

Micro Motion® Model 5700 Transmitter

ATEX Installation Instructions

II 2 G or II 2 (1) G/EPL Gb & II 2 D/EPL Db





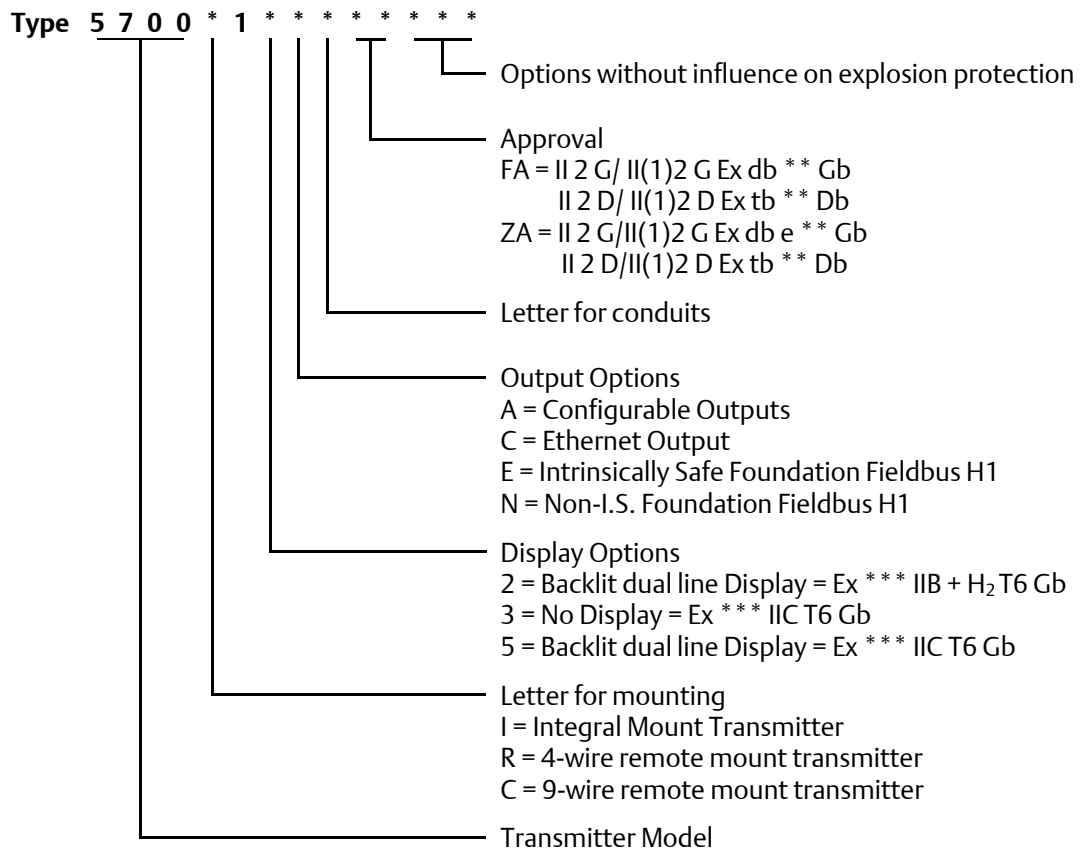
Subject:	Equipment type	Transmitter type 5700*1*****	
Manufactured and submitted for examination	Micro Motion, Inc.		
Address	Boulder, Co. 80301, USA		
Basis for examination	Annex II of Directive 94/9/EC		
Standard basis	EN 60079-0:2012+A11:2013	General requirements	
	EN 60079-1:2014	Flameproof enclosure	'd'
	EN 60079-7:2007	Increased safety	'e'
	EN 60079-11:2012	Intrinsic safety	'i'
	EN 60079-31:2014	Dust Enclosure	't'
Code for type of protection	II 2 G Ex db [ib] IIB + H ₂ /IIC T6 Gb	or	
	II 2 G Ex db e [ib] IIB + H ₂ /IIC T6 Gb and		
	II 2 D Ex tb [ib] IIIC T75°C Db		
	IP66/IP67		
	or		
	II(1)2G Ex db [ia Ga] [ib] IIB+H ₂ /IIC T6 Gb	or	
	II(1)2G Ex db e [ia Ga] [ib] IIB+H ₂ /IIC T6 Gb		and
	II(1)2D Ex tb [ia Da] [ib] IIIC T75°C Db		
	IP66/IP67		
EC Type Examination Certificate	BVS 14 ATEX E 132 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 5700*1*****

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 EMI Terminal Board, Power Supply Board, Feature Board, Core Board and Backplane Board are mounted.
- When executed with display, there is a window cover available, either marked (for gas application) as IIB + H₂ (type 5700*12******) or IIC (type 5700*15*****).
- The other compartment (terminal compartment) in type of protection “Flameproof Enclosure” (type 5700*****FA***) is equipped with terminals for the connection of non-intrinsically safe circuits. In type of protection “Increased Safety” (type 5700*****ZA***) the terminal compartment is equipped with terminals for the connection of intrinsically safe Fieldbus circuit as well as non-intrinsically safe circuits as well as Intrinsically Safe Outputs.
- The enclosure can be constructed with a terminal compartment (compartment for sensor connection) for the connection of remotely operating intrinsically safe sensors (type 5700C1******) or to remote mount core (5700R1*****).
- Alternatively, the enclosure can be mounted directly to the sensor via a transition compartment (type 5700I1*****). This type of mounting has to be certified separately.
- The enclosures (electronic compartment, terminal compartment and compartment for sensor connection) also fulfill the requirements for type of protection “Protection by enclosures”.
- Amendment 1 to the ATEX Certificate BVS 14 ATEX E 132 X adds:
 - Ex e Increased Safety Septum design
 - Ethernet Output
 - Fieldbus Output (Intrinsically Safe as well as Non-Intrinsically Safe)
 - OIML Display

3) Parameters

3.1 Mains circuits:

3.1.1 for type 5700*1*(A,E,N)***** (J1, terminal 1 - 2)

voltage		AC/DC	18 - 240 V + 10 %	
max. voltage	Um	AC/DC	265	V

3.1.2 for type 5700*1*C***** (J6, terminal 1 - 2)

voltage		AC/DC	18 - 240 V + 10 %	
max. voltage	Um	AC/DC	265	V

3.2 Non intrinsically safe input/output circuits:

3.2.1 For all types(J2, USB)

voltage	Um	AC/DC	10	V
---------	----	-------	----	---

3.2.2 for type 5700*1*A***** (J3, terminals 1-10)

voltage	Um	AC/DC	30	V
---------	----	-------	----	---

3.2.3 for type 5700*1*N***** (J3, terminals 1-2, FF)

voltage	Um	DC	33	V
---------	----	----	----	---

3.2.4 for type 5700*1*N***** (J3, terminals 3-4, mA)

voltage	Um	DC	30	V
---------	----	----	----	---

3.2.5 for type 5700*1*N***** (J3, terminals 5-6, FO/DO)

voltage	Um	DC	30	V
---------	----	----	----	---

3.2.6 for type 5700*1*C***** (J5, terminals 1-2)

voltage	Um	AC/DC	30	V
---------	----	-------	----	---

3.2.7 for type 5700*1*C***** (J7/J8, ETHERNET RJ-45)

voltage	Un	DC	2,4	V
---------	----	----	-----	---

3.3 Intrinsically safe circuits:

3.3.1 for type 5700*1*E***** (J3, terminals 1-2 FF)

voltage	Ui	DC	30	V
current	Ii		300	mA
power	Pi		1,3	W
effective internal inductance	Li		5	μH
effective internal capacitance	Ci		0,27	nF

3.3.1.1 for type 5700*1*E***** (J3, terminals 1-2 FF) for the connection of a FIELDBUS circuit in accordance with FISCO model, Annex G of EN 60079-1:2012

voltage	Ui	DC	33	V
current	Ii		380	mA
power	Pi		5,32	W
effective internal inductance	Li		5	μH
effective internal capacitance	Ci		0,27	nF

3.3.2 for type 5700*1*E***** (J3, terminals 3-4, mA)

voltage	Ui	DC	30	V
current	Ii		484	mA
power	Pi		2,05	W
effective internal inductance	Li		5	μH
effective internal capacitance	Ci		0,27	nF

3.3.3 for type 5700*1*E***** (J3, terminals 5-6, FO/DO)

voltage	Ui	DC	30	V
current	Ii		484	mA
power	Pi		2,05	W
effective internal inductance	Li		5	μH
effective internal capacitance	Ci		11,27	nF

3) Parameters (continued)

3.4 Intrinsically safe power and signal circuits for type 5700R1 * * * * * (J1 in J-box, VDC+ RED; VDC- BLK; COM A WHT; COM B GRN)

voltage	Uo	DC	17,2	V
current; instantaneous	Io		0,479	A
current; steady state	Io		0,272	A
power	Po		2,06	W
type of protection Ex ib IIC				
max. external inductance	Lo		154,9	μH
max. external capacitance	Co		333	nF
max. induct/resistance ratio	Lo/Ro		17,26	μH/Ω
type of protection Ex ib IIB and IIIC				
max. external inductance	Lo		619,8	μH
max. external capacitance	Co		2,04	μF
max. induct/resistance ratio	Lo/Ro		69,0	μH/Ω

3.5 Intrinsically safe power and signal circuits for type 5700(C or I)1 * * * * *

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

voltage	Uo	DC	10,5	V
current; instantaneous	Io		1,06	A
current; steady state	Io		0,272	A
power	Po		2,13	W
internal resistance	Ri		9,9	Ω
for group IIC				
max. external capacitance	Co		2,41	μF
max. external inductance	Lo		31,6	μH
max. external induct/resist	Lo/Ro		12,77	μH/Ω
for group IIB and IIIC				
max. external capacitance	Co		16,8	μF
max. external inductance	Lo		126,6	μH
max. external induct/resist	Lo/Ro		51,1	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)

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

voltage	Uo	DC	17,3	V
current	Io		6,92	mA
power	Po		30	mW
for group IIC				
max. external capacitance	Co		353	nF
max. external inductance	Lo		742	mH
max. external induct/resist	Lo/Ro		1,19	mH/Ω
for group IIB and IIIC				
max. external capacitance	Co		2,06	μF
max. external inductance	Lo		2,97	H
max. external induct/resist	Lo/Ro		4,75	mH/Ω

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

voltage	Uo	DC	17,3	V
current	Io		19,26	mA
power	Po		83,3	mW
for group IIC				
max. external capacitance	Co		353	nF
max. external inductance	Lo		95,8	mH
max. external induct/resist	Lo/Ro		0,42	mH/Ω
for group IIB and IIIC				
max. external capacitance	Co		2,06	μF
max. external inductance	Lo		383	mH
max. external induct/resist	Lo/Ro		1,68	mH/Ω

3.6 Ambient temperature range

















Type 5700*1*****	Ta	-40°C to +65°C
------------------	----	----------------

4) Marking

Type 5700*1*****

Ta

-40°C to +65°C

type	type of protection
5700*12(A,C,N)*FA***	 0575  II 2G Ex db [ib] IIB+H ₂ T6 Gb II 2D Ex tb [ib] IIIC T75°C Db IP66/IP67
5700*1(3,5)(A,C,N)*FA***	 0575  II 2G Ex db [ib] IIC T6 Gb II 2D Ex tb [ib] IIIC T75°C Db IP66/IP67
5700*12(A,N)*ZA***	 0575  II 2G Ex db e [ib] IIB+H ₂ T6 Gb II 2D Ex tb [ib] IIIC T75°C Db IP66/IP67
5700*1(3,5)(A,N)*ZA***	 0575  II 2G Ex db e [ib] IIC T6 Gb II 2D Ex tb [ib] IIIC T75°C Db IP66/IP67
5700*12E*FA***	 0575  II(1)2G Ex db [ia Ga] [ib] IIB+H ₂ T6 Gb II(1)2D Ex tb [ia Da][ib] IIIC T75°C Db IP66/IP67
5700*1(3,5)E*FA***	 0575  II (1) 2G Ex db [ia Ga] [ib] IIC T6 Gb II (1) 2D Ex tb [ia Da][ib] IIIC T75°C Db IP66/IP67
5700*12E*ZA***	 0575  II(1)2G Ex db e[ia Ga] [ib] IIB+H ₂ T6 Gb II(1)2D Ex tb [ia Da][ib] IIIC T75°C Db IP66/IP67
5700*1(3,5)E*ZA***	 0575  II(1)2G Ex db e [ia Ga] [ib] IIC T6 Gb II(1)2D Ex tb [ia Da][ib] IIIC T75°C Db IP66/IP67

5 min delay time after switch off

5) Special conditions for safe use / Installation instructions

- 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 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
- 5.3 If certified conduit entries are used for the connection of the transmitter enclosure, the associated stopping boxes shall be installed immediately at the enclosure.
- 5.4 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.
- 5.5 The dimensions of the flameproof joints are in parts other than the relevant minimum or maximum values of EN 60079-1:2014. For information on the dimensions of the flameproof joints contact the manufacturer.
- 5.6 For model 5700*1***ZA***: wiring to the Ex-e terminals shall be in compliance with the applicable Ex-e installation instructions attached below:



Install_gmstb_2_5... Install_mstb_2_5...-e
-ex_en_01_signed.px_en_01_signed.pdf

Emerson Process Management

Micro Motion Inc. USA
Worldwide Headquarters
7070 Winchester Circle
Boulder, Colorado 80301
T +1 303-527-5200
T +1 800-522-6277
F +1 303-530-8459
www.micromotion.com

Emerson Process Management

Micro Motion Europe
Neonstraat 1
6718 WX Ede
The Netherlands
T +31 (0) 318 495 555
F +31 (0) 318 495 556
www.micromotion.nl

Emerson Process Management

Micro Motion Asia
1 Pandan Crescent
Singapore 128461
Republic of Singapore
T +65 6777-8211
F +65 6770-8003

Emerson Process Management Ltd.

Micro Motion United Kingdom
Horsfield Way
Bredbury Industrial Estate
Stockport SK6 2SU U.K.
T +44 0870 240 1978
F +44 0800 966 181

Emerson Process Management

Micro Motion Japan
1-2-5, Higashi Shinagawa
Shinagawa-ku
Tokyo 140-0002 Japan
T +81 3 5769-6803
F +81 3 5769-6844

©2015 Micro Motion, Inc. All rights reserved.

The Emerson logo is a trademark and service mark of Emerson Electric Co. Micro Motion, ELITE, ProLink, MVD and MVD Direct Connect marks are marks of one of the Emerson Process Management family of companies. All other marks are property of their respective owners.

