



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEx DEK 13.0008X**

Page 1 of 5

Certificate history:

Status: **Current**

Issue No: 4

Issue 3 (2022-06-28)

Issue 2 (2015-05-01)

Issue 1 (2014-06-05)

Issue 0 (2013-03-01)

Date of Issue: 2023-01-13

Applicant: **Endress+Hauser Flowtec AG**
Kägenstr. 7
CH-4153 Reinach
Switzerland

Equipment: **Mass Flow Measuring Systems CNGmass, LPGmass and LNGmass**

Optional accessory:

Type of Protection: **Ex i, Ex n, Ex t, Ex e**

Marking: Ex nA [ia Ga] IIC T4 Gc or
Ex ec [ia Ga] IIC T4 Gc
Ex ia IIC T6 ... T1 Gb or
Ex ia IIB T6 ... T1 Gb or
Ex ia IIC T6 ... T1 Ga/Gb or
Ex ia IIB T6 ... T1 Ga/Gb
and Ex tb IIIC Txx °C Db
or
Ex nA IIC T6 ... T1 Gc or
Ex ec IIC T6 ... T1 Gc

Approved for issue on behalf of the IECEx
Certification Body:

R. Schuller

Position:

Certification Manager

Signature:
(for printed version)

Date:
(for printed version)

2023-01-13

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Netherlands





IECEx Certificate of Conformity

Certificate No.: **IECEx DEK 13.0008X**

Page 2 of 5

Date of issue: 2023-01-13

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Kägenstr. 7
CH-4153 Reinach
Switzerland

Manufacturing locations: **Endress+Hauser Flowtec AG**
Kägenstr. 7
CH-4153 Reinach
Switzerland

Endress+Hauser Flowtec AG
35, rue de l'Europe
68700 Cernay
France

Endress+Hauser Flowtec (India) Pvt. Ltd.
M 171-176, Waluj MIDC, Industrial Area
Aurangabad - , Maharashtra State
431136
India

See following pages for more locations

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

IEC 60079-15:2010 Explosive atmospheres - Part 15: Equipment protection by type of protection "n"
Edition:4

IEC 60079-26:2014-10 Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga
Edition:3.0

IEC 60079-31:2013 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
Edition:2

IEC 60079-7:2017 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

NL/DEK/ExTR12.0034/09

Quality Assessment Report:

DE/TUN/QAR06.0004/10



IECEx Certificate of Conformity

Certificate No.: **IECEx DEK 13.0008X**

Page 3 of 5

Date of issue: 2023-01-13

Issue No: 4

EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

Mass Flow Measuring Systems CNGmass, LPGmass and LNGmass are intended to be used for mass flow measurement based on the principle of controlled generated Coriolis forces.

For further details and for the electrical and thermal data, refer to the Annex 1.

SPECIFIC CONDITIONS OF USE: YES as shown below:

For maximum surface temperature, ambient temperature range and maximum process temperatures see Annex 1 and safety instructions.

Only for Ex ec and Ex nA type of protection:

The safety barrier shall be installed in an enclosure that provides a minimum ingress protection of IP54 in accordance with IEC 60079-0.

Only for Ex nA type of protection:

- Enclosure may only be opened at an ambient temperature between +5 °C and +40 °C, with maximum relative humidity 80 % for temperatures up to +31 °C decreasing linearly to 50 % relative humidity at +40 °C.

- The safety barrier shall, in addition to the above, be located and operated in a controlled environment that ensures a pollution degree 2, as defined in IEC 60664-1.



IECEx Certificate of Conformity

Certificate No.: **IECEx DEK 13.0008X**

Page 4 of 5

Date of issue: 2023-01-13

Issue No: 4

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Changes to Specific Conditions of Use for types of protection Ex ec and Ex nA



IECEX Certificate of Conformity

Certificate No.: **IECEX DEK 13.0008X**

Page 5 of 5

Date of issue: 2023-01-13

Issue No: 4

Additional manufacturing locations:

Endress+Hauser Flowtec AG
Division U.S.A., 2330 Endress Place
Greenwood, Indiana 46143
United States of America

Endress+Hauser Flowtec (Brazil)
Fluxômetros Ltda.
Estrada Municipal Antônio Sesti,
600 Bairro Recreio Costa Verde
Itatiba, SP - 13254-085
Brazil

Endress+Hauser Flowtec (China) Co. Ltd.
China-Singapore Industrial Park (SIP), Su-
Hong-Zhong-Lu No. 465
Suzhou Industrial Park (SIP), Jiang-Tian-Li-Lu
No. 31, 215021 Suzhou
Suzhou 215021
China

Annex:

[227096500-Annex1 to Certificate of Conformity IECEx DEK 13.0008X.pdf](#)

Description

The Mass Flow Measuring Systems CNGmass, LPGmass and LNGmass are intended to be used for mass flow measurement based on the measuring principle of controlled generated Coriolis forces.

The intrinsically safe versions for use in explosive gas and in explosive dust atmospheres and the versions in type of protection Ex tb for use in an explosive dust atmosphere consist of a mass flow transmitter and an associated intrinsically safe safety barrier in type of protection Ex ec, Ex nA. This safety barrier shall be mounted in a suitable enclosure, providing at least IP54 according to IEC 60079-0.

These systems are provided with a MODbus communication interface.

The versions in type of protection Ex ec, Ex nA for application in explosive gas atmospheres are provided with an interface for MODbus RS485, EtherNet/IP, PROFINET or Profibus DP or with an analogue 4-20 mA current output signal with digital communication (HART), combined with a Pulse/Frequency/Status (PFS) output. These versions are also available with an optional display.

The transmitter enclosure is made of aluminium or stainless steel and provides a degree of protection of at least IP66/IP67.

Type designation

CNGmass, LPGmass, LNGmass

code D8cdee-ffghijknnpppr+### and
code OD8cdee-ffghijknnppprt+###

c	=	Product			
		C =	CNGmass		
		E =	LPGmass		
		L =	LNGmass		
d	=	Generation			
		B =	CNGmass, LPGmass, LNGmass		
ee	=	Size			
		08 =	DN8	15 =	DN15
		40 =	DN40	50 =	DN50
		XX =	sensor only		
ff	=	Approval ¹⁾			
		BM, NG	=	Ex ia IIC/IIB T6 ... T1 Gb or	
				Ex ia IIC/IIB T6 ... T1 Ga/Gb	
				Ex tb IIIC Txx °C Db	
		BO	=	Ex ia IIC/IIB T6 ... T1 Ga/Gb	
				Ex tb IIIC Txx °C Db	
		BQ	=	Ex ia IIC/IIB T6 ... T1 Ga/Gb	
		BU	=	Ex ia IIC/IIB T6 ... T1 Gb or	
				Ex ia IIC/IIB T6 ... T1 Ga/Gb	
		85	=	Ex ia IIC/IIB T6 ... T1 Gb or	
				Ex ia IIC/IIB T6 ... T1 Ga/Gb	
				Ex tb IIIC Txx °C Db	
		BS, I5, I6	=	Ex ec IIC T6 ... T1 Gc	
				Ex nA IIC T6 ... T1 Gc	
g	=	Power supply			
		D	=	24 Vdc	
h	=	Input/output			
		B	=	4-20 mA HART + Pulse/Frequency/Status (PFS)	
		L	=	Profibus DP	
		M	=	MODbus RS485	
		N	=	EtherNet/IP	
		R	=	PROFINET	

- i = Display/Operation
any single number or letter
- j = Housing
 - A = aluminium compact, G300
 - B = stainless steel compact, G301
 - C = stainless steel compact, G302
- k = Cable entry
any single number or letter
- nn = Measuring tube material
any double number or letter
- ppp = Process connection
any triple number or letter
- r = Calibration
any single number or letter
- ss = Device model
A1 = product version 1
- t = Customer version
any single number or letter
- ** = Option (none, two or multiple of two digits)
any combination of numbers and/or letters
- #, + = Symbols used as indicator for optional
abbreviation of extended order code

NOTE 1: The associated Safety Barrier is approved for Ex nA [ia Ga] IIC T4 Gc or Ex ec [ia Ga] IIC T4 Gc.

Thermal data

Ambient temperature range: -50 °C to +60 °C;
 process temperature range: -50 °C to +150 °C for CNGmass and LPGmass;
 -200 °C to +150 °C for LNGmass.

The relation between maximum ambient temperature, maximum process temperature and temperature class, depending on the enclosure type is shown in the following tables:

CNGmass, LPGmass, LNGmass in type of protection Ex ia and Ex tb (with ff = BM, BO, BU, BQ, 85, NG)

Enclosures j = A (G300) and j = B (G301)

Temperature class (max surface temperature T ²⁾)	T6 (85 °C)	T5 (100 °C)	T4 (135 °C)	T3 - T1 (200 °C)
Max ambient temperature	35 °C	50 °C	60 °C	60 °C
Max process temperature	50 °C	85 °C	120 °C	150 °C ²⁾

Enclosure j = C (G302)

Temperature class (max surface temperature T ¹⁾)	T6 (85 °C)	T5 (100 °C)	T4 (135 °C)	T3 - T1 (200 °C)
Max ambient temperature	35 °C	45 °C	50 °C	50 °C
Max process temperature	50 °C	85 °C	120 °C	150 °C ²⁾

NOTE 2: Txx for group IIIC

CNGmass, LPGmass and LNGmass in type of protection Ex ec, Ex nA (with ff = BS, I5, I6)

Enclosures j = A (G300) and j = B (G301)

Temperature class	T6	T5	T4	T3 - T1
Max ambient temperature	35 °C	50 °C	60 °C	60 °C
Max process temperature	50 °C	85 °C	120 °C	150 °C

Enclosure j = C (G302)

Temperature class	T6	T5	T4	T3 - T1
Max ambient temperature	--	50 °C	60 °C	60 °C
Max process temperature	--	85 °C	120 °C	150 °C

Electrical data

CNGmass, LPGmass, LNGmass in type of protection Ex ia and Ex tb (with ff = BM, BO, BU, BQ, 85, NG)

Safety barrier

Power supply (terminals 1, 2):

U_N = 20 30 Vdc

P ≤ 4.8 W

U_m = 260 Vac

MODbus RS 485 (terminals 26, 27):

$U_N = 5 \text{ Vdc}$

$U_m = 260 \text{ Vac}$

Power supply (terminals 10, 20) and MODbus RS 485 (terminals 62, 72):

in type of protection intrinsic safety Ex ia IIC or Ex ia IIB, with following maximum values:

$U_o = 16.24 \text{ V}$; $I_o = 0.623 \text{ A}$ (limited by fuse of 0.25 A); $P_o = 2.45 \text{ W}$;

$L_o = 92.8 \text{ } \mu\text{H}$ (IIC) or $372 \text{ } \mu\text{H}$ (IIB);

$C_o = 0.433 \text{ } \mu\text{F}$ (IIC) or $2.57 \text{ } \mu\text{F}$ (IIB);

$L_o/R_o = 14.6 \text{ } \mu\text{H}/\Omega$ (IIC) or $58.3 \text{ } \mu\text{H}/\Omega$ (IIB).

See NOTE 3.

The intrinsically safe circuits are infallibly galvanically isolated from earth and from the non-intrinsically safe circuits up to a peak voltage of 375 V .

Transmitter CNGmass, LPGmass and LNGmass

Power supply (terminals 10, 20) and MODbus RS 485 (terminals 62, 72):

in type of protection intrinsic safety Ex ia IIC, only for connection to the intrinsically safe Safety Barrier, with following maximum values (for each circuit):

$U_i = 16.24 \text{ V}$; $I_i = 0.623 \text{ A}$; $P_i = 2.45 \text{ W}$; $L_i = 0 \text{ } \mu\text{H}$; $C_i = 6 \text{ nF}$.

Service interface (connector):

in type of protection intrinsic safety Ex ia IIC, with following maximum values:

$U_o = 7.5 \text{ V}$; $I_o = 100 \text{ mA}$; $P_o = 160 \text{ mW}$; $C_i = \text{negligible}$; $L_i = \text{negligible}$.

See NOTE 3.

The intrinsically safe circuits of the transmitter are connected to earth.

NOTE 3: All intrinsically safe wiring may be installed in explosive atmospheres requiring the use of equipment of Equipment Protection Level Ga.

CNGmass, LPGmass and LNGmass in type of protection Ex ec, Ex nA (with ff = BS, I5, I6)

Models with h = B (4 – 20 mA, HART plus Pulse/Frequency/Status output)

Power supply (terminals 1, 2):

$U_N = 20 \dots 30 \text{ Vdc}$

$P \leq 3.5 \text{ W}$.

Output 4 – 20 mA HART (terminals 26, 27)

Output PFS (terminals 24, 25)

$U_N \leq 30 \text{ Vdc}$.

Models with h = L (Profibus DP interface)

Power supply (terminals 1, 2):

$U_N = 20 \dots 30 \text{ Vdc}$

$P \leq 3.3 \text{ W}$.

Profibus DP (terminals 26, 27)

$U_N \leq 30 \text{ Vdc}$.

Models with h = M (MODbus RS485 interface)

Power supply (terminals 1, 2):

$U_N = 20 \dots 30 \text{ Vdc}$

$P \leq 2.5 \text{ W}$.

MODbus RS485 (terminals 26, 27)

$U_N = 5 \text{ Vdc}$

Models with h = N (EtherNet/IP interface) and with h = R (PROFINET):

Power supply (terminals 1, 2):

$U_N = 20 \dots 30 \text{ Vdc}$

$P \leq 3.3 \text{ W}$.

EtherNet/IP, PROFINET (connector RJ45):

$U_N = 5 \text{ Vdc}$

All models

Service connector; only to be used if the location is known to be non-hazardous

$U_{\max} = 7.5 \text{ V}$