

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

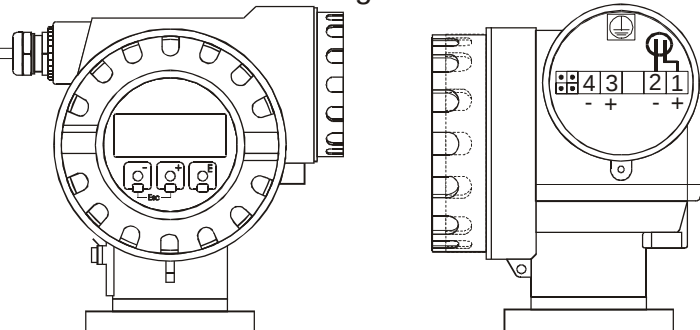
NON HAZARDOUS LOCATION

HAZARDOUS (CLASSIFIED) LOCATION

Class I, Zone 0 IIC
Class I,II,III, Division 1,
Groups A, B, C, D, E, F, G

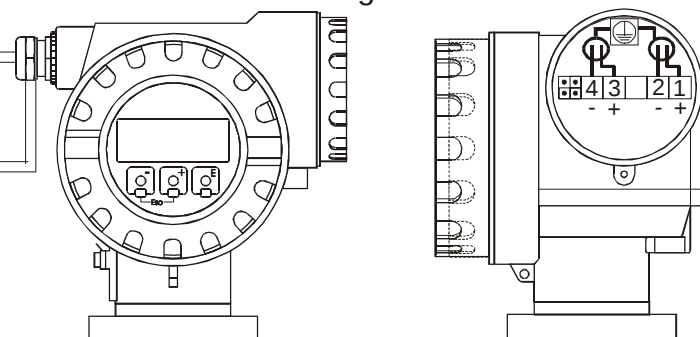
Any FMRC Approved Barrier
or Associated Apparatus

Promag 23*** -*****N*****W



Any FMRC Approved Barrier
or Associated Apparatus

Promag 23*** -*****N*****A



Any FMRC Approved Barrier
or Associated Apparatus

NOTES: INTRINSICALLY SAFE INSTALLATION CL. I, DIV. 1, GPS ABCD

- 1) Installation must be in accordance with NEC NFPA 70 and ANSI/ISA RP 12.6.
- 2) Control room equipment may not use or generate over 250 Vrms.
- 3) Use entity approved safety barrier or other approved associated equipment that satisfies the following conditions:
 $V_{oc}, V_t \text{ or } U_o \leq V_{max} \text{ or } U_i \text{ and } I_{sc}, I_t \text{ or } I_o \leq I_{max} \text{ or } I_i \text{ and } P_o \text{ or } P_{max} \leq P_i \text{ and } C_a \geq C_i + C_{cable} \text{ and } L_a \geq L_i + L_{cable}$
- 4) **WARNING:** SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.
- 5) Sensor electrodes are intrinsically safe for Cl. I, Div.1, Gp ABCD; Cl.I, Zone 0 IIC.
- 6) Cable for different I.S. circuits have to be separated with grounded shields.
- 7) Caution: Use only supply wires suitable for 5 °C above Ta ($T_{Medium} \leq 100 \text{ °C}$) or suitable for 80 °C ($T_{Medium} > 100 \text{ °C}$).

PROMAG 23 H**-*****N***** / PROMAG 23 P**-A*****N***** (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

PROMAG 23 P**-E*****N***** (PTFE – Liner)

Temperature class	T6	T5	T4
$T_{ambient}$	40 °C	60 °C	60 °C
T_{Medium}	80 °C	95 °C	130 °C

Entity parameters:

Promag 23* - *****N*****W** Terminals 1 (+) and 2 (-) / Hart, 4 ... 20 mA

$V_{max}, U_i = 30 \text{ V}$ $I_{max}, I_i = 150 \text{ mA}$ $P_i = 0.81 \text{ W}$
 $C_i \leq 25 \text{ nF}$ $L_i = \text{negligible}$

Promag 23* - *****N*****A** Terminals 1 (+) and 2 (-) / Hart, 4 ... 20 mA

$V_{max}, U_i = 30 \text{ V}$ $I_{max}, I_i = 150 \text{ mA}$ $P_i = 0.81 \text{ W}$
 $C_i \leq 25 \text{ nF}$ $L_i = \text{negligible}$

Terminals 3 (+) and 4 (-) / Frequency output

$V_{max}, U_i = 30 \text{ V}$ $I_{max}, I_i = 250 \text{ mA}$ $P_i = 1 \text{ W}$
 $C_i = \text{negligible}$ $L_i = \text{negligible}$

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

- 8) Install per National Electrical Code (NEC ANSI/NFPA 70) using threaded conduit. Intrinsic safety barrier not required. . For T-code see table.
Terminal 1 and 2
Supply voltage: 13.9 ... 30 VDC Signal current: 4 ... 20 mA (max. 25 mA)
Terminal 3 and 4
Pulse Output: Supply voltage 5 ... 30 V, max. 250 mA, max 1 W
- 9) A dust tight seal must be used for conduit entry when the transmitter is used in a Class II or Class III Location.
- 10) **WARNING:** EXPLOSION HAZARD – Do not disconnect equipment unless the power has been switched off or the area is known to be Non-Hazardous.
- 11) **WARNING:** EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.
- 12) Caution: Use only supply wires suitable for 5 °C above Ta ($T_{Medium} \leq 100 \text{ °C}$) or suitable for 80 °C ($T_{Medium} > 100 \text{ °C}$).

Aenderungen:

A		F	
B		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.: 71040718

Ersatz für:
Ersteller: FES/UD

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

FM CONTROL DRAWING PROMAG 23 2- and 4-WIRE VERSION ENTITY CONCEPT Class I, Division 1



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

Massstab	Gezeichnet	15.02.00	UD
	Geprüft		
	Ex-geprüft	8.05.00	
	Gesehen		

FES0037