Installation Instructions
P/N MMI-20010174, Rev. A
June 2007

ATEX Installation Instructions for Micro Motion® F-Series Sensors with Certificate DMT 01 ATEX E 158 X

For ATEX-approved sensor installations

Micro Motion®

EMERSON™
Process Management

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.

F-Series Sensors (DMT 01 ATEX E 158 X)

ATEX Installation Instructions

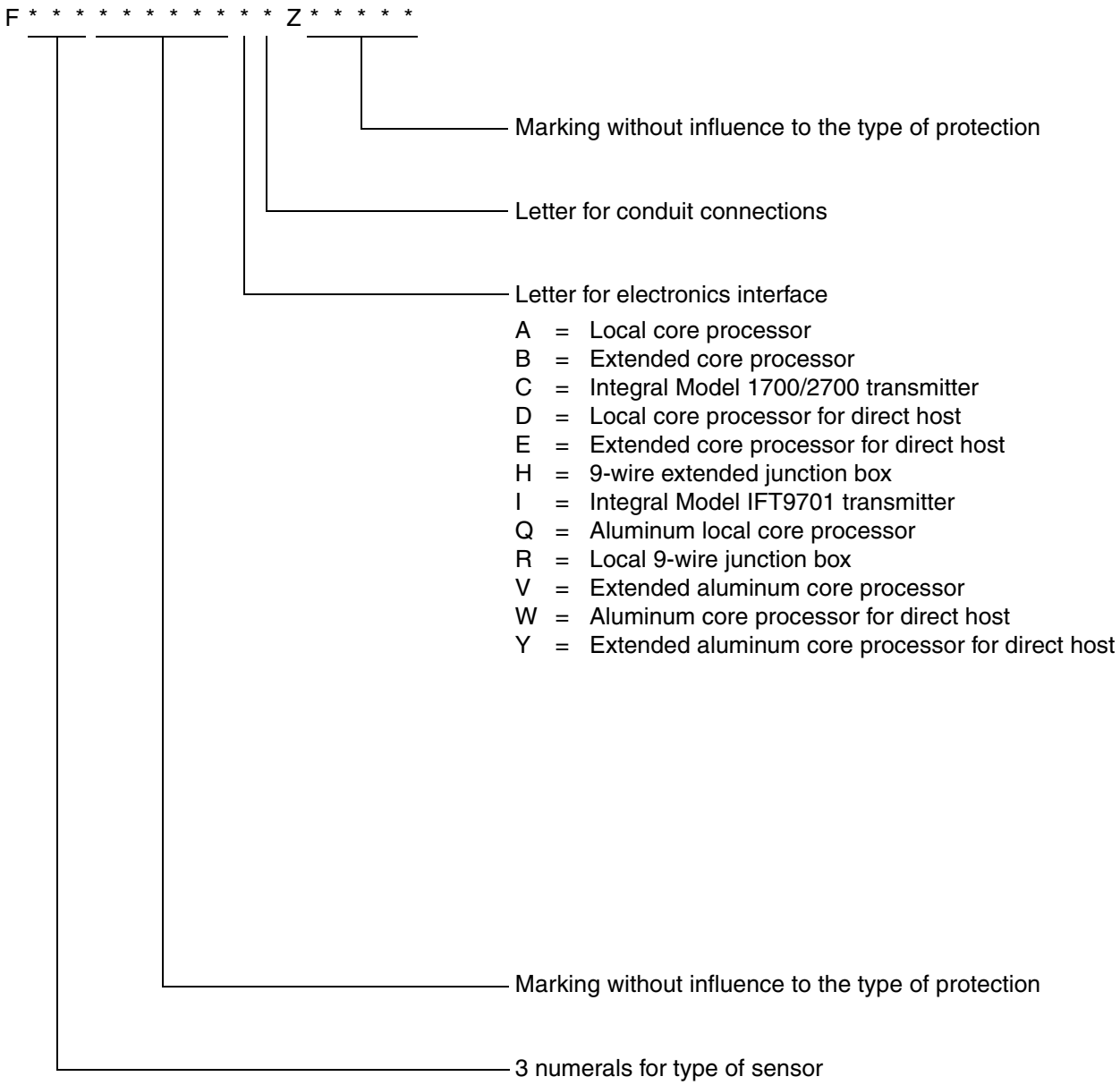
- For installing Micro Motion F-Series sensors with ATEX certificate number DMT 01 ATEX E 158 X

Subject:	Equipment type	**Sensor type F*** *******Z*******	
Manufactured and submitted for examination		**Micro Motion, Inc.**	
Address		**Boulder, Co. 80301, USA**	
Basis for examination:		**Annex II of Directive 94/9/EC**	
Standard basis		EN 50014:1997 +A1-A2	General requirements
		EN 50020:2002	Intrinsic safety ´i´
Code for type of protection		**EEx ib IIB/IIC T1–T6**	

1) Subject and type

Sensor type F*** ********Z*****

Instead of the *** letters and numerals will be inserted which characterize the following modifications:



2) Description

The flow sensor in combination with a transmitter is used for flow measurement.

The flow sensor, which consists of magnetically excited oscillating tubes, contains as electrical components coils, resistors, temperature sensors and terminals and connectors.

Instead of the junction box an enclosure with an inside mounted signal processing device type 700 can be used; this variation gets the denomination type F*** *****(A, B, D, E)*Z***** for a SS enclosure and F*** *****(Q, V, W or Y)*Z***** for an aluminum enclosure

Alternatively a transmitter type *700********** can be mounted directly to the sensor; this variation gets the denomination type F*** *****C*Z*****.

Alternatively a transmitter type IFT9701******* can be mounted directly on the sensor; this variation gets the denomination type F*** *****I*Z*****.

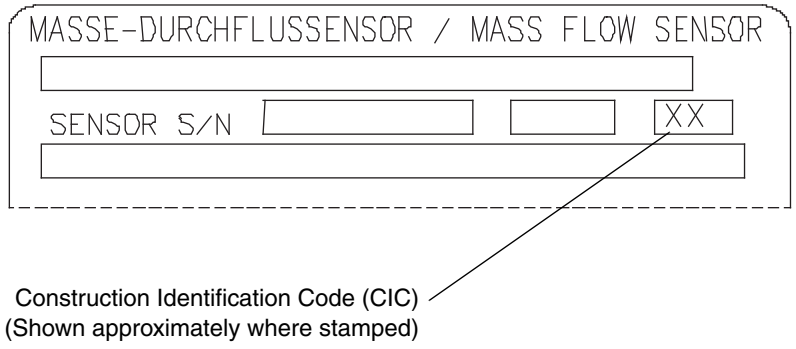
By mounting the sensor directly to the transmitter the use of the unit will be modified according to the following table:

Sensor	F025 *****C*Z***** F050 *****C*Z***** F100 *****C*Z*****	F200 *****C*Z*****
Transmitter type *700*1(1 or 2)*******	EEx ib IIB+H_2 T1–T5	EEx ib IIB T1–T5
Transmitter type *700*13*******	EEx ib IIC T1–T5	EEx ib IIB T1–T5

Note: When sensor is directly mounted to the transmitter, the equipment is only suitable for the more restrictive hazardous area (i.e., if F025 is suitable for EEx ib IIC T1–T6 and integrally mounted *70011******* is suitable for EEx ib IIB+H_2 T1–T5, the combination is only suitable for EEx ib IIB+H_2 T1–T5).

The flow sensor may also be used for measurements with flammable substances under the provision that they do not form permanently or frequently an explosive atmosphere. The flow sensor then must be included in the recurrent pressure test.

Amendment No. 3 to the ATEX Certificate DMT 01 ATEX E 158 X reflects the revised Drive Coil parameters for F100 for compatibility with other ATEX certified transmitters. Sensors constructed using these revised coil parameters will be identified with a Construction Identification Code (C.I.C.) of A1.



3) Parameters

3.1) Type F*** *****(R or H)*Z*****

3.1.1) Drive circuit (connections 1–2 or red and brown)

Voltage	Ui	DC	11,4	V
Current	Ii		2,45	A
Power	Pi		2,54	W
Effective internal capacitance	Ci		Negligible	

Sensor type	**Inductance (mH)**	**Coil resistance at –40 °C (Ω)**	**Series resistor at –40 °C (Ω)**
F025 *****(R or H)*Z*****	5,83	24,1	988,8
F050 *****(R or H)*Z*****	5,83	24,1	469,7
F100 *****(R or H)*Z*****	29,3	69,8	267,0
F200 *****(R or H)*Z*****	9,4	37,4	59,2

3.1.2) Pick-off circuit (connections 5, 9 and 6, 8 or green, white and blue, gray)

Voltage	Ui	DC	30	V
Current	Ii		101	mA
Power	Pi		750	mW
Effective internal capacitance	Ci		Negligible	

Sensor type	**Inductance (mH)**	**Coil resistance at –40 °C (Ω)**	**Series resistor at –40 °C (Ω)**
F025 *****(R or H)*Z*****	5,83	24,1	128,5
F050 *****(R or H)*Z*****	5,83	24,1	128,5
F100 *****(R or H)*Z*****	5,83	24,1	128,5
F200 *****(R or H)*Z*****	5,83	24,1	59,2

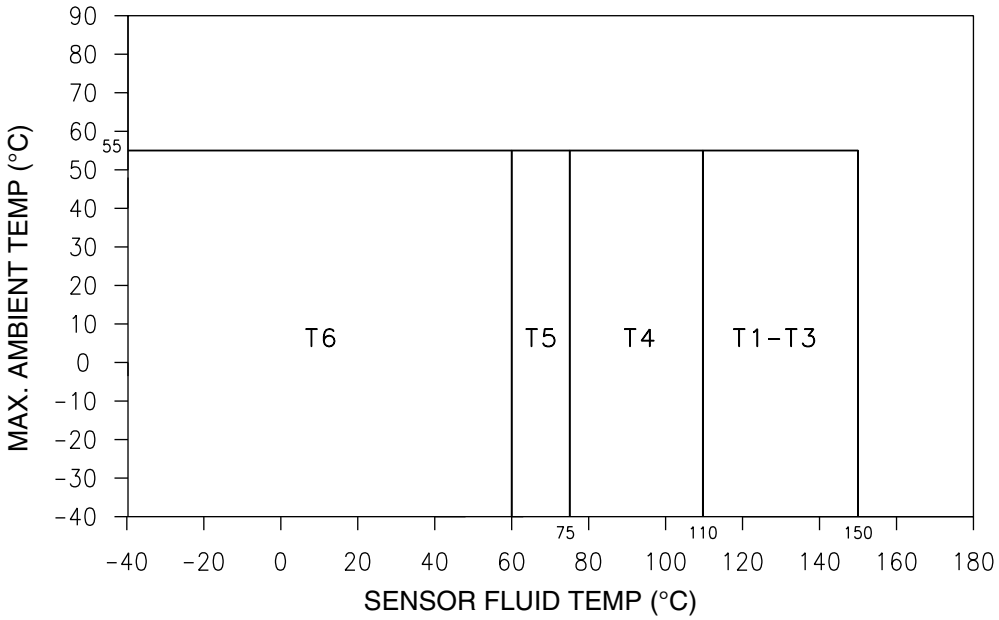
3.1.3) Temperature circuit (connections 3, 4 and 7 or orange, yellow and violet)

Voltage	Ui	DC	30	V
Current	Ii		101	mA
Power	Pi		750	mW
Effective internal capacitance	Ci		Negligible	
Effective internal inductance	Li		Negligible	

3.1.4) Regulation of temperature class

The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graph:

ATEX ALLOWABLE F-SERIES SENSOR TEMPERATURE RATING WITH INTEGRAL J-BOX
BASED ON AMBIENT/FLUID TEMPERATURE



3.1.5) Ambient temperature range

F*** *****(R or H)*Z*****	Ta	–40 °C up to +55 °C

The use of the sensor at an ambient temperature higher than 55 °C is possible, provided that the ambient temperature does not exceed the maximum temperature of the medium taking into account the temperature classification and the maximum operating temperature of the sensor.

3.2) Type F*** *****(A,B, D, E, Q, V, W or Y)*Z*****

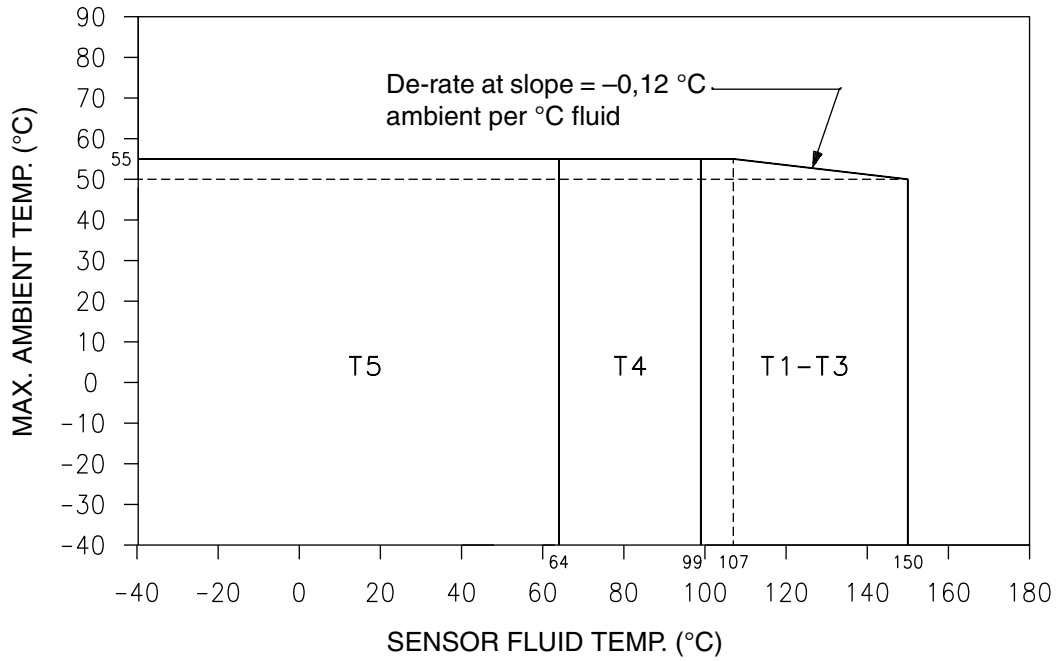
3.2.1) Input circuits (terminals 1–4)

Voltage	Ui	DC	17,3	V
Current	Ii		484	mA
Power	Pi		2,1	W
Effective internal capacitance	Ci		2200	pF
Effective internal inductance	Li		30	µH

3.2.2) Regulation of temperature class

The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graph:

ATEX ALLOWABLE F-SERIES SENSOR TEMPERATURE RATING WITH INTEGRALLY MOUNTED CORE PROCESSOR BASED ON AMBIENT/FLUID TEMPERATURE



3.2.3) Ambient temperature range

F*** *****(A,B, D, E, Q, V, W or Y)*Z*****	Ta	–40 °C up to +55 °C

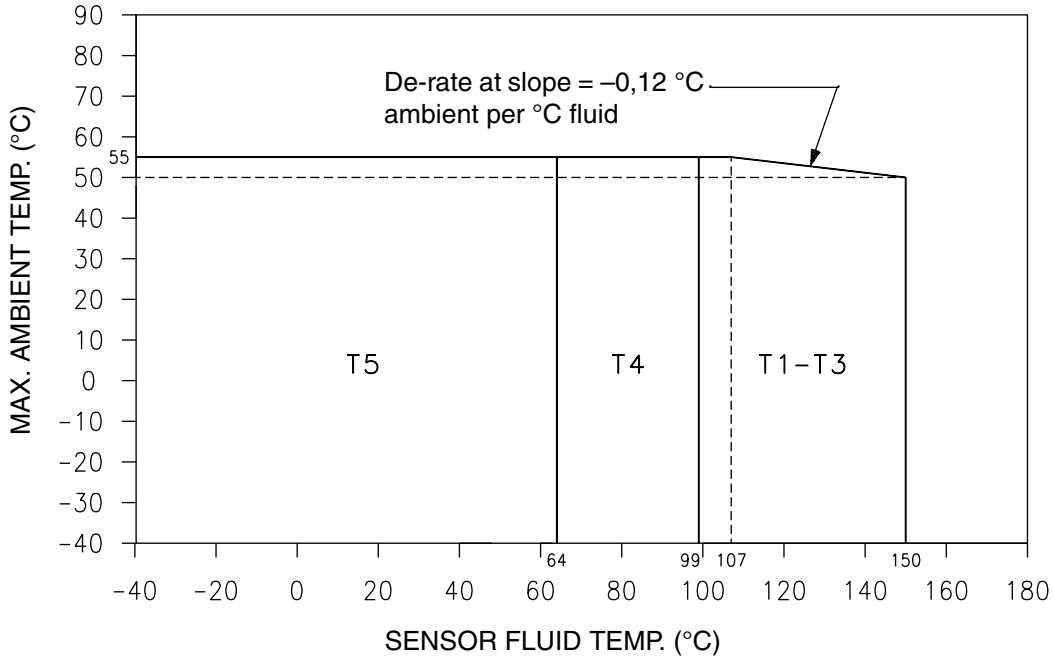
3.3) Type F*** *****C*Z*****

3.3.1) Electrical parameters see 1700/2700 instruction for the transmitter type *700**********.

3.3.2) Regulation of temperature class

The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graph:

ATEX ALLOWABLE F-SERIES SENSOR TEMPERATURE RATING WITH INTEGRALLY MOUNTED MODEL 1700/2700 TRANSMITTER BASED ON AMBIENT/FLUID TEMPERATURE



3.3.3) Ambient temperature range

F*** *****C*Z*****	Ta	–40 °C up to +55 °C

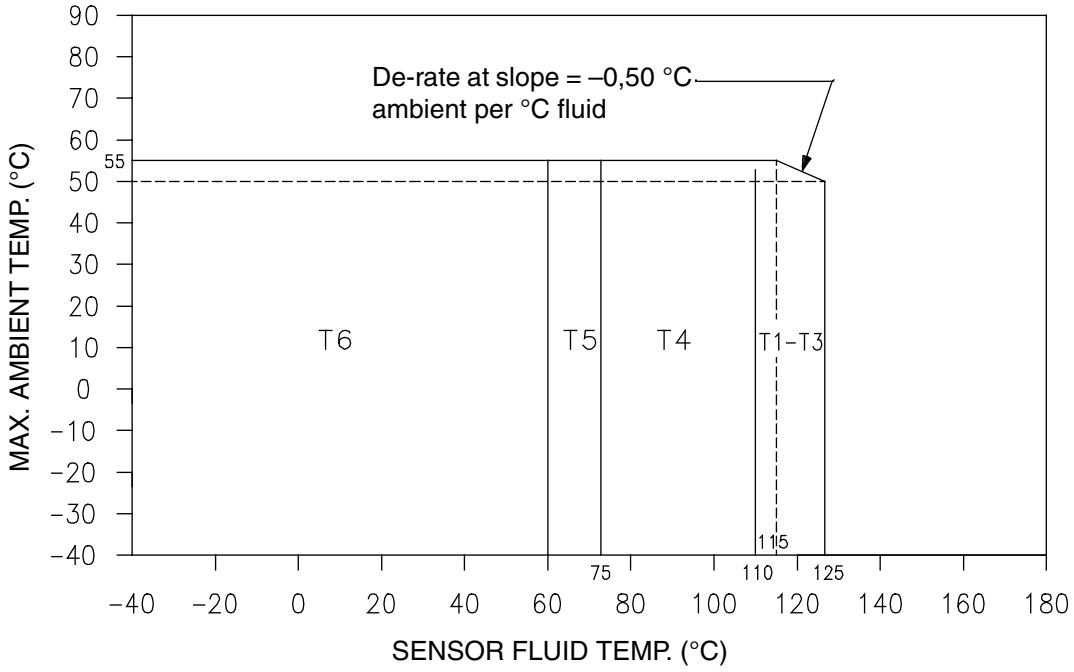
3.4) Type F*** *****I*Z*****

3.4.1) Electrical parameters see IFT9701/IFT9703 instruction for the transmitter type IFT9701*******.

3.4.2) Regulation of temperature class

The classification into a temperature class depends on the temperature of the medium taking into account the maximum operating temperature of the sensor and is shown in the following graph:

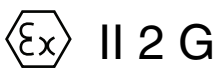
ATEX ALLOWABLE F-SERIES SENSOR TEMPERATURE RATING WITH INTEGRALLY MOUNTED IFT9701 BASED ON AMBIENT/FLUID TEMPERATURE



3.4.3) Ambient temperature range

F*** *****I*Z*****	Ta	–40 °C up to +55 °C

4) Marking



–40 °C ≤ Ta ≤ +55 °C

- type	**- type of protection**
F025 *****(R, H, or I)*Z*****	EEx ib IIC T1–T6
F050 *****(R, H, or I)*Z*****	EEx ib IIC T1–T6
F100 *****(R, H, or I)*Z*****	EEx ib IIC T1–T6
F200 *****(R, H, or I)*Z*****	EEx ib IIB T1–T6
F025 *****(A, B, D, E, Q, V, W or Y)*Z*****	EEx ib IIC T1–T5
F050 *****(A, B, D, E, Q, V, W or Y)*Z*****	EEx ib IIC T1–T5
F100 *****(A, B, D, E, Q, V, W or Y)*Z*****	EEx ib IIC T1–T5
F200 *****(A, B, D, E, Q, V, W or Y)*Z*****	EEx ib IIB T1–T5

5) Special conditions for safe use / Installation instructions

5.1) By mounting the sensor F*** *****C*Z***** directly to the transmitter *700********** the use of the unit will be modified according to the following table:

Sensor	F025 *****C*Z***** F050 *****C*Z***** F100 *****C*Z*****	F200 *****C*Z*****
Transmitter type *700*1(1 or 2)*******	EEx ib IIB+H_2 T1-T5	EEx ib IIB T1-T5
Transmitter type *700*13*******	EEx ib IIC T1-T5	EEx ib IIB T1-T5

Note: When sensor is directly mounted to the transmitter, the equipment is only suitable for the more restrictive hazardous area (i.e., if F025 is suitable for EEx ib IIC T1–T6 and integrally mounted *70011******* is suitable for EEx ib IIB+H_2 T1–T5, the combination is only suitable for EEx ib IIB+H_2 T1–T5).

5.2) When the application requires that IIB certified sensors are to be used in IIC hazardous area's, these sensors can be modified by adding an infallible series resistor in the drive coil circuitry done by the manufacturer or his representative. In this case, the modified sensor can be marked with IIC and must be marked with an identification code (so-called CEQ number). Furthermore the manufacturer or his representative must issue a Manufacturing Declaration which shows how the calculations have been done, what resistor value is to be added and what the identification code is.

5.3) The above is also applicable when IIB or IIC certified sensors are going to be used at lower fluid temperatures than indicated in the EC Type Examination Certificate.

5.4) A combination of points 5.2 and 5.3 is also allowed.

Cable glands and adapters

ATEX Installation Instructions

1) ATEX certification requirement

All sensor and transmitter cable glands and adapters are required to be ATEX certified. Refer to the specific manufacturer's website for installation instructions.

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

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

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