



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx SIR 19.0007X

Issue No: 0

Certificate history:

[Issue No. 0 \(2019-04-29\)](#)

Status: **Current**

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Date of Issue: **2019-04-29**

Applicant: **Micro Motion**
7070 Winchester Circle
Boulder
Colorado 80301
United States of America

Equipment: **Field Mount Loop Power Transmitter, Series 4200**

Optional accessory:

Type of Protection: **Intrinsically Safe, Flameproof, Increased Safety and Dust Protection by Enclosure**

Marking:
Refer to the Annexe

*Approved for issue on behalf of the IECEx
Certification Body:*

N Jones

Position:

Certification Manager

*Signature:
(for printed version)*

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](#).

Certificate issued by:

SIRA Certification Service
CSA Group
Unit 6, Hawarden Industrial Park
Hawarden, Deeside, CH5 3US
United Kingdom

sira
CERTIFICATION





IECEX Certificate of Conformity

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Date of Issue: **2019-04-29** Page 2 of 3
Manufacturer: **Micro Motion**
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Boulder
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Additional Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2017 Edition:7.0	Explosive atmospheres - Part 0: Equipment - General requirements
IEC 60079-1 : 2014-06 Edition:7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-11 : 2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-31 : 2013 Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
IEC 60079-7 : 2015 Edition:5.0	Explosive atmospheres – Part 7: Equipment protection by increased safety "e"

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

[GB/SIR/ExTR19.0106/00](#)

Quality Assessment Report:

[NO/PRE/QAR16.0031/00](#)



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

General:

The 4200 Series transmitter in combination with a sensor, are used for measurement of mass flow. The 4200 Series transmitters are communicating, microprocessor-based, coil drive, sensor (Pickup Coils/RTD input) interfacing instruments. In addition to the normal function of processing sensor inputs into flow rates, processed measurements are communicated via HART 4-20mA current signals.

Refer to the Annexe for Additional Information.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. If a charge-generating mechanism is present, the exposed painted metallic part on the enclosure is capable of storing a level of electrostatic charge that could become incendive for IIIC dust. Therefore, the user/installer shall implement precautions to prevent the build-up of electrostatic charge, e.g. earthing the metallic part. This is particularly important if the equipment is installed in a zone 0 location. Cleaning of the painted surface shall only be done with a damp cloth.
2. The enclosure is manufactured from Aluminium, magnesium, titanium or zirconium may be used at the accessible surface of the equipment. In rare cases, ignition sources due to impact and friction sparks could occur. This shall be considered when the Micro Motion 4200 is being installed in Zone 0 locations for group II/III level of protection Ga/Da.
3. The flameproof joints are not intended to be repaired.

Annex:

[IECEX SIR 19.0007X Annexe Issue 0.pdf](#)

Annexe to: IECEx SIR 19.0007X Issue 0
Applicant: Micro Motion
Apparatus: Field Mount Loop Power Transmitter, Series 4200



The model designation and marking is as follows:

IECEx Model Code	Marking
4200*****IA*****	Ex db [ia Ga] IIC T6 Gb Ex tb [ia Da] IIIC T72°C Db IP66/IP67
4200*****EA*****	Ex db eb [ia Ga] IIC T6 Gb Ex tb [ia Da] IIIC T72°C Db IP66/IP67
4200*****EB*****	Ex ia IIC T4 Ga Ex ia IIIC T77°C Da IP66/IP67
4200*****3A*****	Ex ec [ia Ga] IIC T6 Gc Ex tc [ia Da] IIIC T72°C Dc IP66/IP67

The 4200 incorporates an on-board intrinsically safe (IS) shunt zener diode safety assembly, which is encapsulated. The IS shunt zener diode safety assembly then feeds the remaining electronics which are also encapsulated but protected by intrinsic safety.

The 4200 consists of a single housing. The aluminium enclosure is further sub-divided into two parts, the terminal compartment and the electronics housing.

The field wired connections are made inside the terminal compartment, which is protected by either Increased Safety (Ex eb, ec), Flameproof (Ex d), Intrinsic safety (Ex ia) or by enclosure (Ex t) for dust.

The electronics compartment is protected by Flameproof (Ex d), intrinsic safety (Ex ia), Increased Safety (Ex ec) or by enclosure (Ex t) for dust.

The terminal compartment, accessible via the threaded enclosure cover, allows electrical connection via two cable/conduit entries to a terminal block. Electrical connection to the remainder of the equipment is then made through the terminal PC Board.

The electronics housing contains three PC Boards, the Power PCB, 2WCORE PCB, and Display PCB. All of the circuitry, except for the Display PCB, is encapsulated.

The 4200 Series transmitters are assessed for (a) Intrinsic Safety "ia", (b) Flameproof "db", (c) Dust Ignition protected "tb" and (d) Increased Safety type "eb" or "ec" protection methods.

Intrinsic Safety and Dust-Ignition Protected (Ex ia IIC and Ex ia IIIC)	Flameproof or Increased Safety (Zone 1) and Dust-Ignition Protected (Ex db IIC and Ex tb IIIC) Or (Ex eb IIC and Ex tb IIIC)	Increased Safety (Zone 2) and Dust-Ignition Protected (Ex ec IIC and Ex tc IIIC)
Ui = 30 Vdc Ii = 300 mA Pi = 1000 mW Ci = 1320pF Li = 2.86 µH	18 to 30 Vdc, 4 to 20mA 22mA Max.	18 to 30 Vdc, 4 to 20mA 22mA Max.

Annexe to: IECEx SIR 19.0007X Issue 0
Applicant: Micro Motion
Apparatus: Field Mount Loop Power Transmitter, Series 4200



Input Entity Parameters (Intrinsically Safe Zone 0/1/2):

Parameters	Series 4200	
	gas application	dust application
Terminals	CH A, CH B, Terminals 1 -4	CH A, CH B, Terminals 1 -4
Voltage U_i	DC 30 V	DC 30 V
Current I_i	300mA	300mA
Power P_i	1.0W	1.0W
Effective internal capacitance C_i	1320pF	1320pF
Effective internal inductance L_i	2.86uH	2.86uH

Output Entity Parameters, Group IIC (Zone 0/1/2):

Parameters	Series 4200	
	gas application	
Terminals	Drive +, Drive - Drive Circuit (J2 in J-box, DR+ BRN; DR- RED)	
U_o	6.51VDC	
I_o	1.52A Instantaneous 0.136A Steady State	
P_o	0.81W	
C_o	22µF	
U_o/I_o	4.28Ω	
L_o	15.4µH	
L_o/R_o	14.4µH/Ω	

Output Entity Parameters, Group IIB/Group IIIC (Zone 0/1/2)

Parameters	Series 4200	
	gas application(Group IIB)	dust application(Group IIIC)
Terminals	Drive +, Drive - Drive Circuit (J2 in J-box, DR+ BRN; DR- RED)	Drive +, Drive - Drive Circuit (J2 in J-box, DR+ BRN; DR- RED)
U_o	6.51VDC	6.51VDC
I_o	1.52A Instantaneous 0.136A Steady State	1.52A Instantaneous 0.136A Steady State
P_o	0.81W	0.81W
C_o	500µF	500µF
U_o/I_o	4.28Ω	4.28Ω
L_o	61.6µH	61.6µH
L_o/R_o	57.5µH/Ω	57.5µH/Ω

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

$$L = 2 \times E \times \left(\frac{(U_o / I_{oinst}) + R_o}{1.5 \times U_o} \right)^2$$

whereby E = 40 µJ for group IIC and E = 160 µJ for group IIB & IIIC will be inserted.

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Applicant: Micro Motion
Apparatus: Field Mount Loop Power Transmitter,
Series 4200



Output Entity Parameters, Group IIC (Zone 0/1/2)

Parameters	Series 4200
	gas application
Terminals	Pick Off's (RPO-), (RPO+), (LPO-), (LPO+) Pick Off Circuit (J1 in J-box, LPO+ GRN; LPO- WHT; RPO+ BLU; RPO- GRY)
U _o	6.51VDC
I _o	2.63mA
P _o	4.3mW
C _o	22µF
L _o	5.1H
L _o /R _o	8.3mH/Ω

Output Entity Parameters, Group IIB/Group IIIC (Zone 0/1/2)

Parameters	Series 4200	
	gas application(Group IIB)	dust application(Group IIIC)
Terminals	Pick Off's (RPO-), (RPO+), (LPO-), (LPO+) Pick Off Circuit (J1 in J-box, LPO+ GRN; LPO- WHT; RPO+ BLU; RPO- GRY)	Pick Off's (RPO-), (RPO+), (LPO-), (LPO+) Pick Off Circuit (J1 in J-box, LPO+ GRN; LPO- WHT; RPO+ BLU; RPO- GRY)
U _o	6.51V	6.51V
I _o	2.63mA	2.63mA
P _o	4.3mW	4.3mW
C _o	500µF	500µF
L _o	20.5H	20.5H
L _o /R _o	33.2mH/Ω	33.2mH/Ω

Output Entity Parameters, Group IIC (Zone 0/1/2):

Parameters	Series 4200
	gas application
Terminals	J6 Pins 1(RTD_SNS),2(RTD_LO),9(RTD_HI) Temp Circuit (J1 in J-box, RTD+ VIO; RTD- ORA; RTD-SIG YEL)
U _o	6.51V
I _o	12.3mA
P _o	20mW
C _o	22µF
L _o	235mH
L _o /R _o	1.78mH/Ω

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Applicant: Micro Motion
Apparatus: Field Mount Loop Power Transmitter,
Series 4200



Output Entity Parameters, Group IIB/Group IIIC (Zone 0/1/2)

Parameters	Series 4200	
	gas application(Group IIB)	dust application(Group IIIC)
Terminals	J6 Pins 1(RTD_SNS),2(RTD_LO),9(RTD_HI) Temp Circuit (J1 in J-box, RTD+ VIO; RTD- ORA; RTD-SIG YEL)	J6 Pins 1(RTD_SNS),2(RTD_LO),9(RTD_HI) Temp Circuit (J1 in J-box, RTD+ VIO; RTD- ORA; RTD-SIG YEL)
U _o	6.51V	6.51V
I _o	12.3mA	12.3mA
P _o	20mW	20mW
C _o	500µF	500µF
L _o	940mH	940mH
L _o /R _o	7.1mH/Ω	7.1mH/Ω

Conditions of Manufacture

Protection type: Intrinsic safety “i” items

- i. In accordance with IEC 60079-11:2011 clause 10.3, each manufactured sample of the equipment shall be subjected to an electric strength test using a test voltage of 500 Vac applied between all input terminals and the enclosure for 60 seconds. Alternatively, a voltage of 20% higher may be applied for 1s. There shall be no evidence of flashover or breakdown and the maximum current flowing shall not exceed 5 mA.
- ii. In accordance with IEC 60079-11:2011 clause 11.2, each manufactured sample of the equipment shall be subjected to an electric strength test using a test voltage of 1500 Vac applied between all input terminals and sensor output terminals for 60 seconds. Alternatively, a voltage of 20% higher may be applied for 1s. There shall be no evidence of flashover or breakdown and the maximum current flowing shall not exceed 5 mA

Protection type: Increased safety “eb”, “ec” items

- i. In accordance with IEC 60079-7:2015 clause 7.1, each manufactured sample of the equipment shall be subjected to an electric strength test using a test voltage of 500 Vac applied between all input terminals and the enclosure for 60 seconds. Alternatively, a voltage of 20% higher may be applied for 1s. There shall be no evidence of flashover or breakdown and the maximum current flowing shall not exceed 5 mA.
- ii. In accordance with IEC 60079-7:2015 clause 7.1, each manufactured sample of the equipment shall be subjected to an electric strength test using a test voltage of 500 Vac applied between all input terminals and sensor output terminals for 60 seconds. Alternatively, a voltage of 20% higher may be applied for 1s. There shall be no evidence of flashover or breakdown and the maximum current flowing shall not exceed 5 mA.