

Overview

- Level limit detection in liquids, slurries, foam, interfaces and solids
 - Compact unit
 - Wide range of applications
 - No maintenance
 - Full-, demand-, empty detector
 - Extended pipe version or cable version
 - High chemical resistance on probes
 - Capacitive technology
 - Level detection independent of tank wall/ pipe
 - Sensitivity: dielectric constant ≥ 1.5
- 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 2	Type of protection n
		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. I Div. 2	Non incendive
	TR-CU	Cl. II, III Div. 1	Dust Ignition Proof
		Ordinary Locations	
		Zone 0	Intrinsically Safe
		Zone 0/1	Flameproof
	Lloyds	Zone 20/21	Dust Ignition Proof
		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 or AC peak, 82 mA)	Profibus PA Solid-state switch (30 V DC or 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 of housing	Aluminium, powder-coated
	Ingress protection	Type 4/ NEMA 4/ IP68 ⁽¹⁾
	Material of Temperature extended shaft	1.4404 (SS316L), option
	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 or Type of protection n -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

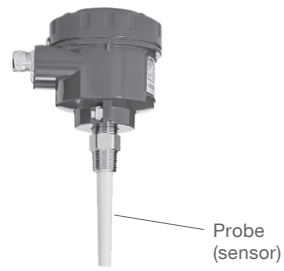
Mechanics and Process	Length of extension "L"	Short extension threaded Short extension flanged/ Triclamp Pipe extension Cable extension	120 .. 5,500 mm (4.72 .. 216.5") 98 .. 5,500 mm (3.86 .. 216.5") 210 .. 5,500 mm (8.27 .. 216.5") 500 .. 30,000 mm (19.69 .. 1,181")
	Diameter of pipe/ cable extension	Pipe extension Cable	ø20 mm (ø0.79") ø6 mm (ø0.3")
	Materials	Process connection Pipe extension Cable insulation Probe (sensor) Wetted seals	1.4404 (SS316L) 1.4404 (SS316L) FEP PPS or PVDF, FDA and 1935/2004/EC conform FKM or FFKM
	Process temperature	Without temp. extended shaft With temp. extended shaft	-40 .. 85°C (-40 .. 185°F) -40 .. 125°C (-40 .. 257°F)
	Process pressure*	Pipe version Cable/ sliding coupling	-1 .. 25 bar g (-14.6 .. 365 psi g) nominal -1 .. 10 bar g (-14.6 .. 150 psi g) nominal *Observe Pressure versus Temperature Curves
	Tensile load (cable version)	max. 1,750 N	

Cable entries (by default)

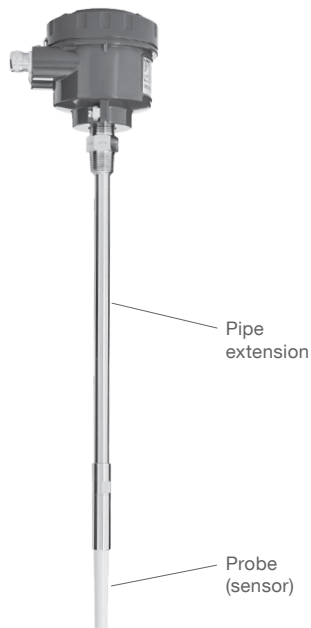
Depending on model selected, the following cable entries are supported (options see pos.33):

Version:	Cable entries:
Flameproof (pos.2 T,L,5)	M20 x 1.5 (1x open conduit + 1x blind plug)
FM/FMc (pos.2 M,H,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)

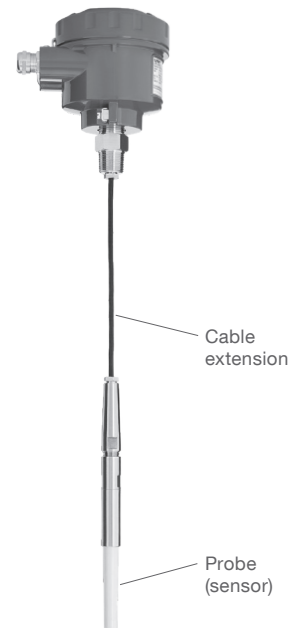
CN 8100



Short extension length
(pos.5/6 0A and 8 A)



Pipe version
Extended
(pos.5/6 0A and 8 B-Y)

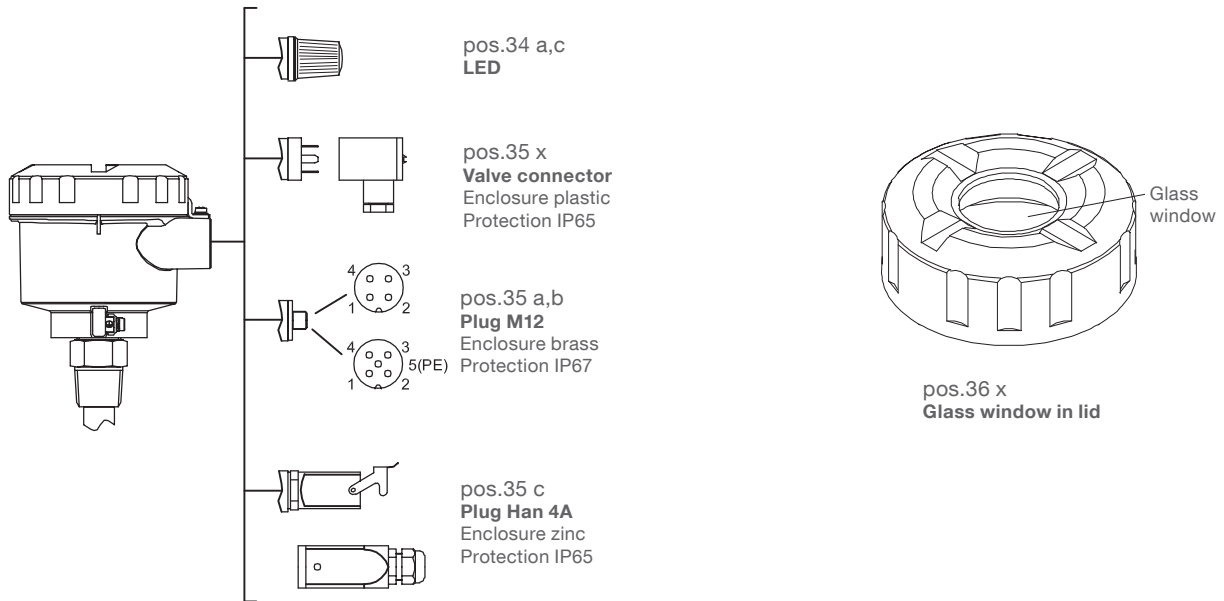


Cable version
(pos.5/6 0A and 8 Z)



Remote version

Options



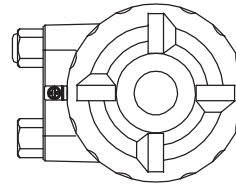
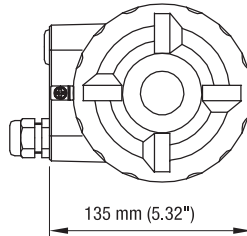
Dimensions

Enclosure

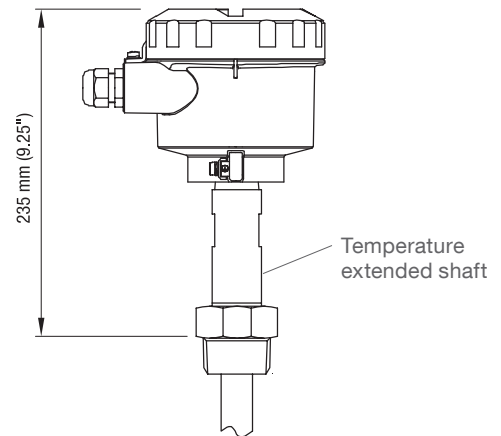
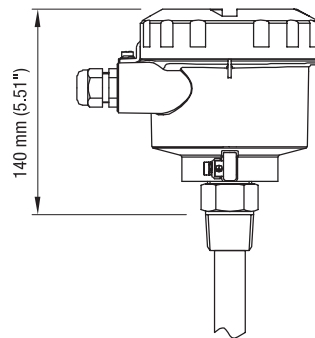
Top view

M20 x 1.5 cable gland

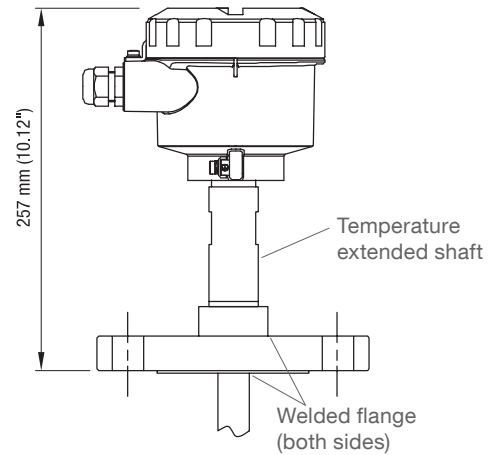
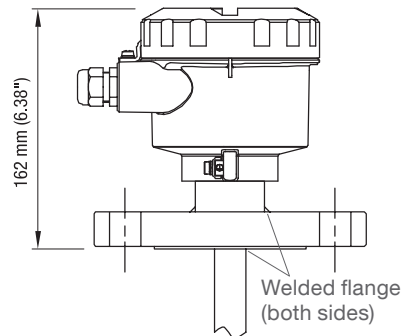
NPT ½" conduit



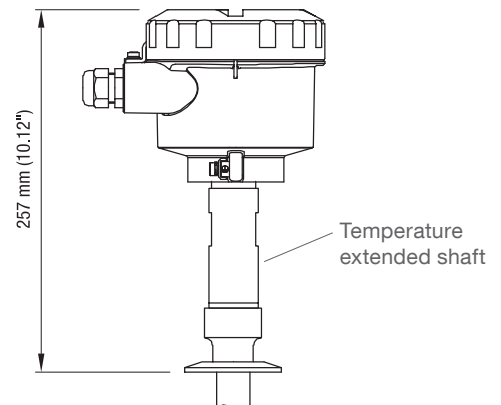
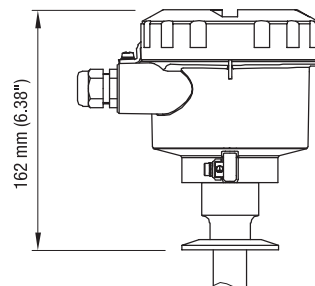
Threaded process connection



Flanged process connection

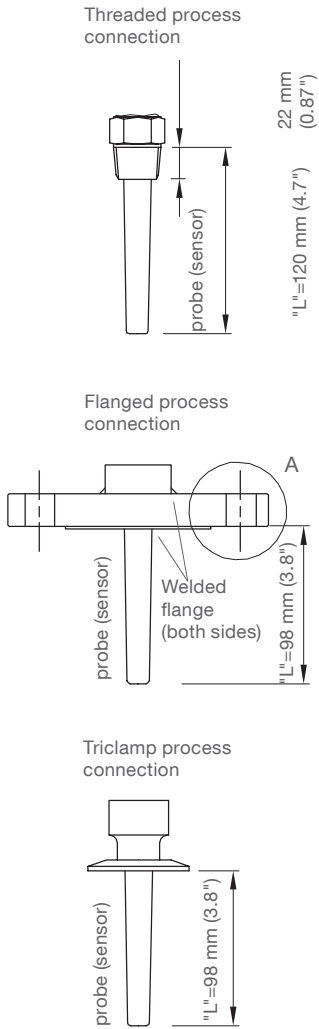


Triclamp process connection

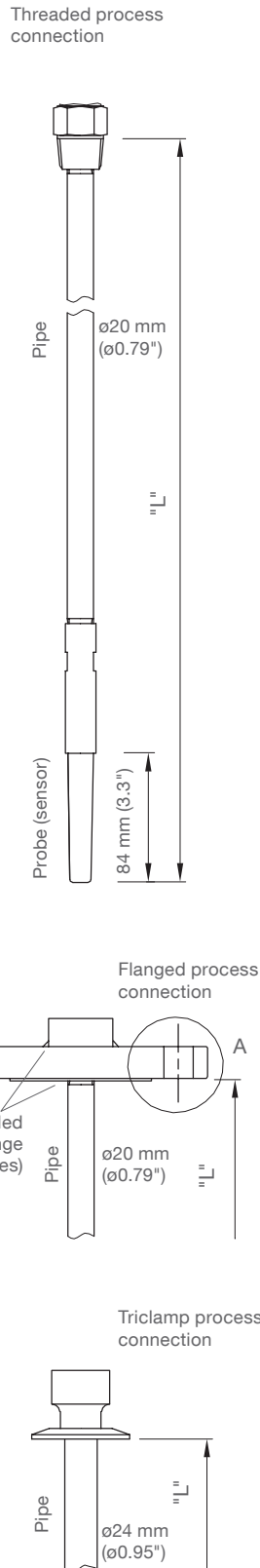


Dimensions

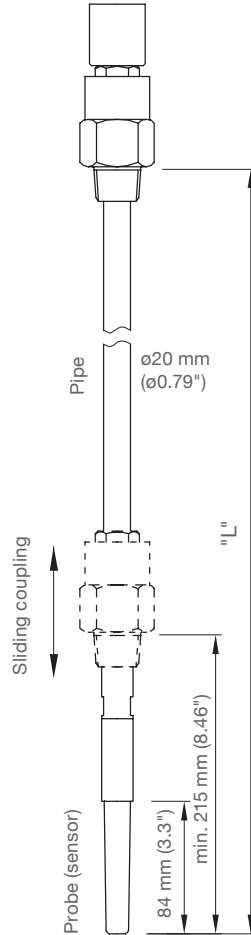
Short extension length Shortest length



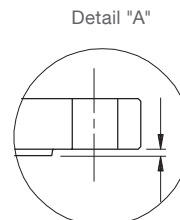
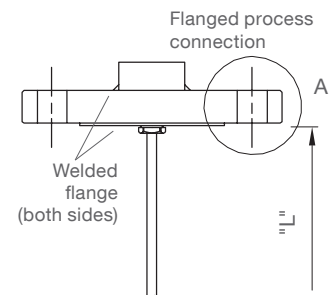
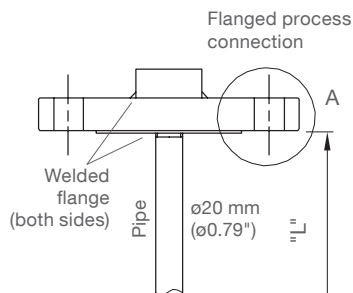
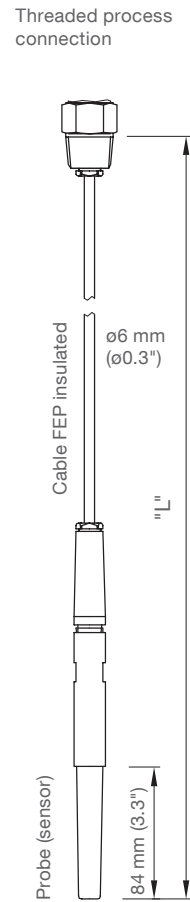
Pipe version Extended



Pipe version Extended, with sliding coupling (pos.19)



Cable version

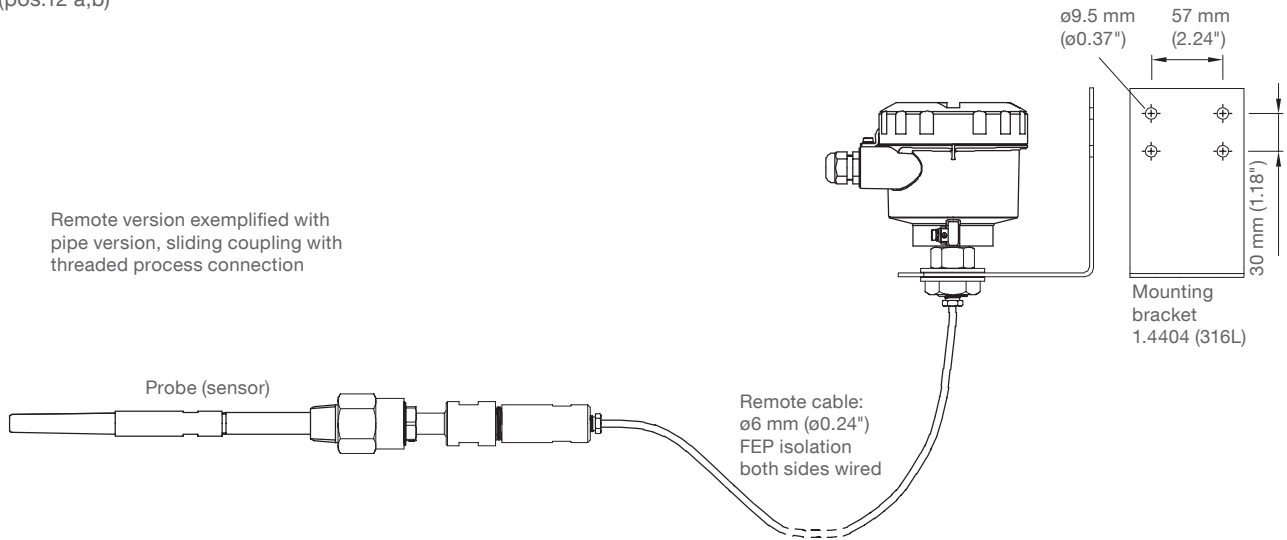


"L" does not include any raised face

Dimensions

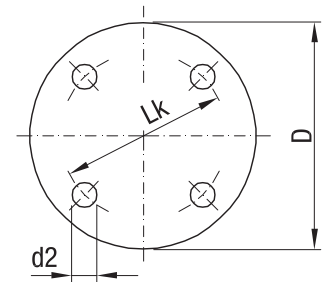
Remote version (pos.12 a,b)

Remote version exemplified with pipe version, sliding coupling with threaded process connection

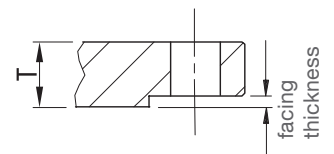


Flanges

	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	Protection method	
Pos.2 G	ATEX II 3G	Ex ic nA IIC T Δ Gc Type of protection n	
Pos.2 T	ATEX II 1/2G ATEX II 1/2D	Ex ia/db [ia Ga] IIC T Δ Ga/Gb Ex ia/tb [ia Da] IIIC T Δ Da/Db Flameproof, Dust Ignition Proof	
Pos.2 Y	ATEX II 1G ATEX II 1/2D	Ex ia IIC T Δ Ga Ex ia IIIC T Δ Da/Db Intrinsically Safe	
Pos.2 W	ATEX II 1/2D	Ex ia/tb [ia Da] IIIC T Δ Da/Db Dust Ignition Proof	
Pos.2 H	FM/ CSA	NI Class I, Div.2, Gr. A, B, C, D Class II, Div.2, Gr. F, G Class III T4 oder T6 Non incensive	
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 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 Intrinsically Safe	
Pos.2 N	FM/ CSA	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 95°C...T ₂₀₀ 175°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 95°C...T ₂₀₀ 175°C Da/Db X Intrinsically Safe	
Pos.2 E	TR-CU	Ex ia/tb IIIC T ₂₀₀ 95°C...T ₂₀₀ 175°C Da/Db X Dust Ignition Proof	
Pos.2 6	+Pos.20 a	INMETRO	Ex nA ic IIC T6...T4 Gc Type of protection n
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 Flameproof, Dust Ignition Proof
Pos.2 3	+Pos.20 a	INMETRO	Ex ia IIC T6...T3 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 Dust Ignition Proof

Deviation in Ex-markings with Remote version (pos.12 a,b)

Code	Certificate electronic housing	Certificate probe (sensor)	Protection method	
Pos.2 G	ATEX II 3G	Ex ic nA IIC T Δ Gc	ATEX II 3G	Ex ic IIC T Δ Gc Type of protection n
Pos.2 T	ATEX II 2(1)G ATEX II 2(1)D	Ex db ia [ia Ga] IIC T Δ Gb Ex ia tb [ia Da] IIIC T Δ Db	ATEX II 1G ATEX II 1D ATEX II 1/2D	Ex ia IIC T Δ Ga Ex ia IIIC T Δ Da Ex ia IIIC T Δ Da/Db Flameproof, Dust Ignition Proof
Pos.2 Y	ATEX II 1G ATEX II 2D	Ex ia IIC T Δ Ga Ex ia IIIC T Δ Db	ATEX II 1G ATEX II 1D ATEX II 1/2D	Ex ia IIC T Δ Ga Ex ia IIIC T Δ Da Ex ia IIIC T Δ Da/Db Intrinsically Safe
Pos.2 W	ATEX II 2(1)D	Ex ia tb [ia Da] IIIC T Δ Db	ATEX II 1D ATEX II 1/2D	Ex ia IIIC T Δ Da Ex ia IIIC T Δ Da/Db Dust Ignition Proof
Pos.2 L	TR-CU	1Ex d [ia Ga] IIC T6/T5 Gb X Ex tb [ia Da] IIIC T55°C...T90°C Db X	TR-CU	0Ex ia IIC T6...T3 Ga X Ex ia IIIC T ₂₀₀ 95°C...T ₂₀₀ 175°C Da X Ex ia IIIC T ₂₀₀ 95°C...T ₂₀₀ 175°C Da/Db X Flameproof, Dust Ignition Proof
Pos.2 V	TR-CU	0Ex ia IIC T6/T4 Ga X Ex ia IIIC T55°C/T70°C Db X	TR-CU	0Ex ia IIC T6...T3 Ga X Ex ia IIIC T ₂₀₀ 95°C...T ₂₀₀ 175°C Da X Ex ia IIIC T ₂₀₀ 95°C...T ₂₀₀ 175°C Da/Db X Intrinsically Safe
Pos.2 E	TR-CU	Ex tb [ia Da] IIIC T55°C...T90°C Db X	TR-CU	Ex ia IIIC T ₂₀₀ 95°C...T ₂₀₀ 175°C Da X Ex ia IIIC T ₂₀₀ 95°C...T ₂₀₀ 175°C Da/Db X Dust Ignition Proof
Pos.2 6 +Pos.20 a	INMETRO	Ex nA ic IIC T6/T4 Gc	INMETRO	Ex ic IIC T6...T4 Gc Type of protection n
Pos.2 5 +Pos.20 a	INMETRO	Ex db ia [ia Ga] IIC T6...T5 Ga/Gb Ex ia tb [ia Da] IIIC T55°C...T90°C Da/Db	INMETRO	Ex ia IIC T6...T3 Ga Ex ia IIIC T* Da Ex ia IIIC T* Da/Db Flameproof, Dust Ignition Proof
Pos.2 3 +Pos.20 a	INMETRO	Ex ia IIC T6/T4 Ga Ex ia IIIC T55°C/T70°C Da/Db	INMETRO	Ex ia IIC T6...T3 Ga Ex ia IIIC T* Da Ex ia IIIC T* Da/Db Intrinsically Safe
Pos.2 2 +Pos.20 a	INMETRO	Ex ia tb [ia Da] IIIC T55°C...T90°C Da/Db	INMETRO	Ex ia IIIC T* Da Ex ia IIIC T* Da/Db Dust Ignition Proof

Electrical installation

Standard

Relay SPDT/
 Solid state switch

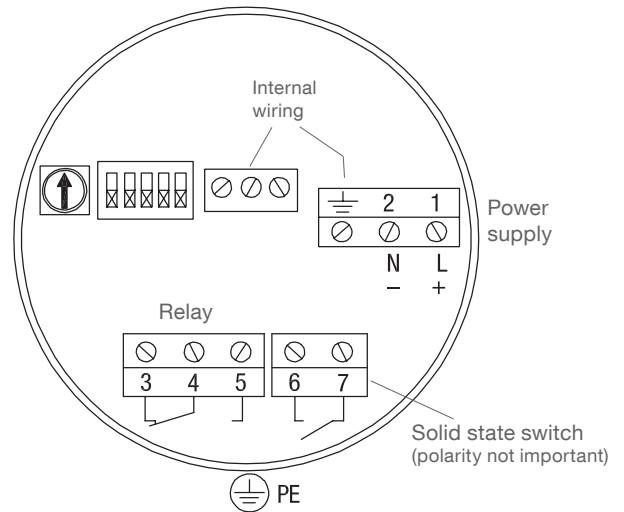
Power supply:

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:

$U_i=24\text{ V}$, $I_i=380\text{ mA}$, $P_i=5.32\text{ W}$, $C_i=5\text{ nF}$, $L_i=10\text{ uH}$

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)

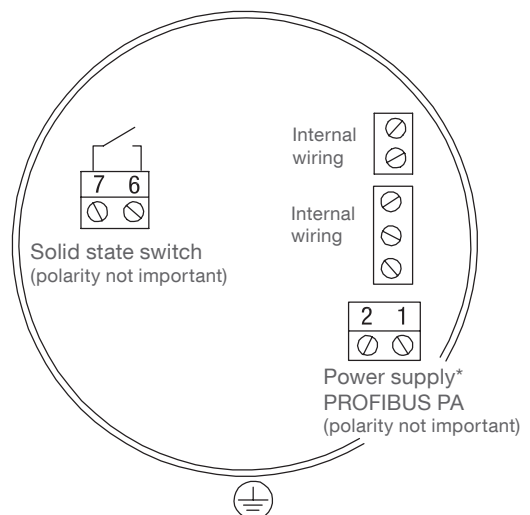
Intrinsically safe:

Intrinsically safe barrier required
 For ATEX, TR-CU, INMETRO:

$U_i=30\text{ V}$, $I_i=200\text{ mA}$, $P_i=350\text{ mW}$, $C_i=0$, $L_i=0$

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

