IECEx Certificate
of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres

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

Certificate No.:	IECEx DEK 12.0041	Issue No: 4	Certificate history:
			Issue No. 4 (2017-09-21)
Status:	**Current**		Issue No. 3 (2015-05-01)
		Page 1 of 4	Issue No. 2 (2014-06-05)
Date of Issue:	**2017-09-21**		Issue No. 1 (2013-03-01)
			Issue No. 0 (2012-06-29)

Applicant: **Endress+Hauser Flowtec AG**
Kägenstrasse 7
4153 Reinach BL 1
Switzerland

Equipment: **Flow Measuring Systems Proline Promass A/E/F/G/H/I/O/P/S/X 100 and Proline Cubemass C 100**

Optional accessory:

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

Marking:

Ex nA [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 ºC Db
or
Ex nA IIC T6 ... T1 Gc

*Approved for issue on behalf of the IECEx
Certification Body:*

R. Schuller

Position:

Certification Manager

Signature:
(for printed version)

Date:

2017-09-21

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

DEKRA Certification B.V.
Meander 1051,
6825 MJ Arnhem
The Netherlands

DEKRA

IECEx Certificate
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Manufacturer: **Endress+Hauser Flowtec AG**
Kägenstrasse 7
4153 Reinach BL 1
Switzerland

Additional Manufacturing location(s):

See Annex 2

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 electrical apparatus 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 : 2011
Edition:6.0
Explosive atmospheres - Part 0: General requirements

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

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

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

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

*This Certificate **does not** indicate compliance with electrical 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/ExTR12.0034/07

Quality Assessment Report:

DE/TUN/QAR06.0004/06

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

Mass Flow Measuring Systems Proline Promass A/E/F/G/H/I/O/P/S/X 100 and Proline Cubemass C 100 are intended to be used for mass flow measurement based on the measuring principle of controlled generated Coriolis forces.

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

SPECIFIC CONDITIONS OF USE: NO

IECEx Certificate
of Conformity

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Assessment IEC 60079-26, Ed. 3 (2014)
New generation sensor Promass E
New option using the existing sensor Promass F, for process temperatures 205 °C > Tp > 240 °C
Added and changed order code options

Annex:

221879400-IECEx DEK 12.0041_i4-Annex2.pdf

221879400-IECEx DEK 12.0041_i4.Annex1.pdf

Manufacturing locations

1. Endress+Hauser Flowtec AG
    Kägenstrasse 7
    4153 Reinach BL
    Switzerland

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

3. Endress+Hauser Flowtec AG, Division USA
    2330 Endress Place
    Greenwood, Indiana 46143
    USA

4. Endress+Hauser Flowtec (China) Co. Ltd.,
    Su-Hong-Zhong-Lu No.465,
    China-Singapore-Suzhou Industrial Park (SIP),
    215021
    P.R. China

5. Endress+Hauser Flowtec (India) Pvt. Ltd.
    M-174 MIDC, Waluj
    Aurangabad 431136
    India

6. Endress+Hauser (Brasil) Fluxômetros Ltda.
    Estrada Municipal Antonio Sesti, 600-A - Recreio Costa Verde
    CEP 13254-085 - Itatiba - SP
    Brazil

Form 124
Version 3 (2013-02)

Annex 1 to Certificate of Conformity IECEx DEK 12.0041, issue 4

Description

The Mass Flow Measuring Systems Proline Promass A/E/F/G/H/I/O/P/S/X 100 and Proline Cubemass C 100 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 nA. This safety barrier shall be mounted in a suitable enclosure, providing at least IP54.
These systems are provided with a MODbus communication interface.

The versions in type of protection 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

Proline Promass A/E/F/G/H/I/O/P/S/X 100
Proline Cubemass C 100

code 8b1dee-ffghijknnpppr+#**#,
code O8b1dee-ffghijknnppprt+#**#,
code 8b1dee - ffghijknnppprss+#**# and
code O8b1dee - ffghijknnppprsst+#**#

b	=	Type of sensor					
		A =	Promass A	E =	Promass E	F =	Promass F
		G =	Promass G	H =	Promass H	I =	Promass I
		O =	Promass O	P =	Promass P	S =	Promass S
		X =	Promass X				
		C =	Sensor (exclusively for Cubemass C 100)				

d = Generation
      B = Promass A/E (Tmed = 140°C)/F/G/H/I/O/P/S/X and Sensor C
      C = Promass E (Tmed = 205°C)/S

ee	=	Size								
		01 =	DN1	02 =	DN2	04 =	DN4	06 =	DN6	
		08 =	DN8	15 =	DN15	16 =	DN16	25 =	DN25	
		26 =	DN26	40 =	DN40	41 =	DN41	50 =	DN50	
		51 =	DN51	80 =	DN80	1H =	DN100	1F =	DN150	
		2F =	DN250	3F, 3R, 3E = DN350						

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
      BN, NF = Ex ia IIC T6...T1 Gb or
                     Ex ia IIC 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

BP	=	Ex ia IIC T6...T1 Ga/Gb
		Ex tb IIIC Txx °C Db
BQ	=	Ex ia IIC/IIB T6...T1 Ga/Gb
BR	=	Ex ia IIC T6...T1 Ga/Gb
BU, TE	=	Ex ia IIC/IIB T6...T1 Gb or
		Ex ia IIC/IIB T6...T1 Ga/Gb
BV	=	Ex ia IIC T6...T1 Gb or
		Ex ia IIC 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
84	=	Ex ia IIC T6...T1 Gb or
		Ex ia IIC T6...T1 Ga/Gb
		Ex tb IIIC Txx °C Db
BS, I5, I6	=	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 Ex nA [ia Ga] IIC T4 Gc.

Annex 1 to Certificate of Conformity IECEx DEK 12.0041, issue 4

Thermal data

Ambient temperature range -50 ℃ to +60 ℃;
process temperature range: -50 ℃ to +150 ℃;
        -40 ℃ to +140 ℃ for Promass E 100 (8E1B... and O 8E1B...)
        -50 ℃ to +240 ℃ for extended temperature version of Promass F only
        -50 ℃ to +205 ℃ for extended temperature version s

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

<u>Proline Promass A/E/F/G/H/I/P/S/O/X 100 and Proline Cubemass C 100 in type of protection Ex ia and Ex tb</u>
(with ff = BM, BN, BO, BP, BQ, BR, BU, BV, 84, 85, NF, NG, TE)

<u>Standard temperature versions</u>

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

Temperature class (max surface temperature T [2])	T6 (85 ℃)	T5 (100 ℃)	T4 (135 ℃)	T3 - T1 (200 ℃)
Max ambient temperature	35 ℃	50 ℃	60 ℃	60 ℃
Max process temperature	50 ℃	85 ℃	120 ℃	150 ℃ [3]

Enclosure j = C (G302)

Temperature class (max surface temperature T [2])	T6 (85 ℃)	T5 (100 ℃)	T4 (135 ℃)	T3 - T1 (200 ℃)
Max ambient temperature	35 ℃	45 ℃	50 ℃	50 ℃
Max process temperature	50 ℃	85 ℃	120 ℃	150 ℃ [3]

NOTE 2: Txx for group IIIC

NOTE 3: For Measuring Systems Proline Promass E 100 (b = E and d = B), the maximum process temperature is 140 ℃.

<u>Extended temperature versions</u>

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

Temperature class (max surface temperature T [4])	T6 (85 ℃)	T5 (100 ℃)	T4 (135 ℃)	T3 (200 ℃)	T2 - T1 (300 ℃)
Max ambient temperature	35 ℃	50 ℃	60 ℃	60 ℃	60 ℃
Max process temperature	50 ℃	85 ℃	120 ℃	170 ℃	2 05 ℃ [5]

Enclosure j = C (G302)

Temperature class (max surface temperature T [4])	T6 (85 ℃)	T5 (100 ℃)	T4 (135 ℃)	T3 (200 ℃)	T2 - T1 (300 ℃)
Max ambient temperature	35 ℃	45 ℃	50 ℃	50 ℃	50 ℃
Max process temperature	50 ℃	85 ℃	120 ℃	170 ℃	2 05 ℃ [5]

NOTE 4: Txx for group IIIC

NOTE 5: Max process temperature = 240 ℃ for Promas s F version with max. Tmed = 240 ℃.
For process temperature above 205 ℃, the transmitt er shall not be installed above the sensor.

Proline Promass A/E/F/G/H/I/P/S/O/X 100 and Proline Cubemass C 100 in type of protection Ex nA (with ff = BS, I5, I6)

Standard temperature versions

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

Temperature class	T6	T5	T4	T3 - T1
Max ambient temperature	35 ℃	50 ℃	60 ℃	60 ℃
Max process temperature	50 ℃	85 ℃	120 ℃	150 ℃ [6]

Enclosure j = C (G302)

Temperature class	T6	T5	T4	T3 - T1
Max ambient temperature	--	50 ℃	60 ℃	60 ℃
Max process temperature	--	85 ℃	120 ℃	150 ℃ [6]

NOTE 6: For Measuring Systems Proline Promass E 100 (b = E and d = B), the maximum process temperature is 140 ℃.

Extended temperature versions

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

Temperature class	T6	T5	T4	T3	T2 - T1
Max ambient temperature	35 ℃	50 ℃	60 ℃	60 ℃	60 ℃
Max process temperature	50 ℃	85 ℃	120 ℃	170 ℃	2 05 ℃ [7]

Enclosure j = C (G302)

Temperature class	T6	T5	T4	T3	T2 - T1
Max ambient temperature	--	50 ℃	60 ℃	60 ℃	60 ℃
Max process temperature	--	85 ℃	120 ℃	170 ℃	205 ℃ [7]

NOTE 7:   Max process temperature = 240 ℃ for Proma ss F version with max. Tmed = 240 ℃.
For process temperature above 205 ℃, the transmitt er shall not be installed above the sensor.

Electrical data

<u>Proline Promass A/E/F/H/I/P/S/O/X 100 and Proline Cubemass C 100 in type of protection Ex ia and Ex tb</u>
(with ff = BM, BN, BO, BP, BQ, BR, BU, BV, 84, 85, NF, NG, TE)

<u>Safety barrier</u>

Power supply (terminals 1, 2):
U_N = 20 …. 30 Vdc
$P \leq$ 4.8 W
U_m = 260 Vac

MODbus RS 485 (terminals 26, 27):
U_N = 5 Vdc
U_m = 260 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 V; I_o = 0.623 A (limited by fuse of 0.25 A); P_o = 2.45 W;
L_o = 92.8 µH (IIC) or 372 µH (IIB);
C_o = 0.433 µF (IIC) or 2.57 µF (IIB);
L_o/R_o = 14.6 µH/Ω (IIC) or 58.3 µH/Ω (IIB).
See NOTE 8.

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.

<u>Transmitter Promass 100 and Cubemass 100</u>

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 V; I_i = 0.623 A; P_i = 2.45 W; L_i = 0 µH; C_i = 6 nF.

Service interface (connector):
in type of protection intrinsic safety Ex ia IIC, with following maximum values:
U_o = 7.5 V; I_o = 100 mA; P_o = 160 mW; C_i = negligible; L_i = negligible.
See NOTE 8.

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

NOTE 8: All intrinsically safe wiring may be installed in explosive atmospheres requiring the use of equipment of Equipment Protection Level Ga or Da.

<u>Proline Promass A/E/F/G/H/I/P/S/O/X 100 and Proline Cubemass C 100 in type of protection Ex nA</u> (with ff = BS, I5, I6)

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

Power supply (terminals 1, 2):
U_N = 20 …. 30 Vdc
$P \leq$ 3.5 W.

Output 4 – 20 mA HART (terminals 26, 27)
Output PFS (terminals 24, 25)
$U_N \leq$ 30 Vdc.

Annex 1 to Certificate of Conformity IECEx DEK 12.0041, issue 4

Models with h = L (Profibus DP interface)

Power supply (terminals 1, 2):
U_N = 20 …. 30 Vdc
P ≤ 3.3 W.

Profibus DP (terminals 26, 27)
U_N ≤ 30 Vdc.

Models with h = M (MODbus RS485 interface)

Power supply (terminals 1, 2):
U_N = 20 …. 30 Vdc
P ≤ 2.5 W.

MODbus RS485 (terminals 26, 27)
U_N = 5 Vdc

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

Power supply (terminals 1, 2):
U_N = 20 …. 30 Vdc
P ≤ 3.3 W.

EtherNet/IP, PROFINET (connector RJ45):
U_N = 5 Vdc

All models

Service connector; only to be used if the location is known to be non-hazardous
U_{max} = 7.5 V