



1 **EU-TYPE EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

3 Certificate Number: **Sira 19ATEX2008X** Issue: **0**

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

5 Applicant: **Micro Motion**

6 Address: 7070 Winchester Circle  
Boulder  
Colorado 80301  
USA

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Sira Certification Service, notified body number 0518 in accordance with Articles 17 and 21 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN IEC 60079-0:2018	EN 60079-1:2014	EN 60079-7:2015/A1:2018
EN 60079-11:2012	EN 60079-31: 2014	

The above list of documents may detail standards that do not appear on the UKAS Scope of Accreditation, but have been added through Sira's flexible scope of accreditation, which is available on request.

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to Specific Conditions of Use identified in the schedule to this certificate.

11 This EU-Type Examination Certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 Refer to the Schedule:

Project Number 70183768

This certificate and its schedules may only be reproduced in its entirety and without change.

  
N Jones  
Certification Manager

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## SCHEDULE

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#### 13 DESCRIPTION OF EQUIPMENT

The model designation and marking is as follows:

ATEX Model Code	Marking	Dust Marking
4200*****FA*****	 II 1 GD or II 2(1) G or II 2(1) D	Ex db [ia Ga] IIC T6 Gb Ex tb [ia Da] IIIC T72°C Db IP66/IP67 Ta = -40°C to +65°C
4200*****ZA*****	 II 1 GD or II 2(1) G or II 2(1) D	Ex db eb [ia Ga] IIC T6 Gb Ex tb [ia Da] IIIC T72°C Db IP66/IP67 Ta = -40°C to +65°C
4200*****ZB*****	 II 1 GD or II 2(1) G or II 2(1) D	Ex ia IIC T4 Ga Ex ia IIIC T77°C Da IP66/IP67 Ta = -40°C to +65°C

#### 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.

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.



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<b>Intrinsic Safety and Dust-Ignition Protected</b> (Ex ia IIC and Ex ia IIIC)	<b>Flameproof or Increased Safety (Zone 1) and Dust-Ignition Protected</b> (Ex db IIC and Ex tb IIIC) Or (Ex eb IIC and Ex tb IIIC)	<b>Increased Safety (Zone 2) and Dust-Ignition Protected</b> (Ex ec IIC and Ex tc IIIC)
$U_i = 30 \text{ Vdc}$ $I_i = 300 \text{ mA}$ , $P_i = 1000 \text{ mW}$ , $C_i = 1320\text{pF}$ , $L_i = 2.86 \text{ }\mu\text{H}$	$18 \text{ to } 30 \text{ Vdc}$ , $4 \text{ to } 20\text{mA}$ $22\text{mA Max.}$	$18 \text{ to } 30 \text{ Vdc}$ , $4 \text{ to } 20\text{mA}$ $22\text{mA Max.}$

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
$C_o$	22 $\mu$ F
$U_o/I_o$	4.28 $\Omega$
$L_o$	15.4 $\mu$ H
$L_o/R_o$	14.4 $\mu$ H/ $\Omega$

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

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Parameters	Series 4200	
	gas application(Group IIB)	dust application(Group IIIC)
C <sub>o</sub>	500µF	500µF
U <sub>o</sub> /I <sub>o</sub>	4.28Ω	4.28Ω
L <sub>o</sub>	61.6µH	61.6µH
L <sub>o</sub> /R <sub>o</sub>	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.

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 <sub>o</sub>	6.51VDC	
I <sub>o</sub>	2.63mA	
P <sub>o</sub>	4.3mW	
C <sub>o</sub>	22µF	
L <sub>o</sub>	5.1H	
L <sub>o</sub> /R <sub>o</sub>	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 <sub>o</sub>	6.51V	6.51V
I <sub>o</sub>	2.63mA	2.63mA
P <sub>o</sub>	4.3mW	4.3mW
C <sub>o</sub>	500µF	500µF
L <sub>o</sub>	20.5H	20.5H
L <sub>o</sub> /R <sub>o</sub>	33.2mH/Ω	33.2mH/Ω

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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 <sub>o</sub>	6.51V
I <sub>o</sub>	12.3mA
P <sub>o</sub>	20mW
C <sub>o</sub>	22μF
L <sub>o</sub>	235mH
L <sub>o</sub> /R <sub>o</sub>	1.78mH/Ω

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 <sub>o</sub>	6.51V	6.51V
I <sub>o</sub>	12.3mA	12.3mA
P <sub>o</sub>	20mW	20mW
C <sub>o</sub>	500μF	500μF
L <sub>o</sub>	940mH	940mH
L <sub>o</sub> /R <sub>o</sub>	7.1mH/Ω	7.1mH/Ω

## 14 DESCRIPTIVE DOCUMENTS

### 14.1 Drawings

Refer to Certificate Annexe.

### 14.2 Associated Sira Reports and Certificate History

Issue	Date	Report number	Comment
0	29 April 2019	R70183768A	The release of the prime certificate.

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- 15 **SPECIFIC CONDITIONS OF USE** (denoted by X after the certificate number)
- 15.1 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.
- 15.2 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.
- 15.3 The flameproof joints are not intended to be repaired.
- 16 **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II** (EHSRs)
- The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the reports listed in Section 14.2.
- 17 **CONDITIONS OF MANUFACTURE**
- 17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.
- 17.2 Holders of EU-Type Examination Certificates are required to comply with the conformity to type requirements defined in Article 13 of Directive 2014/34/EU.
- 17.3 **Intrinsic safety "i" items.** - In accordance with EN 60079-11:2012 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.
- 17.4 In accordance with EN IEC 60079-11:2012 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.
- 17.5 **Intrinsic safety "eb" items** - In accordance with EN 60079-7:2015/A1:2018 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.
- 17.6 In accordance with EN 60079-7:2015/A1:2018 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.

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# Certificate Annexe



**Certificate Number:** Sira 19ATEX2008X  
**Equipment:** Field Mount Loop Power Transmitter, Series 4200  
**Applicant:** Micro Motion

## Issue 0

Drawing no.	Sheets	Rev.	Date (Sira stamp)	Title
EB-20055316	1 to 4	AA	26 Mar 19	SPEC, APPVL TAG 4200 XMTR ATEX Zn 0/1
EB-20055415	1 to 10	AA	26 Mar 19	ATEX Installation Instructions(Zone 0/1)
EB-20002371	1 of 1	BC	19 Feb 19	APPROVAL, SPLINED FEEDTHROUGH
MMI-20045788	1 of 1	AD	19 Feb 19	PCB, 4200, POWER – LAYER STACK
EB-20048326	1 to 11	AA	19 Feb 19	SPEC SAFETY DESC 4200 FLAME PROOF & INCREASED SAFETY
EB-20048833	1 of 10	AA	20 Mar 19	TRANSMITTER, HOUSING 4200
EB-20048834	1 of 2	AA	19 Feb 19	DISPLAY/BLIND COVER 4200
EB-20048835	1 of 1	AA	19 Feb 19	ASSY, DISPLAY COVER 4200
EB-20048839	1 of 1	AA	19 Feb 19	TERMINAL COVER, 4200
EB-20049361	1 to 4	AA	22 Mar 19	ASSY, HOUSING, 4200
EB-20049364	1 of 4	AA	19 Feb 19	APPVL, ASSY, MODULE, 4200
EB-20049365	1 to 4	AB	19 Feb 19	APPVL, SCHEM, 4200, POWER
EB-20049366	1 to 4	AB	19 Feb 19	APPVL, PCA, 4200 POWER
EB-20049367	1 to 6	AB	19 Feb 19	APPVL, EBOM, 4200 Power
EB-20049368	1 to 8	AB	19 Feb 19	APPVL, SCHEM, 4200, 2WCORE
EB-20049369	1 to 4	AB	19 Feb 19	APPVL, PCA, 4200 2WCORE
EB-20049370	1 to 4	AB	19 Feb 19	APPVL, EBOM, 4200, 2WCORE
EB-20049371	1 of 1	AA	19 Feb 19	APPVL, SCHEM, FLEX, 4200 MODULE
EB-20049373	1 to 3	AA	19 Feb 19	APPVL, ASSY, DISPLAY, 4200
EB-20049374	1 of 1	AA	19 Feb 19	APPVL, SCHEM, FLEX, 4200 DISPLAY
EB-20049376	1 to 2	AA	19 Feb 19	APPVL, SCHEM, 4200, DISPLAY BUTTONS
EB-20049378	1 to 2	AB	19 Feb 19	APPVL, SCHEM, 4200, DISPLAY, CONTROLLER
EB-20049379	1 to 3	AB	19 Feb 19	APPVL, PCA, 4200, DISPLAY, CONTROLLER
EB-20049380	1 to 2	AB	19 Feb 19	APPVL, EBOM, 4200, DISPLAY, CONTROLLER
EB-20049381	1 of 1	AA	19 Feb 19	APPVL, ASSY, TERMINAL, 4200
EB-20049382	1 to 2	AB	19 Feb 19	APPVL, SCHEM, 4200, TERMINAL
EB-20049383	1 to 4	AB	19 Feb 19	APPVL, PCA, 4200, TERMINAL
EB-20049384	1 of 1	AB	19 Feb 19	EBOM, 4200 TERMINAL
EB-20049388	1 of 4	AA	20 Mar 19	APPVL ASSY TRANSMITTER 4200
EB-20057899	1 of 1	AA	20 Mar 19	APPVL ASSY CLAMP
MMI-20032616	1 of 1	AB	19 Feb 19	PCB FLEX 4200 MODULE – LAYER STACK
MMI-20032617	1 of 1	AB	19 Feb 19	PCB, FLEX 4200 DISPLAY – LAYER STACK
MMI-20033434	1 of 1	AC	19 Feb 19	4200 DISPLAY BUTTONS – LAYER STACK
MMI-20038852	1 to 2	AD	19 Feb 19	PCB, 4200 Display Controller – LAYER STACK
MMI-20046115	1 to 2	AE	19 Feb 19	PCB, 4200, 2WCORE - LAYER STACK
MMI-20046916	1 of 1	AE	19 Feb 19	4200 TERMINAL PCB GERBERS – LAYER STACK

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