Level sensor
For industrial applications, plastic version
Model RLT-2000

Applications

- Level measurement of liquids in machine building
- Control and monitoring tasks for critical media

Special features

- Media compatibility: aqueous media and corrosive liquids
- Wetted parts: PP or PVDF
- Output signal: Resistance in a 3-wire potentiometer circuit, current output 4 ... 20 mA
- Accuracy, resolution: 24 mm [0.9 in], 12 mm [0.5 in], 10 mm [0.4 in], 6 mm [0.2 in] or 3 mm [0.1 in]

Fig. left: Mounting thread, angular connector
Fig. right: Cable outlet

Description

The model RLT-2000 level sensor has been developed for measuring the level of liquids.

Measuring principle
A permanent magnet built into the float triggers, with its magnetic field, the resistance measuring chain built into the guide tube. The entire assembly corresponds to a 3-wire potentiometer circuit. The measured resistance signal is proportional to the level. The model RLT-2000 is optionally available with a 4 ... 20 mA output signal.

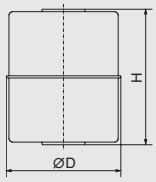
Data sheets showing similar products:
Level sensor; model RLT-1000; see data sheet LM 50.02
Level sensor, with temperature measurement; model RLT-3000; see data sheet LM 50.05

Specifications

Level sensor, model RLT-2000		
Measuring principle	Reed-chain technology with optional analogue amplifier	
Measuring range M	The measuring range is determined from the selected guide tube length L and the position of the 100 % mark. For dimensions see drawing	
Guide tube length L	150 ... 1,500 mm [6 ... 59 in]	
Output signal	■ Variable resistance The overall resistance of the reed chain is approx. 1 ... 10 kΩ, depending on the measuring range Max. voltage < DC 40 V ■ Current output, 4 ... 20 mA, 2-wire Power supply: DC 12 ... 32 V Load in Ω: ≤ (power supply - 12 V) / 0.02 A	
Accuracy, resolution	■ 24 mm [0.9 in] 1) ■ 12 mm [0.5 in] 1) ■ 10 mm [0.4 in] 2) ■ 6 mm [0.2 in] 1) ■ 3 mm [0.1 in] 1)	
Mounting position	Vertical ±30°	
Process connection	■ G 1 ½, installation from outside 3) ■ G 2, installation from outside ■ G ⅜, installation from inside 4) ■ G ½, installation from inside 4)	
Material ■ Wetted ■ Non-wetted	Process connection, guide tube: PP, PVDF (option) Case: PP, PVDF (option)	Float: See table page 3 Electrical connection: See table below
Permissible temperatures ■ Medium ■ Ambient ■ Storage	PP version -10 … +80 °C [14 … 176 °F] -10 … +80 °C [14 … 176 °F] -10 … +80 °C [14 … 176 °F]	PVDF version (option) -10 … +80 °C [14 … 176 °F], option: -30 … +120 °C [-22 … +248 °F] 5) -30 … +80 °C [-22 … +176 °F] -30 … +80 °C [-22 … +176 °F]

Electrical connections 6)	Ingress protection 7)	Material	Cable length
Angular connector DIN 175301-803 A	IP65	PA	-
Cable outlet	IP67	PVC	■ 2 m [6.5 ft] ■ 5 m [16.4 ft] other lengths on request
Cable outlet	IP67	Silicone	
Connection housing Dimensions: 80 x 82 x 55 mm [3.1 x 3.2 x 2.2 in] For cable diameter: 5 ... 10 mm [0.2 ... 0.4 in]	IP66	Polycarbonate, glands from polyamide, brass, stainless steel	-

1) Not with float diameter 44 mm [1.7 in] from PP
2) Only with float diameter 44 mm [1.7 in] from PP and guide tube length L ≤ 500 mm (L ≤ 19,68 in)
3) Only with float diameter 44 mm [1.7 in] from PP
4) Only with cable outlets
5) Not with PVC cable
6) Cable outlets not available with current output, 4 ... 20 mA
7) The stated ingress protection (per IEC/EN 60529) only applies when plugged in using mating connectors that have the appropriate ingress protection.

Float	Form	Outer diameter Ø D	Height H	Operating pressure	Medium temperature	Density	Material
	Cylinder [8]	44 mm [1.7 in]	44 mm [1.7 in]	≤ 3 bar [≤ 43.5 psi]	≤ 80 °C [≤ 176 °F]	≥ 500 kg/m³ [31.2 lbs/ft³]	PP
	Cylinder [9]	55 mm [2.2 in]	55 mm [2.2 in]	≤ 3 bar [≤ 43.5 psi]	≤ 80 °C [≤ 176 °F]	≥ 500 kg/m³ [31.2 lbs/ft³]	PP
	Cylinder [9]	55 mm [2.2 in]	65 mm [2.6 in]	≤ 3 bar [≤ 43.5 psi]	≤ 120 °C [≤ 248 °F]	≥ 850 kg/m³ [53.1 lbs/ft³]	PVDF

8) Guide tube length L ≤ 500 mm [L ≤ 19,68 in], not with process connection G 2
9) Not with process connection G 1 ½

Connection diagram

Angular connector DIN 175301-803 A				
	Variable resistance		Current output, 4 ... 20 mA, 2-wire	
	Overall resistance	Pin 2 / 3	U+	Pin 1
	100 ... 0 %	Pin 1 / 3	U-	Pin 2
	0 ... 100 %	Pin 1 / 2		

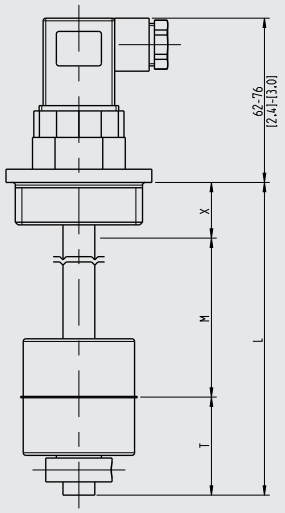
Cable outlet	
	Variable resistance
	Overall resistance — green / white
	100 ... 0 % — white / brown
	0 ... 100 % — brown / green

Polycarbonate case				
	Variable resistance		Current output, 4 ... 20 mA, 2-wire	
	Overall resistance	Terminal W1 / W3	U+	Terminal U+
	100 ... 0 %	Terminal W1 / W2	U-	Terminal U-
	0 ... 100 %	Terminal W2 / W3		

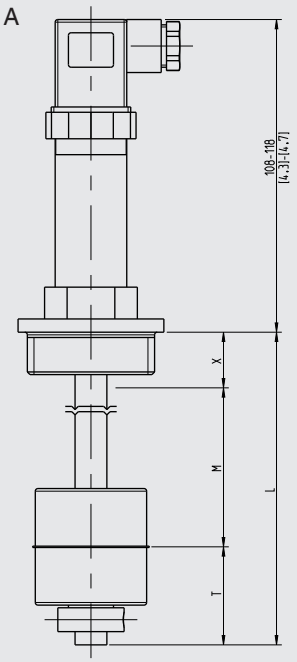
Electrical safety	
Reverse polarity protection	U+ vs. U-
Overvoltage protection	DC 40 V

Dimensions in mm [in]

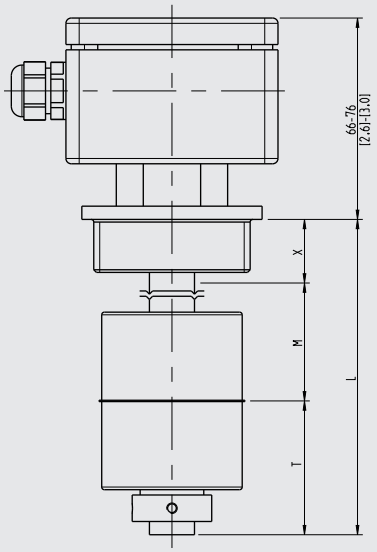
with angular connector form A
Resistance signal



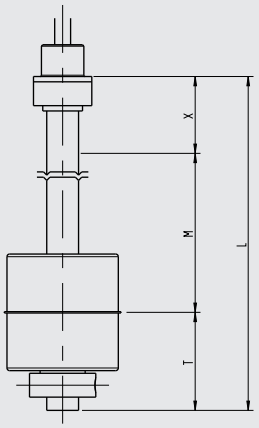
with angular connector form A
Current output 4 ... 20 mA



with connection housing



with cable outlet
Resistance signal



Legend

L Guide tube length
M Measuring range
X Distance sealing face to 100 % mark
(X ≥ dead band T in mm [in] (from sealing edge))
T Dead band (pipe end)

Dead band T in mm [in] (from sealing edge)

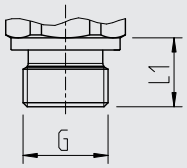
Process connection	Outer diameter float Ø D		
	Ø 44 mm [1.7 in]	Ø 55 mm [2.2 in]	Ø 55 mm PVDF [2.2 in]
G 1 ½ (from outside)	45 mm [1.8 in]	-	-
G 2 (from outside)	-	55 mm [2.2 in]	65 mm [2.6 in]
G ⅜ B (from inside)	50 mm [2.0 in]	55 mm [2.2 in]	60 mm [2.4 in]
G ½ B (from inside)	50 mm [2.0 in]	55 mm [2.2 in]	60 mm [2.4 in]

Dead band T in mm [in] (pipe end)

Dead band	Outer diameter float Ø D		
	Ø 44 mm [1.7 in]	Ø 55 mm [2.2 in]	Ø 55 mm PVDF [2.2 in]
T	40 mm [1.6 in]	45 mm [1.8 in]	55 mm [2.2 in]

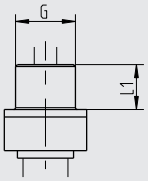
Process connection

Installation from outside



G	L_1	Spanner width
G 1 ½	16 mm [0.63 in]	30 mm [1.2 in]
G 2	20 mm [0.79 in]	36 mm [1.4 in]

Installation from inside



G	L_1	Spanner width
G ⅜ B	12 mm [0.47 in]	22 mm [0.9 in]
G ½ B	14 mm [0.55 in]	27 mm [1.1 in]

Approvals

Logo	Description	Country
CE	**EU declaration of conformity** ■ EMC directive EN 61326 emission (group 1, class B) and interference immunity (industrial application) ■ RoHS directive	European Union

Manufacturer‘s information and certifications

Logo	Description
-	**China RoHS directive**

Approvals and certificates, see website

Ordering information

Model / Output signal / Electrical connection / Process connection / Guide tube length L / 100 % mark (optional) / Accuracy, resolution / Medium temperature / Float

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