Overview

- Level limit detection in liquids, slurries, foam, interfaces and solids
- Compact unit
- Wide range of applications
- No maintenance
- Full-, demand-, empty detector
- Extended rod version or rope version
- High pressure and high temperature
- High chemical resistance on probes
- RF technology with active shield
- Sensitivity: dielectric constant ≥1.5
- Simple modification of probe possible on site

Standard electronics with:
- Universal power supply
- Solid-state switch and Relay output

Digital electronics with:
- Communication via Profibus PA
- Integrated Local User Interface
- Self diagnostics

- Multiple approvals available
- 2011/65/EU RoHS conform

Approvals	CE		
	ATEX/ INMETRO	Zone 0	Intrinsically Safe
		Zone 0/1	Flameproof
		Zone 20/21	Dust Ignition Proof or Intrinsically Safe
	FM/ CSA	General purp.	
		Cl. I Div. 1	Intrinsically Safe
		Cl. I Div. 1	Explosionproof
		Cl. II, III Div. 1	Dust Ignition Proof
	TR-CU	Ordinary Locations	
		Zone 0	Intrinsically Safe
		Zone 0/1	Flameproof
		Zone 20/21	Dust Ignition Proof
	Lloyds	Categories ENV1, ENV2, ENV3 and ENV5	
	WHG	Overfill protection	

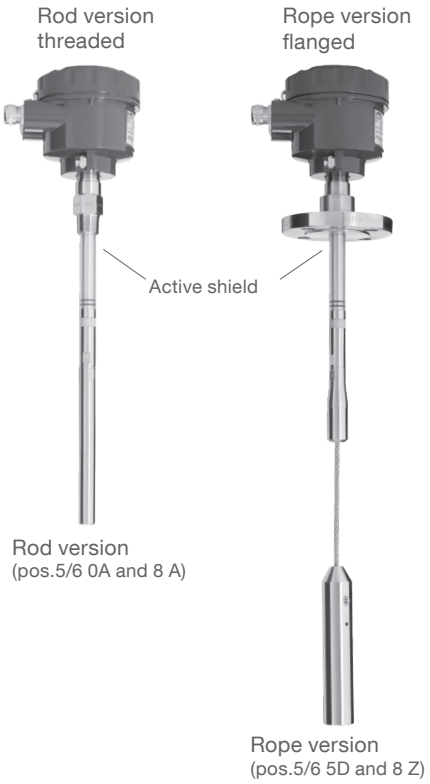
		Electronic module Standard	Electronic module Digital
Electronics	Supply voltage	12 .. 250 V AC/ DC (0 .. 60 Hz)	12 .. 30 V DC (24 V for IS version)
	Signal output	Relais SPDT Solid-state switch (30 V DC/ AC peak, 82 mA)	Profibus PA Solid-state switch (30 V DC/ AC peak, 82 mA)
	Signal output delay	Rise time or Fall time 1 .. 60 sec.	Rise time 0 .. 100 sec. Fall time 0 .. 100 sec.
	Failsafe	High or Low	High or Low
	User interface	Potentiometer, switches, 3 LED indicator	LCD local user interface or Profibus PA
	Diagnostics	-	Over and Under Range Electronics temperature Function check Maintenance alarm Internal electronic self check

Housing	Material	Aluminium, powder-coated
	Ingress protection	Type 4/ NEMA 4/ IP68 (1)
	Temperature extended shaft	Option for RF 8100, standard for RF 8200: Material 1.4404 (SS316L)
	Ambient temperature	-40 .. 85°C (-40 .. 185°F) With Ex-Certificate ATEX, INMETRO, TR-CU: -40 .. 80°C (-40 .. 176°F) with Flameproof or Dust Ignition Proof -40 .. 60°C (-40 .. 140°F) with Intrinsically safe

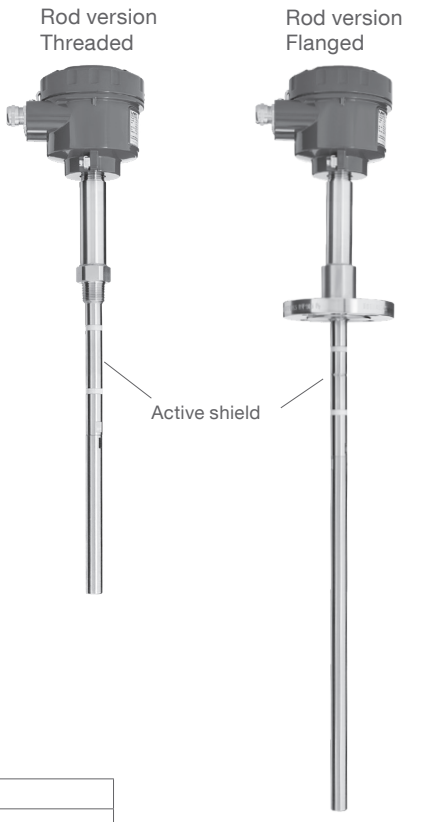
(1) For version with plug the type of protection can be lower (see pos.35).

Overview

RF 8100 Standard version			
Mechanics and Process	Length of extension "L"	Rod Rope	350 .. 1,000 mm (13.78 .. 39.37") 550 .. 25,000 mm (19.7 .. 984.3")
	Active shield length	Threaded Flanged	125 .. 400 mm (4.92 .. 15.75") 105 .. 380 mm (4.13 .. 14.96")
	Diameter of rod/ rope	Rod Rope	ø19 mm (ø0.75") ø6 mm (ø0.3")
	Materials	Process connection Active shield area Rod Rope Rope insulation Probe isolators Wetted seals	1.4404 (SS316L) PFA coated 1.4404 (SS316L) 1.4404 (SS316L) PFA (optional) PEEK FKM or FFKM
	Process temperature	Without temperature extended shaft: -40 .. 85°C (-40 .. 185°F) With temperature extended shaft: -40 .. 200°C (-40 .. 392°F)	
	Process pressure	-1 .. 35 bar g (-14.6 .. 511 psi g) nominal Observe Pressure versus Temperature Curves	
	Tensile load	max. 18.5 kN (rope version)	



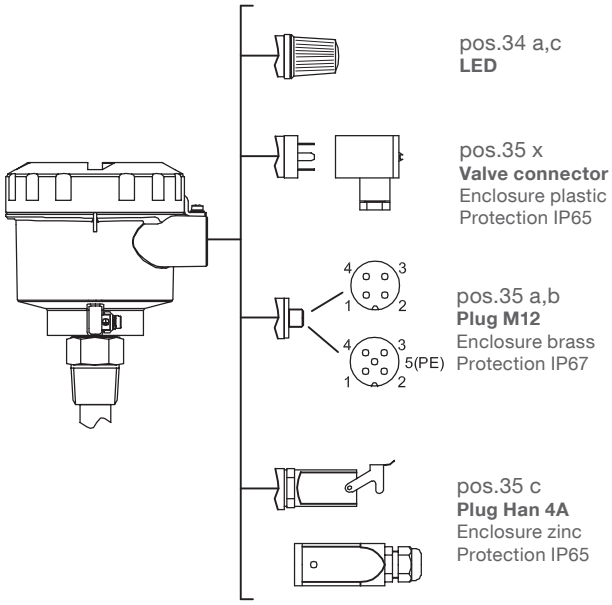
RF 8200 High temperature version (400°C)			
Mechanics and Process	Length of extension "L"	Rod	350 .. 1,000 mm (13.78 .. 39.37")
	Active shield length	Threaded Flanged	125 .. 400 mm (4.92 .. 15.75") 105 .. 380 mm (4.13 .. 14.96")
	Diameter	Rod	ø19 mm (ø0.75")
	Materials	Process connection Rod Probe isolators Wetted seals	1.4404 (SS316L) 1.4404 (SS316L) Ceramic Graphite
	Process temperature	-40 .. 400°C (-40 .. 752°F)	
	Process pressure	-1 .. 35 bar g (-14.6 .. 511 psi g) nominal Observe Pressure versus Temperature Curves	



Cable entries (by default)
Depending on model selected, the following cable entries are supported (options see pos.33):

Version:	Cable entries:
Flameproof (pos.2 T,L,5)	M20 x 1.5 (1x open conduit + 1x blind plug)
FM/FMc (pos.2 M,U,P,N)	NPT ½" tapered ANSI B1.20.1 (1x open conduit + 1x blind plug)
All other versions	M20 x 1.5 (1x screwed cable gland + 1x blind plug)

Options

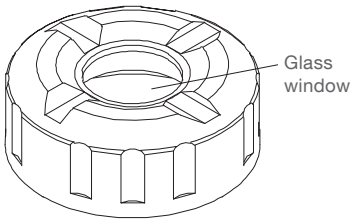


pos.34 a,c
LED

pos.35 x
Valve connector
Enclosure plastic
Protection IP65

pos.35 a,b
Plug M12
Enclosure brass
Protection IP67

pos.35 c
Plug Han 4A
Enclosure zinc
Protection IP65



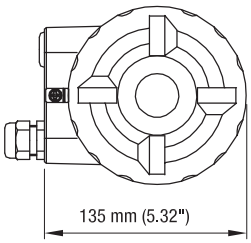
pos.36 x
Glass window in lid

Dimensions

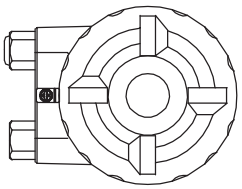
Enclosure

Top view

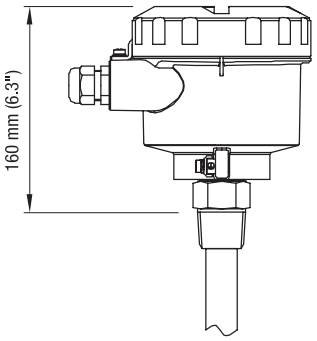
M20 x 1.5 cable gland

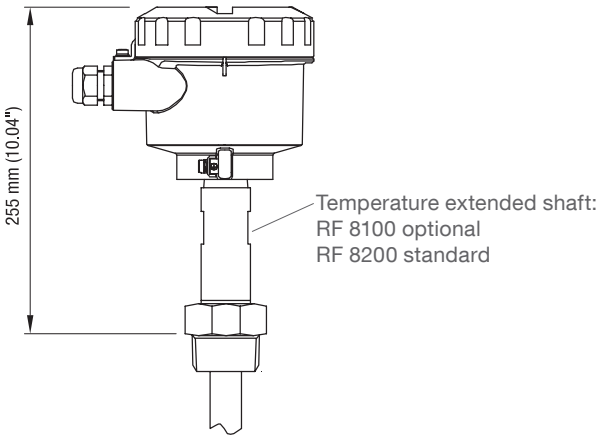


NPT ½" conduit

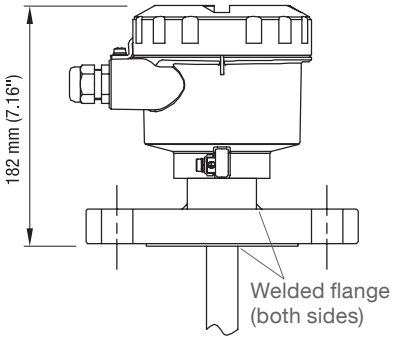


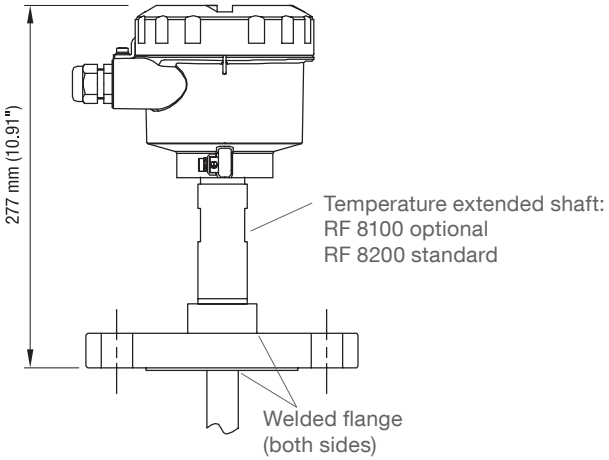
Threaded process connection





Flanged process connection

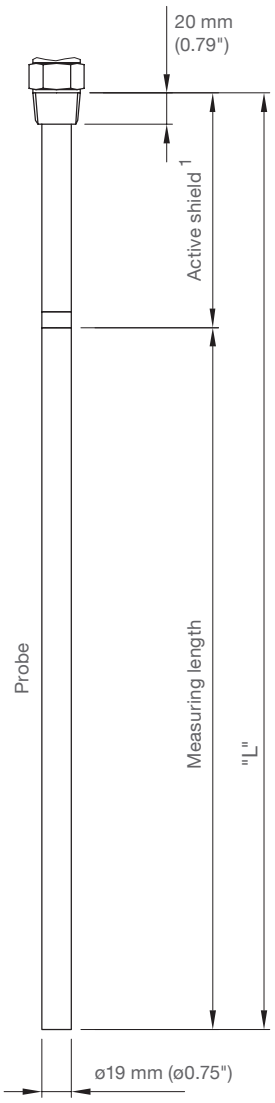




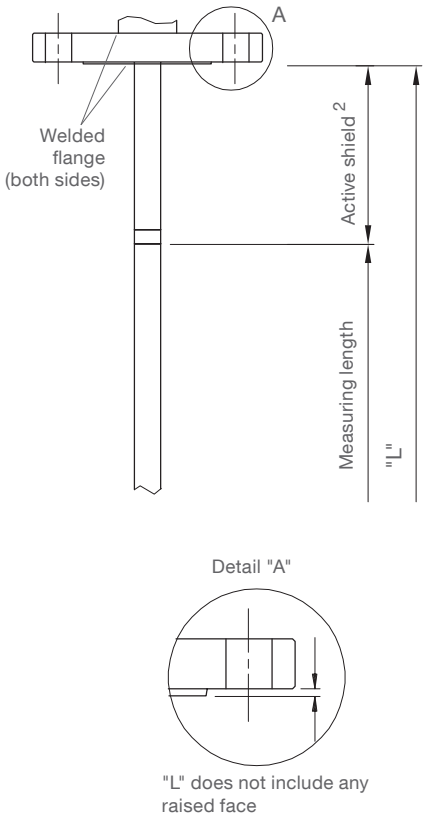
Dimensions

RF 8100 Rod version
RF 8200 Rod version (high temperature)

Threaded process connection



Flanged process connection



Detail "A"

"L" does not include any raised face

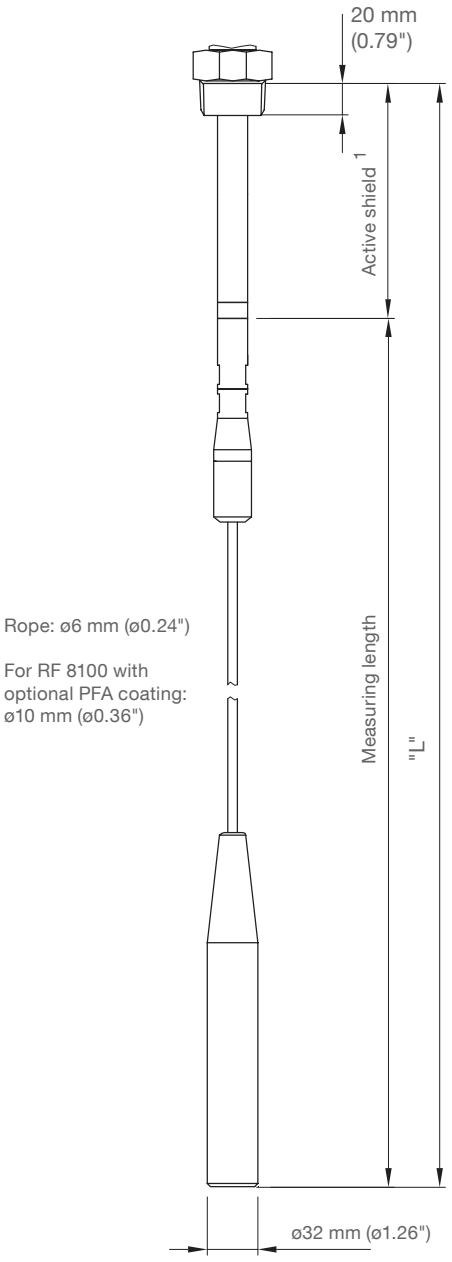
[1] For RF 8100 coated with PFA
Standard 125 mm (4.92")
Optional 250 mm (9.84") or
400 mm (15.75")

[2] For RF 8100 coated with PFA
Standard 105 mm (4.13")
Optional 230 mm (9.06") or
380 mm (14.96")

Dimensions

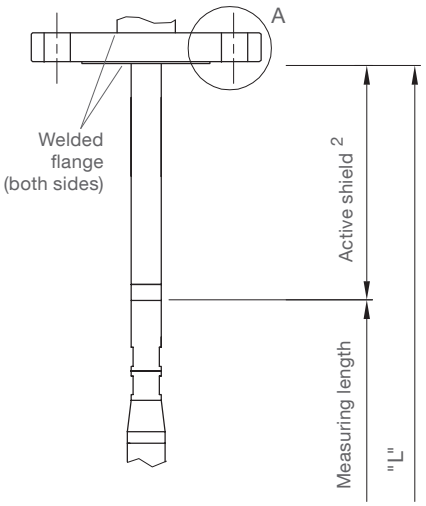
RF 8100 Rope version

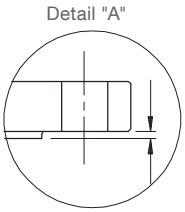
Threaded process connection



[1] Coated with PFA
Standard 125 mm (4.92")
Optional 250 mm (9.84") or
400 mm (15.75")

Flanged process connection





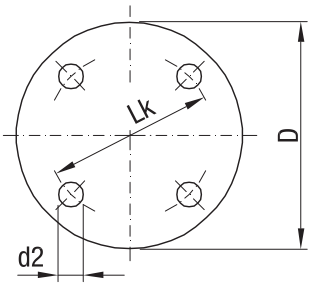
"L" does not include any
raised face

[2] Coated with PFA
Standard 105 mm (4.13")
Optional 230 mm (9.06") or
380 mm (14.96")

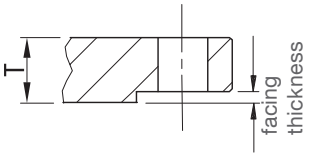
Dimensions/ Detailed Ex-markings

Flanges

	Code	Type	Number of holes	d2 mm (inch)	Lk mm (inch)	D mm (inch)	T (thickness) mm (inch)
ASME B16.5, raised face	5A	1" 150 lbs	4	15.9 (0.63")	79.3 (3.12")	108.0 (4.25")	14.3 (0.56")
	5B	1" 300 lbs	4	19.1 (0.75")	88.9 (3.5")	123.8 (4.87")	17.5 (0.69")
	5C	1" 600 lbs	4	19.1 (0.75")	88.9 (3.5")	123.8 (4.87")	17.5 (0.69")
	5D	1½" 150 lbs	4	15.9 (0.63")	98.6 (3.88")	127.0 (5.0")	17.5 (0.69")
	5E	1½" 300 lbs	4	22.2 (0.87")	114.3 (4.5")	155.6 (6.13")	20.6 (0.81")
	5F	1½" 600 lbs	4	22.2 (0.87")	114.3 (4.5")	155.6 (6.13")	22.4 (0.88")
	5G	2" 150 lbs	4	19.1 (0.75")	120.7 (4.75")	152.4 (6.01")	19.1 (0.75")
	5H	2" 300 lbs	8	19.1 (0.75")	127.0 (5.0")	165.1 (6.5")	22.2 (0.87")
	5J	2" 600 lbs	8	19.1 (0.75")	127.0 (5.0")	165.1 (6.5")	25.4 (1.0")
	5K	3" 150 lbs	4	19.1 (0.75")	152.4 (6.01")	190.5 (7.5")	23.9 (0.94")
	5L	3" 300 lbs	8	22.2 (0.87")	168.2 (6.62")	209.6 (8.25")	28.6 (1.13")
	5M	3" 600 lbs	8	22.2 (0.87")	168.2 (6.62")	209.6 (8.25")	31.7 (1.25")
	5N	4" 150 lbs	8	19.1 (0.75")	190.5 (7.5")	228.6 (9.0")	23.9 (0.94")
	5P	4" 300 lbs	8	22.2 (0.87")	200.0 (7.87")	254.0 (10.0")	31.7 (1.25")
	5Q	4" 600 lbs	8	25.4 (1.0")	215.9 (8.5")	273.1 (10.75")	38.1 (1.5")
EN 1092-1 type A, flat faced	6A	DN25 PN16	4	14.0 (0.55")	85.0 (3.35")	115.0 (4.53")	18.0 (0.71")
	6B	DN25 PN40	4	14.0 (0.55")	85.0 (3.35")	115.0 (4.53")	18.0 (0.71")
	6C	DN40 PN16	4	18.0 (0.71")	110.0 (4.33")	150.0 (5.91")	18.0 (0.71")
	6D	DN40 PN40	4	18.0 (0.71")	110.0 (4.33")	150.0 (5.91")	18.0 (0.71")
	6E	DN50 PN16	4	18.0 (0.71")	125.0 (4.92")	165.0 (6.5")	18.0 (0.71")
	6F	DN50 PN40	4	18.0 (0.71")	125.0 (4.92")	165.0 (6.5")	20.0 (0.79")
	6G	DN80 PN16	8	18.0 (0.71")	160.0 (6.3")	200.0 (7.87")	20.0 (0.79")
	6H	DN80 PN40	8	18.0 (0.71")	160.0 (6.3")	200.0 (7.87")	24.0 (0.94")
	6J	DN100 PN16	8	18.0 (0.71")	180.0 (7.09")	220.0 (8.66")	20.0 (0.79")
	6K	DN100 PN40	8	22.0 (0.87")	190.0 (7.48")	235.0 (9.25")	24.0 (0.94")



Raised face



Type	Facing thickness
ASME 150 lbs ASME 300 lbs	2 mm (0.08")
ASME 600 lbs	7 mm (0.28")

Detailed Ex-markings

Code	Certificate	RF 8100	RF 8200	Protection method
pos.2 T	ATEX II 1/2G ATEX II 1/2D	Ex ia/db [ia Ga] IIC T⚠ Ga/Gb Ex ia/tb [ia Da] IIIC T⚠ Da/Db	Ex ia/db [ia Ga] IIC T⚠ Ga/Gb Ex ia/tb [ia Da] IIIC T⚠ Da/Db	Flameproof, Dust Ignition Proof
pos.2 Y	ATEX II 1G ATEX II 1/2D	Ex ia IIC T⚠ Ga Ex ia IIIC T⚠ Da/Db	Ex ia IIC T⚠ Ga Ex ia IIIC T⚠ Da/Db	Intrinsically Safe
pos.2 W	ATEX II 1/2D	Ex ia/tb [ia Da] IIIC T⚠ Da/Db	Ex ia/tb [ia Da] IIIC T⚠ Da/Db	Dust Ignition Proof
pos.2 U	FM/ CSA	XP-IS Class I, Div.1, Gr. A, B, C, D DIP-IS Class II, Div.1, Gr. E, F, G DIP-IS Class III T4	XP-IS Class I, Div.1, Gr. A, B, C, D DIP-IS Class II, Div.1, Gr. E, F, G DIP-IS Class III T4	Explosion Proof, Dust Ignition Proof
pos.2 P	FM/ CSA	IS Class I, Div.1, Gr. A, B, C, D IS Class II, Div.1, Gr. E, F, G IS Class III T4	IS Class I, Div.1, Gr. A, B, C, D IS Class II, Div.1, Gr. E, F, G IS Class III T4	Intrinsically Safe
pos.2 N	FM/ CSA	DIP-IS Class II, Div.1, Gr. E, F, G DIP-IS Class III T4	DIP-IS Class II, Div.1, Gr. E, F, G DIP-IS Class III T4	Dust Ignition Proof
pos.2 L	TR-CU	Ga/Gb Ex ia/d IIC T6…T3 X Ex ia/tb IIIC T_{200} 80°C…T_{200} 195°C Da/Db X	Ga/Gb Ex ia/d IIC T6…T1 X Ex ia/tb IIIC T_{200} 80°C…T_{200} 405°C Da/Db X	Flameproof, Dust Ignition Proof
pos.2 V	TR-CU	0Ex ia IIC T6…T3 Ga X Ex ia IIIC T_{200} 80°C…T_{200} 195°C Da/Db X	0Ex ia IIC T6…T1 Ga X Ex ia IIIC T_{200} 80°C…T_{200} 405°C Da/Db X	Intrinsically Safe
pos.2 E	TR-CU	Ex ia/tb IIIC T_{200} 80°C…T_{200} 195°C Da/Db X	Ex ia/tb IIIC T_{200} 80°C…T_{200} 405°C Da/Db X	Dust Ignition Proof
pos.2 5 +pos.20 a	INMETRO	Ex ia/db [ia Ga] IIC T6…T3 Ga/Gb Ex ia/tb [ia Da] IIIC T* Da/Db	Ex ia/db [ia Ga] IIC T6…T1 Ga/Gb Ex ia/tb [ia Da] IIIC T* Da/Db	Flameproof, Dust Ignition Proof
pos.2 3 +pos.20 a	INMETRO	Ex ia IIC T6…T3 Ga Ex ia IIIC T* Da/Db	Ex ia IIC T6…T1 Ga Ex ia IIIC T* Da/Db	Intrinsically Safe
pos.2 2 +pos.20 a	INMETRO	Ex ia/tb [ia Da] IIIC T* Da/Db	Ex ia/tb [ia Da] IIIC T* Da/Db	Dust Ignition Proof

Electrical installation

Standard

Relay SPDT/
Solid state switch

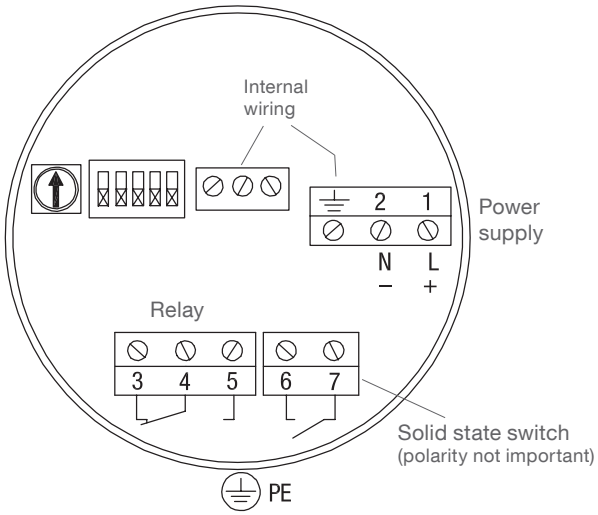
Power supply:

12 .. 250 V AC/ DC (0 .. 60 Hz)
2 W max.

Signal output:

Relay:
Floating relay SPDT
AC max. 250 V, 8 A, 2000 VA, non inductive
DC max. 30 V, 5 A, 150 W, non inductive

Solid state switch:
30 V DC or 30 V AC (peak), 82 mA
Observe protection (see below)



Digital

Profibus PA/
Solid state switch

Power supply:

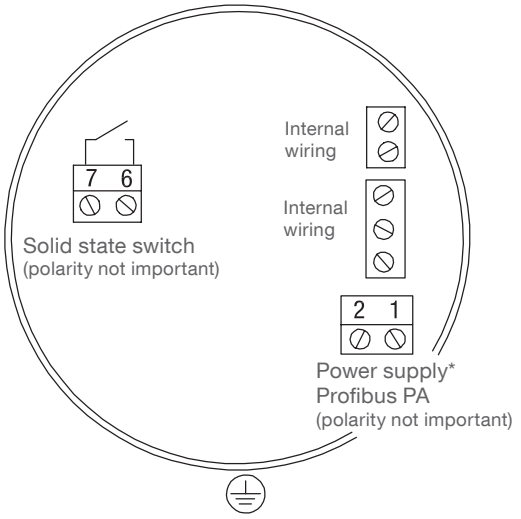
12 .. 30 V DC, 12.5 mA

Intrinsically Safe:
12 .. 24 V DC, 12.5 mA
Intrinsically safe barrier required
For ATEX, TR-CU, INMETRO:
U_i= 24 V I_i= 380 mA P_i=5.32 W C_i=5 nF L_i=10 uH
For FM/ CSA:
See "Connection drawing" in the Instruction Manual

Signal output:

Solid state switch:
30 V DC or 30 V AC (peak), 82 mA
Observe protection (see below)

With Intrinsically safe:
Intrinsically safe barrier required
For ATEX, TR-CU, INMETRO:
U_i=30 V I_i=200 mA P_i=350 mW C_i=0 L_i=0
For FM/ CSA:
See "Connection drawing" in the Instruction Manual



* With use of Profibus the wiring must be according to Profibus PA standards.
If Profibus is not used, a shielded cable is recommended to ensure stable measurement.

Protection of Solid State Switch

Observe a Protection diode in case of connecting an external relay to the Solid state switch.