Certificate of Compliance

Certificate: 1111289 **Master Contract:** 160686

Project: 70158803 **Date Issued:** 2017-12-14

Issued to: **Endress + Hauser Flowtec AG**
Kagenstrasse 7
Reinach, Basel Land 4153
SWITZERLAND

Attention: Daniel Bosshard

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.

Issued by: *Anil Sodhi*
Anil Sodhi

PRODUCTS

CLASS 2258 03 - For Hazardous Locations PROCESS CONTROL EQUIPMENT - Intrinsically Safe and Non- Incendive Systems -

Class I, Division 1, Groups A, B, C and D; Class II, Division 1, Groups E, F and G; Class III; Type 4X:

• PROMAG 50/51/53W/P/H/Xc-defgh**N[A/6/U/V]**lmnop+#**# Compact Magnetic Flowmeter, PROMAG 50/51/53W/P/H/Xc-defgh**N[P]**lmnop+#**# Compact Magnetic Flowmeter (enhanced climate) . Input rated 16-62Vdc, 20-55Vac, 85-260Vac, 50/60Hz, 15VA. Relay contacts rated 42Vdc/100mA and 30Vac/500mA. Explosion-proof with Intrinsically Safe electrodes, specific Temperature Code and signal output circuits per Control Drawing FES0041. Temperature Code T1 - T5. Ambient Temperature -40˚C to +60˚C.

** = 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

Ex de [ia Ga] IIC T6 … T1 Gb; Type 4X:

• PROMAG 50/51/53W/P/H/Xc-defgh[B/D/N/3/4/5/6][G/N/W/7/8]lmnop+#**# Remote Magnetic Flowmeter, PROMAG 50/51/53W/P/Hc-defgh[B/D/N/3/4/5/6][T]lmnop+#**# Remote Magnetic Flowmeter (enhanced climate). Input rated 16-62Vdc, 20-55Vac, 85-260Vac, 50/60Hz, 15VA. Relay contacts rated 42Vdc/100mA and 30Vac/500mA. Explosion-proof with Intrinsically Safe electrodes, specific Temperature Code and signal output circuits per Control Drawing FES0240. Temperature Code T1 - T5. Ambient Temperature -40°C to +60°C.

** = 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

Class I, Division 1, Groups B, C and D; Class II, Division 1, Groups E, F and G; Class III; Type 4X:

• PROMAG 50/51/53W/P/H/Xc-defgh**N[A/6/U/V]**lmnop+#**# Compact Magnetic Flowmeter, PROMAG 50/51/53W/P/H/Xc-defgh**N[P]**lmnop+#**# Compact Magnetic Flowmeter (enhanced climate). Input rated 16-62Vdc, 20-55Vac, 85-260Vac, 50/60Hz, 15VA. Relay contacts rated 42Vdc/100mA and 30Vac/500mA. Explosion-proof with Intrinsically Safe electrodes, specific Temperature Code and signal output circuits per Control Drawing FES0041. FACTORY SEALED. Temperature Code T1 - T5. Ambient Temperature -40˚C to +60˚C.

** = 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

Class I, Division 2, Groups A, B, C and D; Class II, Division 1, Groups E, F and G; Class III:

• Promag50/51/53/55H/Xc-defgh**R[A/B/1/2**]lmnop+#**# Compact Magnetic Flowmeter (Type 4x), Promag50/51/53/55H/Xc-defgh**R[P/R**]lmnop+#**# Compact Magnetic Flowmeter (Type 4x, enhanced climate), Promag50/51/53/55H/Xc-defgh**R[C/3**]lmnop+#**# Remote Magnetic Flowmeter (Type 4x), Promag50/51/53/55H/Xc-defgh**R[S**]lmnop+#**# Remote Magnetic Flowmeter (Type 4x, enhanced climate), Promag50/51/53/55W/L/P/E/S/D/Xc-defgh**R[A/1/6**]lmnop+#**# Compact Magnetic Flowmeter (Type 4x), Promag50/51/53/55W/L/P/E/S/D/Xc-defgh**R[P**]lmnop+#**# Compact Magnetic Flowmeter (Type 4x, enhanced climate), Promag50/51/53/55W/ L/P/E/S/D/Xc-defghR[C/3]lmnop+#**# Remote Magnetic Flowmeter (Type 4x), Promag50/51/53/55W/L/P/E/S/D/Xc-defghR[S]lmnop+#**# Remote Magnetic Flowmeter (Type 4x, enhanced climate) and Promag50/51/53/55W/L/P/E/S/Xc -defghR[K/5]lmnop+#**# Remote Magnetic Flowmeter (Transmitter Type 4x, Sensor 6P). Transmitter Promag50/51/53 Input rated 16-62Vdc; 20-55Vac; or 85-260Vac, 45/65Hz, 15VA. Transmitter Promag55 Input rated 20-64Vdc, 19W; or 20-260Vac, 45-65Hz, 45VA.

Transmitter Promag50/51/53/55 Relay contacts rated 42Vdc/100mA and 30Vac/500mA. Non-incendive electrodes and specific Temperature Code per Control Drawing FES0042.

Temperature Code T1 - T4A (Compact version Promag50/51/53/55W/L/P/H/S/D), T4A (Remote Transmitter Promag50/51/53), T4 (Remote Transmitter Promag55) and T1 - T6 (Remote Sensors Promag W/L/P/H/S/D). Ambient Temperature -40 ˚C to +60 ˚C.

** = 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

• PMG-abcdefghi and PMH-abcdefghij compact or remote Magnetic Flowmeter (Type 4X). Transmitter Input rated 16-62Vdc, 20-55Vac, 85-260Vac, 50/60Hz, 15VA. Transmitter Relay contacts rated 42Vdc/100mA and 30Vac/500mA. Non-incendive electrodes and specific Temperature Code per Control Drawing Kobold 002. Temperature Code T1 - T4A (Transmitter) and T1- T6 (Remote Sensors).Ambient Temperature -40 ˚C to +60 ˚C.

Note: Series PMG flowmeters are manufactured under the trade name Kobold.

CLASS 2258 83 - For Hazardous Locations PROCESS CONTROL EQUIPMENT - Intrinsically Safe and Non- Incendive Systems - CERTIFIED TO U.S. STANDARDS

AEx de [ia Ga] IIC T6 … T1 Gb; Type 4X:

• PROMAG 50/51/53W/P/H/Xc-defgh[B/D/N/3/4/5/6][G/N/W/7/8]lmnop+#**# Remote Magnetic Flowmeter, PROMAG 50/51/53W/P/Hc-defgh[B/D/N/3/4/5/6][T]lmnop+#**# Remote Magnetic Flowmeter (enhanced climate). Input rated 16-62Vdc, 20-55Vac, 85-260Vac, 50/60Hz, 15VA. Relay contacts rated 42Vdc/100mA and 30Vac/500mA. Explosion-proof with Intrinsically Safe electrodes, specific Temperature Code and signal output circuits per Control Drawing FES0240. Temperature Code T1 - T5. Ambient Temperature -40°C to +60°C.

** = Option in two digits (none, two or multiple of two digits); any combination of number or letter
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Certificate: 1111289 **Master Contract:** 160686

Project: 70158803 **Date Issued:** 2017-12-14

APPLICABLE REQUIREMENTS

CAN/CSA C22.2 No. 0-M91 (R2001)	General Requirements - Canadian Electrical Code, Part II
C22.2 No. 142-M1987 (R2009)	Process Control Equipment
C22.2 No. 25-1966 (R2009)	Enclosures for Use in Class II, Groups E, F and G Hazardous Locations
C22.2 No. 30-M1986 (R2007)	Explosion-Proof Enclosures for Use in Class I Hazardous Locations
CAN/CSA-C22.2 No. 157-92 (R2006)	Intrinsically Safe and Non-Incendive Equipment for Use in Hazardous Locations
C22.2 No. 213-M1987 (R2008)	Non-Incendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations
CAN/CSA-C22.2 No. 60079-0:11 Ed. 5	Explosive Atmospheres - Part 0: Equipment - General requirements
CAN/CSA-C22.2 No. 60079-1:11	Explosive Atmospheres – Part 1: Equipment protection by flameproof enclosures "d"
CAN/CSA-C22.2 No. 60079-7:12	Explosive Atmospheres – Part 7: Equipment protection by increased safety "e"
CAN/CSA-C22.2 No. 60079-11:14	Explosive Atmospheres – Part 11: Equipment protection by intrinsic safety "i"
CAN/CSA-C22.2 No. 94-M91 (R2006)	Special Purpose Enclosures
ANSI/UL 60079-0:09	Electrical Apparatus for Explosive Gas Atmospheres - Part 0: General Requirements
ANSI/UL 60079-1:09	Electrical Apparatus for Explosive Gas Atmospheres - Part 1: Flameproof Enclosures “d”
ANSI/UL 60079-11:13	Electrical apparatus for Explosive Gas Atmospheres - Part 11: Intrinsic Safety “i”
ANSI/ISA-60079-7:13	Explosive Atmospheres - Part 7: Equipment protection by increased safety "e"

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

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

Promag 5. W / P / L / E

Promag 5. H

Temperature table

Max. ambient temperature	Max. medium temperature depending temperature classes							
	T6	T5	T4A	T4	T3C	T3	T2	T1
50 °C / 122°F	---	50 °C / 122°F	110 °C / 230°F	110 °C / 230°F	110 °C / 230°F	110 °C / 230°F	110 °C / 230°F	110 °C / 230°F
45 °C / 113°F	---	50 °C / 122°F	110 °C / 230°F	130 °C / 266°F	130 °C / 266°	130 °C / 266°	130 °C / 266°	130 °C / 266°
40 °C / 104°F	---	50 °C / 122°F	110 °C / 230°F	130 °C / 266°F	150 °C / 302°F	150 °C / 302°F	150 °C / 302°F	150 °C / 302°F

Communication Options	**Control Drawing**
I/O option = F,H,J,Q	See FES 0041-0001
I/O option = G,K	See FES 0041-0002
I/O option = S,T	See FES 0041-0004
I/O option = R,U	see FES 0023-0005

WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.
AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SÉCURITÉ INTRINSÈQUE.

Notes:
1. Control room equipment shall not use or generate more than 250 V rms or VDC.
2. Caution: Use supply wires suitable for 20 °C above ambient temperature, but at least for 80 °C / 176°F.
3. Class II Group G: The surface temperature of the apparatus cannot exceed 165 °C / 329°F.
4. Transmitter enclosure PROline G02 is factory sealed for use in Cl. I Div. 1 Groups B, C, D. Means that a conduit seal is not required within 18 inches (450mm) of the enclosure.
5. Install per Canadian Electrical Code
6. A dust-tight conduit seal shall be used when installed in Class II & III environments

Aenderungen:						
	A	03.12.01/MDI	F	08.02.11/KLI		
	B	03.10.04/MDI	G	21.02.14/BDA		
	C	31.10.05/PAM	H	23.08.17/BDA		
	D	07.10.08/PAM	J			
	E	05.05.09/BDA	K			

Ersatz für:
Ersteller: FES / **ID 1077**
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CSA Control Drawing Div. 1 / Zone 1

Class I Zone 1

PROMAG 5x compact version

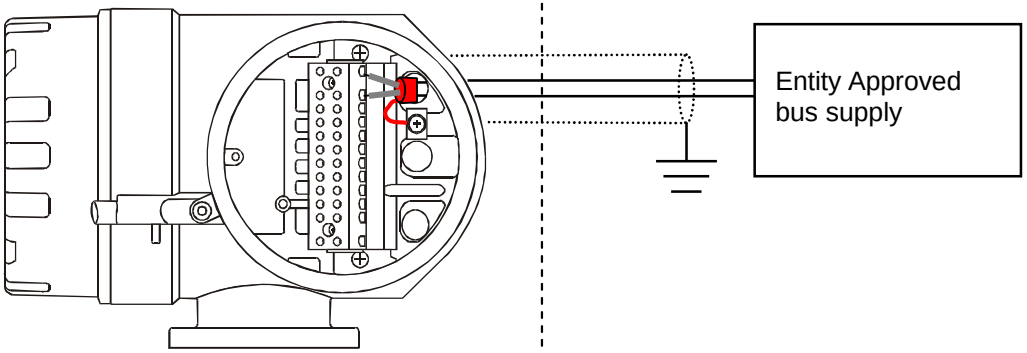
Gezeichnet	03.12.01	MDI
Geprüft		
Ex-geprüft	23.08.2017	BDA
Gesehen		

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

FES0041H

HAZARDOUS LOCATIONS
Cl. I Div. 1 Groups A,B,C,D
Cl. I Zone 1 Group IIC
Cl. I Div. 2 Group A,B,C,D
Cl. I Zone 2 Group IIC
Cl. II, III Div. 1 Group E,F,G

NON HAZARDOUS LOCATIONS



Notes:

Intrinsically safe signal output:

1) Wire intrinsically safe circuits per ANSI/ISA-RP 12.06.01 or in conduit per Canadian Electrical Code.
2) **WARNING**: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.
AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SÉCURITÉ INTRINSÈQUE.
3) Control room equipment may not use or generate more than 250 V rms or VDC.

PROMAG Type: 5****-**********F

Terminals: 26 (+), 27 (-) (Profibus PA):

Passive intrinsically safe PROFIBUS PA circuit:
For connecting the intrinsically safe circuit (PROFIBUS PA) according to the FISCO-CONCEPT see FES 0041-0003.

Nonintrinsically safe signal output:

4) Transmitter circuit wiring in accordance with Canadian Electrical Code.
5) **WARNING**: EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 1 OR CLASS I, ZONE 1
AVERTISSEMENT: RISQUE D'EXPLOSION – LA SUBSTITUTION DE COMPOSANTS PEUT RENDRE CE MATÉRIEL INACCEPTABLE POUR LES EMPLACEMENTS DE CLASSE I, DIVISION 1 OU CLASSE I, ZONE 1
6) Control room equipment may not use or generate over 250 Vrms or VDC.

PROMAG Type: 5****-**********H

Terminals 26 (+),27 (-) (PROFIBUS PA)

V ≤ 32 V, I = 10 mA

PROMAG Type:
5***-**********J (PROFIBUS DP)
5***-**********Q (MODBUS RS)

Terminals 24 (+5V),25 (GND), 26 (DPA/RSA), 27 (DPB/RSB)

Terminals: +5V, GNO, DPA, DPB
V = 5 V, I = 100 mA

Aenderungen:						Ersatz für:
	A	03.12.01/MDI	F	08.02.11/KLI		Ersteller: FES / **ID 1077**
	B	03.10.04/MDI	G	21.02.14/BDA		File: M:\ZEICHNG\FES0041\H\FES0041H.doc
	C	31.10.05/PAM	H	23.08.17/BDA		
	D	07.10.08/PAM	J			
	E	05.05.09/BDA	K			

CSA Control Drawing Div. 1 / Zone 1
PROMAG 5. W / P / H / L / E
PROFIBUS PA / IS installation
PROFIBUS PA / DP or MODBUS RS non-IS installation

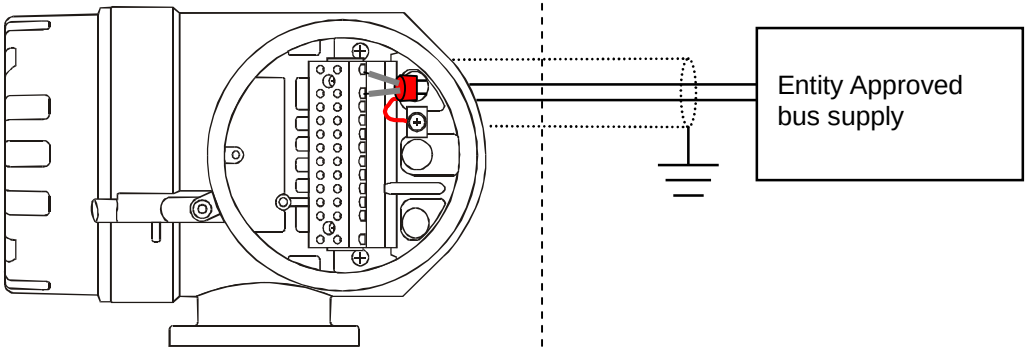
Gezeichnet	03.12.01	MDI
Geprüft		
Ex-geprüft	23.08.2017	BDA
Gesehen		

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

FES0041-0001H

HAZARDOUS LOCATIONS
Cl. I Div. 1 Groups A,B,C,D
Cl. I Zone 1 Group IIC
Cl. I Div. 2 Group A,B,C,D
Cl. I Zone 2 Group IIC
Cl. II, III Div. 1 Group E,F,G

NON HAZARDOUS LOCATIONS



Notes:

Intrinsically safe signal output:

1) Wire all intrinsically circuits per ANSI/ISA-RP 12.06.01 or in conduit per Canadian Electrical Code Part I

2) **WARNING**: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.
AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SÉCURITÉ INTRINSÈQUE.

3) Control room equipment may not use or generate more than 250 Vrms or VDC.

PROMAG Type: 5**-**********G**

Terminals: 26, 27 (Foundation Fieldbus):
Iintrinsically safe circuit:

V_{max} / U_i	I_{max} / I_i	P_{max} / P_i	C_i	L_i
30 V	600 mA	8.5 W	≤ 5 nF	≤ 10 µH

Connect to entity approved associated apparatus with
I_{SC} or $I_O \leq$ Imax or I_i and
V_{OC} or $U_O \leq$ Vmax or U_i
($P_O \leq$ Pmax or P_i)
Cable parameters for Intrinsic Safety:
$C_{cable} \leq C_a / C_O - \Sigma C_i$
$L_{cable} \leq L_a / L_O - \Sigma L_i$ or
$L/R_{cable} \leq L/R_{Associated\ Apparatus}$ and Li of each I.S. apparatus ≤ 10 µH

Alternatively the intrinsically safe circuit (Fieldbus Foundation) can be connected according to the FISCO – Concept (see FES0041).

Nonintrinsically safe signal output:

4) Transmitter circuit wiring in accordance with Canadian Electrical Code.

5) **WARNING**: EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 1 OR CLASS I, ZONE 1.
AVERTISSEMENT: RISQUE D'EXPLOSION – LA SUBSTITUTION DE COMPOSANTS PEUT RENDRE CE MATÉRIEL INACCEPTABLE POUR LES EMPLACEMENTS DE CLASSE I, DIVISION 1 OU CLASSE I, ZONE 1

6) Control room equipment may not use or generate over 250 Vrms or VDC.

PROMAG Type: 5****-**********K

Terminals 26,27 (FIELDBUS FOUNDATION NON I.S.)
V ≤ 32 V, I = 10 mA

Aenderungen:						
	A	03.12.01/MDI	F	08.02.11/KLI	Alle gesetzlichen Urheberrechte vorbehalten.	
	B	03.10.04/MDI	G	21.02.14/BDA	Diese Zeichnung darf ohne unsere	
	C	31.10.05/PAM	H	23.08.17/BDA	Genehmigung weder vervielfältigt werden noch	Ersatz für:
	D	07.10.08/PAM	J		dritten Personen und Konkurrenzfirmen	Ersteller: FES / **ID 1077**
	E	05.05.09/BDA	K		zugängig gemacht werden.	File: M:\ZEICHNG\FES0041\H\FES0041H.doc

CSA Control Drawing Div. 1 / Zone 1

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

Fieldbus Foundation I.S. installation

Gezeichnet	03.12.01	MDI
Geprüft		
Ex-geprüft	23.08.2017	BDA
Gesehen		

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

FES0041-0002H

FISCO CONCEPT

The FISCO Concept allows interconnection of intrinsically safe apparatus to associated apparatus not specially examined in such combination. The criteria for interconnection is that the voltage (Ui or V_{max}), the current (Ii or I_{max}), and the power (Pi or P_{max}) which intrinsically safe apparatus can receive and remain intrinsically safe, considering faults, must be equal or greater than the voltage (Uo or Voc), the current (Io or Isc) and the power (Po or P_{max}) levels which can be delivered by the associated apparatus, considering faults and applicable factors. In addition, the maximum unprotected capacitance (Ci) and inductance (Li) of each apparatus (other than the termination) connected to the fieldbus must be less than or equal to 5 nF and 10 µH 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 Uo or Voc of the associated apparatus is limited to a range of 14V to 24Vd.c. 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 50µA for each connected device. Separatly powered equipment needs a galvanic isolation to assure that the intrinsically safe 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:

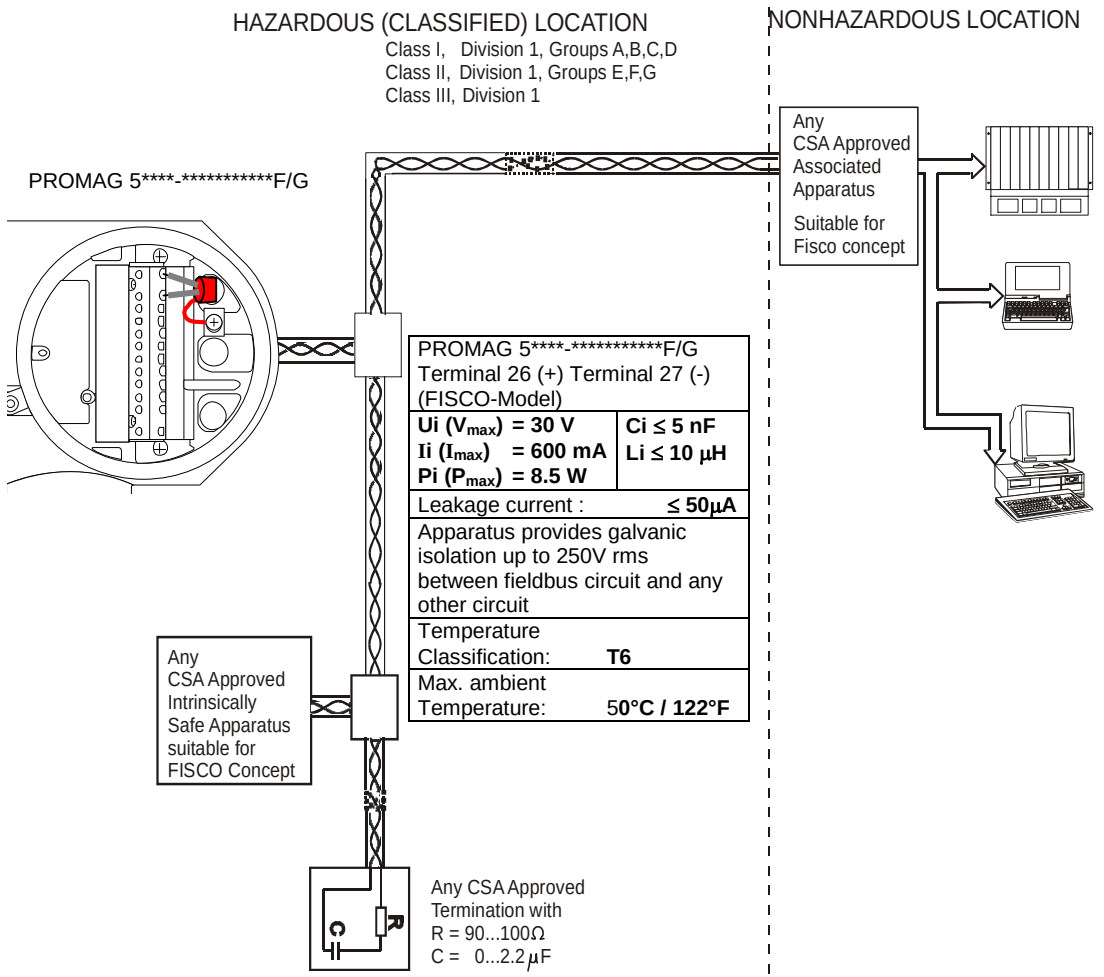
R = 90...100 Ohm C = 0...2.2 µF

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

Notes:

Intrinsically safe Class I, Div.1, Groups A,B,C,D

1. Approved associated apparatus must be installed in accordance with manufacturers instructions.
2. CSA approved associated apparatus must meet the following parameters: Uo or Voc ≤ Ui (V_{max}) and Io or Isc ≤ Ii (I_{max}) and Po or P_{max} ≤ Pi (P_{max})
3. The maximum non-hazardous area voltage must not exceed 250V
4. The installation must be in accordance with the Canadian Electrical Code
5. Multiple earthing of screen is allowed only, if high integrity equipotential system is realized between the points of bonding (see drawing No. FES 0014).
6. Caution: Use only supply wires suitable for 20°C above surrounding temperature.
7. **WARNING**: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.
   AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SÉCURITÉ INTRINSÈQUE.
8. The polarity for connection PA+ (26) and PA- (27) is of no importance due to an internal rectifier.



Aenderungen:					
	A	03.12.01/MDI	F	08.02.11/KLI	
	B	03.10.04/MDI	G	21.02.14/BDA	
	C	31.10.05/PAM	H	23.08.17/BDA	
	D	07.10.08/PAM	J		
	E	05.05.09/BDA	K		

Ersatz für:

Ersteller: FES / **ID 1077**

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CSA Control Drawing Div. 1 / Zone 1

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

Intrinsically safe PROFIBUS PA

FISCO-Concept

Gezeichnet	03.12.01	MDI
Geprüft		
Ex-geprüft	23.08.2017	BDA
Gesehen		

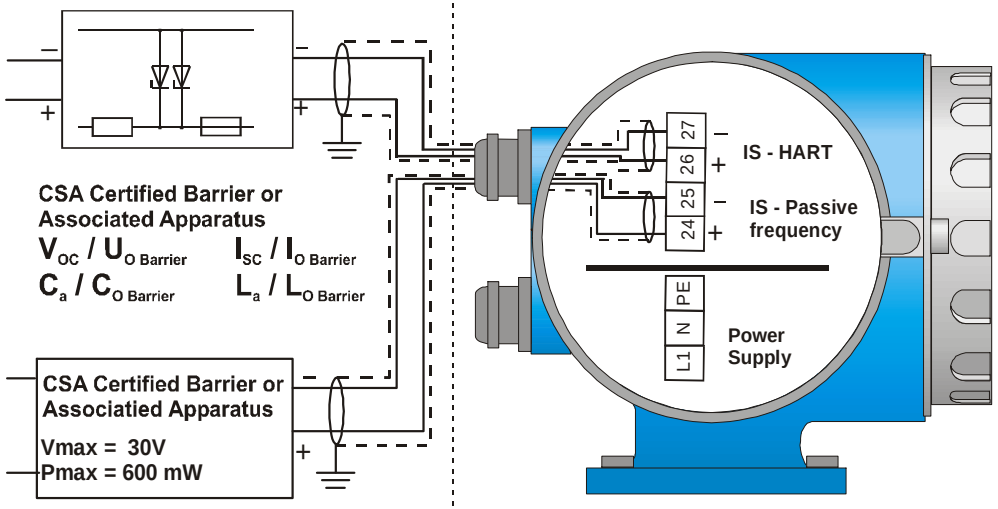
Flowtec AG, Kaegenstrasse 7, CH-4153 Reinach BL1, Postfach

FES0041-0003H

NON HAZARDOUS LOCATION

HAZARDOUS LOCATION

Cl. I, II, III Div. 1 Group A,B,C,D,E,F,G or
Cl. I Div. 2 Group A,B,C,D, and Cl.II,III Div.1 Group E,F,G



Notes:

1) Use supply wires suitable for 20 °C above surrounding ambient, but at least for 80°C / 176°F.

Intrinsically safe signal output:

2) Wire all intrinsically circuits per Canadian Electrical Code

3) **WARNING**: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.
AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SÉCURITÉ INTRINSÈQUE.

4) Control room equipment may not use or generate more than 250 Vrms or VDC.

PROMAG Type: 5** **-**********S

Terminals: 26, 27 (HART current output):
Active intrinsically safe circuit:

V_{oc} / U_o	I_{sc} / I_o	P_{max} / P_o	C_a / C_o	L_a / L_o
21.8 V	90 mA	490 mW	0.15 µF	4.1 mH

V_{max} / U_i	I_{max} / I_i	P_{max} / P_i	C_i	L_i
30 V	10 mA	300 mW	6 nF	0

Cable parameters for Intrinsic Safety:

$C_{cable} \leq 0.15\ \mu F$ if V_{oc} / U_o (of Barrier) ≤ 21.8 V
$C_{cable} \leq C_a$ / $C_{o\ Barrier} - 6$ nF if V_{oc} / U_o (of Barrier) ≥ 21.8 V
$L_{cable} \leq 4.1$ mH

Terminals 24, 25 (Passive intrinsically safe circuit):

V_{max} / U_i	I_{max} / I_i	P_{max} / P_i	C_i	L_i
30 V	300 mA	600 mW	6 nF	0

Entity approved supply must meet the following requirements:
V_{OC} or $U_O \leq V_{max}$ / U_i P_{max} or $P_o \leq P_{max}$ / P_i
Cable parameters for Intrinsic Safety:
$C_{cable} \leq C_a$ (C_O) – 6 nF $L_{cable} \leq L_a$ (L_O)

PROMAG Type: 5** **-**********T

Terminals: 26, 27 (HART current output):
Passive intrinsically safe circuit:

V_{max} / U_i	I_{max} / I_i	P_{max} / P_i	C_i	L_i
30 V	100 mA	1.25 W	6 nF	negligible

Connect to entity approved Barrier with
V_{OC} , V_t or $U_O \leq V_{max}$ / U_i
I_{SC}, I_t or $I_o \leq I_{max}$ / I_i
Cable parameters for Intrinsic Safety:
$C_{cable} \leq C_{a\ Barrier}$ or $C_{o\ Barrier} - 6$ nF
$L_{cable} \leq L_{a\ Barrier}$ or $L_{o\ Barrier}$

Terminals 24, 25 (Passive intrinsically safe circuit):

V_{max} / U_i	I_{max} / I_i	P_{max} / P_i	C_i	L_i
30 V	300 mA	600 mW	6 nF	0

Entity approved apparatus must meet the following requirements:
V_{OC} , V_t or $U_O \leq V_{max}$ P_{max} or $P_o \leq P_{max}$ / P_i
Cable parameters for Intrinsic Safety:
$C_{cable} \leq C_a$ (C_o) – 6 nF $L_{cable} \leq L_a$ (L_o)

Aenderungen:						
	A	03.12.01/MDI	F	08.02.11/KLI	Alle gesetzlichen Urheberrechte vorbehalten.	
	B	03.10.04/MDI	G	21.02.14/BDA	Diese Zeichnung darf ohne unsere	
	C	31.10.05/PAM	H	23.08.17/BDA	Genehmigung weder vervielfältigt werden noch	Ersatz für:
	D	07.10.08/PAM	J		dritten Personen und Konkurrenzfirmen	Ersteller: FES / **ID 1077**
	E	05.05.09/BDA	K		zugängig gemacht werden.	File: M:\ZEICHNG\FES0041\H\FES0041H.doc

CSA CONTROL DRAWING Cl.1, Div. 1 PROMAG 5. W / P / H / L / E Entity concept Commodul HART IS	Massstab	Gezeichnet	03.12.01	MDI
		Geprüft		
		Ex-geprüft	23.08.2017	BDA
		Gesehen		

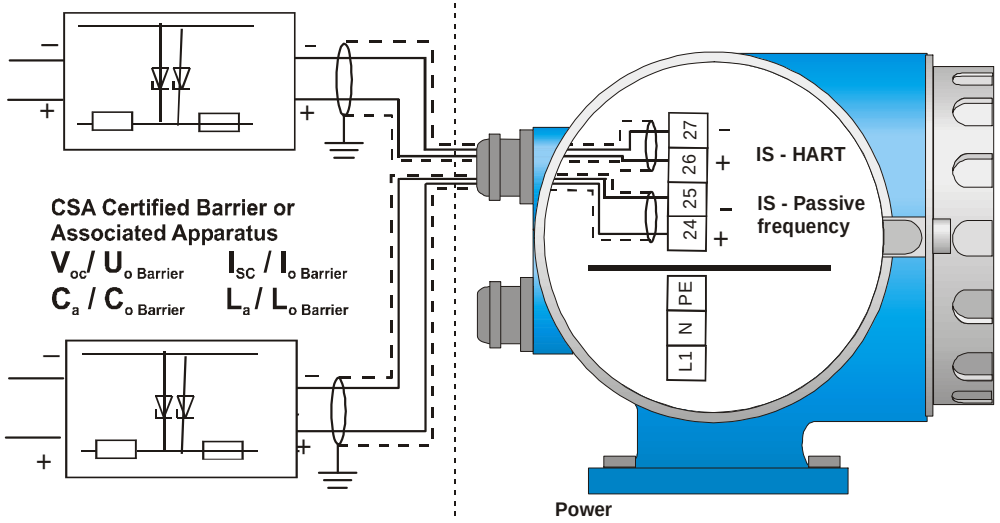
Flowtec AG, Kaegenstrasse 7, CH-4153 Reinach BL1, Postfach

FES0041-0004H

NON HAZARDOUS LOCATION

HAZARDOUS LOCATION

Cl. I, II, III Div. 1 Group A,B,C,D,E,F,G or
Cl. I Div. 2 Group A,B,C,D, and Cl.II,III Div.1 Group E,F,G



Notes:

2) Use supply wires suitable for 20 °C above surrounding ambient, but at least for 80°C / 176°F

Intrinsically safe signal output:

2) Install all intrinsically safe cricuits per NEC ANSI/NFPA 70 and ANSI/ISA-RP 12.06.01 respecting the Explosionproof Integrity of the enclosure

3) **WARNING**: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY. **AVERTISSEMENT**: LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SÉCURITÉ INTRINSÈQUE.

4) Control room equipment may not use or generate more than 250 Vrms or VDC.

PROMAG Type: 5** **-**********R

Terminals: 26, 27 (HART current output):
Terminals: 24, 25 (current output):

Active:

V_{oc} / U_o	I_{sc} / I_o	P_{max} / P_o	C_a / C_o	L_a / L_o
21.8 V	90 mA	490 mW	0.15 µF	4.1 mH

V_{max} / U_i	I_{max} / I_i	P_{max} / P_i	C_i	L_i
30 V	10 mA	300 mW	6 nF	0

Cable parameters for Intrinsic Safety:

$C_{cable} \leq 0.15\ \mu F$ if V_{oc} (of Barrier) ≤ 21.8 V
$C_{cable} \leq C_{a\ Barrier} - 6$ nF if V_{oc} (of Barrier) ≥ 21.8 V
$L_{cable} \leq 4.1$ mH

Type: PROMAG Type: 5** **-**********U

Terminals: 26, 27 (HART current output)
Terminals: 24, 25 (current output)

Passive:

V_{max} / U_i	I_{max} / I_i	P_{max} / P_i	C_i	L_i
30 V	100 mA	1.25 W	6 nF	negligible

Connect to entity approved Barrier with
V_{OC} , V_t or $U_O \leq V_{max} / U_i$
I_{SC}, I_t or $I_o \leq I_{max} / I_i$
Cable parameters for Intrinsic Safety:
$C_{cable} \leq C_{a\ Barrier}$ or $C_{o\ Barrier} - 6$ nF
$L_{cable} \leq L_{a\ Barrier}$ or $L_{o\ Barrier}$

Aenderungen:					
	A	03.12.01/MDI	F	08.02.11/KLI	Alle gesetzlichen Urheberrechte vorbehalten.
	B	03.10.04/MDI	G	21.02.14/BDA	Diese Zeichnung darf ohne unsere
	C	31.10.05/PAM	H	23.08.17/BDA	Genehmigung weder vervielfältigt werden noch
	D	07.10.08/PAM	J		dritten Personen und Konkurrenzfirmen
	E	05.05.09/BDA	K		zugängig gemacht werden.

Ersatz für:
Ersteller: FES / **ID 1077**
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CSA CONTROL DRAWING Cl.1, Div. 1
PROMAG 5. W / P / H / L / E
Entity concept Commodul HART IS

Massstab

Gezeichnet	03.12.01	MDI
Geprüft		
Ex-geprüft	23.08.2017	BDA
Gesehen		

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

FES0041-0005H