IECEx Installation Instructions
EB-20055667 Rev AA
March 2019

Micro Motion® Model 4200 Transmitter

IECEx Installation Instructions
EPL Ga/Gb & EPL Db

MICRO MOTION

EMERSON

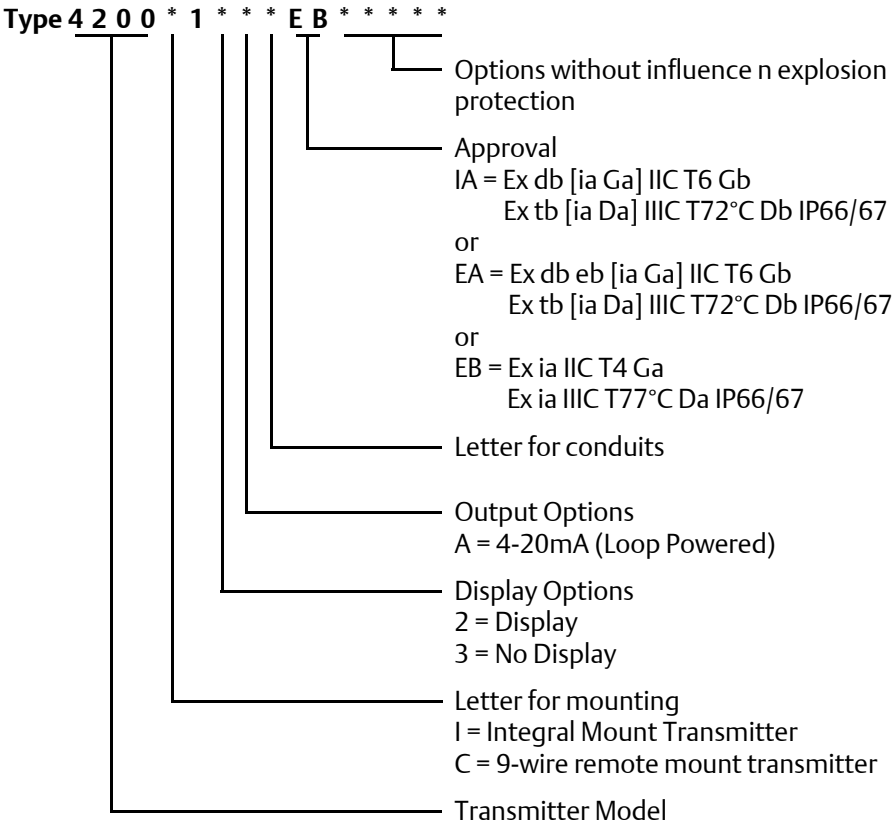
Subject:	Equipment type	Transmitter type 4200*****(IA,EA,EB)*****
Manufactured and submitted for examination		Micro Motion, Inc.
Address		7070 Winchester Circle Boulder, Co. 80301, USA
Standard basis		IEC 60079-0:2017 General requirements IEC 60079-1:2014 Flameproof enclosure ‘d’ IEC 60079-7:2015 Increased safety ‘e’ IEC 60079-11:2011 Intrinsic safety ‘i’ IEC-60079-31:2013 Dust Enclosure ‘t’
Code for type of protection		4200*****IA***** Ex db [ia Ga] IIC T6 Gb Ex tb [ia Da] IIIC T72°C Db IP66/IP67 or 4200*****EA***** Ex db eb [ia Ga] IIC T6 Gb Ex tb [ia Da] IIIC T72°C Db IP66/IP67 or 4200*****EB***** Ex ia IIC T4 Ga Ex ia IIIC T77°C Da IP66/IP67
Certificate of Conformity.		IECEx SIR 19.0007 X

THIS COMPONENT MUST COMPLY WITH REGULATORY AGENCY REQUIREMENTS. NO CHANGES ARE ALLOWED WITHOUT PRIOR AUTHORIZATION FROM MICRO MOTION APPROVALS ENGINEERING

Model Designation

1) Transmitter type 4200*****(IA,EA,EB)*****

Instead of the *** in the complete denomination letters and numerals will be inserted which characterize the following variations:



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 metal enclosure which is divided into three compartments.
- In one compartment (electronic compartment) type of protection “Flameproof Enclosure” the Power Supply Board and Core Board are mounted.
- The other compartment (terminal compartment) in type of protection “Flameproof Enclosure” (type 4200*****IA*****) is equipped with terminals for the connection to intrinsically safe circuits or non-intrinsically safe circuits. In type of protection “Increased Safety” (type 4200*****EA*****) the terminal compartment is equipped with terminals for the connection of intrinsically safe circuits as well as non-intrinsically safe circuits. . In type of protection “Intrinsic Safety” (type 4200*****EB*****) the terminal compartment is equipped with terminals for the connection of intrinsically safe circuits.
- The enclosure is constructed with a terminal compartment (compartment for power and sensor connection) for the connection of remotely operating intrinsically safe sensors.
- Alternatively, the enclosure can be mounted directly to the sensor via a transition compartment (type 4200I**********). This type of mounting has to be certified separately.
- The enclosures (electronic compartment, terminal compartment and compartment for sensor connection) also fulfil the requirements for type of protection “Protection by enclosures”.

3) Parameters

3.1 I/O circuits:

3.1.1 for type 4200*****(IA,EA)***** (J2, terminal 1 - 4)

voltage		DC	30	V
max. voltage	Um		250	V

3.1.2 for type 4200(C or I)****EB***** (J2, terminals 1-4)

voltage	Ui	DC	30	V
current	Ii		300	mA
power	Pi		1,0	W
effective internal capacitance	Ci		1200	pF
effective internal inductance	Li		7,5	µH

3.2 Sensor circuits for type 4200*****(IA,EA,EB)*****:

3.2.1 Drive circuit; (J2 in J-box, DR+ BRN; DR- RED)

voltage	Uo	DC	6,51	V
current; instantaneous	Io		1,52	A
current; steady state	Io		136	mA
power	Po		0,81	W
internal resistance	Ri		4,28	Ω
for group IIC				
max. external capacitance	Co		22	µF
max. external inductance	Lo		15,4	µH
max. external induct/resist	Lo/Ro		14,4	µH/Ω
for group IIB and IIIC				
max. external capacitance	Co		500	µF
max. external inductance	Lo		61,6	µH
max. external induct/resist	Lo/Ro		57,5	µH/Ω

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

$$L = 2 \times E \times \left(\frac{Ri + Ro}{1.5 \times Uo} \right)^2$$

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

3) Parameters *(continued)*

3.2.2 Pick-off circuits (J1 in J-box, LPO+ GRN; LPO- WHT; RPO+ BLU; RPO- GRY)

voltage	Uo	DC	6,51	V
current	Io		2,63	mA
power	Po		4,3	mW
for group IIC				
max. external capacitance	Co		22	uF
max. external inductance	Lo		5,1	H
max. external induct/resist	Lo/Ro		8,3	mH/Ω
for group IIB				
max. external capacitance	Co		500	uF
max. external inductance	Lo		20,5	H
max. external induct/resist	Lo/Ro		33,2	mH/Ω

3.2.3 Temperature circuit (J1 in J-box, RTD+ VIO; RTD- ORA; RTD-SIG YEL)

voltage	Uo	DC	6,51	V
current	Io		12,3	mA
power	Po		20	mW
for group IIC				
max. external capacitance	Co		22	uF
max. external inductance	Lo		235	mH
max. external induct/resist	Lo/Ro		1,78	mH/Ω
for group IIB				
max. external capacitance	Co		500	uF
max. external inductance	Lo		940	mH
max. external induct/resist	Lo/Ro		7,1	mH/Ω

3.3 Ambient temperature range

Type 4200*I**********	Ta	-40°C to +65°C

4) Marking

Type 4200*I**********

type	type of protection
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

5) Special conditions for safe use / Installation instructions

5.1 For hazardous area installations, refer to IEC 60079-14 or other required national standards.

5.2 The enclosure is manufactured from Aluminum, 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 transmitter is being installed in Zone 0 locations for group II/III level of protection Ga/Da.

5.3 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.

5.4 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.

5.5 Enclosure entries can be used for double compression Ex-d IIC Gb/Ex tb IIIC Db cable glands such as but not limited to Hawke 501/453 intended for use with effective filled and circular armored or braided cable; volume of the Ex-d enclosure is less than 2 liters

5.6 If certified conduit entries are used for the connection of the transmitter enclosure, the associated stopping boxes shall be installed immediately at the enclosure.

5.7 To maintain IP Rating of the Transmitter all cable entries, blanking elements or thread adapters must be rated IP66/IP67 minimum.

5.8 The window covers forms one unit and cannot be taken apart without destroying the cover parts. If a cover is damaged it must be replaced by a new cover.

5.9 The dimensions of the flameproof joints are in parts other than the relevant minimum or maximum values of IEC 60079-1:2014. For information on the dimensions of the flameproof joints contact the manufacturer.

5.10 The Flameproof joints are not intended to be repaired.

5.11 For model 4200*I**********: wiring to the Ex-e terminals shall be in compliance with the applicable Ex-e installation instructions attached below:

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5.12 For J2 Screw terminal connections 1-4:

- Conductors: Solid or Stranded
- Wire Strip Length: 0.28" (7mm)
- Screw Torque: 0.37 - 0.44 lb ft (0.5 - 0.6 Nm)
- One wire: 26 - 14 AWG (0.129 - 2.08 mm^2)
- Two wires: 26 - 17 AWG (0.129 - 1.04 mm^2)

5.13 Per IEC 61010 clause 5.4.2d:

5.13.1 Pollution degree 4;

5.13.2 Installation category I;

5.13.3 Altitude 6562 feet (2000m);

5.13.4 The humidity limits are 5 to 95% relative humidity, non-condensing between -40°F(-40°C) to +149°F (+65°C);

5.13.5 Electrical supply 30V (Loop powered)

5.13.6 Suitable for use outdoors within the limits and rating described herein

5.13.7 Temperature Range -40°F (-40°C) to +149°F (+65°C);

5.13.8 Supply voltage fluctuations are not to exceed ± 10 % of the nominal supply voltage

5.13.9 Use of this equipment in a manner not specified by the manufacturer, the protection provided by equipment may be impaired.

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