

October 2017

Micro Motion® Model 5700 Transmitter

IECEX Installation Instructions

EPL Gb and EPL Db



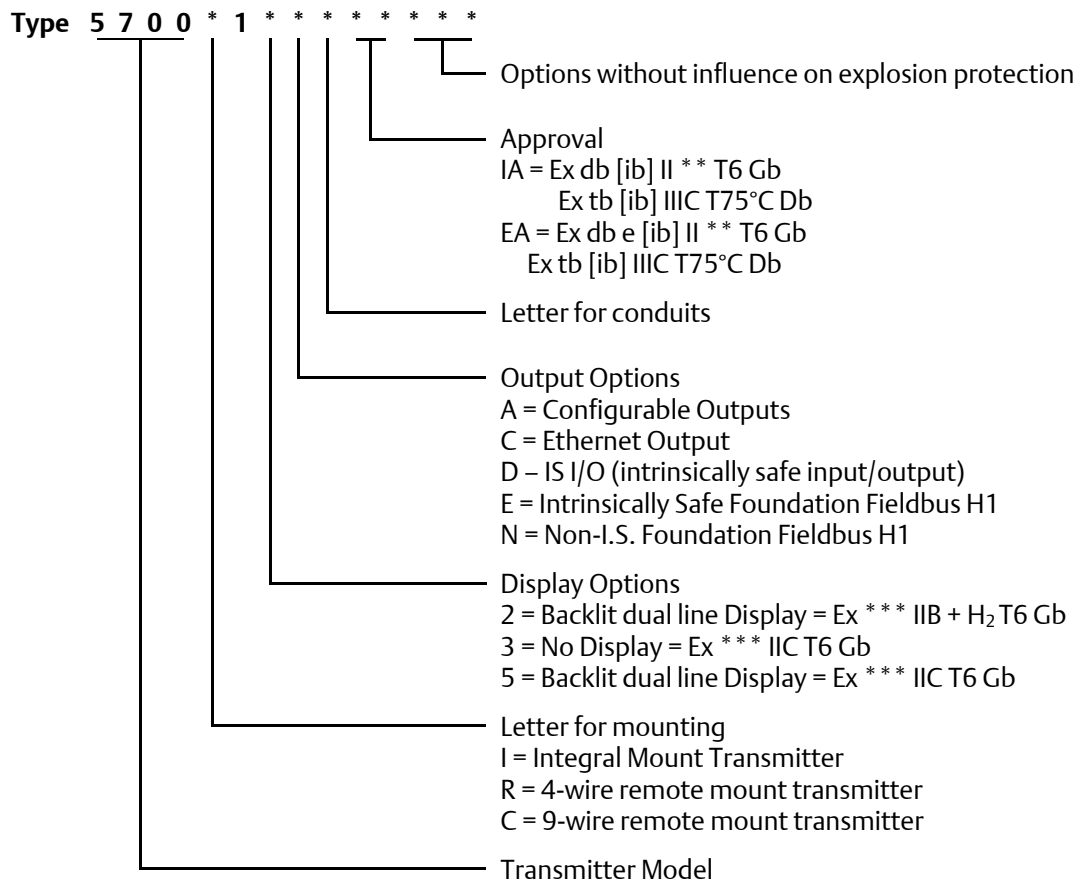
Subject:	Equipment type	Transmitter type 5700*1*****	
Manufactured and submitted for examination	Micro Motion, Inc.		
Address	Boulder, Co. 80301, USA		
Standard basis	IEC 60079-0:2011	General requirements	
	IEC 60079-1:2014	Flameproof enclosure	'd'
	IEC 60079-7:2015	Increased safety	'e'
	IEC 60079-11:2011	Intrinsic safety	'i'
	IEC 60079-31:2013	Dust Enclosure	't'
	Ex db [ib] IIB + H ₂ /IIC T6 Gb		or
	Ex db e [ib] IIB + H ₂ /IIC T6 Gb		and
	Ex tb [ib] IIIC T75°C Db		
Code for type of protection	IP66/IP67		
	Ex db [ia Ga] [ib] IIB+H ₂ /IIC T6 Gb		or
	Ex db eb [ia Ga] [ib] IIB+H ₂ /IIC T6 Gb		and
	Ex tb [ia Da] [ib] IIIC T75°C Db		
	IP66/IP67		
Certificate of Conformity	IECEX BVS 14.0090 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*****IA***) is equipped with terminals for the connection of non-intrinsically safe circuits. In type of protection “Increased Safety” (type 5700*****EA***) 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 fulfil the requirements for type of protection “Protection by enclosures”.
- Issue 1 to the IECEx Certificate IECEx BVS 14.0090 X adds:
 - Ex e Increased Safety Septum design
 - Ethernet Output
 - Fieldbus Output (Intrinsically Safe as well as Non-Intrinsically Safe)
- OIML Display
- Issue 2 to the IECEx Certificate IECEx BVS 14.0090 X adds:
 - IS I/O (intrinsically safe input/output)

3) Parameters

3.1 Mains circuits:

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

voltage	Um	AC/DC	30	V
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3.2.3 for type 5700*1*N***** (J3, terminals 1-2, FF)

voltage	Um	DC	33	V
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3.2.4 for type 5700*1*N***** (J3, terminals 3-4, mA)

voltage	Um	DC	30	V
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3.2.5 for type 5700*1*N***** (J3, terminals 5-6, FO/DO)

voltage	Um	DC	30	V
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3.2.6 for type 5700*1*C***** (J5, terminals 1-2)

voltage	Um	AC/DC	30	V
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3.2.7 for type 5700*1*C***** (J7/J8, ETHERNET RJ-45)

voltage	Un	DC	2,4	V
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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 IEC 60079-11:2011

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	voltage	Ui	DC	33	V
	current	Ii		380	mA
	power	Pi		5,32	W
	effective internal inductance	Li		5	μ H
	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	μ H
	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	μ H
	effective internal capacitance	Ci		11,27	nF
3.3.4	for type 5700*1*D***** (J3,terminals 1-2,3-4,5-6,7-8, FO/DO)				
	voltage	Ui	DC	30	V
	current	Ii		484	mA
	power	Pi		2,05	W
	effective internal inductance	Li		0	μ H
	effective internal capacitance	Ci		150	pF

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
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4) Marking

Type 5700*1*****

Ta

-40°C to +65°C

type	type of protection
5700*12(A,C,N)*IA***	Ex db [ib] IIB+H ₂ T6 Gb Ex tb [ib] IIIC T75°C Db IP66/IP67
5700*1(3,5)(A,C,N)*IA***	Ex db [ib] IIC T6 Gb Ex tb [ib] IIIC T75°C Db IP66/IP67
5700*12(A,N)*EA***	Ex db eb[ib] IIB+H ₂ T6 Gb Ex tb [ib] IIIC T75°C Db IP66/IP67
5700*1(3,5)(A,N)*EA***	Ex db eb[ib] IIC T6 Gb Ex tb [ib] IIIC T75°C Db IP66/IP67
5700*12(E,D)*IA***	Ex db [ia Ga][ib] IIB+H ₂ T6 Gb Ex tb [ia Da][ib] IIIC T75°C Db IP66/IP67
5700*1(3,5)(E,D)*IA***	Ex db [ia Ga][ib] IIC T6 Gb Ex tb [ia Da][ib] IIIC T75°C Db IP66/IP67
5700*12E*(E,D)A***	Ex db eb[ia Ga][ib] IIB+H ₂ T6 Gb Ex tb [ia Da] [ib] IIIC T75°C Db IP66/IP67
5700*1(3,5)(E,D)*EA***	Ex db eb [ia Ga][ib] IIC T6 Gb 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 IEC 60079-1:2014. For information on the dimensions of the flameproof joints contact the manufacturer.
- 5.6 For model 5700*1***EA***: wiring to the Ex-e terminals shall be in compliance with the applicable Ex-e installation instructions attached below:



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-ex_en_01_signed.px_en_01_signed.pdf

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