

CERTIFICATE

(1) EU-Type Examination

(2) **Equipment or protective systems intended for use in potentially explosive atmospheres - Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number: **DEKRA 14ATEX0071 X** Issue Number: **9**

(4) Product: **Magnetic Flow Transmitter Models 8732EM and 8712EM and Flow Tube Models 8705-M and 8711-M/L**

(5) Manufacturer: **Emerson – Rosemount, Micro Motion Inc.**

(6) Address: **12001 Technology Drive, Eden Prairie, MN 55344, United States of America**

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

(8) DEKRA Certification B.V., Notified Body number 0344 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential test report number NL/DEK/ExTR14.0033/08.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0 : 2018
EN 60079-11 : 2012
EN 60079-31 : 2014

EN 60079-1 : 2014
EN 60079-15 : 2010

EN 60079-7 : 2015 + A1 : 2018
EN 60079-26 : 2015

except in respect of those requirements listed at item 18 of the Schedule.

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:



II 2(1) G Ex db eb [ia Ga] IIC T6...T3 Gb
II 2(1) G Ex db [ia Ga] IIC T6...T3 Gb
II 3(1) G Ex nA [ia Ga] IIC T4...T3 Gc
II 3(1) G Ex ec [ia Ga] IIC T4...T3 Gc

II 2 G Ex eb ib IIC T5...T3 Gb
II 3 G Ex nA ic IIC T5...T3 Gc
II 3 G Ex ec ic IIC T5...T3 Gc
II 3(1) G Ex nA ic [ia Ga] IIC T4 Gc
II 3(1) G Ex ec ic [ia Ga] IIC T4 Gc

II 1/2 G Ex eb ia IIC T5...T3 Ga/Gb
II 1/3 G Ex nA ia IIC T5...T3 Ga/Gc
II 1/3 G Ex ec ia IIC T5...T3 Ga/Gc

II 2 D Ex tb IIIC T80 °C...T200 °C Db
II 2(1) D Ex tb [ia Da] IIIC T80 °C...T200 °C Db
II 2 D Ex tb IIIC T80 °C Db
II 2(1) D Ex tb [ia Da] IIIC T80 °C Db

Date of certification: 12 May 2021

DEKRA Certification B.V.

R. Schuller
Certification Manager



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(13) **SCHEDULE**

(14) **to EU-Type Examination Certificate DEKRA 14ATEX0071 X**

Issue No. 9

(15) **Description**

Magnetic Flow Transmitter Model 8732EM

The Magnetic Flow Transmitter Model 8732EM may be remote mounted from or integrally mounted on the Magnetic Flow Tubes Models 8705-M or 8711-M/L.

The 8732EM Transmitter comprises a termination compartment in types of protection Ex eb, Ex db, Ex nA, Ex ec or Ex tb for connecting power and output signal (optionally intrinsically safe Ex ia). The main compartment of the enclosure in types of protection Ex db, Ex nA, Ex ec or Ex tb includes the electronics, optional Local Operator Interface (LOI) or display, intrinsically safe Ex ia supplies for the flow sensor and optionally intrinsically safe Ex ia output signal.

For connection to the Magnetic Flow Tubes, the transmitter comprises a current limiting circuit.

The connection to the Remote Mount Magnetic Flow Tube terminals for the field coils and electrode wiring (optionally intrinsically safe Ex ia) are provided in the Remote Junction Box compartment in types of protection Ex eb, Ex nA, Ex ec or Ex tb.

The Integral Mount Transmitter is mounted directly on the tube adaptor of the Magnetic Flow Tube.

The Magnetic Flow Transmitter Model 8732EM with approval code K1 may be utilized with the Legacy Magnetic Flow Tube Models 8705 and 8711 with approval code KD. This combination results in the marking on the Magnetic Flow Transmitter Model 8732EM, K1 as per this certificate and the marking of the Legacy Flow Tubes as per their current certificate KEMA 03ATEX2052 X.

The temperature class of this combination when utilized as integral mount, shall comply with the corresponding table shown under "Temperature class and specified maximum surface temperature "T"" for Magnetic Flow Tube Models 8705-M and 8711-M/L as listed in this certificate.

Degree of protection, per EN IEC 60079-0 and EN 60529: IP66
Ambient temperature range: $-50\text{ °C} \leq T_{\text{amb}} \leq +60\text{ °C}$

Magnetic Flow Transmitter Model 8712EM

The Magnetic Flow Transmitter Model 8712EM is remote mounted from the Magnetic Flow Tubes Models 8705-M or 8711-M/L.

The main compartment of the enclosure in types of protection Ex ec, Ex nA or Ex tb includes the electronics, optional Local Operator Interface (LOI), optional intrinsically safe Ex ia supplies for the flow sensor and optionally intrinsically safe Ex ia output signal. The optional keypad for the LOI is in type of protection Ex ic.

The 8712EM Transmitter comprises a termination compartment in types of protection Ex ec, Ex nA or Ex tb for connecting power and output signal (with optional intrinsically safe Ex ia outputs), field coils and electrode wiring (optionally intrinsically safe Ex ia).

For connection to the Magnetic Flow Tubes, the transmitter comprises a current limiting circuit.

Degree of protection, per EN IEC 60079-0 and EN 60529: IP66
Degree of protection, per ISO 20653: IP69K
Ambient temperature range: $-40\text{ °C} \leq T_{\text{amb}} \leq +60\text{ °C}$

(13) **SCHEDULE**

(14) **to EU-Type Examination Certificate DEKRA 14ATEX0071 X**

Issue No. **9**

Description (continued)

Magnetic Flow Tube Models 8705-M and 8711-M/L

The Magnetic Flow Tube Models 8705-M and 8711-M/L are designed for use with Magnetic Flow Transmitter Model 8732EM or 8712EM.

The Magnetic Flow Tube Models 8705-M and 8711-M/L may be remote mounted from the Magnetic Flow Transmitter Model 8732EM or 8712EM or may be integrally mounted to the Magnetic Flow Transmitter Model 8732EM. The Magnetic Flow Tube Model 8705-M is utilized with flanges for process connection. Model 8711-M/L is utilized with wafer process connection.

The Remote Mount Flow Tube comprises a Remote Junction Box in types of protection Ex eb, Ex nA, Ex ec or Ex tb for the connection of the field coils and electrode wiring (optionally intrinsically safe Ex ia, Ex ib or Ex ic) to the Remote Mount Magnetic Flow Transmitter.

The field coils are mounted in a welded compartment in types of protection Ex eb, Ex nA, Ex ec or Ex tb. The electrodes (optionally intrinsically safe Ex ia, Ex ib or Ex ic) are mounted in the same welded compartment as the field coils but protrude into the process medium.

The electrodes utilized in Model 8705-M may optionally be mounted in electrode housings that allow EPL Ga (Category 1 G) rating.

When utilized as EPL Db equipment (Category 2 D), EPL Db does not apply to the process.

Degree of protection, per EN IEC 60079-0 and EN 60529:	IP66 Integral Mount
Ambient temperature range:	
Carbon Steel wrapper (housing):	$-29\text{ °C} \leq T_{\text{amb}} \leq +60\text{ °C}$
Stainless Steel wrapper (housing):	$-50\text{ °C} \leq T_{\text{amb}} \leq +60\text{ °C}$

For nomenclature, thermal data, product ratings, electrical data and description of system elements see Annex 1 to NL/DEK/ExTR14.0033/08.

Installation instructions

The instructions provided with the product shall be followed in detail to assure safe operation.

(16) **Report Number**

No. NL/DEK/ExTR14.0033/08.

(17) **Specific conditions of use**

Magnetic Flow Transmitter Models 8732EM

Models marked with ESD warning label, do not rub surface with a dry cloth or clean with solvents to avoid electrostatic charge build-up.

Conduit entries must be installed to maintain the enclosure ingress rating of IP66.

Terminals for the output signals of the Magnetic Flow Transmitters, cannot withstand the 500 V isolation test between signal and ground, due to integral transient protection up to a voltage of 250 Vac. This must be taken into account upon installation.

(13) **SCHEDULE**

(14) **to EU-Type Examination Certificate DEKRA 14ATEX0071 X**

Issue No. **9**

Specific conditions of use (continued)

The property class of the special fasteners which attach the Magnetic Flow Tube or Transmitter Remote Junction Box to the Magnetic Transmitter is A2-70 or A4-70 SST.

For information on the dimensions of the flameproof joints, the manufacturer shall be contacted.

Magnetic Flow Transmitter Models 8712EM

Models marked with ESD warning label, do not rub surface with a dry cloth or clean with solvents to avoid electrostatic charge build-up.

Conduit entries must be installed to maintain the enclosure ingress rating of IP66 or IP69K.

When utilizing the keypad of Magnetic Flow Transmitter Model 8712EM, instructions for safe use regarding potential electrostatic charging hazard have to be followed.

Terminals for the output signals of the Magnetic Flow Transmitters, cannot withstand the 500 V isolation test between signal and ground, due to integral transient protection. This must be taken into account upon installation.

(18) **Magnetic Flow Tube Models 8705-M and 8711-M/L**

The Magnetic Flow Tubes wetted parts may contain Titanium and Zirconium. It is the responsibility of the end user to eliminate ignition hazards due to impact or friction for processes that require EPL Ga or Gb (Category 1 G or 2 G).

The Magnetic Flow Tube contains nonconductive liners covering the grounded flow tube. For process requiring EPL Ga (Category 1 G), precautions shall be taken to avoid the liner being charged by the flow of nonconductive media.

In order to maintain the ingress protection level on the M3 and M4 electrode housing of the Magnetic Flow Tubes, the copper crush washer that seals the electrode access plug shall be replaced when the plug is reinstalled. The copper crush washer is one time use only.

The property class of the special fasteners which attach the Magnetic Flow Tube or Transmitter Remote Junction Box to the Magnetic Transmitter is A2-70 or A4-70 SST.

Models marked with ESD warning label, do not rub surface with a dry cloth or clean with solvents to avoid electrostatic charge build-up.

For information on the dimensions of the flameproof joints, the manufacturer shall be contacted.

Conduit entries must be installed to maintain the enclosure ingress rating of IP66.

(19) **Test documentation**

As listed in Report No. NL/DEK/ExTR14.0033/08.

(13) **SCHEDULE**

(14) **to EU-Type Examination Certificate DEKRA 14ATEX0071 X**

Issue No. **9**

(20) **Certificate history**

Issue 1 -	217012200	Initial certificate.
Issue 2 -	217353500	Additional non-intrinsically safe MODBUS model and editorial changes.
Issue 3 -	381529200	Assessment to EN 60079-26 : 2015, assess legacy flow tube models 8705 and 8711 for use with 8732 EM Transmitter, revision of special conditions of use.
Issue 4 -	381658800	Magnetic Flow Transmitter Model 8732EM minor constructional changes. Add Safety Approval Option model K9.
Issue 5 -	217353200	Assessment to EN 60079-7 : 2015. Addition of the Magnetic Flow Transmitter Model 8712EM
Issue 6 -	222430000	Editorial changes without technical effect.
Issue 7 -	381942200	Assessment of flameproof options per EN 60079-1 : 2014. Add low power option for Magnetic Flow Transmitter Model 8732EM Add Foundation Fieldbus / FISCO and Profibus options for Magnetic Flow Transmitter Model 8732EM and 8712EM.
Issue 8	382768700	Assessment to EN IEC 60079-0 : 2018 Assessment to EN 60079-7 : 2015 + A1 : 2018 Minor constructional changes Update dust Ex t with [ia Da] output markings
Issue 9	382894400	Minor constructional changes

Note: In this document [.] is used as decimal separator.

Nomenclature Magnetic Flow Transmitter Model 8732EM and electrical data

8732EM R 1 B 2 K1 ... M4 RT50 ... SH ... V1 ... F090...
 I II III IV V VI VII VIII IX X

Designation	Explanation	Value	Explanation																																																																				
I	Model	8732EM	Magnetic Flow Transmitter – Field Mount																																																																				
II	Transmitter Mount	R T	Remote Mount Integral Mount																																																																				
III	Transmitter Power Supply	1 2 3	AC (90 - 250 Vac, 50 / 60 Hz), not for Ex nA DC (12 - 42 Vdc) DC (12 - 30 Vdc)																																																																				
IV	Outputs	A B M F P	Non-IS: 4 - 20 mA with digital HART Protocol & Scalable Pulse Output I.S.: 4 - 20 mA Intrinsically Safe Output with digital HART Protocol & Intrinsically Safe Scalable Pulse Output Non-I.S.: Modbus RS-485 I.S.: Intrinsically Safe Fieldbus / FISCO and Intrinsically Safe Scalable Pulse Output I.S.: Intrinsically Safe Profibus and Intrinsically Safe Scalable Pulse Output																																																																				
V	Conduit entries	1 or 4 2 or 5	½-14 NPT female CM20, M20 female																																																																				
VI	Safety Approval Option	K1 ATEX K7 IECEx K9 IECEx N1 ATEX N7 IECEx ND ATEX	<table border="0"> <tr> <td>⊕ II 2 (1) G</td> <td>Ex db eb [ja Ga] IIC T6...T3 Gb</td> </tr> <tr> <td>⊕ II 2 D</td> <td>Ex tb IIIC T80 °C...T200 °C Db</td> </tr> <tr> <td>⊕ II 2 (1) G</td> <td>Ex db eb [ja Ga] IIC T6...T3 Gb</td> </tr> <tr> <td>⊕ II 2 (1) D</td> <td>Ex tb [ja Da] IIIC T80 °C...T200 °C Db **</td> </tr> <tr> <td>⊕ II 2 (1) G</td> <td>Ex db [ja Ga] IIC T6...T3 Gb *</td> </tr> <tr> <td>⊕ II 2 D</td> <td>Ex tb IIIC T80 °C...T200 °C Db</td> </tr> <tr> <td>⊕ II 2 (1) G</td> <td>Ex db [ja Ga] IIC T6...T3 Gb *</td> </tr> <tr> <td>⊕ II 2 (1) D</td> <td>Ex tb [ja Da] IIIC T80 °C...T200 °C Db **</td> </tr> </table> <table border="0"> <tr> <td>Ex db eb [ja Ga] IIC T6...T3 Gb</td> <td></td> </tr> <tr> <td>Ex tb IIIC T80 °C...T200 °C Db</td> <td></td> </tr> <tr> <td>Ex db eb [ja Ga] IIC T6...T3 Gb</td> <td></td> </tr> <tr> <td>Ex tb [ja Da] IIIC T80 °C...T200 °C Db **</td> <td></td> </tr> <tr> <td>Ex db [ja Ga] IIC T6...T3 Gb *</td> <td></td> </tr> <tr> <td>Ex tb IIIC T80 °C...T200 °C Db</td> <td></td> </tr> <tr> <td>Ex db [ja Ga] IIC T6...T3 Gb *</td> <td></td> </tr> <tr> <td>Ex tb [ja Da] IIIC T80 °C...T200 °C Db **</td> <td></td> </tr> </table> <table border="0"> <tr> <td>Ex db eb [ja Ga] IIC T6...T3 Gb</td> <td></td> </tr> <tr> <td>Ex tb IIIC T80 °C...T200 °C Db</td> <td></td> </tr> <tr> <td>Ex db eb [ja Ga] IIC T6...T3 Gb</td> <td></td> </tr> <tr> <td>Ex tb [ja Da] IIIC T80 °C...T200 °C Db **</td> <td></td> </tr> </table> <table border="0"> <tr> <td>⊕ II 3 (1) G</td> <td>Ex nA [ja Ga] IIC T4...T3 Gc ***</td> </tr> <tr> <td>⊕ II 3 (1) G</td> <td>Ex ec [ja Ga] IIC T4...T3 Gc ***</td> </tr> <tr> <td>⊕ II 2 D</td> <td>Ex tb IIIC T80 °C...T200 °C Db</td> </tr> <tr> <td>⊕ II 3 (1) G</td> <td>Ex nA [ja Ga] IIC T4...T3 Gc ***</td> </tr> <tr> <td>⊕ II 3 (1) G</td> <td>Ex ec [ja Ga] IIC T4...T3 Gc ***</td> </tr> <tr> <td>⊕ II 2 (1) D</td> <td>Ex tb [ja Da] IIIC T80 °C...T200 °C Db **</td> </tr> </table> <table border="0"> <tr> <td>Ex nA [ja Ga] IIC T4...T3 Gc ***</td> <td></td> </tr> <tr> <td>Ex ec [ja Ga] IIC T4...T3 Gc ***</td> <td></td> </tr> <tr> <td>Ex tb IIIC T80 °C...T200 °C Db</td> <td></td> </tr> <tr> <td>Ex nA [ja Ga] IIC T4...T3 Gc ***</td> <td></td> </tr> <tr> <td>Ex ec [ja Ga] IIC T4...T3 Gc ***</td> <td></td> </tr> <tr> <td>Ex tb [ja Da] IIIC T80 °C...T200 °C Db **</td> <td></td> </tr> </table> <table border="0"> <tr> <td>⊕ II 2 D</td> <td>Ex tb IIIC T80 °C...T200 °C Db</td> </tr> <tr> <td>⊕ II 2 (1) D</td> <td>Ex tb [ja Da] IIIC T80 °C...T200 °C Db</td> </tr> </table>	⊕ II 2 (1) G	Ex db eb [ja Ga] IIC T6...T3 Gb	⊕ II 2 D	Ex tb IIIC T80 °C...T200 °C Db	⊕ II 2 (1) G	Ex db eb [ja Ga] IIC T6...T3 Gb	⊕ II 2 (1) D	Ex tb [ja Da] IIIC T80 °C...T200 °C Db **	⊕ II 2 (1) G	Ex db [ja Ga] IIC T6...T3 Gb *	⊕ II 2 D	Ex tb IIIC T80 °C...T200 °C Db	⊕ II 2 (1) G	Ex db [ja Ga] IIC T6...T3 Gb *	⊕ II 2 (1) D	Ex tb [ja Da] IIIC T80 °C...T200 °C Db **	Ex db eb [ja Ga] IIC T6...T3 Gb		Ex tb IIIC T80 °C...T200 °C Db		Ex db eb [ja Ga] IIC T6...T3 Gb		Ex tb [ja Da] IIIC T80 °C...T200 °C Db **		Ex db [ja Ga] IIC T6...T3 Gb *		Ex tb IIIC T80 °C...T200 °C Db		Ex db [ja Ga] IIC T6...T3 Gb *		Ex tb [ja Da] IIIC T80 °C...T200 °C Db **		Ex db eb [ja Ga] IIC T6...T3 Gb		Ex tb IIIC T80 °C...T200 °C Db		Ex db eb [ja Ga] IIC T6...T3 Gb		Ex tb [ja Da] IIIC T80 °C...T200 °C Db **		⊕ II 3 (1) G	Ex nA [ja Ga] IIC T4...T3 Gc ***	⊕ II 3 (1) G	Ex ec [ja Ga] IIC T4...T3 Gc ***	⊕ II 2 D	Ex tb IIIC T80 °C...T200 °C Db	⊕ II 3 (1) G	Ex nA [ja Ga] IIC T4...T3 Gc ***	⊕ II 3 (1) G	Ex ec [ja Ga] IIC T4...T3 Gc ***	⊕ II 2 (1) D	Ex tb [ja Da] IIIC T80 °C...T200 °C Db **	Ex nA [ja Ga] IIC T4...T3 Gc ***		Ex ec [ja Ga] IIC T4...T3 Gc ***		Ex tb IIIC T80 °C...T200 °C Db		Ex nA [ja Ga] IIC T4...T3 Gc ***		Ex ec [ja Ga] IIC T4...T3 Gc ***		Ex tb [ja Da] IIIC T80 °C...T200 °C Db **		⊕ II 2 D	Ex tb IIIC T80 °C...T200 °C Db	⊕ II 2 (1) D	Ex tb [ja Da] IIIC T80 °C...T200 °C Db
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Nomenclature Magnetic Flow Transmitter Model 8732EM and electrical data (continued)

Designation	Explanation	Value	Explanation
VI	Safety Approval Option	NF IECEx	Ex tb IIIC T80 °C...T200 °C Db
			Ex tb [ia Da] IIIC T80 °C...T200 °C Db
		NOTE:*	Integral Mount (see II) option only
		**	Intrinsically Safe Output (see IV) options B, F or P
		***	DC Transmitter Power Supply only (12 - 42 Vdc)
VII	Display Option	M4	LOI
		M5	Display
VIII	Remote Cable Option	RTxx ****	Standard Temperature Component
		RHxx ****	Extended Temperature Component
		NOTE:	**** Length = xx x 10 ft, max. 500 ft
IX	Options	--	Aluminum, standard paint
		SH	Stainless Steel Electronics Housing
		Vx	Special Paint Systems *****
X	Specials	F090x	Special Paint Systems *****
		NOTE:	***** Subject to special conditions for safe use.

Annex 1 to Report No. NL/DEK/ExTR14.0033/08



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Nomenclature Magnetic Flow Transmitter Model 8712EM and electrical data

8712EM R 2 B 2 N7 ... M4 RT50 ... Vx ... F090...
 I II III IV V VI VII VIII IX X

Designation	Explanation	Value	Explanation
I	Model	8712EM	Magnetic Flow Transmitter – Field Mount
II	Transmitter Mount	R	Remote Mount
III	Transmitter Power Supply	1 2 3	AC (90 - 250 Vac, 50 / 60 Hz) DC (12 - 42 Vdc) DC (12 – 30 Vdc)
IV	Outputs	A B M F P	Non-I.S.: 4 - 20 mA with digital HART Protocol & Scalable Pulse Output I.S.: 4 - 20 mA Intrinsically Safe Output with digital HART Protocol & Intrinsically Safe Scalable Pulse Output Non-I.S.: Modbus RS-485 I.S.: Intrinsically Safe Fieldbus / FISCO and Intrinsically Safe Scalable Pulse Output I.S.: Intrinsically Safe Profibus and Intrinsically Safe Scalable Pulse Output
V	Conduit entries	1 2	½-14 NPT female CM20, M20 female
VI	Safety Approval Option	N1 ATEX	⊕ II 3 (1) G Ex nA ic [ia Ga] IIC T4 Gc ** ⊕ II 3 (1) G Ex ec ic [ia Ga] IIC T4 Gc ** ⊕ II 2 D Ex tb IIIC T80 °C Db
			⊕ II 3 (1) G Ex nA ic [ia Ga] IIC T4 Gc ** ⊕ II 3 (1) G Ex ec ic [ia Ga] IIC T4 Gc ** ⊕ II 2 (1) D Ex tb [ia Da] IIIC T80 °C Db *
		N7 IECEx	Ex nA ic [ia Ga] IIC T4 Gc ** Ex ec ic [ia Ga] IIC T4 Gc ** Ex tb IIIC T80 °C Db
			Ex nA ic [ia Ga] IIC T4 Gc ** Ex ec ic [ia Ga] IIC T4 Gc ** Ex tb [ia Da] IIIC T80 °C Db *
		N9 IECEx	Ex nA ic [ia Ga] IIC T4 Gc ** Ex ec ic [ia Ga] IIC T4 Gc ** Ex tb IIIC T80 °C Db
			Ex nA ic [ia Ga] IIC T4 Gc ** Ex ec ic [ia Ga] IIC T4 Gc ** Ex tb [ia Da] IIIC T80 °C Db *
		ND ATEX	⊕ II 2 D Ex tb IIIC T80 °C Db ⊕ II 2 (1) D Ex tb [ia Da] IIIC T80 °C Db *
		NF IECEx	Ex tb IIIC T80 °C Db Ex tb [ia Da] IIIC T80 °C Db *
NOTE: * Intrinsically Safe Output (see IV) options B, F, or P ** DC Transmitter Power Supply only (12 - 42 Vdc)			
VII	Display Option	-- M4 M5	Without LOI and keypad LOI + keypad Display
VIII	Remote Cable Option	Rxx	Standard Temperature Component
		NOTE: ***	Length = xx × 10 ft, max. 500 ft
IX	Options	-- Vx	Aluminum, standard paint Special Paint Systems ****
X	Specials	F090x	Special Paint Systems ****
NOTE: ****			Subject to special conditions for safe use.

Annex 1 to Report No. NL/DEK/ExTR14.0033/08



Note: In this document [.] is used as decimal separator.

Nomenclature Magnetic Flow Tube Model 8705-M and electrical data

8705 ... S A 005 ... M4 K1 ... G1 L1 B3 ... J1 SC ... V1 ... SH ... F090x
 I II III IV V VI VII VIII IX X XI XII XIII XIV

Designation	Explanation	Value	Explanation
I	Model	8705	Magnetic Flow Tube
II	Electrode Material	Custom	See special conditions for safe use
III	Electrode Types	Custom	Seal of electrodes comply with IEC 61010-1.
IV	Line Size	005 to 360	1/2" NPS (15 mm) to 36" NPS (900 mm)
V	Electrode Housing *	M0 M1 M2 M3 M4	Category 2 G or 3 G, EPL Gb or Gc Category 2 G or 3 G, EPL Gb or Gc Category 1/2 G or 1/3 G, EPL Ga/Gb or Ga/Gc Category 1/2 G or 1/3 G, EPL Ga/Gb or Ga/Gc Category 1/2 G or 1/3 G, EPL Ga/Gb or Ga/Gc
VI	Safety Approvals	K1 ATEX	Ex II 1/2 G Ex eb ia IIC T5...T3 Ga/Gb *
			Ex II 2 D Ex tb IIIC T80 °C...T200 °C Db
			Ex II 2 G Ex eb ib IIC T5...T3 Gb **
			Ex II 2 D Ex tb IIIC T80 °C...T200 °C Db
		K7 IECEX	Ex eb ia IIC T5...T3 Ga/Gb *
			Ex tb IIIC T80 °C...T200 °C Db
		K9 IECEX	Ex eb ib IIC T5...T3 Gb **
			Ex tb IIIC T80 °C...T200 °C Db
		N1 ATEX	Ex II 1/3 G Ex nA ia IIC T5...T3 Ga/Gc * line sizes 8"- 36"
			Ex II 1/3 G Ex ec ia IIC T5...T3 Ga/Gc * line sizes 8"- 36"
Ex II 2 D Ex tb IIIC T80 °C...T200 °C Db			
Ex II 3 G Ex nA ic IIC T5...T3 Gc * line sizes 0.5" - 6" / **			
Ex II 3 G Ex ec ic IIC T5...T3 Gc * line sizes 0.5" - 6" / **			
Ex II 2 D Ex tb IIIC T80 °C...T200 °C Db			
N7 IECEX	Ex nA ia IIC T5...T3 Ga/Gc * line sizes 8"- 36"		
	Ex ec ia IIC T5...T3 Ga/Gc * line sizes 8"- 36"		
	Ex tb IIIC T 80 °C...T200 °C Db		
	Ex nA ic IIC T5...T3 Gc * line sizes 0.5" - 6" / **		
ND ATEX	Ex ec ic IIC T5...T3 Gc * line sizes 0.5" - 6" / **		
	Ex tb IIIC T 80 °C...T200 °C Db		
NF IECEX	Ex tb IIIC T80 °C...T200 °C Db		
NOTE:*		Electrode Housing M2, M3 and M4 only	
**		Electrode Housing M0 and M1 only	
VII	Grounding rings material	Custom	See special conditions for safe use
VIII	Lining protector material	Custom	See special conditions for safe use
IX	Mounting Configuration	B3	Integral Mount with Model 8732EM
X	Optional conduit entries	J1	CM20, M20 female
XI	Remote Junction Box (RJB) material	--	Aluminum, standard paint
		SJ	316 Stainless steel
XII	Special paint options	Vx	Special Paint Systems ***
XIII	Wrapper (housing) material	--	Carbon Steel (w. Aluminum RJB), standard paint
		SH	316 Stainless Steel (w. Stainless Steel RJB)
XIV	Specials	F090x	Special Paint Systems ***
		NOTE: *** Subject to special conditions for safe use.	

Annex 1 to Report No. NL/DEK/ExTR14.0033/08



Note: In this document [.] is used as decimal separator.

Nomenclature Magnetic Flow Tube Model 8711-M/L and electrical data

8711 ... S A 15F L ... K1 ... G1 ... J1 SC ... V1 ... F090x
 I II III IV V VI VII VIII IX X XI

Designation	Explanation	Value	Explanation
I	Model	8711	Magnetic Flow Tube
II	Electrode Material	Custom	See special conditions for safe use
III	Electrode Types	Custom	Seal of electrodes comply with IEC 61010-1.
IV	Line Size	015 to 080	1½" NPS (40 mm) to 8" NPS (900 mm)
V	Mounting Configuration	L M	Remote Mount from Transmitter Integral Mount with Transmitter
VI	Safety Approvals	K1 ATEX	⊕ II 2 G Ex eb ib IIC T5...T3 Gb ⊕ II 2 D Ex tb IIIC T80 °C...T200 °C Db
		K7 IECEX	Ex eb ib IIC T5...T3 Gb Ex tb IIIC T80 °C...T200 °C Db
		K9 IECEX	Ex eb ib IIC T5...T3 Gb Ex tb IIIC T80 °C...T200 °C Db
		N1 ATEX	⊕ II 3 G Ex nA ic IIC T5...T3 Gc ⊕ II 3 G Ex ec ic IIC T5...T3 Gc ⊕ II 2 D Ex tb IIIC T80 °C...T200 °C Db
		N7 IECEX	Ex nA ic IIC T5...T3 Gc Ex ec ic IIC T5...T3 Gc Ex tb IIIC T80 °C...T200 °C Db
		ND ATEX	⊕ II 2 D Ex tb IIIC T80 °C...T200 °C Db
		NF IECEX	Ex tb IIIC T80 °C...T200 °C Db
VII	Grounding rings material	Custom	See special conditions for safe use
VIII	Optional conduit entries	J1	CM20, M20 female
IX	Remote Junction Box material	-- SJ	Aluminum, standard paint * 316 Stainless steel *
		NOTE: *	Flow Tube with Carbon Steel wrapper (housing)
X	Special paint options	Vx	Special Paint Systems **
XI	Specials	F090x	Special Paint Systems **
		NOTE: **	Subject to special conditions for safe use.

Note: In this document [.] is used as decimal separator.

Temperature class and specified maximum surface temperature “T” (continued)

Magnetic Flow Tube Model 8705-M

6"	60 °C	Ex e	Integral/Remote	T5	Ex t	Integral/Remote	T80 °C
	90 °C		Remote	T4		Remote	T110 °C
	120 °C	Ex nA	Remote	T4		Remote	T140 °C
	155 °C		Remote	T3		Remote	T175 °C
	180 °C	Remote	T3	Remote		T200 °C	
8-36"	60 °C	Ex e	Integral/Remote	T5	Ex t	Integral/Remote	T80 °C
	90 °C		Remote	T4		Remote	T110 °C
	120 °C	Ex nA	Remote	T4		Remote	T140 °C
	155 °C		Remote	T3		Remote	T175 °C
	180 °C	Remote *	T3	Remote *		T200 °C	

NOTE: * Line Size 8" and greater shall be mounted with Remote Junction Box Down or to the Side.

Magnetic Flow Tube Model 8711-M/L

Line Size [NPS]	Max. Process Temperature	Type of protect.	Transmitter Mounting	T-class	Type of protect.	Transmitter Mounting	Maximum surface temperature "T"
1½"	60 °C	Ex e	Integral/Remote	T5	Ex t	Integral/Remote	T80 °C
	80 °C		Integral/Remote	T4		Remote	T100 °C
	100 °C	Ex nA	Remote	T4		Remote	T120 °C
	140 °C *		Remote	T3		Remote	T160 °C
	160 °C *	Ex nA	Remote	T3		Remote	T180 °C
2"	60 °C	Ex e	Integral/Remote	T5	Ex t	Integral/Remote	T80 °C
	80 °C		Integral/Remote	T4		Remote	T100 °C
	100 °C	Ex nA	Remote	T4		Remote	T120 °C
	140 °C *		Remote	T3		Remote	T160 °C
	160 °C *	Ex nA	Remote	T3		Remote	T180 °C
3"	60 °C	Ex e	Integral/Remote	T5	Ex t	Integral/Remote	T80 °C
	80 °C		Remote	T4		Remote	T100 °C
	110 °C	Ex nA	Remote	T4		Remote	T130 °C
	150 °C *		Remote	T3		Remote	T170 °C
	170 °C *	Ex nA	Remote	T3		Remote	T190 °C
4"	60 °C	Ex e	Integral/Remote	T5	Ex t	Integral/Remote	T80 °C
	80 °C		Remote	T4		Remote	T100 °C
	115 °C	Ex nA	Remote	T4		Remote	T135 °C
	155 °C *		Remote	T3		Remote	T175 °C
	175 °C *	Ex nA	Remote	T3		Remote	T195 °C
6"	60 °C	Ex e	Integral/Remote	T5	Ex t	Integral/Remote	T80 °C
	80 °C		Remote	T4		Remote	T100 °C
	115 °C	Ex nA	Remote	T4		Remote	T135 °C
	155 °C *		Remote	T3		Remote	T175 °C
	180 °C *	Ex nA	Remote	T3		Remote	T200 °C
8"	60 °C	Ex e	Integral/Remote	T5	Ex t	Integral/Remote	T80 °C
	80 °C		Remote	T4		Remote	T100 °C
	115 °C	Ex nA	Remote	T4		Remote	T135 °C
	160 °C *		Remote	T3		Remote	T180 °C
	180 °C *	Ex nA	Remote	T3		Remote	T200 °C

NOTE: * Flow tubes on lines with these process temperatures and higher shall be mounted with Remote Junction Box Down.

Electrical data

Magnetic Transmitter Model 8732EM

Supply circuit (terminals 9 and 10):	AC power supply	90-250 Vac; 50/60 Hz; 40 VA; $U_m = 250\text{ V}$
Supply circuit (terminals 9 and 10):	DC power supply	12-42 Vdc; 15 W; $U_m = 250\text{ V}$
Supply circuit (terminals 9 and 10):	DC power supply	12-30 Vdc; 3 W; 0.25 A; $U_m = 250\text{ V}$
Dissipated power:	AC or DC	32 VA (w. Flow Tube connected)

Data circuit (terminals 5, 6, 7 and 8): Digital I/O signals $U_m = 250\text{ V}$

Output Signals

Profibus, Foundation Fieldbus:

Output circuit (terminals 1 and 2):

In type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:

$U_i = 30\text{ V}$; $I_i = 380\text{ mA}$; $P_i = 2.85\text{ W}$; $C_i = 924\text{ pF}$; $L_i = 0\text{ }\mu\text{H}$.

Output circuit (terminals 3 and 4): Pulse

In type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:

$U_i = 28\text{ V}$; $I_i = 100\text{ mA}$; $P_i = 1.0\text{ W}$; $C_i = 4.5\text{ nF}$; $L_i = 0.0\text{ }\mu\text{H}$.

FISCO:

Output circuit (terminals 1 and 2):

In type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit or a circuit in accordance with FISCO, with the following maximum values:

$U_i = 30\text{ V}$; $I_i = 380\text{ mA}$; $P_i = 5.32\text{ W}$; $C_i = 924\text{ pF}$; $L_i = 0\text{ }\mu\text{H}$.

Output circuit (terminals 3 and 4): Pulse

In type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:

$U_i = 28\text{ V}$; $I_i = 100\text{ mA}$; $P_i = 1.0\text{ W}$; $C_i = 4.5\text{ nF}$; $L_i = 0.0\text{ }\mu\text{H}$.

RS-485 Modbus digital Output & Scalable Pulse Output:

Output circuit (terminals 1 and 2): Modbus $U_m = 250\text{ V}$

Output circuit (terminals 3 and 4): Pulse $U_m = 250\text{ V}$

4 - 20 mA with digital HART Protocol & Scalable Pulse Output:

Output circuit (terminals 1 and 2): 4-20 mA $U_m = 250\text{ V}$

Output circuit (terminals 3 and 4): Pulse $U_m = 250\text{ V}$

4 - 20 mA Intrinsically Safe Output with digital HART Protocol & Intrinsically Safe Scalable Pulse Output:

Output circuit (terminals 1 and 2): 4-20 mA

In type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:

$U_i = 30\text{ V}$; $I_i = 300\text{ mA}$; $P_i = 1.0\text{ W}$; $C_i = 924\text{ pF}$; $L_i = 0.0\text{ }\mu\text{H}$.

Output circuit (terminals 3 and 4): Pulse

In type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:

$U_i = 28\text{ V}$; $I_i = 100\text{ mA}$; $P_i = 1.0\text{ W}$; $C_i = 4.5\text{ nF}$; $L_i = 0.0\text{ }\mu\text{H}$.

Electrical data (continued)

Magnetic Transmitter Model 8712EM

Supply circuit (terminals L1 and N/L2):	AC power supply	90-250 Vac; 50/60 Hz; 40 VA; $U_m = 250 V$
Supply circuit (terminals DC+ and DC-):	DC power supply	12-42 Vdc; 15 W; $U_m = 250 V$
Supply circuit (terminals DC+ and DC-):	DC power supply	12-30 Vdc; 3W; 0.25 A, $U_m = 250 V$
Dissipated power:	AC or DC	32 VA (w. Flow Tube connected)

Data circuit (terminals 9, 10, 11 and 12): Digital I/O signals $U_m = 250 V$

Output signals

Profibus, Foundation Fieldbus:

Output circuit (terminals 7 and 8):

In type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:

$U_i = 30 V$; $I_i = 380 mA$; $P_i = 2.85 W$; $C_i = 924 pF$; $L_i = 0 \mu H$.

Output circuit (terminals 5 and 6): Pulse

In type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:

$U_i = 28 V$; $I_i = 100 mA$; $P_i = 1.0 W$; $C_i = 4.5 nF$; $L_i = 0.0 \mu H$.

FISCO:

Output circuit (terminals 7 and 8):

In type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit or a circuit in accordance with FISCO, with the following maximum values:

$U_i = 30 V$; $I_i = 380 mA$; $P_i = 5.32 W$; $C_i = 924 pF$; $L_i = 0 \mu H$.

Output circuit (terminals 5 and 6): Pulse

In type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:

$U_i = 28 V$; $I_i = 100 mA$; $P_i = 1.0 W$; $C_i = 4.5 nF$; $L_i = 0.0 \mu H$.

RS-485 Modbus digital Output & Scalable Pulse Output:

Output circuit (terminals 7 and 8): Modbus $U_m = 250 V$

Output circuit (terminals 5 and 6): Pulse $U_m = 250 V$

4 - 20 mA with digital HART Protocol & Scalable Pulse Output:

Output circuit (terminals 7 and 8): 4-20 mA $U_m = 250 V$

Output circuit (terminals 5 and 6): Pulse $U_m = 250 V$

4 - 20 mA Intrinsically Safe Output with digital HART Protocol & Intrinsically Safe Scalable Pulse Output:

Output circuit (terminals 7 and 8): 4-20 mA

In type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:

$U_i = 30 V$; $I_i = 300 mA$; $P_i = 1.0 W$; $C_i = 924 pF$; $L_i = 0.0 \mu H$.

Output circuit (terminals 5 and 6): Pulse

In type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:

$U_i = 28 V$; $I_i = 100 mA$; $P_i = 1.0 W$; $C_i = 4.5 nF$; $L_i = 0.0 \mu H$.

Electrical data (continued)

Flow Tube connection

Output circuit (terminals 1, 2 and 3): Coil drive 500 mA; 40 Vmax.; 9 Wmax.

For explosive gas or vapor atmospheres (Categories 1 G, 2 G and 3 G or EPL Ga, Gb, and Gc):

Output circuit (terminals 17, 18, 19): Electrode circuit

In types of protection intrinsic safety Ex ia IIC, Ex ib IIC or Ex ic IIC, with the following maximum values:

$U_o = 28.56 \text{ V}$; $I_o = 5.77 \text{ mA}$; $P_o = 165 \text{ mW}$; $C_o = 61.7 \text{ nF}$; $L_o = 1.0 \text{ H}$.

For combustible dust atmospheres (Category 2 D or EPL Db):

Output circuit (terminals 17, 18, 19): Electrode circuit 5 V; 200 μA ; 1 mW

Flow Tube Models 8705-M

Flow Tube Remote Mount Junction Box, Transmitter connection

Input circuit (terminals 1, 2 and 3): Coil drive 500 mA; 40 Vmax; 20 Wmax.

For explosive gas or vapor atmospheres (Categories 1 G, 2 G, 3 G or EPL Ga, Gb, Gc):

Input circuit (terminals 17, 18 and 19): Electrode circuit

In type of protection intrinsic safety Ex ia IIC, Ex ib IIC or Ex ic IIC, with the following maximum values:

$U_i = 30 \text{ V}$; $I_i = 50 \text{ mA}$; $P_i = 1.0 \text{ W}$; $C_i = 1.9 \text{ nF}$; $L_i = 630 \mu\text{H}$.

For combustible dust atmospheres (Category 2 D or EPL Db):

Input circuit (terminals 17, 18 and 19): Electrode circuit 5 V; 200 μA ; 1 mW

Flow Tube Models 8711-M/L

Flow Tube Remote Mount Junction Box, Transmitter connection

Input circuit (terminals 1, 2 and 3): Coil drive 500 mA; 40 Vmax.; 20 Wmax.

For explosive gas or vapor atmospheres (Categories 2 G, 3 G or EPL Gb, Gc):

Input circuit (terminals 17, 18 and 19): Electrode circuit

In type of protection intrinsic safety Ex ib IIC or Ex ic IIC, with the following maximum values:

$U_i = 30 \text{ V}$; $I_i = 50 \text{ mA}$; $P_i = 1.0 \text{ W}$; $C_i = 1.9 \text{ nF}$; $L_i = 630 \mu\text{H}$.

For combustible dust atmospheres (Category 2 D or EPL Db):

Input circuit (terminals 17, 18 and 19): Electrode circuit 5 V; 200 μA ; 1 mW