

# Reed-chain level sensor For industrial applications, with temperature output Model RLT-3000

WIKA data sheet LM 50.05

## Applications

- Combined level and temperature measurement of liquids in machine building
- Control and monitoring tasks for hydraulic power packs, compressors and cooling systems

## Special features

- Media compatibility: Oil, water, diesel, refrigerants and other liquids
- Level: Current output 4 ... 20 mA
- Temperature: Pt100, Pt1000, accuracy: Class B



Version with connection housing

## Description

The model RLT-3000 level sensor with temperature output combines the recording of the level and temperature of liquids in a single measuring point. The stainless steel used is suitable for a multitude of media, such as, for example, oil, water, diesel and refrigerants.

## Measuring principle

A permanent magnet built into the float triggers, with its magnetic field, the resistance measuring chain built into the guide tube. The built-in transmitter converts the signal of the resistance measuring chain into a 4 ... 20 mA current signal. The current signal is proportional to the level.

For the temperature measurement, there is a platinum measuring resistor built into the end of the guide tube.

## Specifications

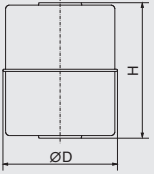
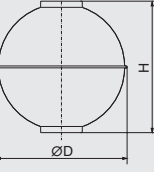
Level sensor, model RLT-3000	Level	Temperature
<b>Measuring principle</b>	Reed-chain technology with optional analogue amplifier	Pt100 or Pt1000 measuring resistor
<b>Measuring range</b>	The measuring range M is determined from the selected guide tube length L and the position of the 100 % mark. For dimensions see drawing	<ul style="list-style-type: none"> <li>■ Pt100</li> <li>■ Pt1000</li> </ul>
<b>Guide tube length L</b>	150 ... 1,500 mm [6 ... 59 in], greater lengths on request	
<b>Output signal</b>	Current output, 4 ... 20 mA, 2-wire Power supply: DC 12 ... 32 V Load in $\Omega$ : $\leq$ (power supply - 12 V) / 0.02 A	<ul style="list-style-type: none"> <li>■ Pt100, 2-wire</li> <li>■ Pt1000, 2-wire</li> </ul>
<b>Accuracy</b>	<ul style="list-style-type: none"> <li>■ 24 mm [0.9 in] <sup>1)</sup></li> <li>■ 12 mm [0.5 in] <sup>2)</sup></li> <li>■ 10 mm [0.4 in] <sup>3)</sup></li> <li>■ 6 mm [0.2 in] <sup>2)</sup></li> <li>■ 3 mm [0.1 in] <sup>2)</sup></li> </ul> For reed-chain technology, the accuracy corresponds to the resolution.	Class B per DIN EN 60751
<b>Mounting position</b>	Vertical $\pm 30^\circ$	
<b>Process connection</b>	<ul style="list-style-type: none"> <li>■ G 1, installation from outside</li> <li>■ G 1 1/2, installation from outside</li> <li>■ G 2, installation from outside</li> <li>■ Flange DN 50, form B per DIN 2527/EN 1092, PN 16, installation from outside</li> </ul>	
<b>Material</b>		
Wetted	Process connection, guide tube: Stainless steel 1.4571 (316 Ti) Float: See table on page 3	
Non-wetted	Case: Stainless steel 1.4571 (316Ti) Electrical connection: See table below	
<b>Permissible temperatures</b>		
Medium	-30 ... +100 °C [-22 ... +212 °F]	
Ambient	-30 ... +80 °C [-22 ... +176 °F]	
Storage	-30 ... +80 °C [-22 ... +176 °F]	

Electrical connections	Ingress protection	Material
<b>“Standard” connection housing</b> Dimensions: 75 x 80 x 57 mm [3.0 x 3.1 x 2.2 in] For cable diameter: 5 ... 10 mm [0.2 ... 0.4 in]	IP66	<ul style="list-style-type: none"> <li>■ Aluminium</li> <li>■ Glands from polyamide</li> <li>■ Brass</li> <li>■ Stainless steel</li> </ul>

1) Not with float diameter 30 mm [1.2 in] or 25 mm [1.0 in]

2) Not with float diameter 30 mm [1.2 in]

3) Only with float diameter 30 mm [1.2 in]


Float	Form	Outer diameter $\varnothing D$	Height H	Operating pressure	Medium temperature	Density	Material
	Cylinder <sup>1)</sup>	44 mm [1.7 in]	52 mm [2.0 in]	≤ 16 bar [≤ 232 psi]	≤ 120 °C [≤ 248 °F]	≥ 750 kg/m <sup>3</sup> [46.8 lbs/ft <sup>3</sup> ]	1.4571 (316Ti)
	Cylinder <sup>2)</sup>	30 mm [1.2 in]	36 mm [1.4 in]	≤ 10 bar [≤ 145 psi]	≤ 80 °C [≤ 176 °F]	≥ 850 kg/m <sup>3</sup> [53.1 lbs/ft <sup>3</sup> ]	1.4571 (316Ti)
	Cylinder	25 mm [1.0 in]	20 mm [0.8 in]	≤ 16 bar [≤ 232 psi]	≤ 80 °C [≤ 176 °F]	≥ 750 kg/m <sup>3</sup> [46.8 lbs/ft <sup>3</sup> ]	Buna / NBR
	Sphere <sup>3)</sup>	52 mm [2.0 in]	52 mm [2.0 in]	≤ 40 bar [≤ 580 psi]	≤ 120 °C [≤ 248 °F]	≥ 750 kg/m <sup>3</sup> [46.8 lbs/ft <sup>3</sup> ]	1.4571 (316Ti)

1) Not with process connection G 1

2) Guide tube length ≤ 1,000 mm [39.4 in]

3) Not with process connection G 1, G 1 ½

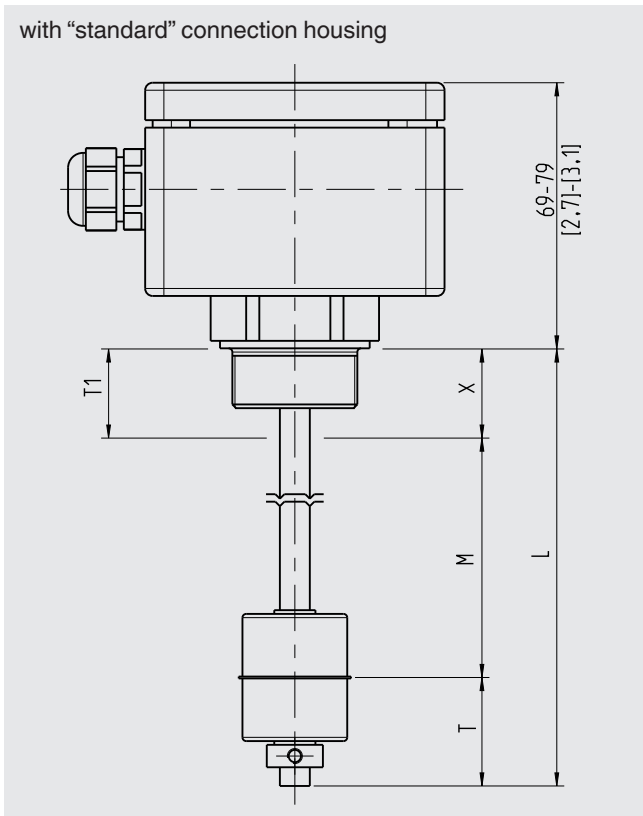
## Connection diagram

Aluminium case				
	Level		Temperature	
	4 ... 20 mA, 2-wire		Pt100/Pt1000	
	U+	Terminal MU005+	+	Terminal MU004+
	U-	Terminal MU005-	-	Terminal MU004-

## Electrical safety

<b>Reverse polarity protection</b>	U+ vs. U-
<b>Insulation voltage</b>	DC 1,500 V
<b>Overvoltage protection</b>	DC 40 V

## Dimensions in mm [in]



### Legend

- L Guide tube length
- M Measuring range
- X Distance sealing face to 100 % mark  
( $X \geq$  dead band T in mm [in] (from sealing edge))
- T Dead band (pipe end)
- T1 Dead band (from sealing edge)

### Dead band T1 in mm [inch] (from sealing edge)

Process connection	Outer diameter float $\varnothing$ D			
	$\varnothing$ 30 mm [1.2 in]	$\varnothing$ 44 mm [1.7 in]	$\varnothing$ 52 mm [2.0 in]	$\varnothing$ 25 mm [1.0 in]
<b>G 1 (from outside)</b>	35 mm [1.4 in]	-	-	-
<b>G 1 ½ (from outside)</b>	35 mm [1.4 in]	45 mm [1.8 in]	-	25 mm [1.0 in]
<b>G 2 (from outside)</b>	40 mm [1.6 in]	50 mm [2.0 in]	50 mm [2.0 in]	25 mm [1.0 in]
<b>Flange (from outside)</b>	20 mm [0.8 in]	30 mm [1.2 in]	30 mm [1.2 in]	5 mm [0.2 in]

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

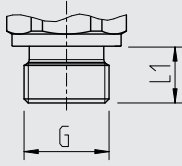
Dead band	Outer diameter float $\varnothing$ D			
	$\varnothing$ 30 mm [1.2 in]	$\varnothing$ 44 mm [1.7 in]	$\varnothing$ 52 mm [2.0 in]	$\varnothing$ 25 mm [1.0 in]
<b>T</b>	35 mm [1.4 in]	45 mm [1.8 in]	45 mm [1.8 in]	45 mm [1.8 in]

### Float stop at guide tube end

- Adjusting collar, for medium temperature  $\leq 80$  °C [ $\leq 176$  °F]
- Pipe clamp, for medium temperature  $> 80$  °C [ $> 176$  °F]

## Process connection

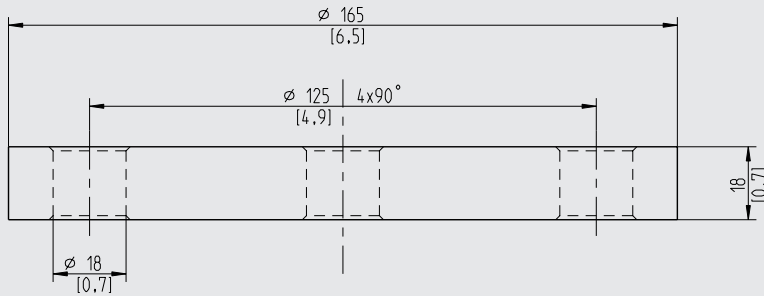
Installation from outside



G	L <sub>1</sub>	Spanner width
G 1	16 mm [0.63 in]	41 mm [1.6 in]
G 1 ½	18 mm [0.71 in]	30 mm [1.2 in]
G 2	20 mm [0.79 in]	36 mm [1.4 in]

Flange

DN 50, form B per EN 1092-1 (DIN 2527), PN 16



## Approvals

Logo	Description	Country
CE	<b>EU declaration of conformity</b> <ul style="list-style-type: none"> <li>■ EMC directive</li> <li>EN 61326 emission (group 1, class B) and interference immunity (industrial application)</li> <li>■ RoHS directive</li> </ul>	European Union

## Manufacturer's information and certificates

Logo	Description
-	China RoHS directive

Approvals and certificates, see website

## Ordering information

Model / Temperature output signal / Process connection / Guide tube length L / 100 % mark (optional) / Accuracy, resolution / Float

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