



Level



Pressure



Flow



Temperature



Liquid  
Analysis



Registration



Systems  
Components



Services



Solutions

## Safety Instructions

# Proline Promass 83 FOUNDATION Fieldbus

Division 1

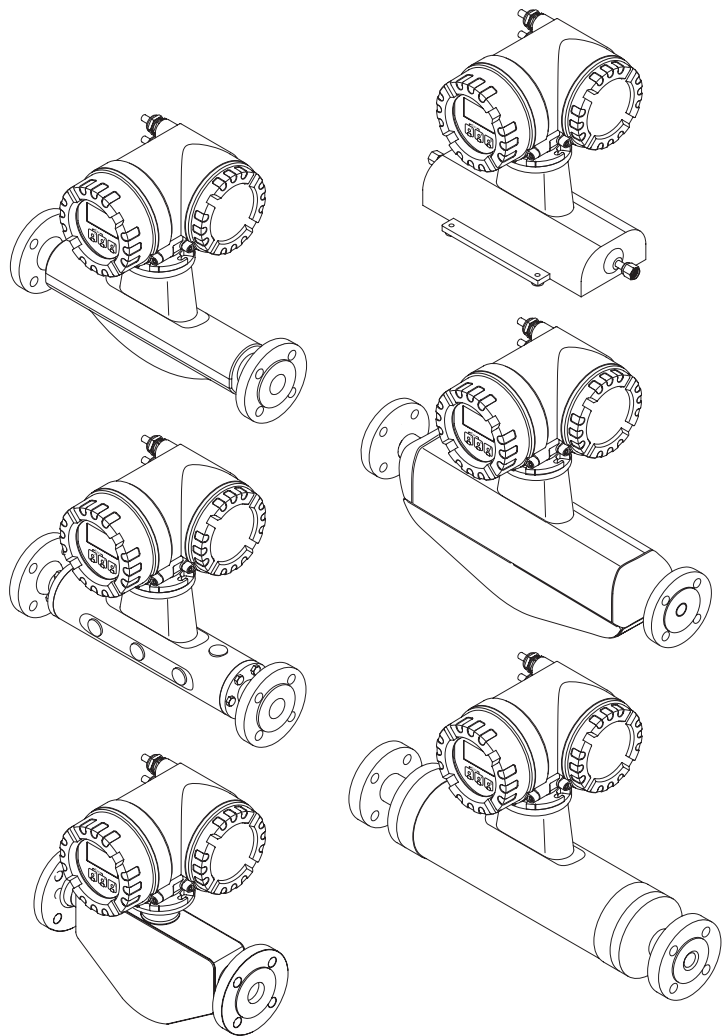
Ex documentation



Ex documentation for the Operating Instructions according to  
FACTORY MUTUAL standards → **Page 3**



Ex documentation for the Operating Instructions according to  
CANADIAN STANDARDS ASSOCIATION → **Page 17**



Examples for markings according to FM and CSA:



Temperature Class

	Maximum surface temperature	
T1	842 °F	450 °C
T2	572 °F	300 °C
T2A	536 °F	280 °C
T2B	500 °F	260 °C
T2C	446 °F	230 °C
T2D	419 °F	215 °C
T3	392 °F	200 °C
T3A	356 °F	180 °C
T3B	329 °F	165 °C
T3C	320 °F	160 °C
T4	275 °F	135 °C
T4A	248 °F	120 °C
T5	212 °F	100 °C
T6	185 °F	85 °C

Example: **XP / I / 1 / ABCD**

Factory Mutual	Type of Protection	
	XP	Explosionproof
	IS	Intrinsically Safe Apparatus
	AIS	Associated Apparatus with Intrinsically Safe Connections
	ANI	Associated Nonincendive Field Wiring Apparatus
	PX,PY,PZ	Pressurized
	APX,APY,APZ	Associated Pressurization Systems/Components
	NI	Nonincendive
	DIP	Dust-Ignitionproof
	S	Special Protection
Class		
I	Class I (Gas)	
II	Class II (Dust)	
III	Class III (Fibre)	
Division		
1	Division 1	
2	Division 2	
Group		
FM /NEC	Gases, vapours and dust examples	Min. ignition temperature [µJ]
A	Acetylene, carbon disulfide (Class I)	0.02
B	Hydrogen, ethyl nitrate (Class I)	0.02
C	Ethylene, isoprene (Class I)	0.06
D	Acetone, ethane, benzene, ethanoic acid, gasolines, diesel oil, aircraft fuel, methane, heating oil,crude oil, hexane, ether (Class I)	0.18
E	Metallic powder (Class II)	
F	Coal dust (Class II)	
G	Mill dust (Class II)	
	Textile fibres (Class III)	



Temperature Class

	Maximum surface temperature	
T1	450 °C	842 °F
T2	300 °C	572 °F
T2A	280 °C	536 °F
T2B	260 °C	500 °F
T2C	230 °C	446 °F
T2D	215 °C	419 °F
T3	200 °C	392 °F
T3A	180 °C	356 °F
T3B	165 °C	329 °F
T3C	160 °C	320 °F
T4	135 °C	275 °F
T4A	120 °C	248 °F
T5	100 °C	212 °F
T6	85 °C	185 °F

Example: **Class I, Division 1, Group ABCD**

Canadian Standards Association	Class		
	I	Class I (Gas)	
	II	Class II (Dust)	
	III	Class III (Fibre)	
	Division		
	1	Division 1	
	2	Division 2	
	Group		
	CSC /NEC	Gases, vapours and dust examples	Min. ignition temperature [µJ]
	A	Acetylene, carbon disulfide (Class I)	0.02
B	Hydrogen, ethyl nitrate (Class I)	0.02	
C	Ethylene, isoprene (Class I)	0.06	
D	Acetone, ethane, benzene (Class I)	0.18	
E	Metallic powder (Class II)		
F	Coal dust (Class II)		
G	Mill dust (Class II)		
	Textile fibres (Class III)		
Type of Protection			
Explosionproof			
Intrinsically Safe Apparatus			
Associated Apparatus with Intrinsically Safe Connections			
Associated Nonincendive Field Wiring Apparatus			
Pressurized			
Associated Pressurization Systems/Components			
Nonincendive			
Dust-Ignitionproof			
Special Protection			



Level



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## Safety Instructions

# Proline Promass 83 FOUNDATION Fieldbus

## Division 1



## Ex documentation

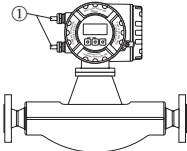
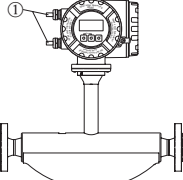
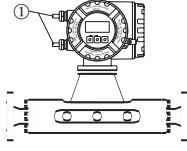
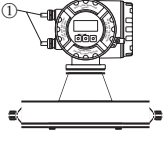
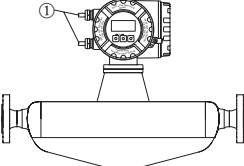
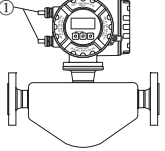
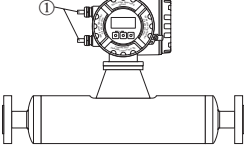


**This documentation is an integral part of the following Operating Instructions:**

- BA065D, Operating Instruction, Proline Promass 83 FOUNDATION Fieldbus

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## Measuring system compact version

Hazardous area		Safe area
Division 1 / Zone 0 / Zone 1	Division 2 / Zone 2	
 <p>F</p>  <p>F (HT)</p>  <p>M</p>  <p>A</p>  <p>H</p>  <p>E</p>  <p>I</p>		
A0001378		
Hazardous area		Safe area
Division 1 / Zone 0 / Zone 1	Division 2 / Zone 2	
<p><b>Transmitter Promass 83 FOUNDATION Fieldbus:</b></p> <ul style="list-style-type: none"> <li>■ Housing: explosionproof (use only cable entry 1/2" NPT) for use in Cl. I Div. 1 Groups ABCD or Cl. I Zone 1 Group IIC and Cl. II and III Div. 1 Groups EFG Electronics, associated apparatus: provides intrinsically safe sensor circuits</li> <li>■ Sensor: intrinsically safe Cl. I Div. 1 Groups ABCD or Cl. I Zone 1 Group IIC and Cl. II and III Div. 1 Groups EFG                             <ul style="list-style-type: none"> <li>– Promass A; DN 1/24"...1/8"</li> <li>– Promass F; DN 3/8"...2"</li> <li>– Promass F; (HT) High temperature; DN 1", DN 2"</li> <li>– Promass I; DN 3/8"...1 1/2"</li> <li>– Promass M; DN 3/8"...2"</li> <li>– Promass E; DN 3/8"...2"</li> <li>– Promass H; DN 3/8"...1 1/2"</li> </ul> </li> <li>■ Ambient-/fluid temperature ranges and temperature class see Page 6.</li> <li>■ ① = Cable entries, for number reference see Page 11.</li> <li>■ F (HT) = Promass F high-temperature version.</li> </ul>		<p><b>Transmitter Promass 83 FOUNDATION Fieldbus:</b></p> <ul style="list-style-type: none"> <li>■ Housing: explosionproof (use only cable entry 1/2" NPT) for use in Cl. I Div. 1 Groups CD or Cl. I Zone 1 Group IIB and Cl. II and III Div. 1 Groups EFG Electronics, associated apparatus: provides intrinsically safe sensor circuits</li> <li>■ Sensor: intrinsically safe Cl. I Div. 1 Groups CD or Cl. I Zone 1 Group IIB and Cl. II and III Div. 1 Groups EFG                             <ul style="list-style-type: none"> <li>– Promass F; DN 3"...10"</li> <li>– Promass F; (HT) High temperature; DN 3"</li> <li>– Promass M; DN 3"</li> <li>– Promass H; DN 2"</li> <li>– Promass I; DN 2", DN 1 1/2" FB (full bore)</li> </ul> </li> <li>■ Optionally, a version for Groups A and B is available.</li> <li>■ Ambient-/fluid temperature ranges and temperature class see Page 6.</li> <li>■ ① = Cable entries, for number reference see Page 11.</li> <li>■ F (HT) = Promass F high-temperature version.</li> </ul>

Measuring system remote version

Hazardous area		Safe area
Division 1 / Zone 0 / Zone 1	Division 2 / Zone 2	
<p style="text-align: right;">A0001379</p>		
Hazardous area		Safe area
Division 1 / Zone 0 / Zone 1	Division 2 / Zone 2	
<p><b>Transmitter Promass 83 FOUNDATION Fieldbus:</b> or <b>Transmitter Promass 83 FOUNDATION Fieldbus:</b></p> <ul style="list-style-type: none"> <li>■ Housing: explosionproof (use only cable entry 1/2" NPT) for use in Cl. I Div. 1 Groups ABCD or Cl. I Zone 1 Group IIC and Cl. II and III Div. 1 Groups EFG Electronics, associated apparatus: provides intrinsically safe sensor circuits</li> <li>■ Sensor: intrinsically safe Cl. I Div. 1 Groups ABCD or Cl. I Zone 1 Group IIC and Cl. II and III Div. 1 Groups EFG                         <ul style="list-style-type: none"> <li>- Promass A; DN 1/24"...1/8"</li> <li>- Promass F; DN 3/8"...2"</li> <li>- Promass F; (HT) High temperature; DN 1", DN 2"</li> <li>- Promass I; DN 3/8"...1 1/2"</li> <li>- Promass M; DN 3/8"...2"</li> <li>- Promass E; DN 3/8"...2"</li> <li>- Promass H; DN 3/8"...1 1/2"</li> </ul> </li> <li>■ Only the cables supplied by Endress+Hauser may be used between the transmitter and the sensor.</li> <li>■ Ambient-/fluid temperature ranges and temperature class see Page 6.</li> <li>■ ①, ②, ③ = Cable entries, for number reference see Page 11.</li> <li>■ ④ = transmitter Promass 83</li> <li>■ F (LN) = Promass F Long-neck version (Remote version for heating)</li> <li>■ F (HT) = Promass F high-temperature version</li> </ul> <ul style="list-style-type: none"> <li>■ Housing: explosionproof (use only cable entry 1/2" NPT) for use in Cl. I Div. 1 Groups CD or Cl. I Zone 1 Group IIB and Cl. II and III Div. 1 Groups EFG Electronics, associated apparatus: provides intrinsically safe sensor circuits</li> <li>■ Sensor: intrinsically safe Cl. I Div. 1 Groups CD or Cl. I Zone 1 Group IIB and Cl. II and III Div. 1 Groups EFG                         <ul style="list-style-type: none"> <li>- Promass F; DN 3"...10"</li> <li>- Promass F; (HT) High temperature; DN 3"</li> <li>- Promass M; DN 3"</li> <li>- Promass H; DN 2"</li> <li>- Promass I; DN 2", DN 1 1/2" FB (full bore)</li> </ul> </li> <li>■ Optionally, a version for Groups A and B is available.</li> <li>■ Only the cables supplied by Endress+Hauser may be used between the transmitter and the sensor.</li> <li>■ Ambient-/fluid temperature ranges and temperature class see Page 6.</li> <li>■ ①, ②, ③ = Cable entries, for number reference see Page 11.</li> <li>■ ④ = transmitter Promass 83</li> <li>■ F (LN) = Promass F Long-neck version (Remote version for heating)</li> <li>■ F (HT) = Promass F high-temperature version</li> </ul>		

**Temperature tables  
compact version**

Max. medium temperature [°F] (at $T_a = 113$ °F)		T6 185 °F	T5 212 °F	T4A 248 °F	T4 275 °F	T3A 356 °F	T2C 446 °F	T2B 500 °F	T1 842 °F
Promass E	DN 3/8"...2"	113	212	248	257	257	257	257	257

Max. medium temperature [°F] (at $T_a = 122$ °F)		T6 185 °F	T5 212 °F	T4A 248 °F	T4 275 °F	T3A 356 °F	T2C 446 °F	T2B 500 °F	T1 842 °F
Promass F	DN 3/8"...1 1/2"	131	158	185	212	302	365*	392*	392*
Promass F	DN 2"...10"	140	158	185	221	302	365*	392*	392*
Promass I	DN 3/8"...1", 1/2" FB	140	203	203	230	302	302	302	302
Promass I	DN 1 1/2"...2", 1" FB, 1 1/2" FB	158	185	221	248	302	302	302	302
Promass M	DN 3/8"...3"	122	140	185	221	302	302	302	302
Promass E	DN 1"...2"	122	212	248	257	257	257	257	257
Promass H	DN 3/8"	122	149	185	212	284	365	392	392
Promass H	DN 1/2"...2"	140	167	212	239	320	392	392	392

Max. medium temperature [°F] (at $T_a = 140$ °F)		T6 185 °F	T5 212 °F	T4A 248 °F	T4 275 °F	T3A 356 °F	T2C 446 °F	T2B 500 °F	T1 842 °F
Promass A	DN 1/24"...1/8"	140	203	239	266	284	392	392	392
Promass F	DN 3/8"...1 1/2"	131	158	185	212	302*	365*	392*	392*
Promass F	DN 2"...10"	140	158	185	212	302*	365*	392*	392*
Promass F, HT	DN 1", 2", 3"	158	185	212	239*	320*	401*	455*	662*
Promass I	DN 3/8"...1", 1/2" FB	140	203	203	230	302*	302*	302*	302*
Promass I	DN 1 1/2"...2", 1" FB, 1 1/2" FB	158	185	221	248	302*	302*	302*	302*
Promass M	DN 3/8"...3"	–	140	185	212	212	212	212	212
Promass E	DN 3/8"...2"	–	212	248	257	257	257	257	257
Promass H	DN 3/8"	122	149	185	212	284	365*	392*	392*
Promass H	DN 1/2"...2"	140	167	212	239	320	392*	392	392*

\* The maximum permissible fluid temperatures apply only when the transmitter is installed in such a way that it is not above the sensor and heat can be removed freely by convection in all directions.

- The minimum **fluid temperature** is –58 °F for Promass A/F/I/M/H, and –40 °F for Promass E.
- The minimum **ambient temperature** is –4 °F. A version for ambient temperatures up to –40 °F is optionally available.

**Temperature tables sensor  
remote version**

Max. medium temperature [°F] (at $T_a = 113$ °F)		T6 185 °F	T5 212 °F	T4A 248 °F	T4 275 °F	T3A 356 °F	T2C 446 °F	T2B 500 °F	T1 842 °F
Promass E	DN 3/8"...2"	113	212	248	257	257	257	257	257

Max. medium temperature [°F] (at $T_a = 140$ °F)		T6 185 °F	T5 212 °F	T4A 248 °F	T4 275 °F	T3A 356 °F	T2C 446 °F	T2B 500 °F	T1 842 °F
Promass A	DN 1/24"...1/8"	140	203	239	266	284	392	392	392
Promass F	DN 3/8"...1 1/2"	131	158	185	212	302	365	392	392
Promass F	DN 2"...10"	140	158	185	221	302	365	392	392
Promass F, HT	DN 1", 2", 3"	158	185	212	239	320	401	455	662
Promass I	DN 3/8"...1", 1/2" FB	140	203	203	230	302	302	302	302
Promass I	DN 1 1/2"...2", 1" FB, 1 1/2" FB	158	185	221	248	302	302	302	302
Promass M	DN 3/8"...3"	122	140	185	221	212	302	302	302
Promass E	DN 3/8"...2"	–	212	248	257	257	257	257	257
Promass H	DN 3/8"	122	149	185	212	284	365	392	392
Promass H	DN 1/2"...2"	140	167	212	239	320	392	392	392

- The minimum **fluid temperature** is –58 °F for Promass A/F/I/M/H, and –40 °F for Promass E.
- The minimum **ambient temperature** is –40 °F.

**Transmitter**

- The Promass 83 (remote version) transmitter has a T6 temperature class rating when installed in the EEx d housing for operation at ambient temperatures up to  $T_a = 140$  °F.
- The minimum **ambient temperature** is –4 °F. A version for ambient temperatures up to –40 °F is optionally available.

**Note!**

At the specified medium temperatures, the equipment is not subjected to temperatures impermissible for the temperature class in question.

**Approvals**

Nr. / Approval type	Description
<b>J.I.3009083</b>  (Special notes, see Page 8)	for the electric flow measuring system Proline Promass 83 FOUNDATION Fieldbus  Identification: see below

**Compact version**

P r o m a s s 8 3 * * * - * * * * * * * * * * *				
<table border="1"> <tr> <td>G = FOUNDATION Fieldbus, IS, FISCO</td> </tr> <tr> <td>K = FOUNDATION Fieldbus</td> </tr> </table>			G = FOUNDATION Fieldbus, IS, FISCO	K = FOUNDATION Fieldbus
G = FOUNDATION Fieldbus, IS, FISCO				
K = FOUNDATION Fieldbus				
Promass 83 A	DN 1/24"...1/8"	<b>XP-IS-DIP I, II, III/1/ABCDEFGF</b>		
Promass 83 F	DN 3/8"...2"			
Promass 83 F (HT)	DN 1", 2"			
Promass 83 I	DN 3/8"...1 1/2"			
Promass 83 M	DN 3/8"...2"			
Promass 83 E	DN 3/8"...2"			
Promass 83 H	DN 3/8"...1 1/2"			
<hr/>				
Promass 83 F	DN 3"...10"	<b>XP-IS-DIP I, II, III/1/CDEFG</b>		
Promass 83 F (HT)	DN 3"	(Optionally, a version for Groups A and B is available)		
Promass 83 I	DN 2", DN 1 1/2" FB			
Promass 83 M	DN 3"			
Promass 83 H	DN 2"			

**Remote version**

P r o m a s s 8 3 * * * - * * * * * * * * * * *				
<table border="1"> <tr> <td>G = FOUNDATION Fieldbus, IS, FISCO</td> </tr> <tr> <td>K = FOUNDATION Fieldbus</td> </tr> </table>			G = FOUNDATION Fieldbus, IS, FISCO	K = FOUNDATION Fieldbus
G = FOUNDATION Fieldbus, IS, FISCO				
K = FOUNDATION Fieldbus				
<b>Transmitter</b>				
Promass 83		<b>XP-IS-DIP I, II, III/1/ABCDEFGF</b> or <b>XP-IS-DIP I, II, III/1/CDEFG</b>		
<hr/>				
<b>Sensor</b>				
Promass A	DN 1/24"...1/8"	<b>XP-IS-DIP I, II, III/1/ABCDEFGF</b>		
Promass F	DN 3/8"...2"			
Promass F (HT)	DN 1", 2"			
Promass I	DN 3/8"...1 1/2"			
Promass M	DN 3/8"...2"			
Promass E	DN 3/8"...2"			
Promass H	DN 3/8"...1 1/2"			
<hr/>				
Promass F	DN 3"...10"	<b>XP-IS-DIP I, II, III/1/CDEFG</b>		
Promass F (HT)	DN 3"	(Optionally, a version for Groups A and B is available)		
Promass I	DN 2", DN 1 1/2" FB			
Promass M	DN 3"			
Promass H	DN 2"			

**Notified body**

The measuring system was tested for approval by the following named entity: FM Global Technologies LLC

## Special conditions

1. The flowmeter must be integrated into the potential equalisation system. Potential must be equalized along the intrinsically safe sensor circuits.
2. Control room equipment shall not use or generate more than 250 V rms.
3. Ratings for devices connected to terminals Nos. 26 to 27 of the Promass 83 FOUNDATION Fieldbus transmitter must not exceed  $U_m = 250$  V and  $I_m = 500$  mA: it is impermissible to connect devices with higher ratings to these terminals (Does not apply to Promass 83\*\*\*\_\*\*\*\*\*G with intrinsically safe output circuits).



### Caution!

4. Use supply wires suitable for 41 °F above ambient temperature, but at least for 176 °F.
5. Class II Group G: The surface temperature of the apparatus cannot exceed 329 °F. The user must limit the process temperature for Group G to 284 °F.
6. Transmitter enclosure G02 explosionproof for use in Cl. I Div. 1 Groups A, B, C, D and dust-ignition proof for Cl. II, III Div. 1 Groups E, F, G. Seal not required.
7. Sensor circuits intrinsically safe for Cl. I, II, III Div. 1 Group A, B, C, D, E, F, G except Promass M DN 3" (sensor version Group C-D)  
Promass I DN 2" (sensor version Group C-D)  
Promass F DN 3"/4"/6"/10" (sensor version Group C-D)  
Promass H DN 2" (sensor version Group C-D)  
which are only suitable for Cl. I, II, III Div. 1 Group C, D, E, F, G.  
(Optionally, a version for Groups A and B is available)
8. It is not permissible to connect the service adapter in explosive atmospheres.
9. Install per National Electrical Code. Install intrinsically safe circuits per NEC ANSI/NFPA 70 and ISA RP 12.6 respecting the explosionproof integrity of the enclosure.

### Warning!

10. Substitution of components may impair intrinsic safety.

## General warnings

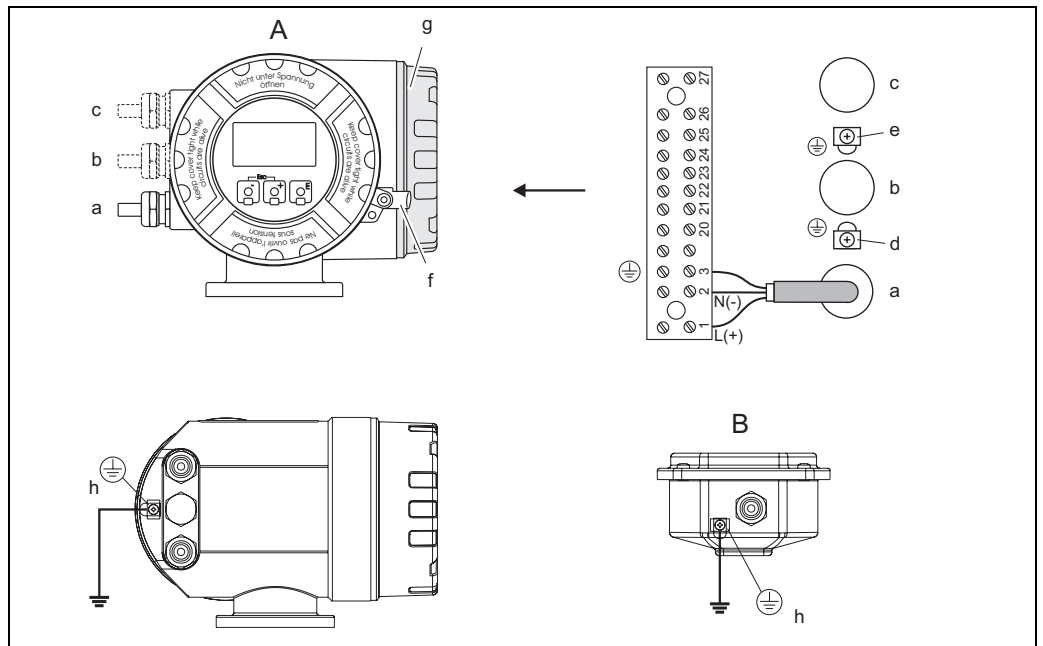
### Warning!

- Installation, connection to the electricity supply, commissioning and maintenance of the devices must be carried out by qualified specialists trained to work on Ex-rated devices..
- Compliance with national regulations relating to the installation of devices in potentially explosive atmospheres is mandatory, if such regulations exist.
- Open the device only when it is de-energized (and after a delay of at least 10 minutes following shutdown of the power supply).
- The housing of the Ex-rated transmitter can be turned in 90° steps. Whereas the non-Ex version has a bayonet adapter, however, the Ex version has a thread. Recesses for centering the worm screw are provided to prevent inadvertent movement of the transmitter housing. It is permissible to turn the transmitter housing through a maximum of 180° during operation (in either direction), without compromising explosion protection. After turning the housing the worm screw must be tightened again.
- The screw cap has to be removed before the local display can be turned, and this must be done with the device de-energized (and after a delay of at least 10 minutes following shutdown of the power supply). Be sure that the device is closed properly, before connecting it to power again.



Electrical connections

Power supply



P06-x3xxxxZZ-04-06-08-xx-003

Fig. 1: Power supply and potential equalisation

A Transmitter housing (compact or remote version), front view

B Connection housing of remote version

a Power supply cable

b Power supply cable for external termination (see Fig. 2)

c FOUNDATION Fieldbus bus cable (see Fig. 2)

d Ground terminal for protective earth

e Ground terminal for the power supply cable for external termination and the FOUNDATION Fieldbus bus cable

f Securing clamp

g Connection compartment cover

h Screw terminal for connecting to potential equalisation

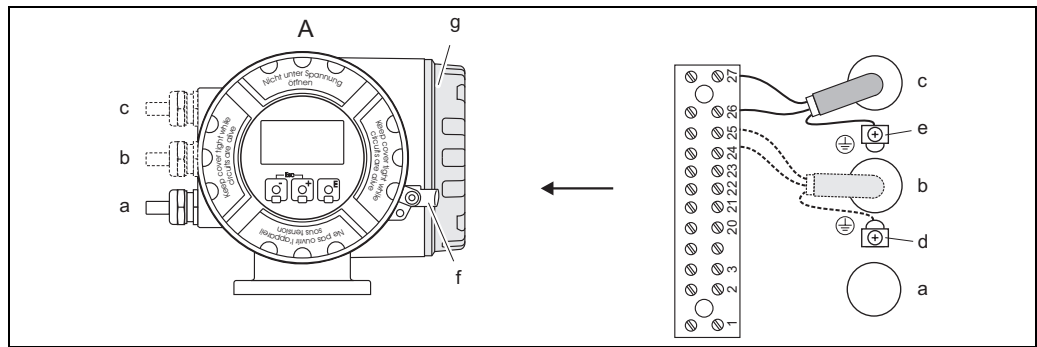


**Caution!**

- The transmitter (compact and remote version) is to be securely connected to the potential equalization system using either the screw terminal on the outside of the transmitter housing.
- With the remote version, the sensor's wiring compartment housing is to be grounded using the external screw terminal. Alternatively, the sensor can be connected to the potential equalization system via the pipeline when a ground connection according to regulations can be assured.

The table below contains the values that are identical for all versions, irrespective of the type code:

Terminals	1 L (+)	2 N (-)	3
Designation	Power supply (Fig. 1: a)		Protective earth
Functional values	AC: U = 85...260 V or AC: U = 20...55 V or DC: U = 16...62 V  Power consumption: 15 VA / 15 W		Caution: Follow ground network requirements for the facility!
Intrinsically safe circuit	no		
U <sub>m</sub> =	260 V AC		

**Input/output circuit**


F06-x3xPBxZZ-04-06-08-xx-001

Fig. 2: Input/output circuit

A Transmitter housing (compact or remote version)

a Power supply cable (see Fig. 1)

b Power supply cable for external termination

c FOUNDATION Fieldbus bus cable

d Ground terminal for protective earth

e Ground terminal for the power supply cable for external termination and the FOUNDATION Fieldbus bus cable

f Securing clamp

g Connection compartment cover

**Note!**

The table below contains the values which depend on the type code (type of device).

Always remember to compare the type code in the table with the code on the nameplate of your device.

**Terminal assignment of input/output circuits with an intrinsically safe circuit**

Transmitter 83\*\*\*\_\*\*\*\*\*G

Type code	20 (+)	21 (-)	22 (+)	23 (-)	24 (+)	25 (-)	26 (+)	27 (-)
83***_*****G	-	-	-	-	-	-	FOUNDATION Fieldbus, IS	
<i>Safety-related relevant values</i>								
Intrinsically safe circuit	-	-	-	-	-	-	Ex ia (IS) FISCO	
$U_i$	-	-	-	-	-	-	30 V DC	
$I_i$	-	-	-	-	-	-	500 mA	
$P_i$	-	-	-	-	-	-	5,5 W	
$L_i$	-	-	-	-	-	-	10 $\mu$ H	
$C_i$	-	-	-	-	-	-	5 nF	
<i>Functional values</i>								
Operating voltage $U_{BUS}$	-	-	-	-	-	-	9...32 V DC	
Base current $I_{BUS}$	-	-	-	-	-	-	12 mA	

**Terminal assignment of input/output circuits without an intrinsically safe circuit**

Transmitter 83\*\*\*\_\*\*\*\*\*K

Type code	20 (+)	21 (-)	22 (+)	23 (-)	24 (+)	25 (-)	26 (+)	27 (-)
83***_*****K	-	-	-	-	-	-	FOUNDATION Fieldbus	
<i>Safety-related relevant values</i>								
Intrinsically safe circuit	-	-	-	-	-	-	No	
$U_{max}$	-	-	-	-	-	-	260 V DC	
$I_{max}$	-	-	-	-	-	-	500 mA	
<i>Functional values</i>								
Operating voltage $U_{BUS}$	-	-	-	-	-	-	9...32 V DC	
Base current $I_{BUS}$	-	-	-	-	-	-	12 mA	

**Connection cable remote version**

Connction between compartment housing and transmitter:

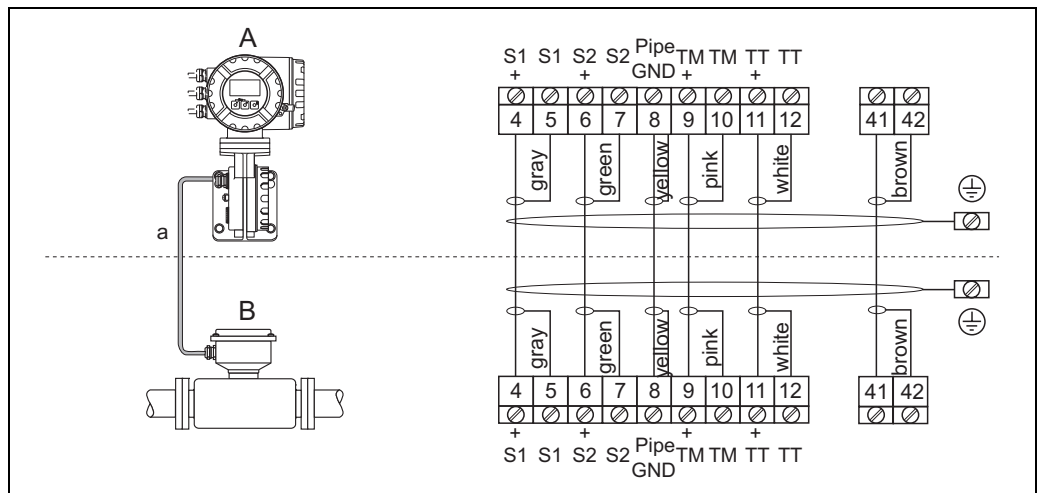


Fig. 3: Connection cable (remote version)  
 A Transmitter remote version  
 B Compartment housing remote version  
 a Sensor cable

A0001331-EN

**Service adapter**

The service adapter is exclusively for connection to Endress+Hauser approved service interfaces.

**⚠ Warning!**

It is not permissible to connect the service adapter in explosive atmospheres.

**Device fuse**

**⚠ Warning!**

Use only fuses of the following types; the fuses are installed on the power supply board:

- Voltage 20...55 V AC / 16...62 V DC:  
 fuse 2.0 A slow-blow, disconnect capacity 1500 A  
 (Schurter, 0001.2503 or Wickmann, Standard Type 181 2.0 A)
- Voltage 85...260 V AC:  
 fuse 0.8 A slow-blow, disconnect capacity 1500 A  
 (Schurter, 0001.2507 or Wickmann, Standard Type 181 0.8 A)

**Cable entries**

Number reference for Figures on Page 4 and Page 5:

- ① Cable entries for the transmitter terminal compartment (XP version)  
 power supply / bus cable: (Promass 83\*\*\*\_\*\*\*\*\*N/P\*\*\*\*\*)  
 Choice of thread for cable entries, 1/2" NPT.  
 Make sure that the XP cable glands/entries are secured to prevent working loose.
- ② Cable entries for the transmitter terminal compartment (remote version)
- ③ Sensor cable connection: Choice of thread for cable entry, 1/2" NPT.

**Technical data**
**Dimensions**

- The dimensions of the Ex-transmitter housing (remote version) can be seen in the following illustration. The dimensions of the Ex-transmitter housing in the compact version are also contained in this.
- The dimensions of the transmitter correspond to the standard versions. Please find these dimensions in the Technical Information.
- Weight + approx. 4.4 lbs more than the standard version (see Technical Information).

**Note!**

Applicable "Technical Information":

- Promass 80/83 A → TI054D
- Promass 80/83 E → TI061D
- Promass 80/83 F, M → TI053D
- Promass 80/83 I, H → TI052D

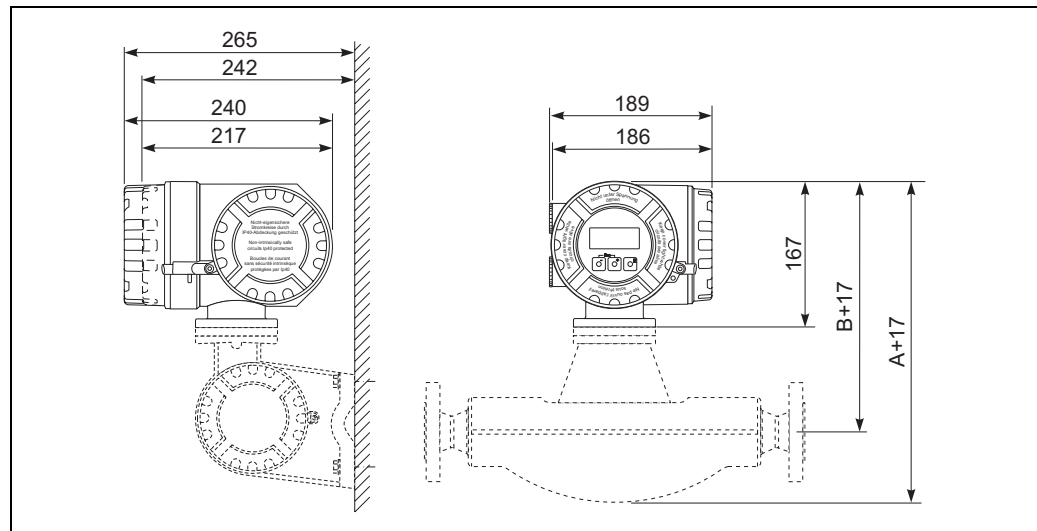


Fig. 4: Dimensions of the Ex-transmitter housing

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**Device identification**

Transmitter Promass 83 FOUNDATION Fieldbus and A/F/I/M/E/H sensor.

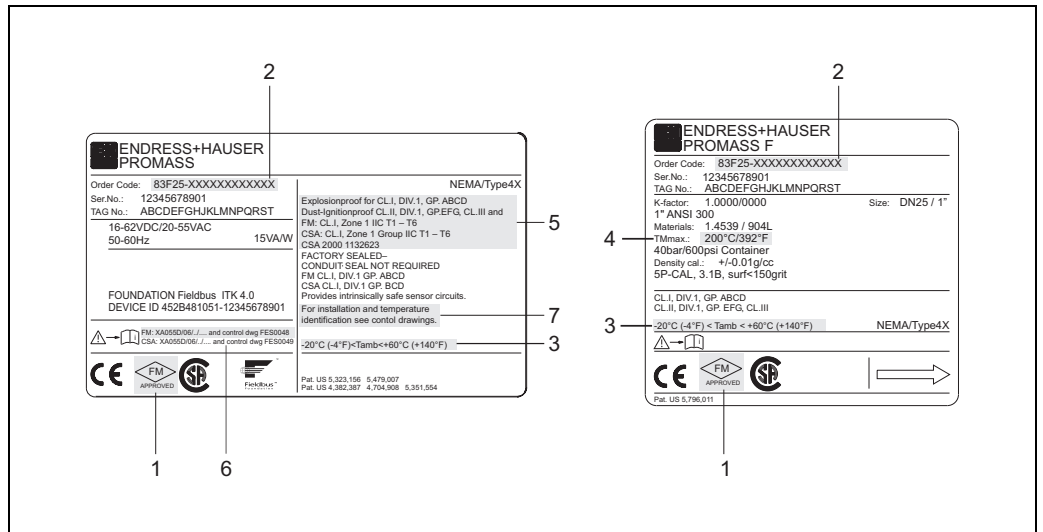


Fig. 5: Nameplate of transmitter and nameplate of sensor (example)

- 1 Label of the notified body: Factory Mutual Research
- 2 Type code
- 3 Ambient temperature range
- 4 Maximum medium temperature
- 5 Type of protection and explosion group for the measuring system
- 6 Applicable Ex documentation
- 7 Warning

Control drawings

Endress+Hauser Reinach hereby declares that the product is in conformity with the requirements of the FACTORY MUTUAL standards.

### Hazardous Locations

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

Temperature table	max. medium temperature [°C]								
	T6	T5	T4A	T4	T3A	T2C	T2B	T2	T1
<b>Ta = 45 °C:</b> PROMASS E DN8/15/25/40/50	45	100	120	125	125	125	125	125	125
<b>Ta = 50 °C:</b> PROMASS M DN8/15/25/40/50/80 PROMASS F DN8/15/25/40 PROMASS F DN50/80/100/150/250 PROMASS I DN8/15/16/25 PROMASS I DN26/40/41/50 PROMASS H DN8 PROMASS H DN15/25/40/50	50	60	85	105	150	150	150	150	150
<b>Ta = 60 °C:</b> PROMASS A DN1/2/4 PROMASS M DN8/15/25/40/50/80 PROMASS F DN8/15/25/40 PROMASS F DN50/80/100/150/250 PROMASS I DN8/15/16/25 PROMASS I DN26/40/41/50 PROMASS H DN8 PROMASS H DN15/25/40/50 PROMASS H DN15/25/40/50 PROMASS F(HT) DN25/50/80	60	95	115	130	140	200	200	200	200

**WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.**

**Notes:**

- Control room equipment shall not use or generate more than 250 V rms.
- 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 140 °C.
- Transmitter enclosure PROline G02 explosionproof for use in Cl. I Div. 1 Groups A, B, C, D and dust-ignitionproof for Cl. II, III Div. 1 Groups E, F, G
- Transmitter enclosure PROline G02 is factory sealed for use in Cl. I Div. 1 Groups A, B, C, D. Means that a conduit seal is not required within 18 inches (450mm) of the enclosure.
- Sensor circuits intrinsically safe for Cl. I, II, III Div. 1 Group A, B, C, D, E, F, G except limited versions of PROMASS M DN80 (sensor version Group C-D) PROMASS I DN50 (sensor version Group C-D) PROMASS F DN80/100/150/250 (sensor version Group C-D) PROMASS H DN50 (sensor version Group C-D) which are only suitable for Cl. I, II, III Div. 1 Group C, D, E, F, G
- The minimum medium temperature is -50 °C
- Install all intrinsically safe circuits per NEC ANSI/NFPA 70 and ISA RP 12.6 respecting the Explosionproof Integrity of the enclosure

<b>Communication Options</b> I/O option = F, H, J see FES 0048 - 0001 I/O option = G, K see FES 0048 - 0002 I/O option = S, T see FES 0048 - 0004 I/O option = R, U see FES 0048 - 0005		<b>Control Drawing</b> see FES 0048 - 0001 see FES 0048 - 0002 see FES 0048 - 0004 see FES 0048 - 0005	
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Aenderungen: A 16.05.01 / Bn F 27.04.04/MDI B 17.12.03/MDI G C 07.06.03/MDI H D 29.10.02 /MDI J E 06.06.03/UD K		Alle gesetzlichen Urheberrechte vorbehalten. Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch dritten Personen und Konkurrenzfirmen zugänglich gemacht werden.		Esteller: FES / ID 1090 FILE: M\ZEICHN\G\FES0048\F040323.doc	
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FM Control Drawing Div. 1 / Zone 1 Class I Zone 1 Compact Version PROMASS 40 / 8. A / F / I / M / H / E		Massstab Gezeichnet 06.10.00 Bn Geprüft Ex-geprüft 27.04.04 MDI Gesehen		FES0048 F 1/2	
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### Hazardous Locations

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

Temperature table	max. medium temperature [°C]								
	T6	T5	T4A	T4	T3A	T2C	T2B	T2	T1
<b>Ta = 45 °C</b> PROMASS E DN25/40/50	45	100	120	125	125	125	125	125	125
<b>Ta = 60 °C</b> PROMASS A DN1/2/4 PROMASS M DN8/15/25/40/50/80 PROMASS F DN8/15/25/40 PROMASS F DN50/80/100/150/250 PROMASS I DN8/15/16/25 PROMASS I DN26/40/41/50 PROMASS H DN8 PROMASS H DN15/25/40/50 PROMASS H DN15/25/40/50 PROMASS F(HT) DN25/50/80	60	95	115	130	140	200	200	200	200

The ambient temperature is -20 °C ... +60 °C for the transmitter and -40 °C ... +60 °C for the sensor

The minimum medium temperature is -50 °C. A special version of Promass A/F/H is suitable for medium temperatures down to -200 °C. The minimum medium temperature for Promass E is limited to -40 °C.

**WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.**

**Notes:**

- Control room equipment shall not use or generate more than 250 V rms.
- 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 140 °C.
- Transmitter enclosure PROline G02 explosionproof for use in Cl. I Div. 1 Groups A, B, C, D and dust-ignitionproof for Cl. II, III Div. 1 Groups E, F, G
- Transmitter enclosure PROline G02 is factory sealed for use in Cl. I Div. 1 Groups A, B, C, D. Means that a conduit seal is not required within 18 inches (450mm) of the enclosure.
- Sensor circuits intrinsically safe for Cl. I, II, III Div. 1 Group A, B, C, D, E, F, G except a limited version of PROMASS M DN80 (sensor version Group C-D) PROMASS I DN50 (sensor version Group C-D) PROMASS F DN80/100/150/250 (sensor version Group C-D) PROMASS H DN50 (sensor version Group C-D) which are only suitable for Cl. I, II, III Div. 1 Group C, D, E, F, G
- Allowed cable glands: NPT 1/2", G 1/2", M20x1.5 or PG13.5
- A sensor which was connected to a Promass 60/63/64 transmitter can also be installed to a Promass 8. transmitter. For this case this control drawing is relevant for safe use, except the minimum ambient temperature which is limited to -20 °C
- Install all intrinsically safe circuits per NEC ANSI/NFPA 70 and ISA RP 12.6 respecting the Explosionproof Integrity of the enclosure

<b>Communication Options</b> I/O option = F, H, J see FES 0048 - 0001 I/O option = G, K see FES 0048 - 0002 I/O option = S, T see FES 0048 - 0004 I/O option = R, U see FES 0048 - 0005		<b>Control Drawing</b> see FES 0048 - 0001 see FES 0048 - 0002 see FES 0048 - 0004 see FES 0048 - 0005	
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Aenderungen: A 16.05.01 / Bn F 27.04.04/MDI B 17.12.03/MDI G C 07.06.03/MDI H D 29.10.02 /MDI J E 06.06.03/UD K		Alle gesetzlichen Urheberrechte vorbehalten. Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch dritten Personen und Konkurrenzfirmen zugänglich gemacht werden.		Esteller: FES / ID 1090 FILE: M\ZEICHN\G\FES0048\F040323.doc	
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FM Control Drawing Div. 1 / Zone 1 Class I Zone 1 Remote Version PROMASS 40 / 8. A / F / I / M / H / E		Massstab Gezeichnet 06.10.00 Bn Geprüft Ex-geprüft 27.04.04 MDI Gesehen		FES0048 F 2/2	
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**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: PROMASS 8\*\* \*\*..\*\*\*\*\*G**  
**Terminals: 26, 27 (Foundation Fieldbus):**  
 Intrinsically safe circuit:

V <sub>max</sub> / U <sub>i</sub>	I <sub>max</sub> / I <sub>i</sub>	P <sub>max</sub> / P <sub>i</sub>	C <sub>i</sub>	L <sub>i</sub>
30 V	500 mA	5.5 W	≤ 5 nF	≤ 10 μH

Connect to entity approved associated apparatus with  
 I<sub>sc</sub>, I<sub>o</sub> or I<sub>o</sub> ≤ I<sub>max</sub> or I<sub>i</sub> and  
 V<sub>oc</sub>, V<sub>i</sub> or U<sub>o</sub> ≤ V<sub>max</sub> or U<sub>i</sub>  
 (P<sub>o</sub> ≤ P<sub>max</sub> or P<sub>i</sub>)  
 Cable parameters for Intrinsic Safety:  
 C<sub>cable</sub> ≤ C<sub>a</sub> / C<sub>o</sub> - Σ C<sub>i</sub>  
 L<sub>cable</sub> ≤ L<sub>a</sub> / L<sub>o</sub> - Σ L<sub>i</sub> or  
 L/R<sub>cable</sub> ≤ L/R<sub>Associated Apparatus</sub> and L<sub>i</sub> of each I.S. apparatus ≤ 10 μH

Alternatively the intrinsically safe circuit ( Fieldbus Foundation) can be connected according to the FISCO – Concept ( see FES 0048-0003 ).

**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: PROMASS 8\*\* \*\*..\*\*\*\*\*K**  
**Terminals 26,27 (FIELDBUS FOUNDATION NON I.S.)**  
 V 9...32V ; I = 12mA

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E	06.06.03/UD	K					

FM Control Drawing Div. 1 / Zone 1  
 PROMASS 8. A / F / I / M / H / E  
 Fieldbus Foundation IS installation  
 Fieldbus Foundation non-IS installation

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	Ex-geprüft	27.04.04	MDI
	Gesehen		

**FES0048-0002 F**

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**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<sub>i</sub> or V<sub>max</sub>), the current (I<sub>i</sub> or I<sub>max</sub>), and the power (P<sub>i</sub> or P<sub>max</sub>) which intrinsically safe apparatus can receive and remain intrinsically safe, considering faults, must be equal or greater than the voltage (U<sub>o</sub>, V<sub>oc</sub> or V<sub>t</sub>), the current (I<sub>o</sub>, I<sub>sc</sub> or I<sub>t</sub>) and the power (P<sub>o</sub> or P<sub>max</sub>) levels which can be delivered by the associated apparatus, considering faults and applicable factors. In addition, the maximum unprotected capacitance (C<sub>i</sub>) and inductance (L<sub>i</sub>) 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 U<sub>o</sub> (or V<sub>oc</sub> or V<sub>t</sub>) 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. 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' 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 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**

1. Approved associated apparatus must be installed in accordance with manufacturers instructions.
2. FM approved associated apparatus must meet the following parameters:  
 U<sub>o</sub> or V<sub>oc</sub> or V<sub>t</sub> ≤ U<sub>i</sub> (V<sub>max</sub>) and I<sub>o</sub> or I<sub>sc</sub> or I<sub>t</sub> ≤ I<sub>i</sub> (I<sub>max</sub>) and P<sub>o</sub> or P<sub>max</sub> ≤ P<sub>i</sub> (P<sub>max</sub>)
3. The maximum non-hazardous area voltage must not exceed 250V
4. The installation must be in accordance with the National Electrical Code NFPA 70, and ANSI/ISA-Rp 12.6. (except chapter 5).
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 5°C above surrounding temperature.
7. Warning: Substitution of components may impair intrinsic safety.
8. 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**

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D	29.10.02/MDI	J					
E	06.06.03/UD	K					

FM Control Drawing Div. 1 / Zone 1  
 PROMASS 8. A / F / I / M / H / E  
 Intrinsically safe PROFIBUS PA  
 Foundation Fieldbus  
 FISCO-Concept

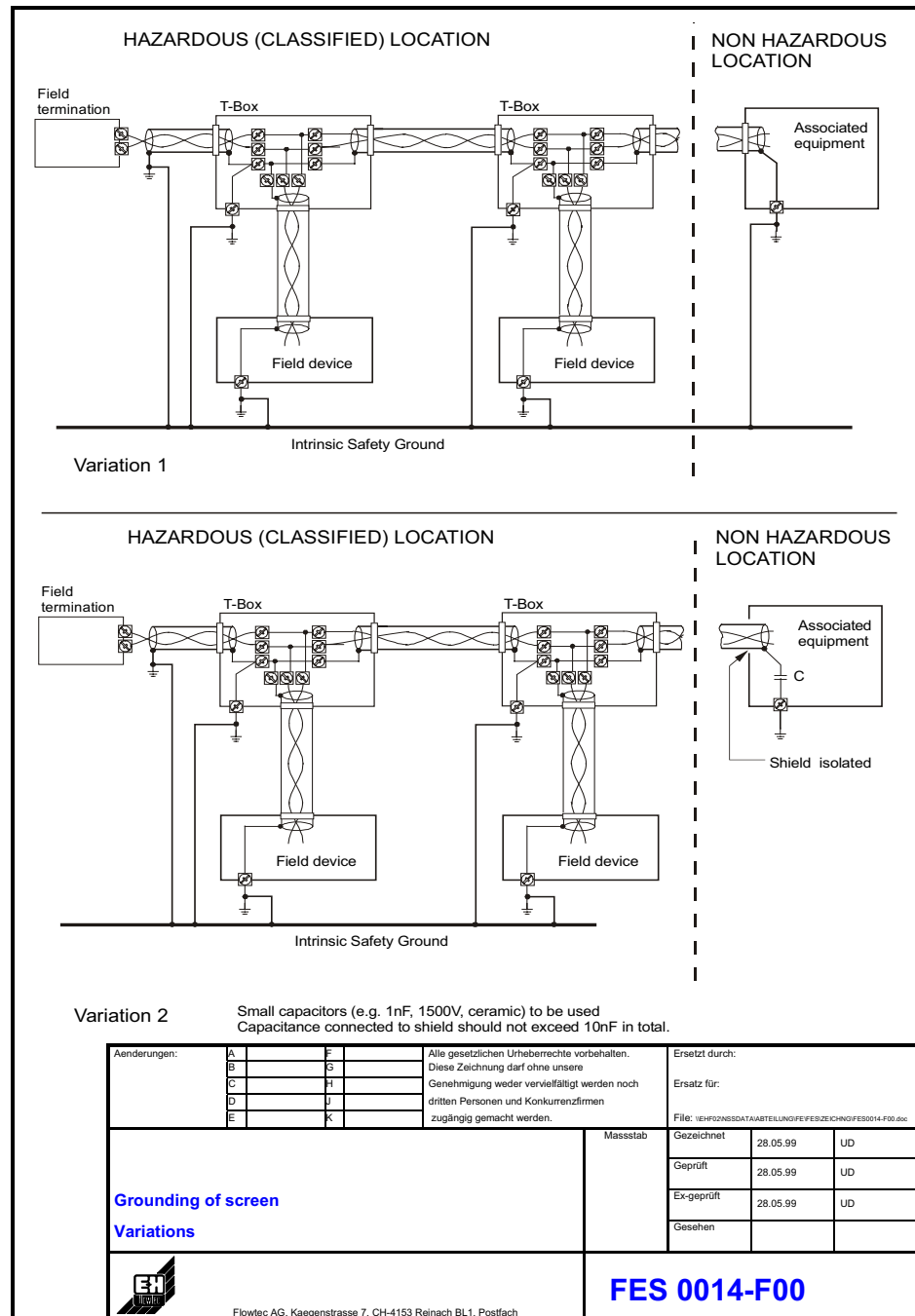
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	Ex-geprüft	27.04.04	MDI
	Gesehen		

**FES0048-0003 F**

F06-8xMBxxZZ-01-xx-xx-en-005

Endress + Hauser

15







Level



Pressure



Flow



Temperature



Liquid  
Analysis



Registration



Systems  
Components



Services



Solutions

## Safety Instructions

# Proline Promass 83 FOUNDATION Fieldbus

## Division 1

### Ex documentation

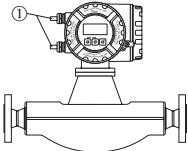
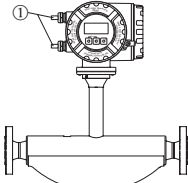
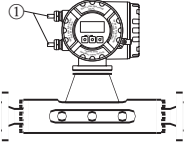
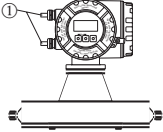
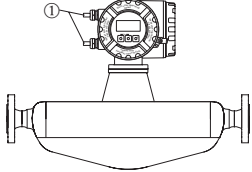

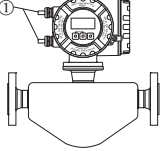
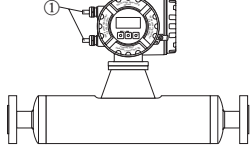

**This documentation is an integral part of the following Operating Instructions:**

- BA065D, Operating Instruction, Proline Promass 83 FOUNDATION Fieldbus

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## Measuring system compact version

Hazardous area		Safe area	
Division 1 / Zone 0 / Zone 1	Division 2 / Zone 2	Safe area	
 F	 F (HT)	 M	
 A	 H		
 E	 I		
<b>Division 1 / Zone 0 / Zone 1</b>	<b>Division 2 / Zone 2</b>	<b>Safe area</b>	
Hazardous area		Safe area	
<p><b>Transmitter Promass 83 FOUNDATION Fieldbus:</b></p> <ul style="list-style-type: none"> <li>■ Housing: explosionproof (use only cable entry 1/2" NPT) for use in Cl. I Div. 1 Groups ABCD or Cl. I Zone 1 Group IIC and Cl. II and III Div. 1 Groups EFG Electronics, associated apparatus: provides intrinsically safe sensor circuits</li> <li>■ Sensor: intrinsically safe Cl. I Div. 1 Groups ABCD or Cl. I Zone 1 Group IIC and Cl. II and III Div. 1 Groups EFG                             <ul style="list-style-type: none"> <li>– Promass A; DN 1...4</li> <li>– Promass F; DN 8...50</li> <li>– Promass F; (HT) High temperature; DN 25, DN 50</li> <li>– Promass I; DN 8...40</li> <li>– Promass M; DN 8...50</li> <li>– Promass E; DN 8...50</li> <li>– Promass H; DN 8...40</li> </ul> </li> <li>■ Ambient-/fluid temperature ranges and temperature class see Page 20.</li> <li>■ ① = Cable entries, for number reference see Page 25.</li> <li>■ F (HT) = Promass F high-temperature version.</li> </ul>		<p><b>or</b></p>	<p><b>Transmitter Promass 83 FOUNDATION Fieldbus:</b></p> <ul style="list-style-type: none"> <li>■ Housing: explosionproof (use only cable entry 1/2" NPT) for use in Cl. I Div. 1 Groups CD or Cl. I Zone 1 Group IIB and Cl. II and III Div. 1 Groups EFG Electronics, associated apparatus: provides intrinsically safe sensor circuits</li> <li>■ Sensor: intrinsically safe Cl. I Div. 1 Groups CD or Cl. I Zone 1 Group IIB and Cl. II and III Div. 1 Groups EFG                             <ul style="list-style-type: none"> <li>– Promass F; DN 80...250</li> <li>– Promass F; (HT) High temperature; DN 80</li> <li>– Promass M; DN 80</li> <li>– Promass H; DN 50</li> <li>– Promass I; DN 50, DN 40 FB (full bore)</li> </ul> </li> <li>■ Optionally, a version for Groups A and B is available</li> <li>■ Ambient-/fluid temperature ranges and temperature class see Page 20.</li> <li>■ ① = Cable entries, for number reference see Page 25.</li> <li>■ F (HT) = Promass F high-temperature version.</li> </ul>

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Measuring system remote version

Hazardous area		Safe area
Division 1 / Zone 0 / Zone 1	Division 2 / Zone 2	
<p style="text-align: right;">A0001379</p>		
Hazardous area		Safe area
Division 1 / Zone 0 / Zone 1	Division 2 / Zone 2	
<p><b>Transmitter Promass 83 FOUNDATION Fieldbus:</b> or <b>Transmitter Promass 83 FOUNDATION Fieldbus:</b></p> <ul style="list-style-type: none"> <li>■ Housing: explosionproof (use only cable entry 1/2" NPT) for use in Cl. I Div. 1 Groups ABCD or Cl. I Zone 1 Group IIC and Cl. II and III Div. 1 Groups EFG Electronics, associated apparatus: provides intrinsically safe sensor circuits</li> <li>■ Sensor: intrinsically safe Cl. I Div. 1 Groups ABCD or Cl. I Zone 1 Group IIC and Cl. II and III Div. 1 Groups EFG                         <ul style="list-style-type: none"> <li>– Promass A; DN 1...4</li> <li>– Promass F; DN 8...50</li> <li>– Promass F; (HT) High temperature; DN 25, DN 50</li> <li>– Promass I; DN 8...40</li> <li>– Promass M; DN 8...50</li> <li>– Promass E; DN 8...50</li> <li>– Promass H; DN 8...40</li> </ul> </li> <li>■ Only the cables supplied by Endress+Hauser may be used between the transmitter and the sensor.</li> <li>■ Ambient-/fluid temperature ranges and temperature class see Page 20.</li> <li>■ ①, ②, ③ = Cable entries, for number reference see Page 25.</li> <li>■ ④ = transmitter Promass 83</li> <li>■ F (LN) = Promass F Long-neck version (Remote version for heating)</li> <li>■ F (HT) = Promass F high-temperature version</li> </ul> <ul style="list-style-type: none"> <li>■ Housing: explosionproof (use only cable entry 1/2" NPT) for use in Cl. I Div. 1 Groups CD or Cl. I Zone 1 Group IIB and Cl. II and III Div. 1 Groups EFG Electronics, associated apparatus: provides intrinsically safe sensor circuits</li> <li>■ Sensor: intrinsically safe Cl. I Div. 1 Groups CD or Cl. I Zone 1 Group IIB and Cl. II and III Div. 1 Groups EFG                         <ul style="list-style-type: none"> <li>– Promass F; DN 80...250</li> <li>– Promass F; (HT) High temperature; DN 80</li> <li>– Promass M; DN 80</li> <li>– Promass H; DN 50</li> <li>– Promass I; DN 50, DN 40 FB (full bore)</li> </ul> </li> <li>■ Optionally, a version for Groups A and B is available</li> <li>■ Only the cables supplied by Endress+Hauser may be used between the transmitter and the sensor.</li> <li>■ Ambient-/fluid temperature ranges and temperature class see Page 20.</li> <li>■ ①, ②, ③ = Cable entries, for number reference see Page 25.</li> <li>■ ④ = transmitter Promass 83</li> <li>■ F (LN) = Promass F Long-neck version (Remote version for heating)</li> <li>■ F (HT) = Promass F high-temperature version</li> </ul>		

**Temperature tables  
compact version**

Max. medium temperature [°C] (at $T_a = 45\text{ °C}$ )		T6 85 °C	T5 100 °C	T4A 120 °C	T4 135 °C	T3A 180 °C	T2C 230 °C	T2B 260 °C	T1 450 °C
Promass E	DN 8...50	45	100	120	125	125	125	125	125

Max. medium temperature [°C] (at $T_a = 50\text{ °C}$ )		T6 85 °C	T5 100 °C	T4A 120 °C	T4 135 °C	T3A 180 °C	T2C 230 °C	T2B 260 °C	T1 450 °C
Promass F	DN 8...40	55	70	85	100	150	185*	200*	200*
Promass F	DN 50...250	60	70	85	105	150	185*	200*	200*
Promass I	DN 8...25, 15 FB	60	95	95	110	150	150	150	150
Promass I	DN 40...50, 25 FB, 40 FB	70	85	105	120	150	150	150	150
Promass M	DN 8...80	50	60	85	105	150	150	150	150
Promass E	DN 25...50	50	100	120	125	125	125	125	125
Promass H	DN 8	50	65	85	100	140	185	200	200
Promass H	DN 15...50	60	75	100	115	160	200	200	200

Max. medium temperature [°C] (at $T_a = 60\text{ °C}$ )		T6 85 °C	T5 100 °C	T4A 120 °C	T4 135 °C	T3A 180 °C	T2C 230 °C	T2B 260 °C	T1 450 °C
Promass A	DN 1...4	60	95	115	130	140	200	200	200
Promass F	DN 8...40	55	70	85	100	150*	185*	200*	200*
Promass F	DN 50...250	60	70	85	100	150*	185*	200*	200*
Promass F, HT	DN 25, 50, 80	70	85	100	115*	160*	205*	235*	350*
Promass I	DN 8...25, 15 FB	60	95	95	110	150*	150*	150*	150*
Promass I	DN 40...50, 25 FB, 40 FB	70	85	105	120	150*	150*	150*	150*
Promass M	DN 8...80	–	60	85	100	100	100	100	100
Promass E	DN 25...50	–	100	120	125	125	125	125	125
Promass H	DN 8	50	65	85	100	140	185*	200*	200*
Promass H	DN 15...50	60	75	100	115	160	200*	200*	200*

\* The maximum permissible fluid temperatures apply only when the transmitter is installed in such a way that it is not above the sensor and heat can be removed freely by convection in all directions.

- The minimum **fluid temperature** is  $-50\text{ °C}$  for Promass A/F/I/M/H, and  $-40\text{ °C}$  for Promass E.
- The minimum **ambient temperature** is  $-20\text{ °C}$ . A version for ambient temperatures up to  $-40\text{ °C}$  is optionally available.

**Temperature tables sensor  
remote version**

Max. medium temperature [°C] (at $T_a = 45\text{ °C}$ )		T6 85 °C	T5 100 °C	T4A 120 °C	T4 135 °C	T3A 180 °C	T2C 230 °C	T2B 260 °C	T1 450 °C
Promass E	DN 8...50	45	100	120	125	125	125	125	125

Max. medium temperature [°C] (at $T_a = 60\text{ °C}$ )		T6 85 °C	T5 100 °C	T4A 120 °C	T4 135 °C	T3A 180 °C	T2C 230 °C	T2B 260 °C	T1 450 °C
Promass A	DN 1...4	60	95	115	130	140	200	200	200
Promass F	DN 8...40	55	70	85	100	150	185	200	200
Promass F	DN 50...250	60	70	85	105	150	185	200	200
Promass F, HT	DN 25, 50, 80	70	85	100	115	160	205	235	350
Promass I	DN 8...25, 15 FB	60	95	95	110	150	150	150	150
Promass I	DN 40...50, 25 FB, 40 FB	70	85	105	120	150	150	150	150
Promass M	DN 8...80	50	60	85	105	150	150	150	150
Promass E	DN 25...50	–	100	120	125	125	125	125	125
Promass H	DN 8	50	65	85	100	140	185	200	200
Promass H	DN 15...50	60	75	100	115	160	200	200	200

- The minimum **fluid temperature** is  $-50\text{ °C}$  for Promass A/F/I/M/H, and  $-40\text{ °C}$  for Promass E.
- The minimum **ambient temperature** is  $-40\text{ °C}$ .

**Transmitter**

- The Promass 83 (remote version) transmitter has a T6 temperature class rating when installed in the EEx d housing for operation at ambient temperatures up to  $T_a = 60\text{ °C}$ .
- The minimum **ambient temperature** is  $-20\text{ °C}$ . A version for ambient temperatures up to  $-40\text{ °C}$  is optionally available.

**Note!**

At the specified medium temperatures, the equipment is not subjected to temperatures impermissible for the temperature class in question.

**Approvals**

Nr. / Approval type	Description
<b>160686-1132623</b>  (Special notes, see Page 22)	for the electric flow measuring system Proline Promass 83 FOUNDATION Fieldbus  Identification: see below

**Compact version**

P r o m a s s 8 3 * * * - * * * * * * * * * * *				
<table border="1"> <tr> <td>G = FOUNDATION Fieldbus, IS, FISCO</td> </tr> <tr> <td>K = FOUNDATION Fieldbus</td> </tr> </table>			G = FOUNDATION Fieldbus, IS, FISCO	K = FOUNDATION Fieldbus
G = FOUNDATION Fieldbus, IS, FISCO				
K = FOUNDATION Fieldbus				
Promass 83 A	DN 1...4	<b>XP-IS-DIP I, II, III/1/ABCDEFGF</b>		
Promass 83 F	DN 8...50			
Promass 83 F (HT)	DN 25, 50			
Promass 83 F (HT)	DN 25, 50			
Promass 83 M	DN 8...50			
Promass 83 E	DN 8...50			
Promass 83 H	DN 8...40			
<hr/>				
Promass 83 F	DN 80...250	<b>XP-IS-DIP I, II, III/1/CDEFG</b>		
Promass 83 F (HT)	DN 80	(Optionally, a version for Groups A and B is available)		
Promass 83 I	DN 50, DN 40 FB			
Promass 83 M	DN 80			
Promass 83 H	DN 50			

**Remote version**

P r o m a s s 8 3 * * * - * * * * * * * * * * *				
<table border="1"> <tr> <td>G = FOUNDATION Fieldbus, IS, FISCO</td> </tr> <tr> <td>K = FOUNDATION Fieldbus</td> </tr> </table>			G = FOUNDATION Fieldbus, IS, FISCO	K = FOUNDATION Fieldbus
G = FOUNDATION Fieldbus, IS, FISCO				
K = FOUNDATION Fieldbus				
<b>Transmitter</b>				
Promass 83		<b>XP-IS-DIP I, II, III/1/ABCDEFGF</b> or <b>XP-IS-DIP I, II, III/1/CDEFG</b>		
<hr/>				
<b>Sensor</b>				
Promass A	DN 1...4	<b>XP-IS-DIP I, II, III/1/ABCDEFGF</b>		
Promass F	DN 8...50			
Promass F (HT)	DN 25, 50			
Promass I	DN 8...40			
Promass M	DN 8...50			
Promass E	DN 8...50			
Promass H	DN 8...40			
<hr/>				
Promass F	DN 80...250	<b>XP-IS-DIP I, II, III/1/CDEFG</b>		
Promass F (HT)	DN 80	(Optionally, a version for Groups A and B is available)		
Promass I	DN 50, DN 40 FB			
Promass M	DN 80			
Promass H	DN 50			

**Notified body**

The measuring system was tested for approval by the following named entity:  
CSA (Canadian Standards Association)

### Special conditions

1. The flowmeter must be integrated into the potential equalisation system. Potential must be equalized along the intrinsically safe sensor circuits.
2. Control room equipment shall not use or generate more than 250 V rms.
3. Ratings for devices connected to terminals Nos. 26 to 27 of the Promass 83 FOUNDATION Fieldbus transmitter must not exceed  $U_m = 250$  V and  $I_m = 500$  mA: it is impermissible to connect devices with higher ratings to these terminals (Does not apply to Promass 83\*\*\*\_\*\*\*\*\*G with intrinsically safe output circuits).



#### Caution!

4. Use supply wires suitable for 5 °C above ambient temperature, but at least for 80 °C.
5. Class II Group G: The surface temperature of the apparatus cannot exceed 165 °C. The user must limit the process temperature for Group G to 140 °C.
6. Transmitter enclosure G02 explosionproof for use in Cl. I Div. 1 Groups A, B, C, D and dust-ignition proof for Cl. II, III Div. 1 Groups E, F, G. Seals not required for Groups B, C and D.
7. Sensor circuits intrinsically safe for Cl. I, II, III Div. 1 Group A, B, C, D, E, F, G except  
 Promass M DN 80 (sensor version Group C-D)  
 Promass I DN 50 (sensor version Group C-D)  
 Promass F DN 80/100/150 / 250 (sensor version Group C-D)  
 Promass H DN 50 (sensor version Group C-D)  
 which are only suitable for Cl. I, II, III Div. 1 Group C, D, E, F, G.  
 (Optionally, a version for Groups A and B is available)
8. It is not permissible to connect the service adapter in explosive atmospheres.
9. Install per Canadian Electrical Code. Install intrinsically safe circuits per CEC Part I, Section 18, Appendix F, respecting the explosion-proof integrity of the housing.



#### Warning!

10. Substitution of components may impair intrinsic safety.
- 

### General warnings



#### Warning!

- Installation, connection to the electricity supply, commissioning and maintenance of the devices must be carried out by qualified specialists trained to work on Ex-rated devices..
- Compliance with national regulations relating to the installation of devices in potentially explosive atmospheres is mandatory, if such regulations exist.
- Open the device only when it is de-energized (and after a delay of at least 10 minutes following shutdown of the power supply).
- The housing of the Ex-rated transmitter can be turned in 90° steps. Whereas the non-Ex version has a bayonet adapter, however, the Ex version has a thread. Recesses for centering the worm screw are provided to prevent inadvertent movement of the transmitter housing. It is permissible to turn the transmitter housing through a maximum of 180° during operation (in either direction), without compromising explosion protection. After turning the housing the worm screw must be tightened again.
- The screw cap has to be removed before the local display can be turned, and this must be done with the device de-energized (and after a delay of at least 10 minutes following shutdown of the power supply). Be sure that the device is closed properly, before connecting it to power again.

Electrical connections

Power supply

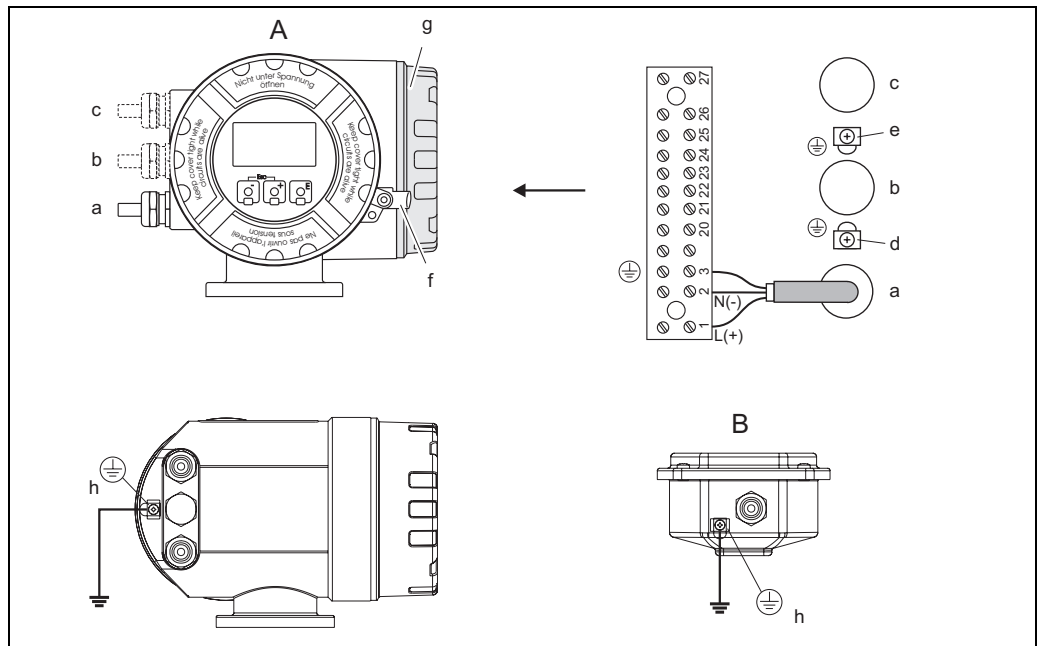


Fig. 1: Power supply and potential equalisation  
 A Transmitter housing (compact or remote version), front view  
 B Connection housing of remote version  
 a Power supply cable  
 b Power supply cable for external termination (see Fig. 2)  
 c FOUNDATION Fieldbus bus cable (see Fig. 2)  
 d Ground terminal for protective earth  
 e Ground terminal for the power supply cable for external termination and the FOUNDATION Fieldbus bus cable  
 f Securing clamp  
 g Connection compartment cover  
 h Screw terminal for connecting to potential equalisation

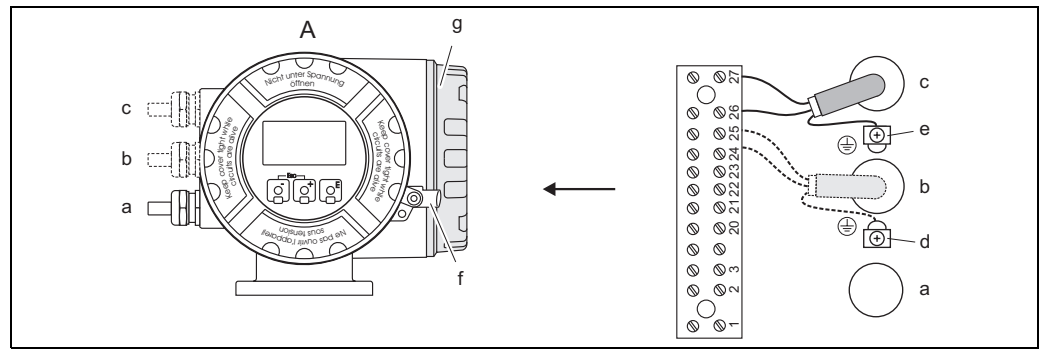


**Caution!**

- The transmitter (compact and remote version) is to be securely connected to the potential equalization system using either the screw terminal on the outside of the transmitter housing.
- With the remote version, the sensor's wiring compartment housing is to be grounded using the external screw terminal. Alternatively, the sensor can be connected to the potential equalization system via the pipeline when a ground connection according to regulations can be assured.

The table below contains the values that are identical for all versions, irrespective of the type code:

Terminals	1 L (+)	2 N (-)	3
Designation	Power supply (Fig. 1: a)		Protective earth
Functional values	AC: U = 85...260 V or AC: U = 20...55 V or DC: U = 16...62 V  Power consumption: 15 VA / 15 W		Caution: Follow ground network requirements for the facility!
Intrinsically safe circuit	no		
U <sub>m</sub> =	260 V AC		

**Input/output circuit**


F06-x3xPBxZZ-04-06-08-xx-001

Fig. 2: Input/output circuit

A Transmitter housing (compact or remote version)

a Power supply cable (see Fig. 1)

b Power supply cable for external termination

c FOUNDATION Fieldbus bus cable

d Ground terminal for protective earth

e Ground terminal for the power supply cable for external termination and the FOUNDATION Fieldbus bus cable

f Securing clamp

g Connection compartment cover

**Note!**

The table below contains the values which depend on the type code (type of device). Always remember to compare the type code in the table with the code on the nameplate of your device.

**Terminal assignment of input/output circuits with an intrinsically safe circuit**

Transmitter 83\*\*\*\_\*\*\*\*\*G

Type code	20 (+)	21 (-)	22 (+)	23 (-)	24 (+)	25 (-)	26 (+)	27 (-)
83***_*****G	-	-	-	-	-	-	FOUNDATION Fieldbus, Ex ia	
<i>Safety-related relevant values</i>								
Intrinsically safe circuit	-	-	-	-	-	-	Ex ia FISCO	
$U_i$	-	-	-	-	-	-	30 V DC	
$I_i$	-	-	-	-	-	-	500 mA	
$P_i$	-	-	-	-	-	-	5,5 W	
$L_i$	-	-	-	-	-	-	10 $\mu$ H	
$C_i$	-	-	-	-	-	-	5 nF	
<i>Functional values</i>								
Operating voltage $U_{BUS}$	-	-	-	-	-	-	9...32 V DC	
Base current $I_{BUS}$	-	-	-	-	-	-	12 mA	

**Terminal assignment of input/output circuits without an intrinsically safe circuit**

Transmitter 83\*\*\*\_\*\*\*\*\*K

Type code	20 (+)	21 (-)	22 (+)	23 (-)	24 (+)	25 (-)	26 (+)	27 (-)
83***_*****K	-	-	-	-	-	-	FOUNDATION Fieldbus	
<i>Safety-related relevant values</i>								
Intrinsically safe circuit	-	-	-	-	-	-	No	
$U_m$	-	-	-	-	-	-	260 V DC	
$I_m$	-	-	-	-	-	-	500 mA	
<i>Functional values</i>								
Operating voltage $U_{BUS}$	-	-	-	-	-	-	9...32 V DC	
Base current $I_{BUS}$	-	-	-	-	-	-	12 mA	



**Connection cable remote version**

Connexion between compartment housing and transmitter:

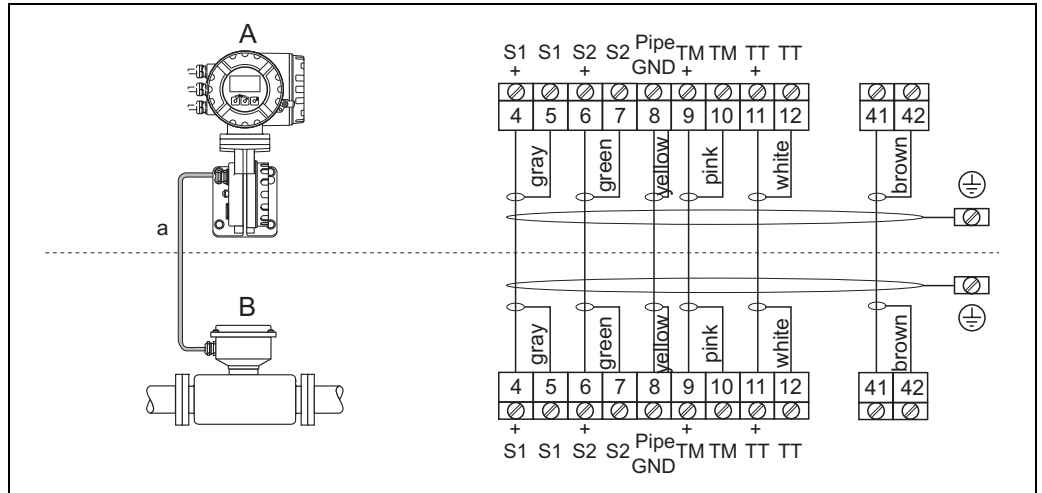


Fig. 3: Connection cable (remote version)  
 A Transmitter remote version  
 B Compartment housing remote version  
 a Sensor cable

A0001331-EN

**Service adapter**

The service adapter is exclusively for connection to Endress+Hauser approved service interfaces.

**⚠ Warning!**

It is not permissible to connect the service adapter in explosive atmospheres.

**Device fuse**

**⚠ Warning!**

Use only fuses of the following types; the fuses are installed on the power supply board:

- Voltage 20...55 V AC / 16...62 V DC:  
 fuse 2.0 A slow-blow, disconnect capacity 1500 A  
 (Schurter, 0001.2503 or Wickmann, Standard Type 181 2.0 A)
- Voltage 85...260 V AC:  
 fuse 0.8 A slow-blow, disconnect capacity 1500 A  
 (Schurter, 0001.2507 or Wickmann, Standard Type 181 0.8 A)

**Cable entries**

Number reference for Figures on Page 18 and Page 19:

- ① Cable entries for the transmitter terminal compartment (XP version)  
 power supply / bus cable: (Promass 83\*\*\*\_\*\*\*\*\*N/P\*\*\*\*\*)  
 Choice of thread for cable entries, 1/2" NPT.

Make sure that the XP cable glands/entries are secured to prevent working loose and that the seals are installed immediately adjacent to the housing, if required.

- ② Cable entries for the transmitter terminal compartment (remote version)
- ③ Sensor cable connection:  
 Choice of thread for cable entry, 1/2" NPT.

**Technical data**
**Dimensions**

- The dimensions of the Ex-transmitter housing (remote version) can be seen in the following illustration. The dimensions of the Ex-transmitter housing in the compact version are also contained in this.
- The dimensions of the transmitter correspond to the standard versions. Please find these dimensions in the Technical Information.
- Weight + approx. 4.4 lbs more than the standard version (see Technical Information).

**Note!**

Applicable "Technical Information":

- Promass 80/83 A → TI054D
- Promass 80/83 E → TI061D
- Promass 80/83 F, M → TI053D
- Promass 80/83 I, H → TI052D

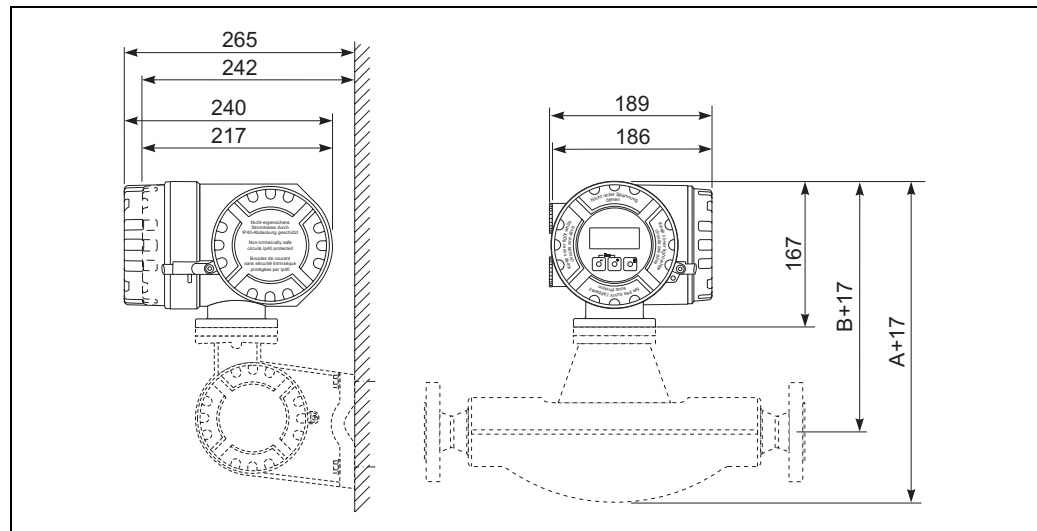
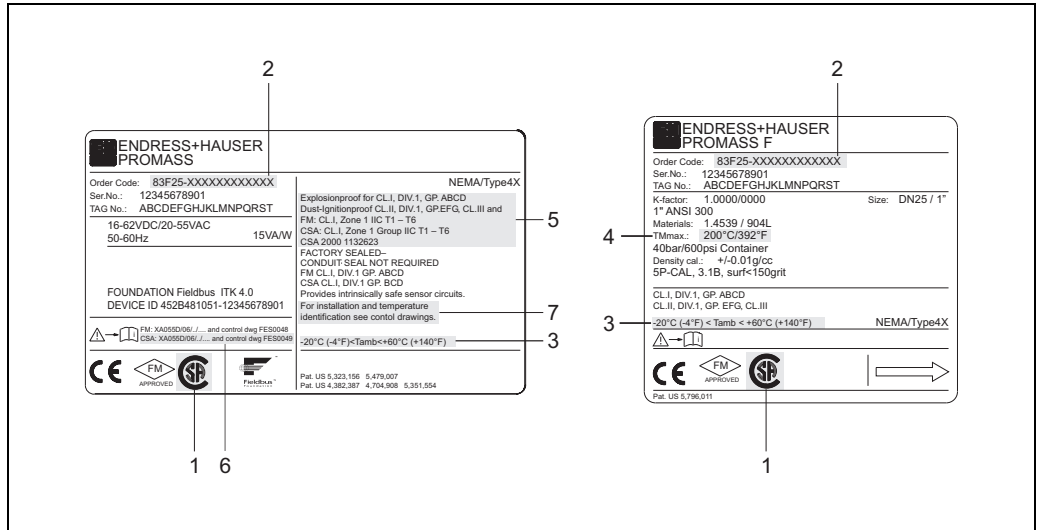


Fig. 4: Dimensions of the Ex-transmitter housing

A0001333

**Device identification**

Transmitter Promass 83 FOUNDATION Fieldbus and A/F/I/M/E/H sensor.



F06-83FFfxZZ-18-xx-xx-xx-002

Fig. 5: Nameplate of transmitter and nameplate of sensor (example)

- 1 Label of the notified body: Factory Mutual Research
- 2 Type code
- 3 Ambient temperature range
- 4 Maximum medium temperature
- 5 Type of protection and explosion group for the measuring system
- 6 Applicable Ex documentation
- 7 Warning

Control drawings

Endress+Hauser Reinach hereby declares that the product is in conformity with the requirements of the CSA (Canadian Standards Association).

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

**WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.**

**Notes:**

- Control room equipment shall not use or generate more than 250 V rms.
- 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 140°C.
- Transmitter enclosure PROline G02 explosionproof for use in Cl. I Div. 1 Groups A, B, C, D and dust-ignitionproof for Cl. II, III Div. 1 Groups E, F, G
- 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.
- Sensor circuits intrinsically safe for Cl. I, II, III Div. 1 Group A, B, C, D, E, F, G except limited versions of  
 PROMASS M DN80 (sensor version Group C-D)  
 PROMASS I DN50 (sensor version Group C-D)  
 PROMASS F DN80/100/150/250 (sensor version Group C-D)  
 PROMASS H DN50 (sensor version Group C-D)  
 which are only suitable for Cl. I, II, III Div. 1 Group C, D, E, F, G
- The minimum medium temperature is -50°C
- Install all Intrinsically Safe Circuits per Canadian Electrical Code Part I Section 18 and Appendix F.

Temperature table		max. medium temperature [°C]									
		T6	T5	T4A	T4	T3A	T2C	T2B	T2	T1	
<b>Ta = 45 °C:</b> PROMASS E DN8/15/25/40/50		45	100	120	125	125	125	125	125	125	
<b>Ta = 50 °C:</b> PROMASS M DN8/15/25/40/50/80 PROMASS F DN8/15/25/40 PROMASS F DN50/80/100/150/250 PROMASS I DN8/15/16/25 PROMASS I DN26/40/41/50 PROMASS H DN8 PROMASS H DN15/25/40/50		50 55 60 60 70 70 50 60	60 70 70 95 85 65 75 100	85 85 85 95 105 85 85 100	105 100 105 110 120 100 115 120	150 150 150 150 150 140 160 160	185* 185* 185* 185* 185* 185* 205* 205*	200* 200* 200* 200* 200* 200* 235* 235*	200* 200* 200* 150* 150* 150* 200* 200*	200* 200* 200* 150* 150* 150* 275* 275*	200* 200* 200* 150* 150* 200* 350* 350*
<b>Ta = 60 °C:</b> PROMASS A DN1/2/4 PROMASS M DN8/15/25/40/50/80 PROMASS F DN8/15/25/40 PROMASS F DN50/80/100/150/250 PROMASS I DN8/15/16/25 PROMASS I DN26/40/41/50 PROMASS H DN8 PROMASS H DN15/25/40/50 PROMASS E DN8/15/25/40/50 PROMASS F(HT) DN25/50/80		60 --- 55 60 60 70 50 60 --- 70	95 85 70 85 95 85 65 75 100 85	115 85 85 100 110 105 100 100 120 100	130 100 100 150* 150* 150* 140 115 125 115	140 100 100 150* 150* 150* 140 160 125 160	200 100 100 185* 185* 185* 185* 200* 200* 205*	200 100 100 200* 200* 200* 200* 200* 200* 235*	200 100 100 150* 150* 150* 150* 200* 200* 250*	200 100 100 200* 200* 200* 150* 150* 200* 275*	

\* Device shall not be installed in such way that the transmitter enclosure is located above the sensor.

Communication Options		Control Drawing	
I/O option = F, H, J		see FES 0049-0001	
I/O option = G, K		see FES 0049-0002	
I/O option = S, T		see FES 0049-0004	
I/O option = R, U		see FES 0049-0005	

Anderungen:		A 27.11.01 / MDI	F	Alle gesetzlichen Urheberrechte vorbehalten.		Ersteller: FES / ID 1089 FILE: M:ZEICHNUNG\FES0049\E040323csa.doc
		B 07.06.02 / MDI	G	Diese Zeichnung darf ohne unsere		
		C 29.10.02 / MDI	H	Genehmigung weder vervielfältigt werden noch		
		D 09.06.03 / UD	J	dritten Personen und Konkurrenzfirmen		
		E 27.04.04 / MDI	K	zugänglich gemacht werden.		

CSA Control Drawing Div. 1 / Zone 1  
Class I Zone 1  
Compact Version  
PROMASS 40 / 8. A / F / I / M / H / E

Gezeichnet	09.10.00	Bn
Geprüft		
Ex-geprüft	27.04.04	MDI
Gesehen		

FES0049 E 1/2

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

F06-8xMBxxZZ-01-xx-xx-en-011

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

**WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.**

**Notes:**

- Control room equipment shall not use or generate more than 250 V rms.
- 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 140°C.
- Transmitter enclosure PROline G02 explosionproof for use in Cl. I Div. 1 Groups A, B, C, D and dust-ignitionproof for Cl. II, III Div. 1 Groups E, F, G
- 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.
- Sensor circuits intrinsically safe for Cl. I, II, III Div. 1 Group A, B, C, D, E, F, G except a limited version of  
 PROMASS M DN80 (sensor version Group C-D)  
 PROMASS I DN50 (sensor version Group C-D)  
 PROMASS F DN80/100/150/250 (sensor version Group C-D)  
 PROMASS H DN50 (sensor version Group C-D)  
 which are only suitable for Cl. I, II, III Div. 1 Group C, D, E, F, G
- Allowed cable glands: NPT 1/2", G 1/2", M20x1.5 or PG13.5
- A sensor which was connected to a Promass 60/63/64 trans-mitter can also be installed to a Promass 8. transmitter. For this case this control drawing is relevant for safe use, except the minimum ambient temperature which is limited to -20°C
- Install all Intrinsically Safe Circuits per Canadian Electrical Code Part I Section 18 and Appendix F.

Temperature table		max. medium temperature [°C]								
		T6	T5	T4A	T4	T3A	T2C	T2B	T2	T1
<b>Ta = 45 °C</b> PROMASS E DN25/40/50		45	100	120	125	125	125	125	125	125
<b>Ta = 60 °C</b> PROMASS A DN1/2/4 PROMASS M DN8/15/25/40/50/80 PROMASS F DN8/15/25/40 PROMASS F DN50/80/100/150/250 PROMASS I DN8/15/16/25 PROMASS I DN26/40/41/50 PROMASS H DN8 PROMASS H DN15/25/40/50 PROMASS E DN8/15/25/40/50 PROMASS F(HT) DN25/50/80		60 50 55 60 60 70 50 60 - 70	95 60 70 70 95 85 65 75 100 85	115 85 85 100 110 105 100 100 120 100	130 105 100 105 110 120 100 115 120 115	140 150 150 150 150 150 140 160 125 160	200 150 185 185 185 185 185 200 200 205	200 150 200 200 200 200 200 200 200 235	200 150 185 185 150 150 185 200 200 275	200 150 200 200 150 150 200 200 200 350

The ambient temperature is -20°C ... +60°C for the transmitter and -40°C ... +60°C for the sensor

The minimum medium temperature is -50°C. A special version of Promass A/F/H is suitable for medium temperatures down to -200°C. The minimum medium temperature for Promass E is limited to -40 °C

Communication Options		Control Drawing	
I/O option = F, H, J		see FES 0049-0001	
I/O option = G, K		see FES 0049-0002	
I/O option = S, T		see FES 0049-0004	
I/O option = R, U		see FES 0049-0005	

Anderungen:		A 27.11.01 / MDI	F	Alle gesetzlichen Urheberrechte vorbehalten.		Ersteller: FES / ID 1089 FILE: M:ZEICHNUNG\FES0049\E040323csa.doc
		B 07.06.02 / MDI	G	Diese Zeichnung darf ohne unsere		
		C 29.10.02 / MDI	H	Genehmigung weder vervielfältigt werden noch		
		D 09.06.03 / UD	J	dritten Personen und Konkurrenzfirmen		
		E 27.04.04 / MDI	K	zugänglich gemacht werden.		

CSA Control Drawing Div. 1 / Zone 1  
Class I Zone 1  
Remote Version  
PROMASS 40 / 8. A / F / I / M / H / E

Gezeichnet	09.10.00	Bn
Geprüft		
Ex-geprüft	27.04.04	MDI
Gesehen		

FES0049 E 2/2

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

F06-8xMBxxZZ-01-xx-xx-en-012



**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:**

- Wire all intrinsically circuits per ISA RP 12.6. or in conduit per Canadian Electrical Code.
- WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.**
- Control room equipment may not use or generate more than 250 Vrms.

**Type: PROMASS 8\*\* \*\*..\*\*\*\*\*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	500 mA	5.5 W	$\leq 5$ nF	$\leq 10$ $\mu$ H

Connect to entity approved associated apparatus with  
 $I_{sc}$  or  $I_o \leq I_{max}$  or  $I_i$  and  
 $V_{oc}$  or  $U_o \leq V_{max}$  or  $U_i$   
 $(P_o \leq P_{max}$  or  $P_i)$   
 Cable parameters for Intrinsic Safety:  
 $C_{cable} \leq C_a / C_o - \Sigma C_i$   
 $L_{cable} \leq L_a / L_o - \Sigma L_i$  or  
 $L/R_{cable} \leq L/R_{Associated Apparatus}$  and  $L_i$  of each I.S. apparatus  $\leq 10$   $\mu$ H

**Alternatively the intrinsically safe circuit ( Fieldbus Foundation ) can be Connected according to the FISCO-Concept ( see FES 0049-0003).**

**Nonintrinsically safe signal output:**

- Wire all intrinsically safe circuits per Canadian Electrical Code respecting the Explosionsproof Integrity of the enclosure
- WARNING: EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 1.**
- Control room equipment may not use or generate over 250 Vrms.

**Type: PROMASS 8\*\* \*\*..\*\*\*\*\*K**  
**Terminals: 26,27 (FIELDBUS FOUNDATION NON I.S.)**  
 $V 9...32V; I = 12mA$

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	D   09.06.03 / UD   J	drillen Personen und Konkurrenzfirmen	
	E   27.04.04 / MDI   K	zugänglich gemacht werden.	
CSA Control Drawing Div. 1 / Zone 1		Masstab	Gearbeitet   09.10.00   Bn
PROMASS 8. A / F / I / M / H / E			Geprüft
Fieldbus Foundation IS installation			Ex-geprüft   27.04.04   MDI
Fieldbus Foundation non-IS installation			Gesehen
		<b>FES0049-0002 E</b>	

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

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**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 ( $U_o$  or  $V_{oc}$ ), the current ( $I_o$  or  $I_{sc}$ ) 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  $\mu$ 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  $V_{oc}$  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 $\mu$ 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

$C' = C'_{line/line} + 0.5 C'_{line/screen}$ , 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:  $\leq 1000$  m  
 Length of spur cable:  $\leq 30$  m  
 Length of splice:  $\leq 1$  m

At each end of the trunk cable an approved infallible line termination with following parameters is suitable:  
 $R = 90...100$  Ohm       $C = 0...2.2$   $\mu$ 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.
- CSA approved associated apparatus must meet the following parameters:  
 $U_o$  or  $V_{oc} \leq U_i$  ( $V_{max}$ ) and  $I_o$  or  $I_{sc} \leq I_i$  ( $I_{max}$ ) and  $P_o$  or  $P_{max} \leq P_i$  ( $P_{max}$ )
- The maximum non-hazardous area voltage must not exceed 250V
- Wire all intrinsically safe circuits per Canadian Electrical Code respecting the Explosionsproof Integrity of the enclosure
- 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**

**PROMASS 8\*\* \*\*..\*\*\*\*\*F/G**  
 Terminal 26 (+) Terminal 27 (-)  
 (FISCO-Model)

$U_i$ ( $V_{max}$ ) = 30 V	$C_i \leq 5$ nF
$I_i$ ( $I_{max}$ ) = 500 mA	$L_i \leq 10$ $\mu$ H
$P_i$ ( $P_{max}$ ) = 5.5 W	

Leakage current :  $\leq 50$   $\mu$ A

Apparatus provides galvanic isolation up to 250V rms between fieldbus circuit and any other circuit

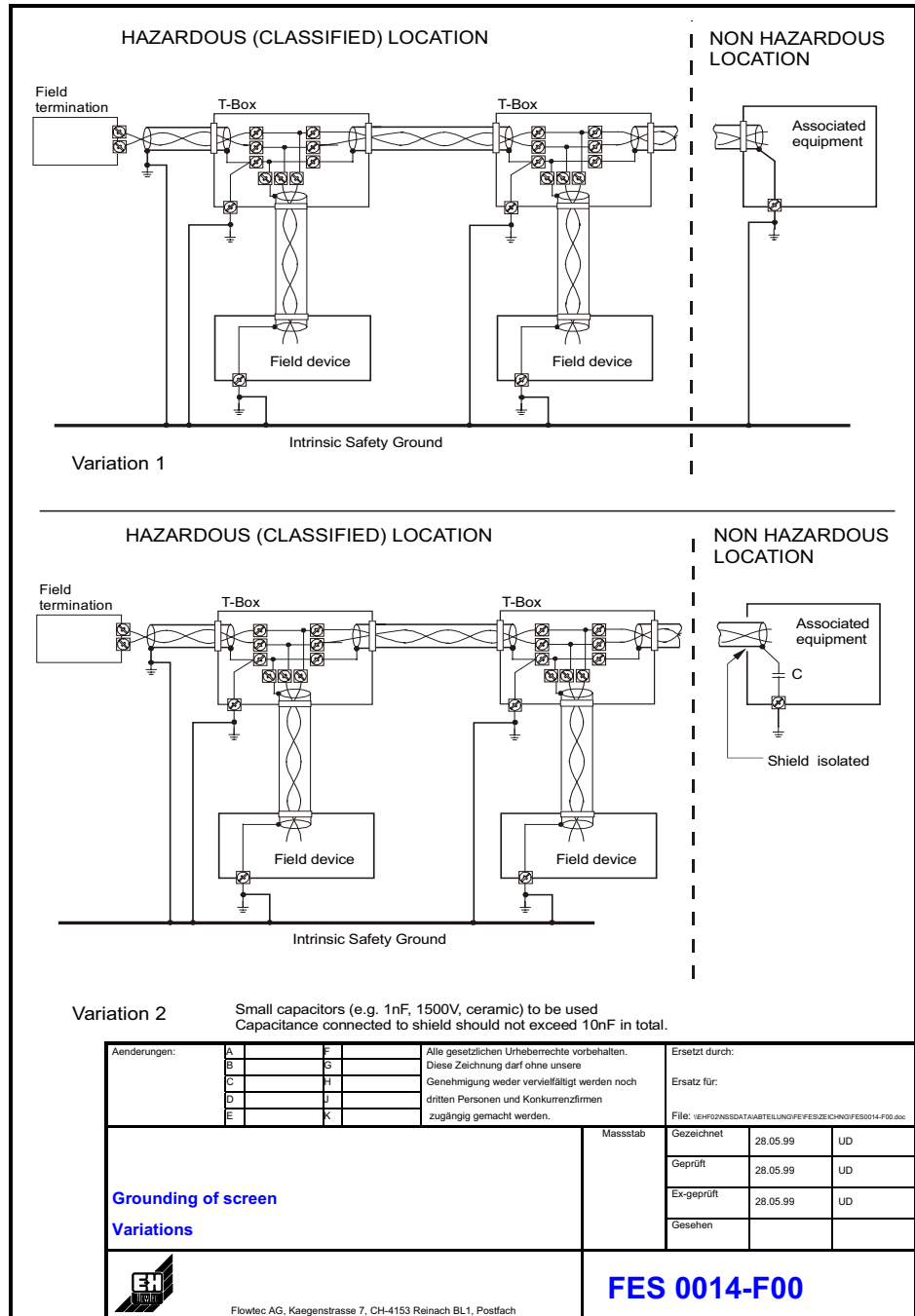
Temperature Classification: T6  
 Max. ambient Temperature: 60°C / 140°F

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	D   09.06.03 / UD   J	drillen Personen und Konkurrenzfirmen	
	E   27.04.04 / MDI   K	zugänglich gemacht werden.	
CSA Control Drawing Div. 1 / Zone 1		Masstab	Gearbeitet   09.10.00   Bn
PROMASS 8. A / F / I / M / H / E			Geprüft
Intrinsically safe PROFIBUS PA			Ex-geprüft   27.04.04   MDI
Foundation Fieldbus			Gesehen
FISCO-Concept			
		<b>FES0049-0003 E</b>	

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