must be properly grounded.

Electronics: IFT9701 Sensor: D, DL

EB-20000370 Rev. B

Model IFT9701/IFT9703 Integral

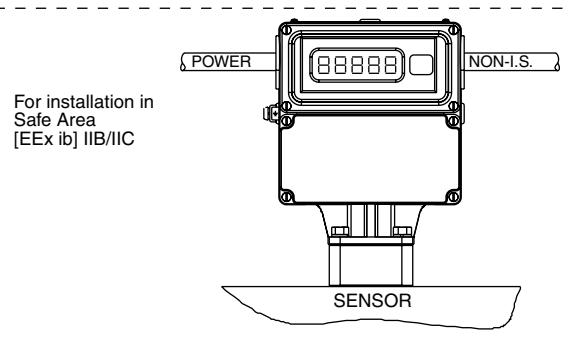


(IFT9701 with increased safety (EExe) cable glands)
(IFT9703 with increased safety (EExe) cable glands)

For type IFT9701**N*W** or IFT9703**N*W**
Below -20 °C ambient, use cable and cable entries or conduit entries certified for that temperature.

For type IFT9701*6N*W** or IFT9703*6N*W**
WARNING: Do not open EEx d within 2 minutes after power is disconnected.

Refer to sensor tag for complete hazardous area classification.



(IFT9701 with industrial cable glands)
(IFT9703 with industrial cable glands)

For installation outside the hazardous area, it is allowed to use cable entry fittings that are not increased safety EExe.

Electronics: Integral IFT9701/IFT9703

EB-20000372 Rev. A

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Micro Motion Inc. USA
Worldwide Headquarters

7070 Winchester Circle
Boulder, Colorado 80301
T +1 303-527-5200
+1 800-522-6277
F +1 303-530-8459

Micro Motion Europe

Emerson Process Management
Neonstraat 1
6718 WX Ede
The Netherlands
T +31 (0) 318 495 555
F +31 (0) 318 495 556

Micro Motion Asia

Emerson Process Management
1 Pandan Crescent
Singapore 128461
Republic of Singapore
T +65 6777-8211
F +65 6770-8003

Micro Motion United Kingdom

Emerson Process Management Limited
Horsfield Way
Bredbury Industrial Estate
Stockport SK6 2SU U.K.
T +44 0870 240 1978
F +44 0800 966 181

Micro Motion Japan

Emerson Process Management
1-2-5, Higashi Shinagawa
Shinagawa-ku
Tokyo 140-0002 Japan
T +81 3 5769-6803
F +81 3 5769-6844

