[1] # EU-TYPE EXAMINATION CERTIFICATE

[2] **Equipment or Protective System intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU**

[3] EU-Type Examination Certificate Number: **UL 21 ATEX 2517X Rev. 1**

[4] Product: **Mass flow meters, types CNGmass, LPGmass and Cubemass**

[5] Manufacturer: **Endress+Hauser Flowtec AG**

[6] Address: **Kägenstr. 7, 4153 Reinach, Switzerland**

[7] This product and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

[8] UL International Demko A/S, notified body number 0539 in accordance with Article 17 of the Council Directive 2014/34/EU of 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to 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 report no. **DK/ULD/ExTR21.0004/01.**

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018	**EN 60079-1: 2014**
EN IEC 60079-7: 2015 +A1:2018	**EN 60079-11:2012**
EN 60079-18:2015 + A1:2017	**EN 60079-31:2014**

[10] If the sign "**X**" is placed after the certificate number, it indicates that the product is subject to special conditions for safe 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 the certificate.

[12] The marking of the product shall include the following:

CNGmass:

II 2 G Ex db ia IIC T5…T1 Gb

II 2 G Ex db eb ia mb IIC T5…T1 Gb

II 2 D Ex tb IIIC T85 °C…T450 °C Db

LPGmass:

II 2 G Ex db ia IIC T6…T1 Gb

II 2 G Ex db eb ia mb IIC T6…T1 Gb

II 2 D Ex tb IIIC T85 °C…T450°C Db

Cubemass:

II 2 G Ex db ia IIC T6…T1 Gb

II 2 G Ex db eb ia mb IIC T6…T1 Gb

II 2 D Ex tb IIIC T85 °C…T450 °C Db

Certification Manager
Jan-Erik Storgaard

This is to certify that the sample(s) of the Product described herein ("Certified Product") has been investigated and found in compliance with the Standard(s) indicated on this Certificate, in accordance with the ATEX Product Certification Program Requirements. This certificate and test results obtained apply only to the product sample(s) submitted by the Manufacturer. UL did not select the sample(s) or determine whether the sample(s) provided were representative of other manufactured product. UL has not established Follow-Up Service or other surveillance of the product. The Manufacturer is solely and fully responsible for conformity of all product to all applicable Standards, specifications, requirements or Directives. The test results may not be used, in whole or in part, in any other document without UL's prior written approval.

Date of issue: 2021-12-17

Re-issued: 2022-01-27

Notified Body UL International Demko A/S, Borupvang 5A, 2750 Ballerup, Denmark Tel. +45 44 85 65 65, info.dk@ul.com, www.ul.com

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[13] [14]

Schedule
EU-TYPE EXAMINATION CERTIFICATE No.
UL 21 ATEX 2517X Rev. 1

[15] Description of Product

The mass flowmeters of type series LPGmass, CNGmass and Cubemass are mass flow meters providing additional information on volume flow, density and temperature of fluids. The measuring principle is based on the controlled generation of Coriolis forces. The transmitter is designed as 4-wire device with separate connections for supply and signal circuits. The CNGmass, LPGmass and Cubemass consist of three main parts, the transmitter housing, the electronics and the sensors. The enclosure of the transmitter is divided into 2 compartments, the terminal compartment relies on increased safety Ex eb and flameproof Ex db, the second compartment includes the electronic and relies on intrinsic safety Ex ia and encapsulation Ex mb. The material of construction of the G13 enclosure is aluminium alloy.

The Coriolis sensor is certified separately per Certificate of Conformity IECEx CSA 15.0003U Issue 4. The relationship between the type of devices, the sensor types and the marking is shown in the following table:

Mass Flow Meter Type	Sensor IECEx CSA 15.0003U Issue 4	Marking
CNGmass	Promass FP Nominal diameter/Size: DN8/15/25	Ex db ia IIC T5...T1 Gb Ex db eb ia mb IIC T5...T1 Gb, and Ex tb IIIC T85 °C…T450 °C Db
LPGmass	Promass E Nominal diameter/Size: DN8/15/25/40/50/80	Ex db ia IIC T6...T1 Gb resp. Ex db eb ia mb IIC T6...T1 Gb and Ex tb IIIC T85 °C…T450 °C Db
Cubemass	Sensor C Nominal diameter/Size: DN1/2/4/6	Ex db ia IIC T6...T1 Gb resp. Ex db eb ia mb IIC T6...T1 Gb and Ex tb IIIC T85 °C…T450 °C Db

Nomenclature

CNGmass 8aF bb-cdddefghiklm
- a = F: Denoting version
- bb = Nominal Diameters: 08, 15, 25
- c = Measuring Tube Material
- ddd = Process Connection
- e = Additional Test, Certificate
- f = Calibration Massflow
- g = Approval
- h = Housing: A = compact version, IP67, TYPE 4X, aluminium electronics enclosure
- i = Cable Entry: 0, A, B, C, F
- k = Power supply / Display.
- l = Custody Transfer Approval.
- m = Output / Input.

LPGmass 8aE bb-cdddefghiklm
- a = F: Denoting version
- bb = Nominal Diameters: 08, 15,25,40,50
- c = Measuring Tube Material.
- ddd = Process Connection.
- e = Additional Test, Certificate.
- f = Calibration.
- g = Approval
- h = Housing: A=compact version, IP67, TYPE 4X, aluminium electronics enclosure
- i = Cable Entry: 0, A, B, C, F
- k = Power supply / Display.
- l = Custody Transfer Approval.
- m = Output / Input.

This certificate may only be reproduced in its entirety and without any change, schedule included.

[13] **Schedule**

[14] **EU-TYPE EXAMINATION CERTIFICATE No.**

UL 21 ATEX 2517X Rev. 1

Cubemass 8aM bb-ccdefghijklm +nn
a = C: Denoting Coriolis Sensors Series Type: Sensor C
bb= Nominal Diameter: 01, 02, 04, 06
cc = Approval
d = Output / Input: any single number or letter (coding a non-intrinsically safe circuit)
e = Power Supply.
f = Display / Operation.
g = Operation language.
h = Housing: A=compact version, IP67, NEMA TYPE 4X, aluminium electronics enclosure
i = Cable entry: 0, A, B, C, F
j = Measuring tube material.
k = Process Connection.
l = Secondary Containment.
m = Calibration.
nn = Option in two digits (none, one or more) series of any combination of double number and/or letter (It can be "+",+" alone or none)

Temperature range
The ambient temperature range is -40 °C to +60 °C

Electrical data
U = 20…28V a.c. and / or U = 10..30 V d.c. 4VA/3.2W

Intrinsically safe specifications:
U_m : 253 V

Routine tests
Refer to EN 60079-7, clause 7.1, dielectric strength test.
Final assembly equipment:

- Between Primary side, pin 1 and 2 of connection terminal are connected and Earth, GND of secondary side and earth connected ≥ 500Vac for at least 60 seconds.
- Between Primary side, pin 1 and 2 of connection terminals are connected, and IO side, pin 22,23,24,25,26 and 27 of connection terminal are connected ≥ 500Vac for at least 60 seconds.
- Between IO side, pin 22,23,24,25,26 and 27 of connection terminal are connected, and Earth, GND of secondary side and earth are connected ≥ 500Vac for at least 60 seconds.

Refer to EN 60079-11, clause 11.2, transformers test.

- Between Primary and Secondary ≥ 1500Vrms for at least 60 seconds or alternatively ≥ 1800Vrms for at least 1 second.

Refer to EN 60079-18. Clause 9.1, visual inspection.

- Each piece of "m" equipment shall be subjected to a visual inspection. No damage shall be evident, such as cracks in the compound, exposure of the encapsulated parts, flaking, inadmissible shrinkage, swelling, decomposition, failure of adhesion (separation of any adhered parts) or softening.

Refer to EN 60079-18. Clause 9.2, dielectric strength test.

- Between Primary, terminals 1 and 2, and IO side, terminals 22,23,24,25,26 and 27 ≥ 500Vac or ≥ 700Vdc at least 1 second or alternatively ≥ 1.2 times the test voltage for at least 100 ms.
- Between Primary, terminals 1 and 2, and Earth ≥ 500Vac or ≥ 700Vdc at least 1 second or alternatively ≥ 1.2 times the test voltage for at least 100 ms.
- Between IO side, terminals 22,23,24,25,26 and 27 and Earth ≥ 500Vac or ≥ 700Vdc at least 1 second or alternatively ≥ 1.2 times the test voltage for at least 100 ms.

[16] Descriptive Documents
The scheduled documents are listed in the report no. provided under item no. [8] on page 1 of this EU-Type Examination Certificate.

This certificate may only be reproduced in its entirety and without any change, schedule included.

[13] **Schedule**

[14] **EU-TYPE EXAMINATION CERTIFICATE No.**

UL 21 ATEX 2517X Rev. 1

[17] Specific Conditions of Use:

- For terminals No. 22 to No. 27, only devices with Um ≤ 253 V and Im ≤ 1 A are allowed to be connected.
- The relationship between flowmeter type, ambient temperature, process temperature and temperature class is as follows:

Temperature table	max. medium temperature [°C]					
	T6 (85°C) 2)	T5 (100°C) 2)	T4 (135°C) 2)	T3 (200°C) 2)	T2 (300°C) 2)	T1 (450°C) 2)
Ta = 45°C:						
LPGmass DN08/15	45	95	125	125	125	125
Ta = 50°C:						
CNGmass DN08/15/25	---	95	125	125	125	125
LPGmass DN08/15	---	95	125	125	125	125
LPGmass DN25/40/50	50	95	125	125	125	125
Cubemass DN1/2/4	50	95	130	150	200	200
Ta = 60°C:						
CNGmass DN08/15	---	90	125	125	125	125
CNGmass DN25	---	95	125	125	125	125
LPGmass DN08/15/25/40	---	95	125	125	125	125
LPGmass DN50	60	95	125	125	125	125
Cubemass DN1/2/4	---	95	130	150	200	200
Cubemass DN6	60	100	130	150	200	200

- 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
- For installation the special requirements of EN 60079-14 must be observed.

[18] Essential Health and Safety Requirements

The Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9.

Additional information

The Mass Flowmeter , types CNGmass, LPGmass and Cubemass has in addition passed the tests for Ingress Protection to IP 54 in accordance with EN60529:1991+A1:2000+A2:2013.

The trademark Endress+Hauser People for Process Automation will be used as the company identifier on the marking label.

The manufacturer shall inform the notified body concerning all modifications to the technical documentation as described in Annex III to Directive 2014/34/EU of the European Parliament and the Council of 26 February 2014.

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