

FM Approvals
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CERTIFICATE OF COMPLIANCE

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

PROMAG 23bc-defghNmnopr. Magnetic Flowmeter.

IS-AIS / I,II,III / 1 / ABCDEFG / T6 to T3C, Ta = 40°C to 60°C, Tmed = up to 150°C

I / 0 / AEx ia [ia] / IIC / T6 to T3C, Ta = 40°C to 60°C, Tmed = up to 150°C; Entity - FES0037/15.02.00

Terminals 1 (+) and 2 (-):

$V_{Max}(U_i) = 30\text{ V}$, $I_{Max}(I_i) = 150\text{ mA}$, $P_i = 0.81\text{ W}$, $C_i = 25\text{ nF}$, $L_i = 0$;

Terminals 3 (+) and 4 (-):

$V_{Max}(U_i) = 30\text{ V}$, $I_{Max}(I_i) = 250\text{ mA}$, $P_i = 1\text{ W}$, $C_i = 0$, $L_i = 0$;

NI / I / 2 / ABCD / T6 to T3C, Ta = 40°C to 60°C, Tmed = up to 150°C;

NI / I / 2 / IIC / T6 to T3C, Ta = 40°C to 60°C, Tmed = up to 150°C

DIP / II,III / 1 / EFG / T6 to T3C, Ta = 40°C to 60°C, Tmed = up to 150°C; Type 4X

b = Type of sensor P or H.

c = Size: any two digit number/letter combination (representing a sensor size up to 200 mm/8").

d = Liner, application range: any single number or letter.

e = Process connection material: any single number or letter.

f = Electrodes equipped, material: any single number or letter.

g = Calibration: any single number or letter.

h = Attestation: any single number or letter.

m = Protection version: any single number or letter.

n = Cable for separate version: any single number or letter.

o = Cable entry: 1, 2, 3, A, B, C, E, J, K, L, M.

p = Display, supply, control: any single number or letter.

r = Software: any single number or letter.

s = Outputs: W, A.

PROMAG 23bc-defghRmnoprs. Magnetic Flowmeter.

NI-ANI / I / 2 / ABCD / T6 to T3C, Ta = 40°C to 60°C, Tmed = up to +150°C

NI-ANI / I / 2 / IIC / T6 to T3C, Ta = 40°C to 60°C, Tmed = up to 150°C

DIP / II,III / 1 / EFG / T6 to T3C, Ta = 40°C to 60°C, Tmed = up to +150°C - FES 0039/15.02.00; Type 4X

b = Type of sensor P or H.

c = Size: any two digit number/letter combination.

d = Liner, application range: any single number or letter.

e = Process connection material: any single number or letter.

f = Electrodes equipped, material: any single number or letter.

g = Calibration: any single number or letter.

h = Attestation: any single number or letter.

m = Protection version: any single number or letter.

n = Cable for separate version: any single number or letter.

o = Cable entry: 2, B.

p = Display, supply, control: any single number or letter.

r = Software: any single number or letter.

s = Outputs: W, A.

Equipment Ratings:

PROMAG 23bc-defghNmnoprs. Magnetic Flowmeter

Intrinsically Safe apparatus with intrinsically safe sensor electrodes for Class I, II and III division 1, Groups A, B, C and D and Class I, Zone 0, Group IIC when installed in accordance with entity requirements and Control Drawing FES 0037; Dust-ignition proof for Class II and III, Division I, Groups E, F and G; Nonincendive for Class I, Division 2, Groups A, B, C and D and Class I, Zone 2, Group IIC hazardous (classified) outdoor (Type 4X) locations.

PROMAG 23bc-defghRmnoprs:

Nonincendive apparatus with nonincendive sensor electrodes for Class I, Division 2, Groups A, B, C and D and Class I, Zone 2, Group IIC; Dust-ignition proof for Class II and III, Division I, Groups E, F and G hazardous (classified) outdoor (Type 4X) locations when installed in accordance with Control Drawing FES 0039.

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	1999
Class 3810	1989
Including Supplement #1	1995
NEMA 250	1991
ANSI/ISA 60079-0	2009
ANSI/ISA 60079-11	2009

Original Project ID: 3006330

Approval Granted: August 14, 2000

Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
3041673	April 21, 2011		

FM Approvals LLC



J. E. Marquedant
Group Manager, Electrical

21 April 2011
Date

NON HAZARDOUS LOCATION

Terminals 1 and 2:
Any Apparatus with
supply voltage: max. 30 V
signal current : 4/ 20 mA
(max. 25 mA)

Terminals 1 and 2:
Any Apparatus with
supply voltage: max. 30 V
signal current : 4/ 20 mA
(max. 25 mA)

Terminals 3 and 4:
Any Apparatus with
supply voltage: max. 30 V
signal current : 250 mA
max power: 1 W

Functional Rating

These ratings do not supersede Hazardous Location values.

Terminals 1 and 2 (Hart, current output)

$U_{nom} = 12...30V$, $I_{nom} = 4 ... 20$ mA (max.25 mA)

Terminals 3 and 4 (Pulse, output)

$U_{nom} = 12...30V$, $I_{nom} = 10...250$ mA

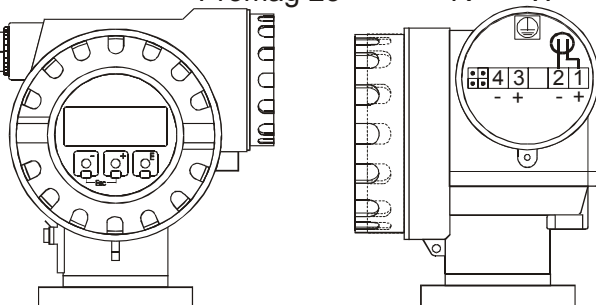
HAZARDOUS (CLASSIFIED) LOCATION

Class I, Zone 2 IIC

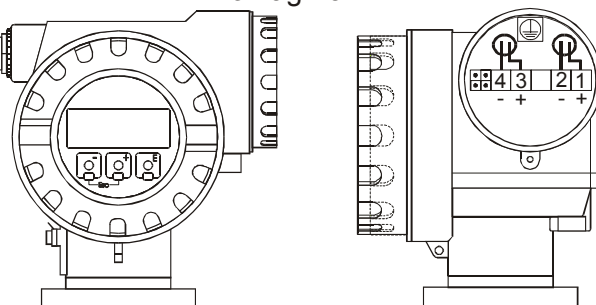
Class I, Division 2, Groups A, B, C, D

Class II, III, Division 1, Groups E, F, G

Promag 23*** - *****R*****W



Promag 23*** - *****R*****A



Notes:

NONINCENDIVE Cl.I, Div.2, Gps ABCD and DIP Cl. II, III, Div.1 Gps EFG HAZARDOUS LOCATION INSTALLATION

- 1) Installation of Transmitter circuit wiring according to NEC using threaded conduit or other wiring methods in accordance with articles 500 to 510.
For T-code see table.

PROMAG 23H** - *****R***** / PROMAG 23P** - A*****R***** / PROMAG 23P** - B*****R***** (PFA – Liner)				
Temperature class	T6	T5	T4	T3C
$T_{ambient}$	40 °C	60 °C	60 °C	60 °C
T_{Medium}	80 °C	95 °C	130 °C	150 °C ¹⁾

¹⁾ 180 °C for PROMAG 23*** - B*****R***** (Class I, Div. 2, Gps A,B,C,D only)

PROMAG 23P** - E*****R***** (PTFE – Liner)			
Temperature class	T6	T5	T4
$T_{ambient}$	40 °C	60 °C	60 °C
T_{Medium}	80 °C	95 °C	130 °C

- 2) **Nonincendive field wiring installation**

The Nonincendive Field Wiring Circuit Concept allows interconnection of nonincendive field wiring apparatus with associated nonincendive field wiring apparatus or associated apparatus not specifically examined in combination as a system using any of the wiring methods permitted for unclassified locations, when:

$$V_{max} \geq V_{oc} \text{ or } V_t, C_a \geq C_i + C_{cable}, L_a \geq L_i + L_{cable}$$

Transmitter Parameters are as follows:

HART current output, Terminal 1 and 2 (current controlled circuit)

V_{max}	I_{max}	C_i	L_i
30V	see note 3	5 nF	0

Pulse Output, Terminal 3 and 4 (voltage controlled circuit)

V_{max}	I_{max}	C_i	L_i
30V	see note 3	0	0

- 3) For these current and voltage controlled circuits, the parameter I_{max} is not required and need not to be aligned with parameter I_{sc} and I_i of the associated non-incendive field wiring or associated apparatus.
- 4) A dust tight seal must be used for conduit entry when the transmitter is used in a Class II or Class III Location.

Änderungen:

A	17.11.00 UD	F
B	19.05.04/PAM	G
C		H
D		J
E		K

Alle gesetzlichen Urheberrechte vorbehalten.

Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch dritten Personen und Konkurrenzfirmen zugänglich gemacht werden.

Mat.-Nr.: 71040720

Ersatz für:

Ersteller: FES/UD

File: M:\ZEICHNUNG\...000215C.DOC ID 1035

FM CONTROL DRAWING PROMAG 23

2- and 4-WIRE VERSION

Class I, Div. 2 and Class II, III, Div. 1

Massstab

Gezeichnet	15.02.00	UD
Geprüft		
Ex-geprüft	19.05.04	PAM
Gesehen		

FES0039 B



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

- 5) **WARNING: EXPLOSION HAZARD** – Do not disconnect equipment unless the power has been switched off or the area is known to be Non-Hazardous. (not mandatory for nonincendive field wiring installation)
- 6) **WARNING: EXPLOSION HAZARD** – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.
- 7) Sensor electrodes nonincendive for Cl.I, Div.2, Gp ABCD; Cl.I, Zone2 IIC
- 8) **CAUTION:** Use only supply wires suitable for 5°C above T_a ($T_{Medium} \leq 100$ °C) or suitable for 80 °C ($T_{Medium} > 100$ °C).