



Member of the FM Global Group

FM Approvals
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CERTIFICATE OF COMPLIANCE

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

CNGmass 8aF bb-cdddefghijkl+##*. Compact Mass Flowmeter.

XP-IS / I / 1 / ABCD / T* Ta = 60°C — FES0122; Type 4X;

I / 1 / AEx d ia IIC T* Ta = 60°C — FES0122; Type 4X;

DIP-IS / II, III / 1 / EFG / T* Ta = 60°C — FES0122; Type 4X;

*Reference control drawing for temperature class

a = Version: any single number or letter.

bb = Nominal Diameter: 08, 15, or 25.

c = Measuring Tube Material: any single number or letter
(representing stainless steel or alloy C-22).

ddd = Process Connection: – any single number or letter.

e = Additional Test, Certification: – any single number or letter.

f = Calibration Massflow, Density: – any single number or letter.

g = Approval: M, N or 8.

h = Housing: A.

i = Cable Entry: 0, A, or B.

j = Power supply / Display: 1.

k = Custody Transfer Approval: – any single number or letter.

l = Output / Input: N.

** = Option in two digits (none, two or multiple of two digits): any
combination of number or letter.

+, # = Signs used as indicator for optional abbreviation of extended
order code.

CNGmass 8aF bb-cdddefghijkl+##. Compact Mass Flowmeter.

NI / I / 2 / ABCD / T* Ta = 60°C — FES0153; Type 4X;
 DIP / II, III / 1 / EFG / T* Ta = 60°C — FES0153; Type 4X;

*Reference control drawing for temperature class

- a = Version: any single number or letter.
- bb = Nominal Diameter: 08, 15, or 25.
- c = Measuring Tube Material: any single number or letter (representing stainless steel or alloy C-22).
- ddd = Process Connection: – any single number or letter.
- e = Additional Test, Certification: - any single number or letter.
- f = Calibration Massflow, Density: – any single number or letter.
- g = Approval: R.
- h = Housing: A.
- i = Cable Entry – See Control Drawing FES0153.
- j = Power supply / Display: 1.
- k = Custody Transfer Approval: – any single number or letter.
- l = Output / Input: N.
- ** = Option in two digits (none, two or multiple of two digits): any combination of number or letter.
- +, # = Signs used as indicator for optional abbreviation of extended order code.

LPGmass 8aE bb-cdddefghijkl+##. Compact Mass Flowmeter.

XP-IS / I / 1 / ABCD / T* Ta = 60°C — FES0122; Type 4X;
 I / 1 / AEx d ia IIC T* Ta = 60°C — FES0122; Type 4X;
 DIP-IS / II, III / 1 / EFG / T* Ta = 60°C — FES0122; Type 4X;

*Reference control drawing for temperature class

- a = Version: any single number or letter.
- bb = Nominal Diameter: 08, 15, 25, 40, or 50.
- c = Measuring Tube Material: any single number or letter (representing stainless steel or alloy C-22).
- ddd = Process Connection: – any single number or letter.
- e = Additional Test, Certification: - any single number or letter.
- f = Calibration Massflow, Density: – any single number or letter.
- g = Approval: M, N or 8.
- h = Housing: A.
- i = Cable Entry: 0, A, or B.
- j = Power supply / Display: 1.
- k = Custody Transfer Approval: – any single number or letter.
- l = Output / Input: N
- ** = Option in two digits (none, two or multiple of two digits): any combination of number or letter.
- +, # = Signs used as indicator for optional abbreviation of extended order code.

LPGmass 8aE bb-cdddefghijkl+##. Compact Mass Flowmeter.

NI / I / 2 / ABCD / T* Ta = 60°C — FES0153; Type 4X;
 DIP / II, III / 1 / EFG / T* Ta = 60°C — FES0153; Type 4X;

*Reference control drawing for temperature class

- a = Version: any single number or letter.
- bb = Nominal Diameter: 08, 15, 25, 40, or 50.
- c = Measuring Tube Material: any single number or letter (representing stainless steel or alloy C-22).
- ddd = Process Connection: – any single number or letter.
- e = Additional Test, Certification: - any single number or letter.

- f = Calibration Massflow, Density: – any single number or letter.
- g = Approval: R.
- h = Housing: A.
- i = Cable Entry: See Control Drawing FES0153.
- j = Power supply / Display: 1.
- k = Custody Transfer Approval: – any single number or letter.
- l = Output / Input: N
- ** = Option in two digits (none, two or multiple of two digits): any combination of number or letter.
- +, # = Signs used as indicator for optional abbreviation of extended order code.

Cubemass 8Ca bb-ccdefghijklm+###. Compact Mass Flowmeter.

XP-IS / I / 1 / ABCD / T* Ta = 60°C — FES0122; Type 4X;
 I / 1 / AEx dia IIC T* Ta = 60°C – FES0122; Type 4X
 DIP-IS / II, III / 1 / EFG / T* Ta = 60°C — FES0122; Type 4X;
 *Reference control drawing for temperature class

- a = Version: any single number or letter.
- bb = Nominal Diameter: 01, 02, 04 or 06.
- cc = Approval: C3 or 84
- d = Output / Input: B.
- e = Power supply: B.
- f = Display / Operation: any single number or letter.
- g = Operation Language: any single number or letter
- h = Housing: A or B.
- i = Cable Entry: 0, A or B.
- j = Measuring tube material: any single number or letter (representing stainless steel or alloy C-22).
- k = Process connection: any single number or letter.
- l = Secondary Containment: any single number or letter.
- m = Calibration: any single number or letter
- ** = Option in two digits (none, two or multiple of two digits): any combination of number or letter.
- +, # = Signs used as indicator for optional abbreviation of extended order code.

Cubemass 8Ca bb-ccdefghijklm+###. Compact Mass Flowmeter.

NI / I / 2 / ABCD / T* Ta = 60°C — FES0153; Type 4X;
 DIP / II, III / 1 / EFG / T* Ta = 60°C — FES0153; Type 4X;
 *Reference control drawing for temperature class

- a = Version: any single number or letter.
- bb = Nominal Diameter: 01, 02, 04 or 06.
- cc = Approval: C4
- d = Output / Input: B.
- e = Power supply: B.
- f = Display / Operation: any single number or letter.
- g = Operation Language: any single number or letter
- h = Housing: A or B.
- i = Cable Entry: see Control Drawing FES0153.
- j = Measuring tube material: any single number or letter (representing stainless steel or alloy C-22).
- k = Process connection: any single number or letter.
- l = Secondary Containment: any single number or letter.
- m = Calibration: any single number or letter
- ** = Option in two digits (none, two or multiple of two digits): any combination of number or letter.

+, # = Signs used as indicator for optional abbreviation of extended order code.

Equipment Ratings:

CNGmass series, LPGmass series and Cubemass series Mass Flowmeters as Explosionproof for use in Class I, Division 1, Group A, B, C and D; and Dust-Ignitionproof for use in Class II, III, Division 1, Group E, F and G, in accordance with control drawing FES0122; and Nonincendive for use in Class I, Division 2, Groups A, B, C and D, in accordance with control drawing FES0153, for indoor/ outdoor hazardous (classified) locations, utilizing Type 4X enclosure. Reference the control drawing for products temperature class.

And

CNGmass series, LPGmass series and Cubemass series Mass Flowmeters as Class I, Zone 1, AEx d ia Group IIC, IIB, & IIA, utilizing Type 4X enclosure. The installation of the products should be in accordance with control drawing FES0122. Reference the control drawing for products temperature class.

Marked as "Dual Seal" in accordance with ANSI/ISA-12.27.01.

FM Approved for:

Endress + Hauser Flowtec AG
Kägenstraße 7
CH-4153 Reinach BL 1
Switzerland



This certifies that the equipment described has been found to comply with the following Approval Standards and other documents:

Class 3600	1998
Class 3610	2010
Class 3611	2004
Class 3615	1989
Class 3810	2005
NEMA 250	2003
ANSI/ISA 60079-0	2005
ANSI/ISA 60079-1	2005
ANSI/ISA 60079-11	2009
ANSI/ISA-12.27.01	2003

Original Project ID: 3027806

Approval Granted: March 8, 2007

Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
071113	March 3, 2008		
090904	October 22, 2009		
3041673	April 21, 2011		
3043872	September 27, 2011		

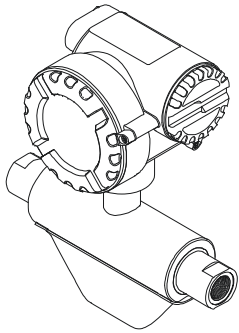
FM Approvals LLC

J. E. Marquedant
Group Manager, Electrical

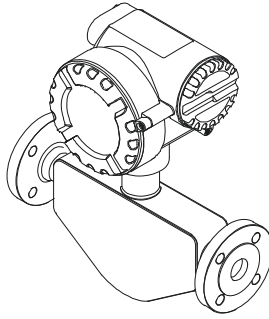
27 September 2011
Date

Hazardous Locations

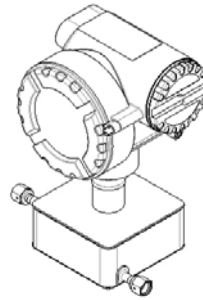
Class I Division 1 Groups ABCD or Class I Zone 1 IIC,
Class II Division 1 Groups EFG and Class III



CNGmass



LPGmass



Cubemass

Temperature table	max. medium temperature [°C / °F]					
	T6	T5	T4	T3	T2	T1
Ta = 45°C: LPGmass DN08/15	45 / 113	95 / 203	125 / 257	125 / 257	125 / 257	125 / 257
Ta = 50°C: CNGmass DN08/15/25	---	95 / 203	125 / 257	125 / 257	125 / 257	125 / 257
LPGmass DN08/15	---	95 / 203	125 / 257	125 / 257	125 / 257	125 / 257
LPGmass DN25/40/50	50 / 122	95 / 203	125 / 257	125 / 257	125 / 257	125 / 257
Cubemass DN1/2/4	50 / 122	95 / 203	130 / 266 ^{*)}	150 / 302 ^{*)}	200 / 392 ^{*)}	200 / 392 ^{*)}
Ta = 60°C: CNGmass DN08/15	---	90 / 194	125 / 257	125 / 257	125 / 257	125 / 257
CNGmass DN25	---	95 / 203	125 / 257	125 / 257	125 / 257	125 / 257
LPGmass DN08/15/25/40	---	95 / 203	125 / 257	125 / 257	125 / 257	125 / 257
LPGmass DN50	60 / 140	95 / 203	125 / 257	125 / 257	125 / 257	125 / 257
Cubemass DN1/2/4	---	95 / 203	130 / 266 ^{*)}	150 / 302 ^{*)}	200 / 392 ^{*)}	200 / 392 ^{*)}
Cubemass DN6	60 / 140	100 / 212	130 / 266 ^{*)}	150 / 302 ^{*)}	200 / 392 ^{*)}	200 / 392 ^{*)}

*) Medium temperatures above 125°C / 257°F only available for Cubemass 8C***-*****A****#+##**#

LPGmass : Tm min. = -40°C / -40 °F Ta min. = -40°C / -40 °F
 CNGmass: Tm min. = -50°C / -58 °F Ta min. = -40°C / -40 °F
 Cubemass: Tm min. = -50°C / -58 °F Ta min. = -40°C / -40 °F

Notes:

1. Install all per National Electrical Code (NEC) ANSI/NFPA 70.
2. Control room equipment shall not use or generate more than 250 V rms.
3. Caution: Use supply wires suitable for 5 °C above ambient temperature, but at least for 70 °C / 158°F.
4. Class II Group G: The surface temperature of the apparatus cannot exceed 165 °C / 329°F.
5. Transmitter enclosure explosion proof for use in Cl. I Div. 1 Groups A, B, C, D and dust-ignitionproof for Cl. II Div. 1 Groups E, F, G, Class III.
6. Transmitter enclosure is factory sealed for use in Cl. I Div. 1 Groups A, B, C, D, conduit seal not required.
7. CNGmass and Cubemass are rated as Dual Seal Device in accordance with ANSI/ISA-12.27.01-2003. LPGmass is a Dual Seal Device if the optional rupture disk is present.

WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.

Aenderungen:	A	27.09.07/BDA	F	Alle gesetzlichen Urheberrechte vorbehalten. Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch dritten Personen und Konkurrenzfirmen zugänglich gemacht werden.	Ersteller: FES / ID 1243 FILE: M:\ZEICHNUNG\FES0122B\FES0122B_110525.doc
	B	25.05.11/SCHK	G		
	C		H		
	D		J		
	E		K		

FM Control Drawing Div. 1 / Zone 1

Compact Version
CNGmass, LPGmass, Cubemass

Masstab	Gezeichnet	24.07.2006	SCHK
	Geprüft		
	Ex-geprüft	25.05.2011	SCHK
	Gesehen		



Flowtec AG, Kägenstrasse 7, CH-4153 Reinach BL1, Postfach

FES0122B