

**Installation Instructions**

P/N MMI-20011709, Rev. AA

July 2009

# **ATEX Installation Instructions for Micro Motion<sup>®</sup> Model RFT9739 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](http://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 RFT9739 Transmitters

## ATEX Drawings and Installation Instructions

- For installing the following Micro Motion transmitters with 9-wire connections:
  - Model RFT9739R
  - Model RFT9739D/E



Subject: Equipment type

**Transmitter type RFT9739\*\*E\*\*\*\***

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 50020:1994

Intrinsic safety 'i'

Code for type of protection

**EEx d [ib] IIC T6**

**[EEx ib] IIC**

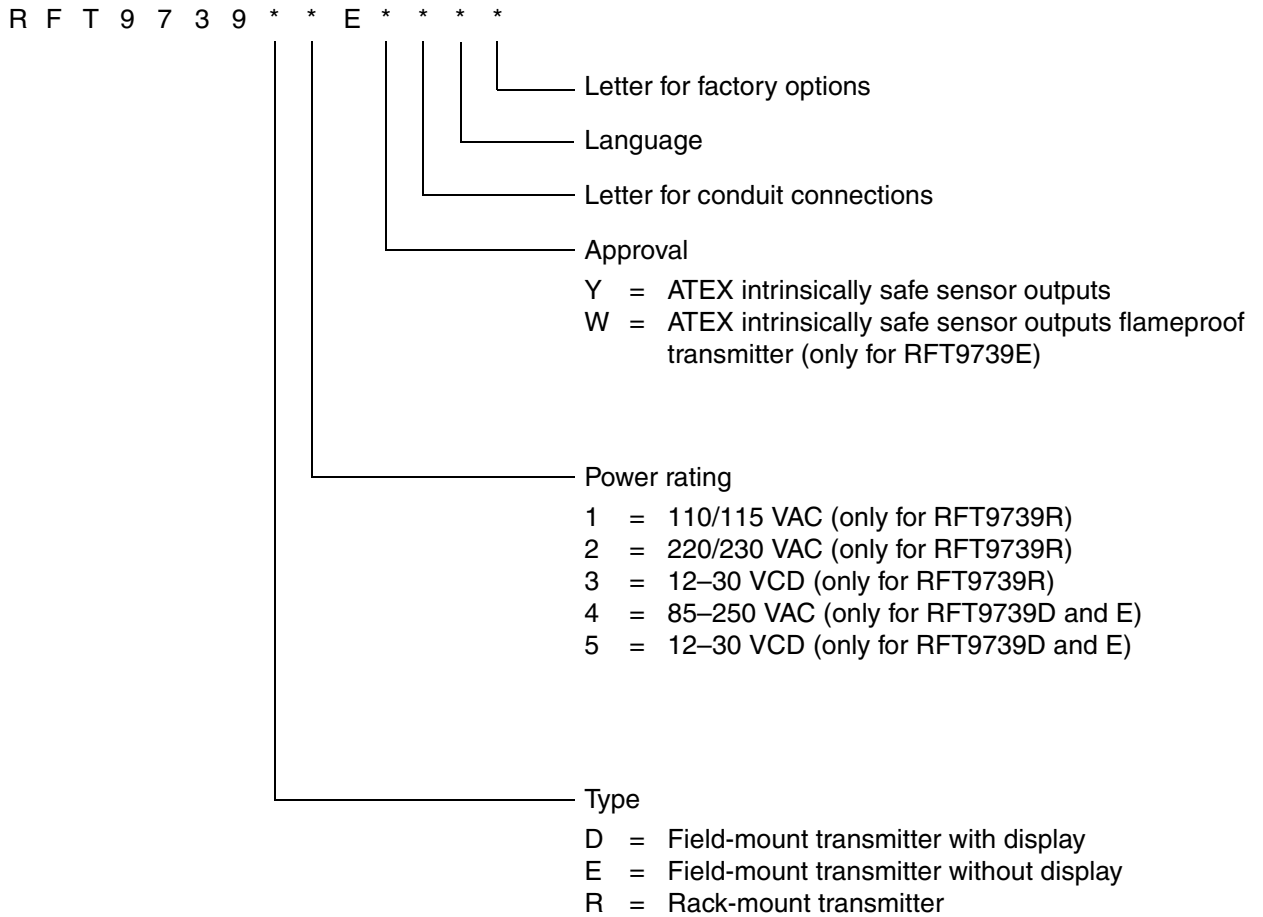
EC Type Examination Certificate

**DMT 02 ATEX E 051 X**

**1) Subject and type**

Transmitter type RFT9739\*\*E\*\*\*\*

The options denoted by \* are as follows:



**2) Description**

The transmitter is, in combination with a sensor, used for measurement of mass flow and data transmission.

The electrical circuitry of the transmitters is mounted inside a flameproof metal enclosure type RFT9739E.

The RFT9739D and RFT9739R are not flameproof enclosures.

### 3) Parameters

#### 3.1) Mains circuit (See document EB-3007165 or EB-3008013 for terminals)

Voltage		AC/DC	12–250	V
Max. voltage	Um	AC/DC	250	V

#### 3.2) 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.

		Drive circuit <sup>(1)</sup>	Pick-off circuits <sup>(1)</sup>	Temperature circuit <sup>(1)</sup>			
Voltage	Umax	11,4 Vdc	7,6 Vdc	14 Vdc			
Current	Imax	1,14 A	4,75 mA	7 mA			
Power	Pmax	1,2 W	18 mW	25 mW			
Internal resistance	Ri	10 Ω					
Nominal fuse		250 mA					
Group		IIC	IIB	IIC	IIB	IIC	IIB
Max. external inductance	Lo	27,4 μH	109 μH	1,5 H	6,3 H	725 mH	2,9 H
Max. external capacitance	Co	1,7 μF	11,7 μF	10,4 μF	160 μF	0,73 μF	4,6 μF
Max. inductance/resistance ratio	Lo/Ro	10,9 μH/Ω	43,7 μH/Ω				

(1) See document EB-3007165 or EB-3008013 for terminals.

For drive circuit terminals, the maximum external inductance L (sensor coil) can be calculated with the following term:

$$L = 2 \times E \times \left( \frac{Ri + Ro}{1,5 \times Uo} \right)^2$$

Where:

E = 40 μJ for group IIC and E = 160 μJ for group IIB

Ro = Total resistance (coil resistance + series resistance)

#### 3.3) Ambient temperature range

RFT9739R*E****	Ta	–20 °C to +55 °C
RFT9739(D or E)*E****	Ta	–30 °C to +45 °C or
	Ta	–40 °C to +45 °C (routine test required, only for RFT9739E*EW****)

**4) Marking**

 II 2 G or II (2) G

-20 °C ≤ Ta ≤ +55 °C for RFT9739R  
 -30 °C ≤ Ta ≤ +45 °C for RFT9739(D or E)\*E\*\*\* or  
 -40 °C ≤ Ta ≤ +45 °C (routine test required, only for RFT9739E\*EW\*\*\*)

- type	- type of protection
RFT9739E*EW***	EEx d[ib] IIC T6
RFT9739E*EY***	[EEx ib] IIC
RFT9739D*EY***	[EEx ib] IIC
RFT9739R*EY***	[EEx ib] IIC

**5) Special conditions for safe use / Installation instructions for RFT9739E\*EW\*\*\*.**

- 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) If certified conduit entries are used for the connection of the transmitter enclosure, the associated stopping boxes shall be installed immediately at the enclosure.
- 5.3) The transmitter shall only be installed within the intended hazardous area if metal cable entries (with 3/4"-14 NPT threading) are used which are classified as EEx d IIC and are for enclosures with >2dm<sup>3</sup> and are certified by an authorized test station.
- 5.4) Entry holes which are not being used must be sealed with blanking plugs and which are classified as EEx d IIC and are certified by an authorized test station.
- 5.5) For installation outside the hazardous area, it is allowed to use cable entry fittings that are not flameproof.
- 5.6) 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.
- 5.7) The non-intrinsically safe end of the transmitter must only be connected to devices where there are no voltages higher than 250V.
- 5.8) After de-energizing the flameproof RFT9739, delay 5 minutes before opening the cover.

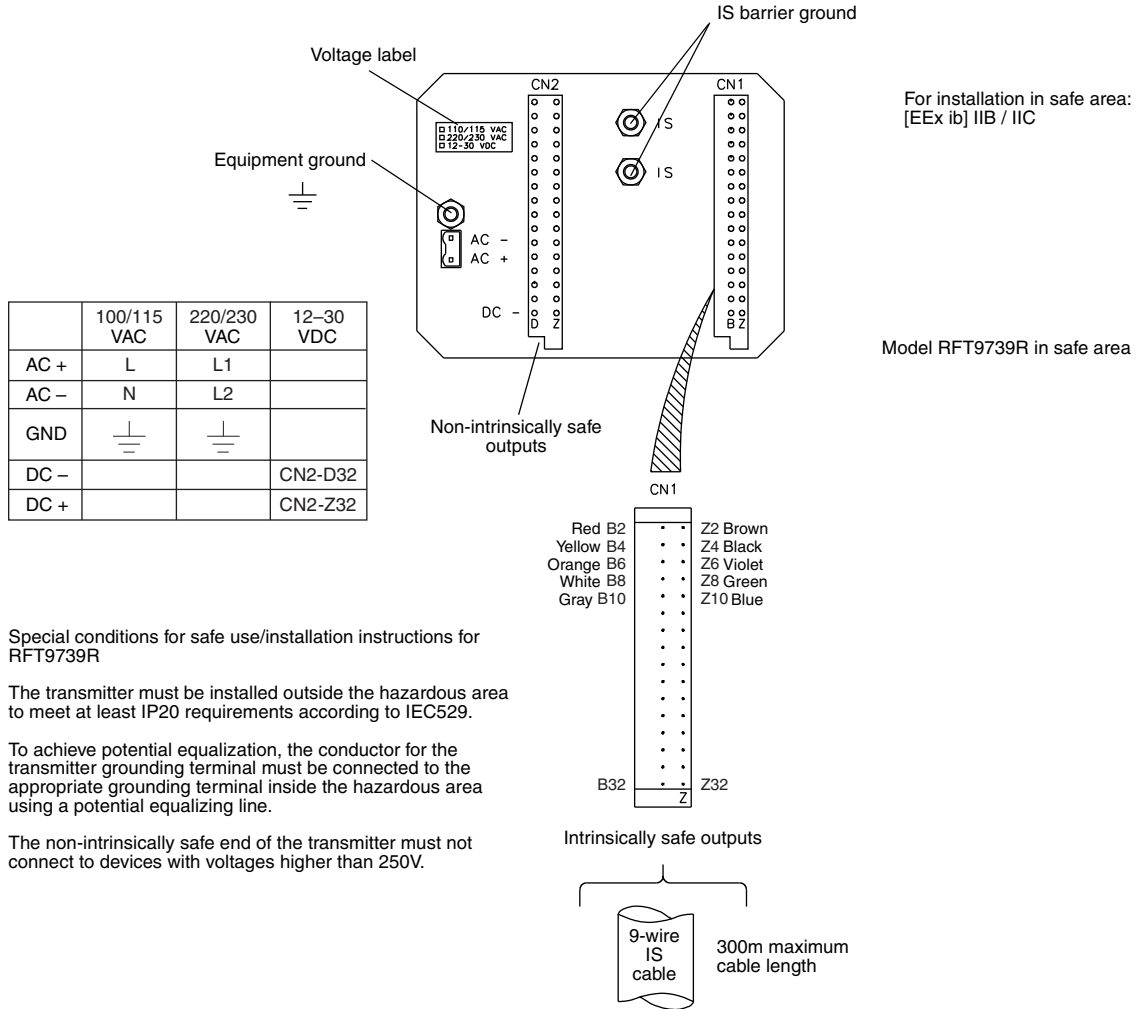
**6) Special conditions for safe use / Installation instructions for RFT9739(R or D or E)\*EY\*\*\*.**

- 6.1) The transmitter must be installed outside the hazardous area in such a way that it meets a degree of protection of at least IP20 according to EN60529.
- 6.2) 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
- 6.3) The non-intrinsically safe end of the transmitter must only be connected to devices where there are no voltages higher than 250V.

# Model RFT9739 installation drawings

**Figure 1: Rack Mount Model RFT9739R transmitter to sensor with junction box**

COMBINE THIS DRAWING WITH ONE OF FIGURE 3, 4, OR 5



Special conditions for safe use/installation instructions for RFT9739R

The transmitter must be installed outside the hazardous area to meet at least IP20 requirements according to IEC529.

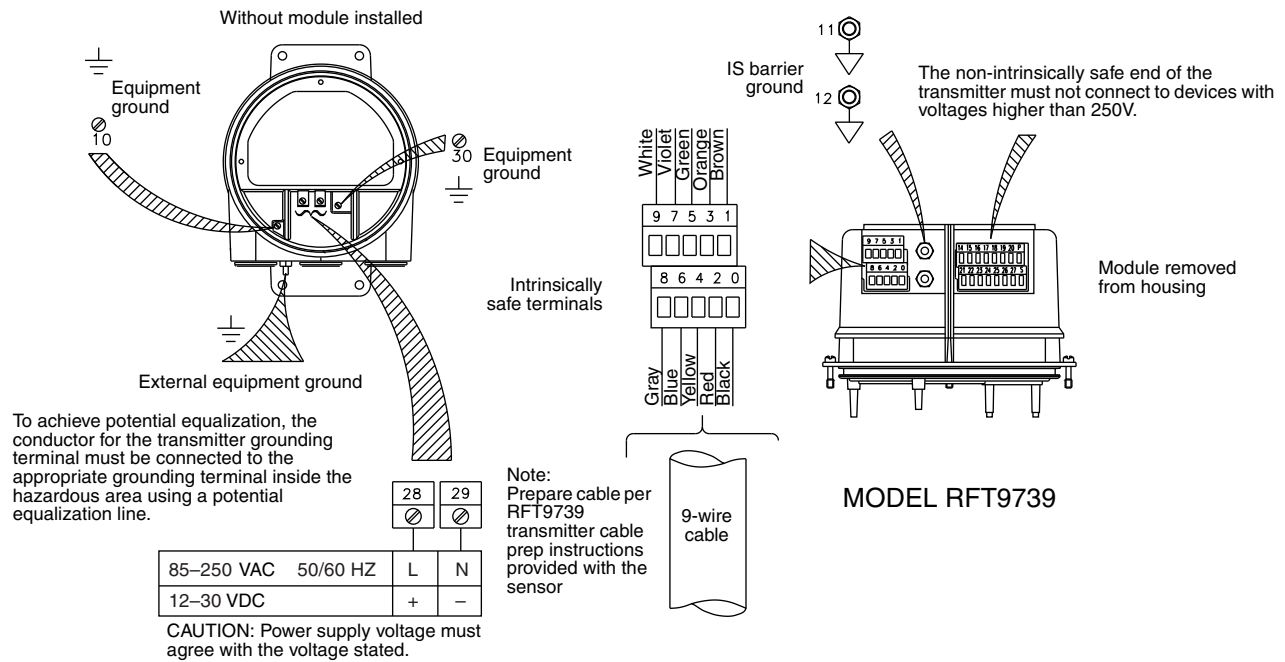
To achieve potential equalization, the conductor for the transmitter grounding terminal must be connected to the appropriate grounding terminal inside the hazardous area using a potential equalizing line.

The non-intrinsically safe end of the transmitter must not connect to devices with voltages higher than 250V.

Reference no. EB-20001047 Rev. D

**Figure 2: Field Mount Model RFT9739D or RFT9739E to sensor with junction box**

COMBINE THIS DRAWING WITH ONE OF FIGURE 3, 4, OR 5

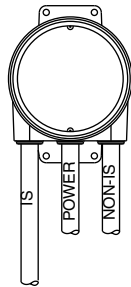


For installation in Hazardous Area EExd [ib] IIC T6 (RFT9739E with flameproof cable glands)

When ambient temperature is less than -20 °C, cable and cable entries or conduit entries certified for this condition shall be used.

To prevent ignition of hazardous atmospheres, disconnect from supply circuit before opening enclosure. Keep tightly closed when circuits are alive.

If certified conduit entries are used, the associated stopping boxes shall be installed immediately at the transmitter enclosure. The transmitter shall only be installed within the intended hazardous area if metal cable entries (with 3/4"-NPT threading) are used and are for enclosures with > 2dm<sup>3</sup> which are classified as EEx d IIC and are certified by an authorized test station. Unused entry holes must be sealed with blanking plugs that are classified as EEx d IIC and certified by an authorized test station.

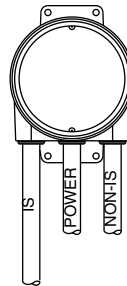


OR

For installation in Safe Area [EEx ib] IIC

(RFT9739D without flameproof cable glands)  
(RFT9739E without flameproof cable glands)

For installation outside the hazardous area, cable entry fittings that are not flameproof are allowed.



MODEL RFT9739

Reference no. EB-20001046 Rev. E



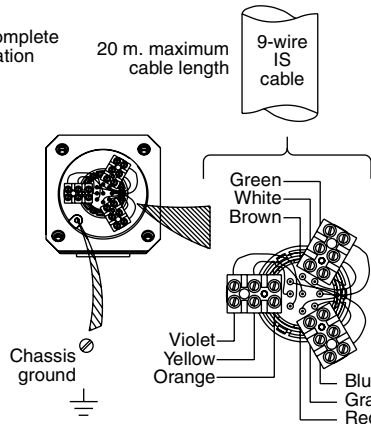
**Figure 3: CMF, D (except D600), DL, F, H, and T sensor with junction box**

COMBINE THIS DRAWING WITH ONE OF FIGURE 1 OR 2

Hazardous Area  
EEx ib IIB / IIC

Refer to sensor tag for complete hazardous area classification

Sensor junction box



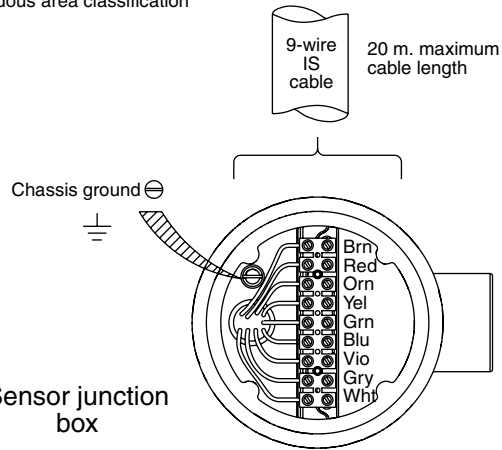
Model			
CMF	T	F	H

Supplied as intrinsically safe

Hazardous Area  
EEx ib IIB / IIC

Refer to sensor tag for complete hazardous area classification

Sensor junction box



Model
D, DL (EXCEPT D600)

Supplied as intrinsically safe

Reference no. EB-20001074 Rev. D

**Figure 4: D600 with junction box**

COMBINE THIS DRAWING WITH ONE OF FIGURE 1 OR 2

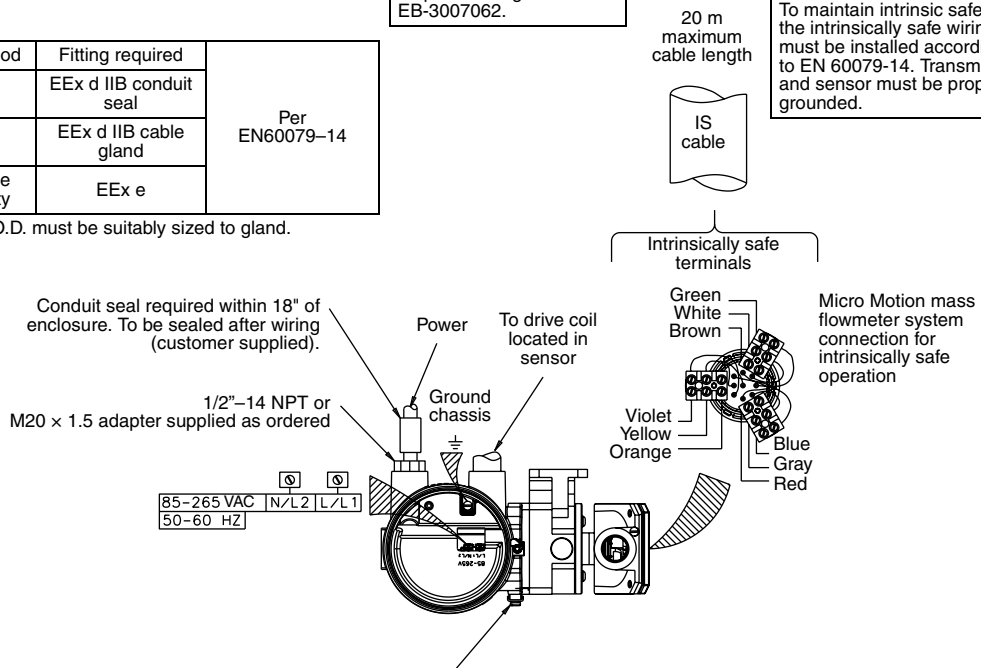
Hazardous Area  
EExde [ib] IIB

Installation method	Fitting required	Per EN60079-14
Conduit	EEx d IIB conduit seal	
Cable	EEx d IIB cable gland	
Conduit or cable increased safety	EEx e	

Cable O.D. must be suitably sized to gland.

For remote mount booster amplifier wiring refer to EB-3007062.

**CAUTION:**  
To maintain intrinsic safety, the intrinsically safe wiring must be installed according to EN 60079-14. Transmitter and sensor must be properly grounded.



To achieve potential equalization the ground terminal must be connected to the appropriate ground terminal within the hazardous area using a potential equalizing line.

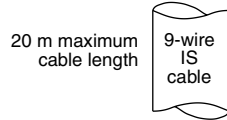
Reference no. EB-20000849 Rev. B

**Figure 5: DT with junction box**

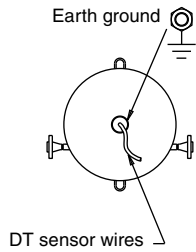
COMBINE THIS DRAWING WITH ONE OF FIGURE 1 OR 2

Hazardous Area  
EEx ib IIb

Special conditions for safe use:  
For the sensor types DT065, DT100,  
and DT150 the following applies: The  
minimum medium temperature is  
+32 °C.



DT sensor wires must be connected to IS cable  
using customer supplied terminal block and  
junction box.



DT sensor wire terminations to 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

Models: DT65, DT100, DT150

Micro Motion mass  
flowmeter system  
connection for intrinsically  
safe operation

Reference no. EB-20000799 Rev. B



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