



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:

9aP bb-cdefghiklmno+###. PROline PROSONIC FLOW Ultrasonic Flowmeter Transmitter.

XP-AIS-DIP / I,II,III / 1 / ABCDEFG / T*; XP-AIS / I / 1 / IIC / T*; - FES0059; Type 4X

I/O option R and S Current Output:

Voc = 21.8 V, Isc = 90 mA, Po = 0.49 W, Ca = 150 nF, La = 4.1 mH;

Vmax = 30 V, Imax = 10 mA, Pi = 300 mW, Ci = 6 nF, Li = 0.

I/O Option S and T Frequency Output:

Vmax = 30 V, Imax = 300 mA, Pi = 0.6 W, Ci = 6 nF, Li = 0.

I/O option T Current Output:

Vmax = 30 V, Imax = 100 mA, Pi = 1.25 W, Ci = 6 nF, Li = 0.

I/O option R Current Output:

Vmax = 30 V, Imax = 10 mA, Pi = 300 mW, Ci = 6 nF, Li = 0.

I/O option U Current Output:

Vmax = 30 V, Imax = 100 mA, Pi = 1.25 W, Ci = 6 nF, Li = 0.

I/O Options F and G (Entity, FISCO):

Vmax = 30 V, Imax = 600 mA, Pi = 8.5 W, Ci = 5 nF, Li = 10 uH

a = Type of electronic: 0 or 3.

bb = Mounting type/number of channels: any two digit combination of number or letter.

c = Flow sensor type: any single number or letter.

d = Sensor holder: any single number or letter.

e = Installation set: any single number or letter.

f = Sensor cable: any single number or letter.

g = Sensor cable conduit adapter: any single number or letter.

h = Calibration: any single number or letter.

i = Approvals: N.

k = Protection type/version: any single number or letter except V, W, or 6 (remote version -20°C)

V (remote version stainless steel -40°C)

W (remote version stainless steel -20°C)

6 (remote version stainless steel -40°C)

l = Cable glands: A, B.

m = Display/Power supply/Operation: 0, 1, 2, 3, 4, 5, A, B, C, D or X.

n = Software: any single number or letter.

o = I/O's:

A, B, C, D, E, H, J, K, L, M, N, P, Q, V, W, X, 0, 2, 3, 4, 5, 6 or 7 = non IS

F = IS Profibus PA
G = IS Foundation Fieldbus
R = IS HART current output, active
S = IS HART current output active, Frequency output passive
T = IS HART current output passive, Frequency output passive
U = IS HART current output passive

** = option in two digits (none, two or multiple of two digits); any combination of number or letter
+,# = Signs used as indicators for optional abbreviations of extended order code.

Special Conditions of Use:

For installation instructions and the Temperature Class() which applies to specific models, ambient temperatures, and process medium Temperature (Tmed), refer to control drawing FES 0059.*

Equipment Ratings:

Explosionproof for Class I, Division 1, Group A, B, C and D and Class I, Zone 1, Group IIC; dust-ignitionproof for Class II and III Division 1, Groups E, F and G hazardous (classified) outdoor (Type 4X) locations; sensor circuits and signal output circuits (o = I/O options S, T, F, G) intrinsically safe for Class I, II, III, Division 1, Groups A, B, C, D, E, F and G and Class I Zone 1 Groups IIC when installed in accordance with FM Control Drawing FES0059.

AND

9aP bb-cdefghiklmno+###. PROline PROSONIC FLOW Ultrasonic Sensor.

IS-DIP / I,II,III / 1 / ABCDEFG / T*, IS / I / 1 / IIC / T*; -FES0059;

NI / I / 2 / ABCD / T6 to T1, Ta = 60°C, Tmed = 80°C to 170°C; Type 4X, Type 6P

a = Type of electronic: any single number or letter.

bb = Mounting type/number of channels: any two digit combination of number or letter.

c = Flow sensor type: any single number or letter.

d = Sensor holder: any single number or letter.

e = Installation set: any single number or letter.

f = Sensor cable: any single number or letter.

g = Sensor cable conduit adapter: any single number or letter.

h = Calibration: any single number or letter.

i = Approvals: N.

k = Protection type/version: any single number or letter.

l = Cable glands: any single number or letter.

m = Display/Power supply/Operation: any single number or letter.

n = Software: any single number or letter.

o = I/O's: 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 indicators for optional abbreviations of extended order code.

Special Conditions of Use:

For installation instructions and the Temperature Class() which applies to specific models, ambient temperatures, and process medium temperature (Tmed), refer to control drawing FES 0059.*

DDU 18-abcd. Prosonic Flow Sensor.

IS-DIP / I,II,III / 1 / ABCDEFG / T6 to T1, Ta = 60°C, Tmed = 80°C to 170°C; IS / I / 1 / IIC / T6 to T1;

NI / I / 2 / ABCD / T6, Ta = 60°C, Tmed = 80°C to 170°C; - FES0059; Type 6P

a = Type of sensor: any single number or letter.

b = Type of mounting: any single number or letter.

c = Sensor cable adapter: any single number or letter.

d = Sensor cable pre-fabricated: any single number or letter.

DDU 19-abcd. Prosonic Flow.

IS-DIP / I,II,III / 1 / ABCDEFG / T6 to T1, Ta = 60°C, Tmed = 80°C to 170°C; IS / I / 1 / IIC / T6toT1;
NI / I / 2 / ABCD / T6, Ta = 60°C, Tmed = 80°C to 170°C; – FES0059; Type 4X

- a = Type of sensor: any single number or letter.
- b = Type of mounting: any single number or letter.
- c = Sensor cable adapter: any single number or letter.
- d = Sensor cable pre-fabricated: any single number or letter.

Equipment Ratings:

Intrinsically safe for Class I, II, III, Division 1, Groups A, B, C, D, E, F, G and Class I, Zone 1, Group IIC; dust-ignitionproof for Class II and III, Division 1, 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 or 6P respectively) locations when installed in accordance with FM Control Drawing FES0059.

AND

9ab cc-defghiklmnop+###. PROline PROSONIC FLOW Ultrasonic Flowmeter Transmitter.

NI-ANI / I / 2 / ABCD / T5, Ta = 60°C; NI-ANI / I / 2 / IIC / T5, Ta = 60°C;
DIP / II,III / 1 / EFG / T6, Ta = 60°C – FES0063; Type 4X

- a = Type of electronic: 0 or 3.
- b = Type of sensor: C, P, U or W.
- cc = Mounting type/number of channels/Nominal diameter: any two digit combination of number or letter.
- d = Flow sensor type: any single number or letter.
- e = Sensor holder/measuring tube: any single number or letter.
- f = Installation set/process connection: any single number or letter.
- g = Sensor cable: any single number or letter.
- h = Sensor cable conduit adapter: any single number or letter.
- i = Calibration: any single number or letter.
- k = Approvals: R.
- l = Protection type/version: any single number or letter except 6 = Ta -20°C and for 6 = Ta -40°C
- m = Cable glands: A, B, C, K, L, M, X or 9.
- n = Display/Power supply/Operation: A, B, C, D, E, F, G, H, P, Q, R, S, 0, 1, 2, 3, 4, 5, 7, 8 or X.
- o = Software: any single number or letter.
- p = I/O's: A, B, C, D, E, H, J, K, L, M, N, P, Q, V, W, X, 0, 2, 3, 4, 5, 6 or 7.
- ** = option in two digits (none, two or multiple of two digits); any combination of number or letter
- +,# = Signs used as indicators for optional abbreviations of extended order code.

9ab cc-defghiklmnop+###. PROline PROSONIC FLOW Ultrasonic Sensor.

NI-ANI / I / 2 / ABCD / T6 to T1, Ta = 60°C, Tmed = 80°C; NI / I / 2 / IIC / T6 to T1, Ta = 60°C, Tmed = 80°C;
DIP / II,III / 1 / EFG / T6 to T1, Ta = 60°C, Tmed = 80°C; – FES0063, Type 4X, Type 6P

- a = Type of electronic: any single number or letter.
- b = Type of sensor: C, P, U or W.
- cc = Type of mounting/number of channels/ diameter:
 - Representing a clamp on version (Type 4X or 6P)
 - Representing an insertion version (Type 6P)
 - Representing a tube diameter (Type of sensor = C)

- d = Flow sensor type: any single number or letter.
- e = Sensor holder/measuring tube: any single number or letter.
- f = Installation set/process connection: any single number or letter.
- g = Sensor cable: any single number or letter.
- h = Sensor cable conduit adapter: any single number or letter.



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i = Calibration: any single number or letter.

k = Approvals: R. (Type of sensor = U; NI, Class I only), (Type of sensor = C, P or W; NI, Class I; DIP Class II, III; Type 4X, 6P)

l = Protection type/version: any single number or letter.

m = Cable glands: any single number or letter.

n = Display/Power supply/Operation: any single number or letter.

o = Software: any single number or letter.

p = I/O's: 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 indicators for optional abbreviations of extended order code.

Equipment Ratings:

Transmitter nonincendive for Class I, Division 2, Group A, B, C and D and Class I, Zone 2, Group IIC; dust-ignitionproof for Class II and III, Division 1, Groups E, F and G hazardous (classified) outdoor (Type 4X) locations; Sensor (Type = U) nonincendive for Class I, Division 2, Groups A, B, C and D and Class I, Zone 2, Group IIC hazardous (classified) indoor locations; Sensor (Type = C, P or W) nonincendive for Class I Division 2, Groups A, B, C, and D and Class I, Zone 2, Group IIC; dust-

Dustignitionproof for Class II and III, Division 1, Groups E, F and G hazardous (classified) outdoor (Type 4X or 6P) locations when installed in accordance with FM Control Drawing FES0063

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 3615	1989
Class 3611	1999
Class 3810	1989
Including Supplement #1	1995

Original Project ID: 3010849

Approval Granted: May 31, 2001

Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
3014812	August 26, 2002		
3015820	December 17, 2002		
030711	September 10 2003		
061106	August 15, 2007		
081124	January 26, 2009		
3041673	April 21, 2011		
10/07/11	<i>November 22, 2011</i>		

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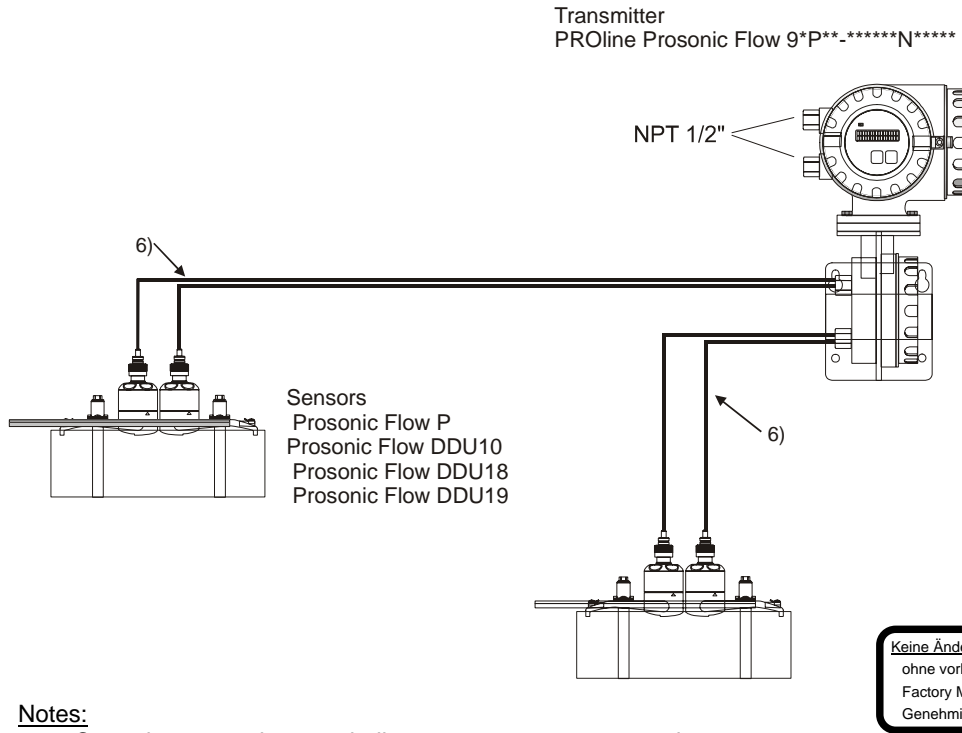
J.E. Marquedant
Group Manager, Electrical

22 November 2011

Date

Hazardous Locations

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



Notes:

- Control room equipment shall not use or generate more than 250 V rms.
- Install per NEC ANSI/NFPA 70. Install all intrinsically safe I/O circuits per NEC and ISA RP 12.6 respecting the Explosion-proof Integrity of the enclosure.
- Transmitter enclosure of PROline Prosonic Flow 9. is factory sealed for use in Cl. I Div. 1 Group A, B, C, D and dust-ignitionproof for Cl. II, III Div. 1 Group E, F, G
- Sensor circuits may be installed as intrinsically safe wiring per ISA RP 12.6 or in conduit in accordance with the NEC.
- Caution: Use supply wires suitable for 5 °C above ambient temperature, but at least for 80 °C / 176°F.
- Class II Group G: The surface temperature of the apparatus cannot exceed 165 °C / 329°F. The user must limit the process temperature for Group G to 160°C.
- Cable Type for all Sensors: Use only prefabricated Endress+Hauser Cable. For reasons of safety the maximum allowed cable length is 30 m per sensor

Keine Änderungen ohne vorherige Factory Mutual Genehmigung


Temperature table

Sensors	maximum medium temperature in °C									
	T6	T5	T4A	T4	T3C	T3B	T3A	T3	T2	T1
at Ta = 60°C										
Pros. Flow 9*PA* - A*****	80	80	80	80	80	80	80	80	80	80
Pros. Flow 9*PA* - B*****	80	80	80	80	80	80	80	80	80	80
Prosonic Flow DDU 10 – A****	80	80	80	80	80	80	80	80	80	80
Prosonic Flow DDU 10 – C****	80	80	80	80	80	80	80	80	80	80
Prosonic Flow DDU18-A***	80	80	80	80	80	80	80	80	80	80
Prosonic Flow DDU19-A***	80	80	80	80	80	80	80	80	80	80
at Ta = 60°C										
Pros. Flow 9*PA* - 1*****	80	95	100	100	100	100	100	100	100	100
Pros. Flow 9*PA* - 2*****	80	95	115	130	150	150	150	150	150	150
Pros. Flow 9*PA* - E*****	80	95	115	130	155	160	170	170	170	170
Pros. Flow 9*PA* - F*****	80	95	115	130	155	160	170	170	170	170
Prosonic Flow DDU 10 – B****	80	95	115	130	155	160	170	170	170	170
Prosonic Flow DDU 10 – D****	80	95	115	130	155	160	170	170	170	170
Prosonic Flow DDU18-B***	80	95	115	130	155	160	170	170	170	170

Communication modules , I/O options

Communication options	Control Drawings
I/O option = F, H, J	see FES0059-0001 C
I/O option = G, K	see FES0059-0002 C
I/O option = S, T	see FES0059-0004 C
I/O option = R, U	see FES0059-0005 C

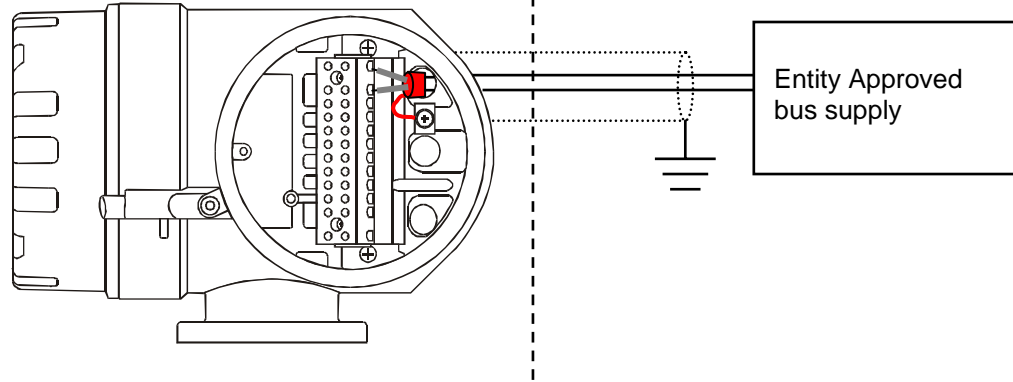
WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.

Änderungen:	A	04.03.02/MDI	F	Alle gesetzlichen Urheberrechte vorbehalten. Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch dritten Personen und Konkurrenzfirmen zugänglich gemacht werden.	Mat. Nr. 71091741															
	B	07.08.06/Bn	G																	
C	24.11.08/SCK	H	Ersteller: FES / ID 1102 FILE: FES0059C_081124doc																	
D		J	<table border="1"> <tr> <td>Masstab</td> <td>Gezeichnet</td> <td>09.03.01</td> <td>UD</td> </tr> <tr> <td></td> <td>Geprüft</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Ex-geprüft</td> <td>24.11.08</td> <td>SCHK</td> </tr> <tr> <td></td> <td>Gesehen</td> <td></td> <td></td> </tr> </table>		Masstab	Gezeichnet	09.03.01	UD		Geprüft				Ex-geprüft	24.11.08	SCHK		Gesehen		
Masstab	Gezeichnet	09.03.01			UD															
	Geprüft																			
	Ex-geprüft	24.11.08	SCHK																	
	Gesehen																			
E		K																		
<p>FM Control Drawing Class I Div. 1 Class I Zone 1</p> <p>PROSONIC FLOW 9.</p>					<p>FES0059 C</p>															
 <p>Flowtec AG, Kaegenstrasse 7, CH-4153 Reinach BL1, Postfach</p>																				

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 ISA RP 12.6. or in conduit per NEC ANSI/NFPA 70.
- 2) **WARNING:** SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.
- 3) Control room equipment may not use or generate more than 250 V rms.

Type: PROSONIC FLOW 9*-*****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 0059-0003.

Keine Änderungen
ohne vorherige
Factory Mutual
Genehmigung

Nonintrinsically safe signal output:

- 4) Install all intrinsically safe circuits per NEC ANSI/NFPA 70 and ISA RP 12.6 respecting the Explosionproof Integrity of the enclosure
- 5) **WARNING:** EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 1.
- 6) Control room equipment may not use or generate over 250 Vrms.

Type: PROSONIC FLOW 9*-*****H**

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

V ≤ 32 V, I = 10 mA

Type: PROSONIC FLOW 9*-*****J**

Terminals 24 (+5V),25 (GND), 26 (DPA), 27 (DPB) (PROFIBUS DP)

Terminals: +5V, GND, DPA, DPB

V = 5 V, I = 100 mA

Änderungen:	A	04.03.02/M	F	Alle gesetzlichen Urheberrechte. vorbehalten. Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch dritten Personen und Konkurrenzfirmen zugänglich gemacht werden.	Mat. Nr. 71091741 Ersetzt durch: Ersatz für: Ersteller: FES / ID 1102 File: FES0059C_081124doc
	B	07.08.06/Bn	G		
	C	24.11.08/SCHK	H		
	D		J		
	E		K		

**FM Control Drawing Class I. Div. 1 / Zone 1
PROSONIC FLOW 9.
PROFIBUS PA / IS installation
PROFIBUS PA / DP non-IS installation**

Masstab	Gezeichnet	09.03.01	UD
	Geprüft		
	Ex-geprüft	24.11.08	SCHK
	Gesehen		



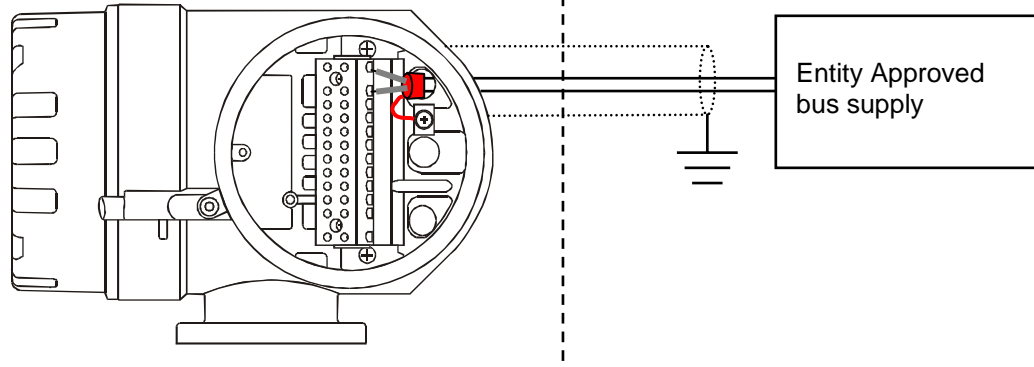
Flowtec AG, Kaegenstrasse 7, CH-4153 Reinach BL1, Postfach

FES0059-0001 C

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 ISA RP 12.6. or in conduit per NEC ANSI/NFPA 70
- 2) **WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.**
- 3) Control room equipment may not use or generate more than 250 Vrms.

Type: PROSONIC FLOW 9*_*****G**

Terminals: 26, 27 (Foundation Fieldbus):

Intrinsically 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 μ H

Connect to entity approved associated apparatus with

I_{SC}, I_i or $I_O \leq I_{max}$ or I_i and

V_{OC}, V_i or $U_O \leq V_{max}$ or U_i

$(P_O \leq P_{max}$ or $P_i)$

Cable parameters for Intrinsic Safety:

$C_{cable} \leq C_a / C_O - \sum C_i$

$L_{cable} \leq L_a / L_O - \sum L_i$ or

$L/R_{cable} \leq L/R_{Associated Apparatus}$ and L_i of each I.S. apparatus ≤ 10 μ H

Alternatively the intrinsically safe circuit (Fieldbus Foundation) can be connected according to the FISCO-Concept (see FES 0059-0003).

Keine Änderungen

ohne vorherige
Factory Mutual
Genehmigung

Nonintrinsically safe signal output:

- 4) Install all intrinsically safe cricuits per NEC ANSI/NFPA 70 and ISA RP 12.6 respecting the Explosionproof Integrity of the enclosure
- 5) **WARNING: EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 1.**
- 6) Control room equipment may not use or generate over 250 Vrms.

Type: PROSONIC FLOW 9*_*****K**

Terminals 26,27 (FIELD BUS FOUNDATION NON I.S.)

$V \leq 32$ V, $I = 10$ mA

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	B	07.08.06/Bn	G		
	C	24.11.08/SCH	H		
	D		J		
	E		K		

**FM Control Drawing Class I, Div. 1 / Zone 1
PROSONIC FLOW 9.
Fieldbus Foundation IS installation
Fieldbus Foundation non-IS installation**

Massstab	Gezeichnet	09.03.01	UD
	Geprüft		
	Ex-geprüft	24.11.08	SCHK
	Gesehen		



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

FES0059-0002 C

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 (U_i or V_{max}), the current (I_i or I_{max}), and the power (P_i or P_{max}) which intrinsically safe apparatus can receive and remain intrinsically safe, considering faults, must be equal or greater than the voltage (U_o , V_o or V_t), the current (I_o , I_{sc} or I_t) and the power (P_o or P_{max}) levels which can be delivered by the associated apparatus, considering faults and applicable factors. 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 (or V_o or V_t) 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 50 μ A for each connected device. Separately 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

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

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

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

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 length 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:

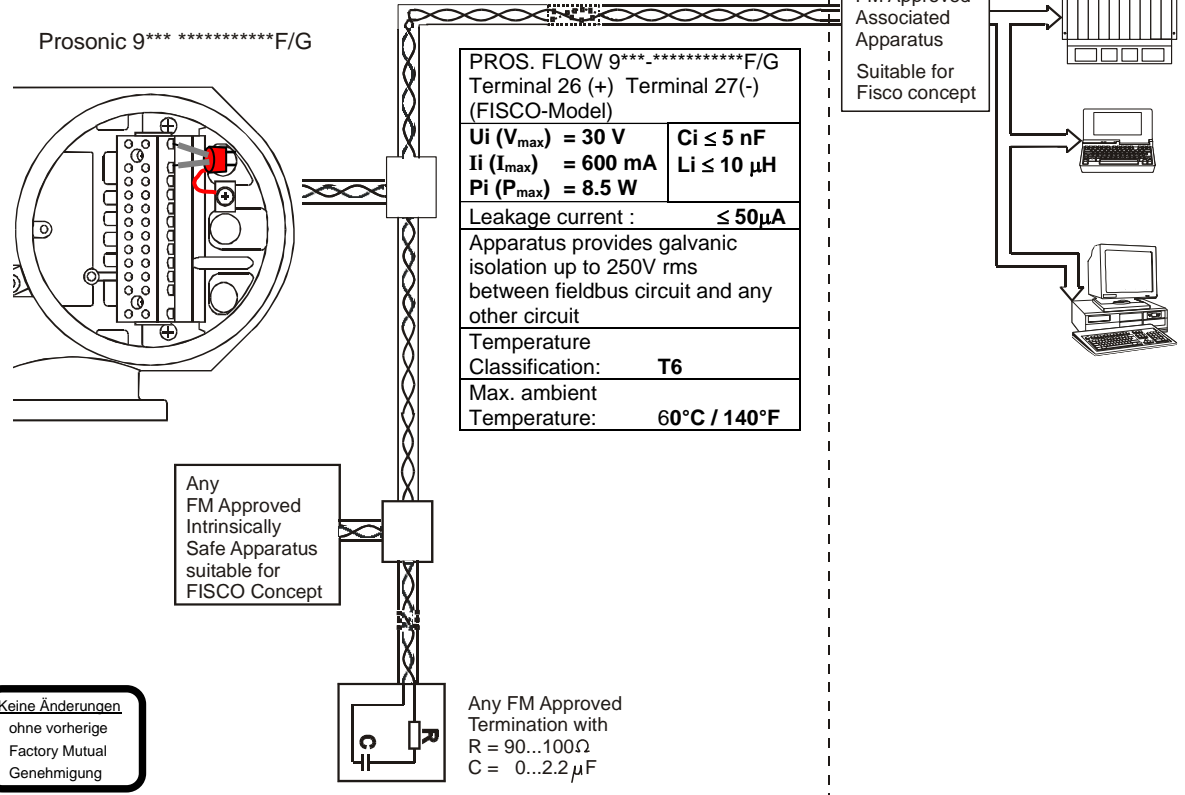
Intrinsically safe Class I, Div.1, Groups A,B,C,D

- Approved associated apparatus must be installed in accordance with manufacturers instructions.
- FM approved associated apparatus must meet the following parameters:
 U_o or V_o or $V_t \leq U_i$ (V_{max}) and I_o or I_{sc} or $I_t \leq I_i$ (I_{max}) and P_o or $P_{max} \leq P_i$ (P_{max})
- The maximum non-hazardous area voltage must not exceed 250V
- The installation must be in accordance with the National Electrical Code NFPA 70, and ANSI/ISA-Rp 12.6. (except chapter 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).
- Caution: Use only supply wires suitable for 5°C above surrounding temperature.
- Warning : Substitution of components may impair intrinsic safety.
- The polarity for connection PA+ (26) and PA- (27) is of no importance due to an internal rectifier.

HAZARDOUS (CLASSIFIED) LOCATION

- Class I, Division 1, Groups A,B,C,D
- Class II, Division 1, Groups E,F,G
- Class III, Division 1

NONHAZARDOUS LOCATION



Keine Änderungen
ohne vorherige
Factory Mutual
Genehmigung

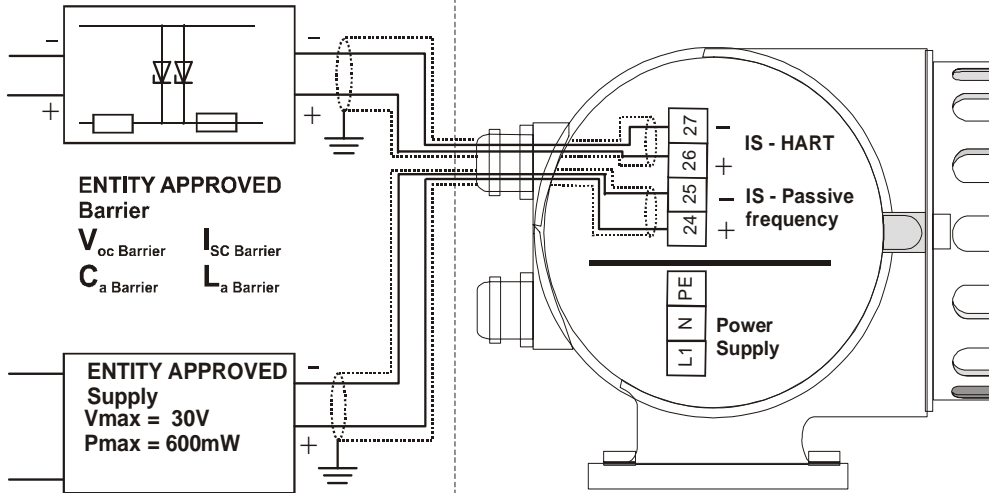
Änderungen:	A	04.03.02/M	F	Alle gesetzlichen Urheberrechte vorbehalten. Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch dritten Personen und Konkurrenzfirmen zugänglich gemacht werden.	Mat. Nr. 71091741 Ersetzt durch: Ersatz für: Ersteller: FES / ID 1102 File: FES0059C_081124doc
	B	07.08.06/Bn	G		
	C	24.11.08/SCHK	H		
	D		J		
	E		K		

<p>FM Control Drawing Class I, Div. 1/ Zone 1 PROSONIC FLOW 9. Intrinsically safe PROFIBUS PA FISCO-Concept</p>	Masstab	Gezeichnet	09.03.01	UD
		Geprüft		
		Ex-geprüft	24.11.08	SCHK
		Gesehen		

NON HAZARDOUS LOCATION

HAZARDOUS LOCATION

Cl. I, Zone 1 IIC
 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 5 °C above surrounding ambient, but at least for 80°C / 176°F
- 2) Install all intrinsically safe circuits per NEC ANSI/NFPA 70 and ISA RP 12.6 respecting the Explosionproof Integrity of the enclosure
- 3) **WARNING:** SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.
- 4) Control room equipment may not use or generate more than 250 Vrms.

Type: PROSONIC FLOW 9*_*****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:

$$C_{cable} \leq 0.15 \mu F \quad \text{if } V_{oc} \text{ (of Barrier)} \leq 21.8 V$$

$$C_{cable} \leq C_a \text{ Barrier} - 6 nF \quad \text{if } V_{oc} \text{ (of Barrier)} \geq 21.8 V$$

$$L_{cable} \leq 4.1 mH$$

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	600mW	6 nF	0

Entity approved supply must meet the following requirements:

$$V_{oc}, V_t \text{ or } U_o \leq V_{max} \quad P_{max} \text{ or } P_o \leq P_{max} / P_i$$

Cable parameters for Intrinsic Safety:

$$C_{cable} \leq C_a (C_o) - 6nF \quad L_{cable} \leq L_a (L_o)$$

Type: PROSONIC FLOW 9*_*****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	0

Connect to entity approved Barrier with

$$V_{oc}, V_t \text{ or } U_o \leq V_{max} / U_i$$

$$I_{sc}, I_t \text{ or } I_o \leq I_{max} / I_i$$

Cable parameters for Intrinsic Safety:

$$C_{cable} \leq C_a \text{ Barrier or } C_o \text{ Barrier} - 6 nF$$

$$L_{cable} \leq L_a \text{ Barrier or } L_o \text{ Barrier}$$

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	600mW	6 nF	0

Entity approved apparatus must meet the following requirements:

$$V_{oc}, V_t \text{ or } U_o \leq V_{max} \quad P_{max} \text{ or } P_o \leq P_{max} / P_i$$

Cable parameters for Intrinsic Safety:

$$C_{cable} \leq C_a (C_o) - 6 nF$$

$$L_{cable} \leq L_a (L_o)$$

Keine Änderungen
 ohne vorherige
 Factory Mutual
 Genehmigung

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	E		K		

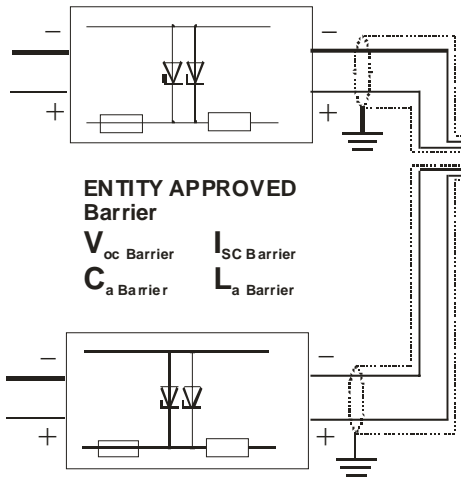
FM CONTROL DRAWING Class I, Div. 1 PROSONIC FLOW 9. Entity concept Commodul HART IS	Masstab	Gezeichnet	09.03.01	UD
		Geprüft		
		Ex-geprüft	24.11.08	SCHK
		Gesehen		



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

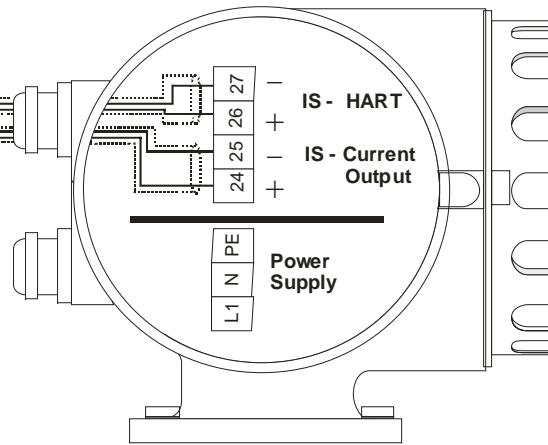
FES0059-0004 C

NON HAZARDOUS LOCATION



HAZARDOUS LOCATION

Cl. I, Zone 1 IIC
 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 5 °C above surrounding ambient, but at least for 80°C / 176°F
- 2) Install all intrinsically safe circuits per NEC ANSI/NFPA 70 and ISA RP 12.6 respecting the Explosionproof Integrity of the enclosure
- 3) **WARNING:** SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.
- 4) Control room equipment may not use or generate more than 250 Vrms.

Intrinsically safe signal output:

- 2) Install all intrinsically safe circuits per NEC ANSI/NFPA 70 and ISA RP 12.6 respecting the Explosionproof Integrity of the enclosure
- 3) **WARNING:** SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.
- 4) Control room equipment may not use or generate more than 250 Vrms.

Type: PROSONIC FLOW 9*_*****R**

Terminals: 26, 27 (HART current output):

Terminals: 24, 25 (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:

$$C_{cable} \leq 0.15 \mu F \quad \text{if } V_{oc} / U_o \text{ (of Barrier)} \leq 21.8 V$$

$$C_{cable} \leq C_a / C_o \text{ Barrier} - 6 nF \quad \text{if } V_{oc} / U_o \text{ (of Barrier)} \geq 21.8 V$$

$$L_{cable} \leq 4.1 mH$$

Type: PROSONIC FLOW 9*_*****U**

Terminals: 26, 27 (HART current output):

Terminals: 24, 25 (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

$$V_{oc} \text{ or } U_o \leq V_{max} / U_i$$

$$I_{sc} \text{ or } I_o \leq I_{max} / I_i$$

Cable parameters for Intrinsic Safety:

$$C_{cable} \leq C_a \text{ Barrier or } C_o \text{ Barrier} - 6 nF$$

$$L_{cable} \leq L_a \text{ Barrier or } L_o \text{ Barrier}$$

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	D		J		
	E		K		

FM CONTROL DRAWING Cl.1, Div. 1
PROSONIC FLOW 9.
Entity concept Commodul HART IS

Masstab	Gezeichnet	09.03.01	UD
	Geprüft		
	Ex-geprüft	24.11.08	SCHK
	Gesehen		



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