

FM Approvals
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CERTIFICATE OF COMPLIANCE

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

I. Explosionproof Version (Division 1)

PROMAG 5abc-defghNklmnop+*#. Magnetic Flowmeter**

XP-IS-DIP/I,II,III/1/ABCDEFGH/T5...T1; $-40^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$; $T_{\text{med}} \leq +150^{\circ}\text{C}$ – FES0023; Entity, FISCO;
Type 4X; IP66/67

XP-IS/II/1/IIIC/T5...T1; $-40^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$; $T_{\text{med}} \leq +150^{\circ}\text{C}$ – FES0023; Entity, FISCO; Type 4X; IP66/67

Entity Parameters:

I/O option p = S & R, Current Output:

$V_{\text{oc}} = 21.8 \text{ V}$, $I_{\text{sc}} = 90 \text{ mA}$, $P_{\text{o}} = 0.49 \text{ W}$, $C_{\text{a}} = 150 \text{ nF}$, $L_{\text{a}} = 4.1 \text{ mH}$;

$V_{\text{max}} = 30 \text{ V}$, $I_{\text{max}} = 10 \text{ mA}$, $P_{\text{i}} = 0.3 \text{ W}$, $C_{\text{i}} = 6 \text{ nF}$, $L_{\text{i}} = 0$

I/O Option p = S or T, Passive Intrinsically Safe Circuit:

$V_{\text{max}} = 30 \text{ V}$, $I_{\text{max}} = 300 \text{ mA}$, $P_{\text{i}} = 0.6 \text{ W}$, $C_{\text{i}} = 6 \text{ nF}$, $L_{\text{i}} = 0$

I/O option p = T & U, Passive Current Output:

$V_{\text{max}} = 30 \text{ V}$, $I_{\text{max}} = 100 \text{ mA}$, $P_{\text{i}} = 1.25 \text{ W}$, $C_{\text{i}} = 6 \text{ nF}$, $L_{\text{i}} = 0$

I/O Options p = F or G, (Entity, FISCO) Passive Intrinsically Safe Circuit:

$V_{\text{max}} = 30 \text{ V}$, $I_{\text{max}} = 600 \text{ mA}$, $P_{\text{i}} = 8.5 \text{ W}$, $C_{\text{i}} = 5 \text{ nF}$, $L_{\text{i}} = 10 \mu\text{H}$

- a = Type of Electronic: 0, 1 or 3.
- b = Type of Sensor: E, L, P, W or X.
- c = Size: any double number or letter (up to the size of 300 mm).
- d = Lining Material: any single number or letter.
- e = Process Connection: any single number or letter (up to the pressure of 431 bar).
- f = Material of Electrodes: any single number or letter.
- g = Calibration: any single number or letter.
- h = Approval of Body Material: any single number or letter.
- k = Version; A (Compact, Type 4X), P (Compact, Type 4X), U (Compact version, Type 4X, stainless steel), V (Compact version, Type 4X, stainless steel, -40°C), or 6 (Compact, Type 4X, -40°C).
- l = Cable Length between Transmitter and Sensor: 0.
- m = Cable Gland: B or X.
- n = Display/Power Supply: A, B, C, D, E, F, G, H, P, Q, R, S, X, 0, 1, 2, 3, 4, 5, 7 or 8.
- o = Software: any single number or letter.
- p = I/O: A, B, C, D, F, G, H, J, K, L, M, N, Q, P, R, S, T, U, V, W, 1, 2, 3, 4, 5 or 7.

- ** = Option in two digits (none, two or multiple of two digits); any combination of number or letter
 +, # = Signs used as indicator for optional abbreviation

PROMAG 5abc-defghNklmnop+###. Magnetic Flowmeter

XP-IS-DIP/I,II,III/1/ABCDEFGH/T5...T1; $-40^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$; $T_{med} \leq +150^{\circ}\text{C}$ – FES0023; Entity, FISCO; Type 4X; IP66/67

XP-IS/II/1/IIC/T5...T1; $-40^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$; $T_{med} \leq +150^{\circ}\text{C}$ – FES0023; Entity, FISCO; Type 4X; IP66/67

Entity Parameters:

I/O option p = S & R, Current Output:

$V_{oc} = 21.8\text{ V}$, $I_{sc} = 90\text{ mA}$, $P_o = 0.49\text{ W}$, $C_a = 150\text{ nF}$, $L_a = 4.1\text{ mH}$;

$V_{max} = 30\text{ V}$, $I_{max} = 10\text{ mA}$, $P_i = 0.3\text{ W}$, $C_i = 6\text{ nF}$, $L_i = 0$

I/O Option p = S or T, Passive Intrinsically Safe Circuit:

$V_{max} = 30\text{ V}$, $I_{max} = 300\text{ mA}$, $P_i = 0.6\text{ W}$, $C_i = 6\text{ nF}$, $L_i = 0$

I/O option p = T & U, Passive Current Output:

$V_{max} = 30\text{ V}$, $I_{max} = 100\text{ mA}$, $P_i = 1.25\text{ W}$, $C_i = 6\text{ nF}$, $L_i = 0$

I/O Options p = F or G, (Entity, FISCO) Passive Intrinsically Safe Circuit:

$V_{max} = 30\text{ V}$, $I_{max} = 600\text{ mA}$, $P_i = 8.5\text{ W}$, $C_i = 5\text{ nF}$, $L_i = 10\text{ }\mu\text{H}$

- a = Type of Electronic: 0, 1 or 3.
 b = Type of Sensor: H or X.
 c = Size: any double number or letter (up to the size of 150 mm).
 d = Process Connection: any single number or letter (up to the pressure of 43 bar).
 e = Gasket: any single number or letter.
 f = Material of Electrodes: any single number or letter.
 g = Calibration: any single number or letter.
 h = Approval of Body Material: any single number or letter.
 k = Version; A (Compact, Type 4X), P (Compact, Type 4X), U (Compact version, Type 4X, stainless steel), V (Compact version, Type 4X, stainless steel, -40°C), or 6 (Compact, Type 4X, -40°C).
 l = Cable Length between Transmitter and Sensor: 0.
 m = Cable Gland: B or X.
 n = Display/Power Supply: A, B, C, D, E, F, G, H, P, Q, R, S, X, 0, 1, 2, 3, 4, 5, 7 or 8.
 o = Software: any single number or letter.
 p = I/O: A, B, C, D, F, G, H, J, K, L, M, N, Q, P, R, S, T, U, V, W, 1, 2, 3, 4, 5 or 7.
 ** = Option in two digits (none, two or multiple of two digits); any combination of number or letter
 +, # = Signs used as indicator for optional abbreviation

II. Nonincendive Version (Division 2)

PROMAG 5abc-defghRklmnop+###. Magnetic Flowmeter.

NI-ANI/II/2/ABCD/T6...T1; $-40^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$; $T_{med} \leq +180^{\circ}\text{C}$ – FES0024; NIFW; Type 4X; Type 6P (for b = L, P, S or W); IP66/67

NI/II/2/IIC/T6...T1; $-40^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$; $T_{med} \leq +180^{\circ}\text{C}$ – FES0024; NIFW; Type 4X; Type 6P (for b = L, P, S or W); IP66/67

DIP/II,III/1/EFG/T6...T1; $-40^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$; $T_{med} \leq +180^{\circ}\text{C}$; Type 4X; Type 6P (for b = L, P, S or W); IP66/67

See Control Drawing For Nonincendive Field Wiring Parameters.

- a = Type of Electronic: 0, 1, 3 or 5.
 b = Type of Sensor: D, E, L, P, S, W or X.
 c = Size: any double number or letter (up to the size of 3,000 mm).
 d = Lining Material: any single number or letter.
 e = Process Connection: any single number or letter (up to the pressure of 431 bar).
 f = Material of Electrodes: any single number or letter.
 g = Calibration: any single number or letter.

- h = Approval of Body Material: any single number or letter.
- k = Version: A (Compact, Type 4X), B (Compact, Type 4X, SS hsg), C (Remote, Type 4X), K (Remote, Trans Type 4X, Sensor Type 6P), P (Compact, Type 4X, enhanced climate), S (Remote, Type 4X, enhanced climate), 1 (Compact, -40 °C, Type 4X), 3 (Wall Mount, -40°C, Type 4X), 5 (Wall Mount, -40 °C, Type 6P) or 6 (Compact, Type 4X, -40 °C).
- l = Cable Length between Transmitter and Sensor: any single number or letter.
- m = Cable Gland: B, C, K, L, M, Q, R, S or X.
- n = Display/Power Supply: A, B, C, D, E, F, G, H, P, Q, R, S, X, 0, 1, 2, 3, 4, 5, 7 or 8.
- o = Software: any single number or letter.
- p = I/O: A, B, C, D, H, I, J, K, L, M, N, P, Q, V, W, 1, 2, 3, 4, 5 or 7.
- ** = Option in two digits (none, two or multiple of two digits); any combination of number or letter
- +,# = Signs used as indicator for optional abbreviation

PROMAG 5abc-defghRklmnop+###. Magnetic Flowmeter.

NI-ANI/II/2/ABCD/T6...T1; -40°C ≤ Ta ≤ +60°C; Tmed ≤ +180°C – FES0024; NIFW; Type 4X; IP66/67
 NI/II/2/IIC/T6...T1; -40°C ≤ Ta ≤ +60°C; Tmed ≤ +180°C – FES0024; NIFW; Type 4X; IP66/67
 DIP/II,III/1/EF6/T6...T1; -40°C ≤ Ta ≤ +60°C; Tmed ≤ +180 °C; Type 4X; IP66/67

See Control Drawing For Nonincendive Field Wiring Parameters.

- a = Type of Electronic: 0, 1, 3 or 5.
- b = Type of Sensor: H or X.
- c = Size: any double number or letter (up to the size of 150 mm).
- d = Process Connection: any single number or letter (up to the pressure of 43 bar).
- e = Gasket: any single number or letter.
- f = Material of Electrodes: any single number or letter.
- g = Calibration: any single number or letter.
- h = Approval of Body Material: any single number or letter.
- k = Version: A (Compact, Type 4X), B (Compact, Type 4X, SS hsg), C (Remote, Type 4X), P (Compact, Type 4X, enhanced climate), R (Compact Stainless, Type 4X, enhanced climate), S (Remote, Type 4X, enhanced climate), 1 (Compact, -40 °C, Type 4X), 2 (Compact, -40 °C, Type 4X, SS hsg) or 3 (Wall Mount, -40 °C, Type 4X).
- l = Cable Length between Transmitter and Sensor: any single number or letter.
- m = Cable Gland: B, C, K, L, M, Q, R, S or X.
- n = Display/Power Supply: A, B, C, D, E, F, G, H, P, Q, R, S, X, 0, 1, 2, 3, 4, 5, 7 or 8.
- o = Software: any single number or letter.
- p = I/O: A, B, C, D, H, I, J, K, L, M, N, P, Q, V, W, 1, 2, 3, 4, 5 or 7.
- ** = Option in two digits (none, two or multiple of two digits); any combination of number or letter
- +,# = Signs used as indicator for optional abbreviation

Equipment Ratings:

I. Intrinsically Safe

Explosionproof for use in Class I, Division 1, Groups A, B, C & D, and Class I, Zone 1, Group IIC; Factory Sealed; Dust-Ignitionproof for Class II & III, Division 1, Groups E, F & G; Sensor Electrodes are Intrinsically Safe for use in Class I, Division 1, Groups A, B, C & D, in accordance with manufacturer's Control Drawing No. FES0023, and Class I, Zone 1, Group IIC, in accordance with manufacturer's Control Drawing No. FES0023, Hazardous (Classified) indoor/outdoor (Type 4X, 6P & IP66/67) Locations.

II. Nonincendive

Nonincendive for use in Class I, Division 2, Groups A, B, C & D, and Class I, Zone 2, Group IIC; Dust-Ignitionproof for Class II & III, Division 1, Groups E, F & G; Sensor Electrodes are Nonincendive, with Nonincendive Field Wiring Parameters, for use in Class I, Division 2, Groups A, B, C & D, and Class I, Zone 2, Group IIC, in accordance with manufacturer's Control Drawing No. FES0024, Hazardous (Classified) indoor/outdoor (Type 4X, 6P & IP66/67) Locations.

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	2006
Class 3810	2005
ANSI/IEC 60529	2004
ANSI/NEMA 250	1991

Original Project ID: 3002554

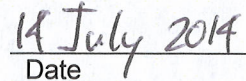
Approval Granted: April 11, 2000

Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
3014128	May 9, 2002		
3016970	March 25, 2003		
030721	September 10, 2003		
041015	January 11, 2005		
050120	February 28, 2005		
051102	February 6, 2006		
3027161	August 7, 2006		
071115	November 30, 2007		
080401	April 25, 2008		
3035153	February 24, 2009		
3036720	September 22, 2009		
3041673	April 21, 2011		
3042794	May 18, 2011		
111008	December 20, 2011		
120326	March 26, 2012		
140207	July 14, 2014		

FM Approvals LLC


 J.E. Marquedant
 Group Manager, Electrical


 Date

Hazardous Locations

Class I Div. 2 Groups ABCD or Class I Zone 2 Groups IIC
and Class II and III Division 1, 2 .Groups EFG



PROMAG 5. W / P / S / L / E



PROMAG 5.H



Promag 5.D

Notes:

1. Installation of Transmitter circuit wiring according to NEC using threaded conduit or other wiring methods in accordance with articles 500 to 510.
2. Control room equipment shall not use or generate more than 250 Vrms or VDC
3. Caution: Use supply wires suitable for 5 °C above ambient temperature, but at least for 80 °C / 176°F.
4. Class II Group G: The surface temperature of the apparatus cannot exceed 165 °C / 329°F.
5. For Installation of fieldbus communication circuits of Promag 5****_*****H /K see sheet 3.
6. A dust-tight conduit seal shall be used when installed in Class II & III environments.

High temperature version (180°C / 356°F):

PROMAG 50/51/53/55 P/S**-B*****

PROMAG 50/51/53/55 W/P/H/S/D/L/E

NI / I / 2 / ABCD; DIP / II, III / 1 / EFG; Class I Zone 2 GP IIC T4A – T1

Temperature table for compact version:

Max. ambient temperature	Max. medium temperature depending temperature classes						
	T6	T5	T4A	T4	T3C	T2	T1
50 °C / 122°F	---	---	115°C/239°F	115°C/ 239°F	115°C/ 239°F	115°C/ 239°F	115°C/ 239°F
45 °C / 113°F				130°C/ 266°F	130°C/ 266°F	130°C / 266°F	130°C / 266°F
40 °C / 104°F					150°C / 302°F	150°C / 302°F	150°C / 302°F

High temperature version PROMAG 50/51/53P**-B***** only:

Temperature table for compact version:

Temperature table for compact version:								
Max. ambient temperature	Max. medium temperature depending temperature classes							
	T6	T5	T4A	T4	T3C	T3A	T2	T1
60 °C / 140°F	---	---	---	130°C / 266°F	130°C / 266°F	130°C / 266°F	130°C / 266°F	130°C / 266°F
50 °C / 122°F			150°C / 302°F		150°C / 302°F	150°C / 302°F	150°C / 302°F	
40 °C / 104°F			180°C / 356°F		180°C / 356°F	180°C / 356°F		

High temperature version PROMAG 55S**-B***** only:

Temperature table for compact version:

Max. medium temperature depending temperature classes								
Max. ambient temperature	T6	T5	T4A	T4	T3C	T3A	T2	T1
50 °C / 122°F	---	---	115°C / 239°F	130°C / 266°F	150°C / 302°F	150°C / 302°F	150°C / 302°F	150°C / 302°F
40 °C / 104°F						180°C / 356°F	180°C / 356°F	180°C / 356°F

The minimum ambient temperature is -40°C / -40°F

Aenderungen:	A	03.12.01 / MDI	F	10.10.2008/BDA	Ersteller: FES / ID 1006 FILE: M:\ZEICHN\G\FES0024\K\FES0024K.doc		
	B	15.01.03 / MDI	G	15.04.2009/BDA			
	C	19.05.04/PAM	H	03.02.2011/KLI			
	D	31.10.05/PAM	J	08.08.2012/BIF			
	E	22.05.2006/UD	K	07.02.2014/BDA			
FM Control Drawing Class I Division 2 / Class I Zone 2 Compact version PROMAG 50/51/53/55 W/P/H/S/D/L/E					Gezeichnet	3.Dez.2001	MDI
					Geprüft		
					Ex-geprüft	07.02.2014	BDA
					Gesehen		
 Flowtec AG, Kaegenstrasse 7, CH-4153 Reinach BL1, Postfach					FES0024 K		1/5

Hazardous Locations

Class I Div. 2 Groups ABCD or Class I Zone 2 Groups IIC
and Class II and III Division 1, 2 Groups EFG



Transmitter PROMAG 5.H PROMAG 5.W/P/S/L/E PROMAG 5.D

Notes:

1. Installation of Transmitter circuit wiring according to NEC using threaded conduit or other wiring methods in accordance with articles 500 to 510.
2. Control room equipment shall not use or generate more than 250 Vrms or VDC.
3. Caution: Use supply wires suitable for 5 °C above ambient temperature, but at least for 80 °C / 176°F.
4. Class II Group G: The surface temperature of the apparatus cannot exceed 165 °C / 329°F.
5. For Installation of fieldbus communication circuits of Promag 5****_*****H /K see sheet 3.
6. A dust-tight conduit seal shall be used when installed in Class II & III environments.

High temperature version (180°C / 356°F):

PROMAG 50/51/53/55 P/S**-B*****

PROMAG 50/51/53/55 W/P/H/S/D/L/E

NI / I / 2 / ABCD; DIP / II, III / 1 / EFG; Class I Zone 2 GP IIC T6 – T1

Temperature table for sensors in remote version

Max. ambient temperature	Max. medium temperature depending temperature classes						
	T6	T5	T4A	T4	T3C	T2	T1
60 °C / 140°F	80°C / 176°F	95°C / 203°F	115°C / 239°F	130°C / 266°F	130°C / 266°F	130°C / 266°F	130°C / 266°F
50 °C / 122°F)	---	---	---	---	150°C / 302°F	150°C / 302°F	150°C / 302°F

*) 60 °C / 140°F for PROMAG 5.H DN40 – 100

High temperature version PROMAG 50/51/53/55 P/S**-B***** only:

Temperature table for compact version:

Max. ambient temperature	Max. medium temperature depending temperature classes						
	T6	T5	T4	T3C	T3A	T2	T1
60 °C / 140°F	80°C / 176°F	95°C / 203°F	130°C / 266°F	150°C / 302°F	150°C / 302°F	150°C / 302°F	150°C / 302°F
50 °C / 122°F	---	---	---	---	180°C / 356°F	180°C / 356°F	180°C / 356°F

For Promag 50/51/53, temperature class for the remote transmitter is T4A at 60°C / 140°F.
For Promag 55, temperature class for the remote transmitter is T4 at 60 °C / 140 °F.

The minimum ambient temperature is -40°C / -40°F

Aenderungen:	A	03.12.01 / MDI	F	10.10.2008/BDA	Ersteller: FES / ID 1006 FILE: M:\ZEICHN\G\FES0024\K\FES0024K.doc		
	B	15.01.03 / MDI	G	15.04.2009/BDA			
	C	19.05.04/PAM	H	03.02.2011/KLI			
	D	31.10.05/PAM	J	08.08.2012/BIF			
	E	22.05.2006/UD	K	07.02.2014/BDA			
FM Control Drawing Class I Division 2 / Class I Zone 2 Remote version PROMAG 50/51/53/55 W/P/H/S/D/L/E					Gezeichnet	3.Dez.2001	MDI
					Geprüft		
					Ex-geprüft	07.02.2014	BDA
					Gesehen		
 Flowtec AG, Kaegenstrasse 7, CH-4153 Reinach BL1, Postfach					FES0024 K 2/5		

Promag 5****_*****H

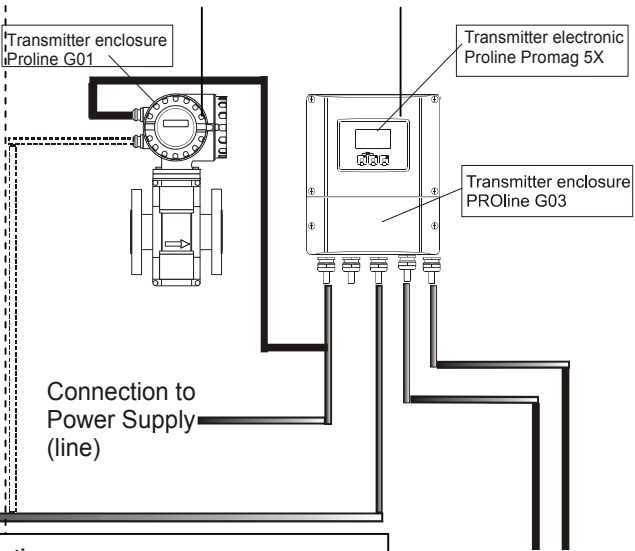
Promag 5****_*****K

Non-Hazardous
Classified Location

Hazardous Classified Location
Class I Div. 2 Groups ABCD or
Class I Zone 2 Groups IIC

Compact Version

Remote Version



FM approved
ANI/II/2/ABCD or
AIS/II/1/ABCDEFG
equipment

Connection to
Power Supply
(line)

Connection to PROline
Promag 5X

Functional ratings:
These ratings do not supersede Hazardous Location
values.
Fieldbus communication circuit: Terminals 26/27
 $U_{nom} = 9...32V$ $I_{nom} = 12mA$

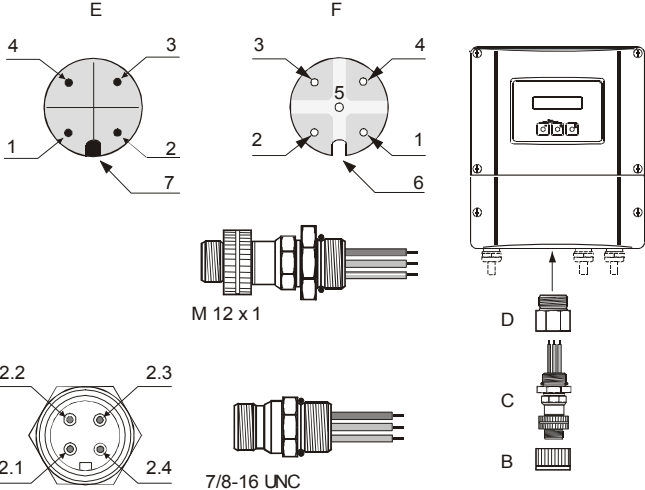
Notes:

- Fieldbus cable connectors are suitable for Class I Div.2 Groups A, B, C, D if connected to associated nonincendive field wiring or associated apparatus.
- 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:
 $V_{max} \geq V_{oc}$ or V_t , $C_a \geq C_i + C_{cable}$, $L_a \geq L_i + L_{cable}$
Fieldbus communication circuit Terminals 26/27 (current controlled circuit)

V_{max}	I_{max}	C_i	L_i
35V	See note 3	5nF	10μH
- For this current controlled circuit, the parameter I_{max} is not required and need not to be aligned with parameter I_{sc} and I_t of the associated non-incendive field wiring or associated apparatus.
- Fieldbus communication circuits Terminals (26/27) are suitable for connection according to Fieldbus Nonincendive Concept (FNICO) see page 4.

Profibus PA
connector

bus Foundation
connector



B = Protection cap for connector, C = Fieldbus connector, D = Thread adapter
E = Connector on housing (male), F = Connector (female)

Pin assignment:
Profibus PA
1 = Brown wire, PA+ (terminal 26)
2 = Not connected
3 = Blue wire, PA- (terminal 27)
4 = Black wire, ground
5 = Female connector not assigned
6 = Positioning groove
7 = Positioning key

Fieldbus Foundation
2.1 = Brown wire, FF+ (terminal 26)
2.2 = Blue wire, FF- (terminal 27)
2.3 = Grey wire, ground
2.4 = Not assigned

Aenderungen:	A	07.12.01 / MDI	F	10.10.2008/BDA
	B	15.01.03 / MDI	G	15.04.2009/BDA
	C	19.05.04 / PAM	H	03.02.2011/KLI
	D	31.10.05/PAM	J	08.08.2012/BIF
	E	22.05.2006/UD	K	07.02.2014/BDA

Ersteller: FES / ID 1006
FILE: M:\ZEICHN\GFES0024\K\FES0024K.doc

FM Control Drawing Cl. I Div.2 / Zone 2
Fieldbus Communication circuits
Compact version / Remote version
PROMAG 50/51/53/55 W/P/H/S/D/L/E

Gezeichnet	15.01.2003	MDI
Geprüft		
Ex-geprüft	07.02.2014	BDA
Gesehen		



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

FES0024 K

3/5

FNICO CONCEPT

The FNICO-concept allows interconnection of nonincendive apparatus to associated apparatus not specially examined in such combination. The criteria for interconnection is that the voltage (U_i or V_{max}) which nonincendive apparatus can receive and remain nonincendive, must be equal or greater than the voltage (U_o , V_{oc} or V_t) levels which can be delivered by the associated apparatus. In addition, the maximum unprotected capacitance (C_i) and inductance (L_i) of each apparatus (other than the termination) connected to the fieldbus must be less than or equal to 5 nF and 10 μ H respectively.

In each segment only one active device, normally the associated apparatus, is allowed to provide the necessary energy for the fieldbus system. The voltage U_o , V_{oc} or V_t of the associated apparatus has to be limited to the range of 14V to 24V. All other equipment connected to the bus cable has to be passive, meaning that they are not allowed to provide energy to the system, except a leakage current of 50 μ A for each connected device. Separately powered equipment needs a galvanic isolation to assure that the nonincendive fieldbus circuit remains passive.

The cable used to interconnect the devices needs to have the parameter in the following range:

Loop Resistance R' :	15...150 Ohm/km
Inductance per unit length L' :	0.4...1 mH/km
Capacitance per unit length C' :	80...200 nF

$C' = C'$ line/line + 0.5 C' line/screen, if both lines are floating, or	
$C' = C'$ line/line + C' line/screen, if the screen is connected to one line	
Length of trunk cable:	≤ 1000 m
Length of spur cable:	≤ 30 m
Length of splice:	≤ 1 m

At each end of the trunk cable an approved infallible line termination with following parameters is suitable:

$$R = 90...100 \text{ Ohm} \quad C = 0...2.2 \text{ } \mu\text{F}$$

One of the allowed terminations might already be integrated in the associated apparatus. The associated apparatus has to be installed within 30m from the end of the trunk cable. The number of passive apparatus connected to the bus segment is not limited due to NI reasons. If the above rules are respected, up to a total length of 1000 m (sum of trunk and all spur cables), the inductance and the capacitance of the cable will not impair the safety of the installation.

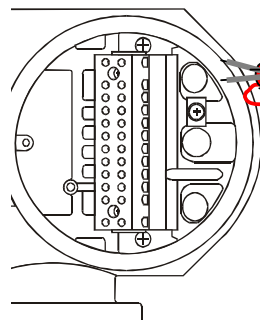
Notes:

1. Approved associated apparatus must be installed in accordance with manufacturers instructions.
2. Be aware of multiple earthing of the screen. The screen must be connected in accordance with ISA RP 12.06.01
3. Caution: Use only supply wires suitable for 5°C above surrounding temperature.
4. The polarity for connection terminals 26 (+) and 27 (-) is of no importance due to an internal rectifier.

HAZARDOUS (CLASSIFIED) LOCATION

Class I , Division 2, Groups A,B,C,D
Class II, Division 2, Groups E,F,G
Class III, Division 2

Promag
5****-*****H / K



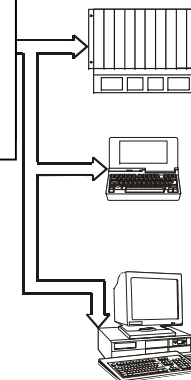
Any
FM Approved
nonincendive
Apparatus
suitable for
FNICO

PROMAG 5****-*****H/K Terminal 26 (+) Terminal 27 (-) (FNICO-Model)	
$U_i (V_{max}) = 35 \text{ V}$ $I_i (I_{max}) = \text{not relevant}$	$C_i \leq 5 \text{ nF}$ $L_i \leq 10 \text{ } \mu\text{H}$
Leakage current : $\leq 50 \mu\text{A}$	
Apparatus provides galvanic isolation up to 250V rms between fieldbus circuit and any other circuit	
Temperature Classification: T4A	
Max. ambient Temperature: 60°C / 140°F	

Any FM Approved
Termination with
 $R = 90...100 \Omega$
 $C = 0...2.2 \mu\text{F}$

NONHAZARDOUS LOCATION

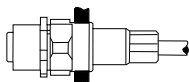
Any
FM Approved
Associated
Nonincendive
Field wiring
Apparatus
Suitable for
FNICO



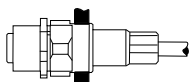
Änderungen:	A	07.12.01 / MDI	F	10.10.2008/BDA	Alle gesetzlichen Urheberrechte vorbehalten. Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch dritten Personen und Konkurrenzfirmen zugänglich gemacht werden.	Ersatz für: Ersteller: FES / ID 1006 FILE: M:\ZEICHNG\FES0024\K\FES0024K.doc		
	B	15.01.03 / MDI	G	15.04.2009/BDA				
	C	19.05.04/PAM	H	03.02.2011/KLI				
	D	31.10.05/PAM	J	08.08.2012/BIF				
	E	22.05.2006/UD	K	07.02.2014/BDA				
FM Control Drawing Cl. I Div. 2 / Zone 2 PROFIBUS PA + Foundation Fieldbus FNICO PROMAG 50/51/53/55 W/P/H/S/D/L/E					Masstab	Gezeichnet	15.01.2003	MDI
						Geprüft		
						Ex-geprüft	07.02.2014	BDA
						Gesehen		
 Flowtec AG, Kaegenstrasse 7, CH-4153 Reinach BL1, Postfach					FES0024 K		4/5	

1) Thread: M20x1.5, NPT 1/2", NPT 3/4" or G 1/2"

2) Approved / Certified receptacle for process wiring for Cl.I, Div. 2



3) Listed receptacle for process wiring (general purpose)



Notes:

1. Class I Division 2 Groups ABCD, Class II Division 1 Groups EFG and Class III

Flow meter with cable entry M20x1.5 thread, NPT 1/2" thread, NPT 3/4" thread:

- Install all per National Electrical Code NEC and use supply wires suitable for 10 °C / 18 °F above ambient temperature.
- Class II Group G: The surface temperature of the apparatus cannot exceed 165 °C / 329 °F

2. Class I Division 2 Groups ABCD

Flow meter with FM approved receptacles (plug-in connector) suitable for Class I, Div. 2 installation:

- Install per National Electrical Code NEC
- Install tool secured guard on the connection to render the connection normally not arcing.

3. Class I Division 2 Groups ABCD:

Flowmeters with listed cable glands, pig tails or receptacles (plug in connector):

- The connector must not be removed when energized. Therefore the warning "Do not separate when energized" must be readable after installation.
- Install per National Electrical Code NEC

4. Non-hazardous classified areas:

All of the above described cable entries are suitable for installations in non-hazardous areas

- Install per National Electrical Code NEC

Component ratings:

- Wire at least AWG 28
- Dielectric strength of wire insulation at least 50 V
- Current rating of components at least 1 A
- Temperature range at least -40 °C ... +70 °C

Aenderungen:	A	07.12.01 / MDI	F	10.10.2008/BDA	Alle gesetzlichen Urheberrechte vorbehalten. Diese Zeichnung darf ohne unsere Genehmigung weder vervielfaltigt werden noch dritten Personen und Konkurrenzfirmen zugänglich gemacht werden.	Ersatz für: Ersteller: FES / ID 1006 FILE: M:\ZEICHNUNG\FES0024\K\FES0024K.doc		
	B	15.01.03 / MDI	G	15.04.2009/BDA				
	C	19.05.04/PAM	H	03.02.2011/KLI				
	D	31.10.05/PAM	J	08.08.2012/BIF				
	E	22.05.2006/UD	K	07.02.2014/BDA				
FM Control Drawing Cl. I Div. 2 / Zone 2 Cable entries PROMAG 50/51/53/55 W/P/H/S/D/L/E					Masstab	Gezeichnet	15.01.2003	MDI
						Geprüft		
						Ex-geprüft	07.02.2014	BDA
						Gesehen		
 Flowtec AG, Kaegenstrasse 7, CH-4153 Reinach BL1, Postfach					FES0024 K			
					5/5			