Float switch
For industrial applications, plastic version
Model RLS-2000

Applications

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

Special features

- Media compatibility: Oil, aqueous media and corrosive liquids
- Wetted parts: PP or PVDF
- Up to 4 switching outputs freely definable as normally open, normally closed or change-over contact
- Potential-free switching reed contacts

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

Description

The model RLS-2000 float switch has been developed for measuring the levels of aggressive and corrosive media, such as acids and bases.

Measuring principle
A permanent magnet built into the float triggers, with its magnetic field, the potential-free reed contacts built into the guide tube. The triggering of the reed contacts by the permanent magnet is contact-free and thus free from wear. Depending on customer wishes, the switching functions of normally open, normally closed or change-over can be realised for the defined liquid level.

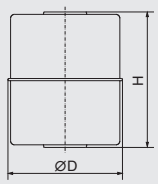
Data sheets showing similar products:
Float switch; model RLS-1000; see data sheet LM 50.03
Float switch with temperature output; model RLS-3000; see data sheet LM 50.06
Float switch, intrinsic safety Ex i; model RLS-4000; see data sheet LM 50.07

Specifications

Float switch, model RLS-2000	
Measuring principle	Potential-free switching reed contacts are triggered by a magnet in the float.
Guide tube length L ■ PP version ■ PVDF version	 100 ... 1.500 mm [4 ... 59 in] 120 ... 1.500 mm [4.7 ... 59 in] other lengths on request
Output signal	Up to 4 switch points, depending on the electrical connection: SP1, SP2, SP3, SP4
Switching function	Alternatively normally open (NO), normally closed (NC) or change-over (SPDT) contact - on rising level
Switch position ■ PP version ■ PVDF version	Specified in mm, starting from the upper sealing face (SP1 ... SP4) At the end of the guide tube ≈ 45 mm [≈ 1.8 in] cannot be used for switch positions. At the end of the guide tube ≈ 65 mm [≈ 2.6 in] cannot be used for switch positions.
Distance between switch points [1]	Minimum distance SP1 to the upper sealing face: 50 mm [2.0 in] Minimum distance between the switch points: 50 mm [2.0 in] Minimum distance with 3 switch points: 80 mm [3.1 in], either between SP1 and SP2 or SP2 and SP3 Minimum distance with 4 switch points: 80 mm [3.1 in], between SP2 and SP3
Switching power	Normally open, normally closed: AC 230 V; 100 VA; 1 A; max. 100 Hz DC 230 V; 50 W; 0.5 A Change-over contact: AC 230 V; 40 VA; 1 A; max. 100 Hz DC 230 V; 20 W; 0.5 A
Accuracy	±3 mm switch point accuracy incl. hysteresis, non-repeatability
Mounting position	Vertical ±30°
Process connection	■ G 1 ½, installation from outside [2] ■ G 2, installation from outside ■ G ⅜, installation from inside [3] ■ G ½, installation from inside [3]
Material ■ Wetted ■ Non-wetted	 Process connection, guide tube: PP, PVDF (option) Float: See table on page 3 Case: PP, PVDF (option) Electrical connection: See table below
Permissible temperatures ■ Medium ■ Ambient ■ Storage	PP version / PVDF version (option) -10 … +80 °C [14 … 176 °F] / -10 … +80 °C [14 … 176 °F] [4], option: -30 … +120 °C [-22 … +248 °F] [4] -10 … +80 °C [14 … 176 °F] / -30 … +80 °C [-22 … +176 °F] -10 … +80 °C [14 … 176 °F] / -30 … +80 °C [-22 … +176 °F]

Electrical connections [5]	Max. switch point definition	Ingress protection per IEC/EN 60529 [6]	Protection class	Material	Cable length
Angular connector DIN EN 175301-803 A	■ 2 NO/NC ■ 1 SPDT	IP65	II	PA	-
Cable outlet	■ 4 NO/NC ■ 4 SPDT	IP67	II	PVC	■ 2 m [6.5 ft] ■ 5 m [16.4 ft] other lengths on request
Cable outlet	■ 4 NO/NC ■ 2 NO/NC + 1 SPDT	IP67	II	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]	■ 4 NO/NC ■ 4 SPDT	IP66	II	Polycarbonate, glands from polyamide, brass, stainless steel	-

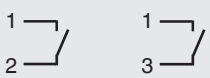
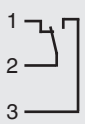
1) Smaller minimum distances on request
2) Only with float outer diameter Ø D = 44 mm [1.7 in] from PP, not with 3x change-over contact
3) Only with cable outlet
4) Not with PVC cable
5) Versions with protective conductor on request
6) The stated ingress protection (per IEC/EN 60529) only applies when 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 [1]	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 [2]	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 [2]	55 mm [2.2 in]	65 mm [2.6 in]	≤ 3 bar [≤ 43.5 psi]	≤ 120 °C [≤ 248 °F]	≥ 800 kg/m³ [49.9 lbs/ft³]	PVDF

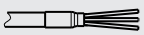
1) Permissible guide tube length L ≤ 500 mm [19.68 in], not with process connection G 2
2) Not with process connection G 1 ½

Connection diagram

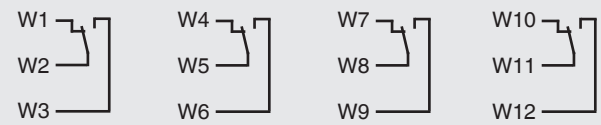
Angular connector DIN EN 175301-803 A

	Normally open/normally closed (NO/NC)	Change-over contact (SPDT)
	2 switch points SP1 SP2 	1 switch point SP1 

Cable outlet

	Normally open/normally closed (NO/NC)	Change-over contact (SPDT)
	4 switch points SP1 SP2 SP3 SP4 	4 switch points SP1 SP2 SP3 SP4 

Connection housing

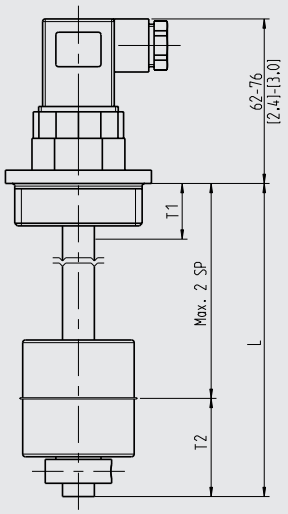
Normally open/normally closed (NO/NC)	Change-over contact (SPDT)
4 switch points SP1 SP2 SP3 SP4 	4 switch points SP1 SP2 SP3 SP4 

Legend

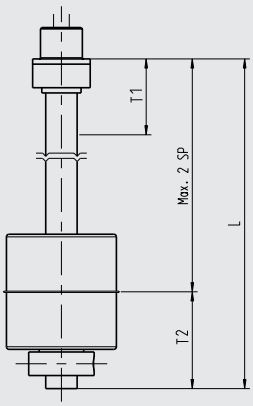
SP1 - SP4	Switch points	GY	Grey	BK	Black
WH	White	PK	Pink	VT	Violet
BN	Brown	BU	Blue	GYPK	Grey/Pink
GN	Green	RD	Red	RDBU	Red/Blue
YE	Yellow				

Dimensions in mm [in]

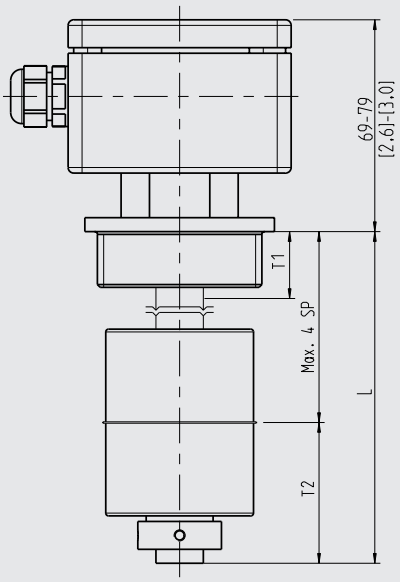
with angular connector form A



with cable outlet



with connection housing



Legend

L Guide tube length
T1 Dead band (from sealing edge)
T2 Dead band (pipe end)

Dead band T1 float switch in mm [in] (from sealing edge)

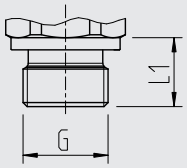
Process connection	Outer diameter float Ø D		
	Ø 44 mm [1.7 in]	Ø 55 mm [2.2 in]	Ø 55 mm [2.2 in] PVDF
G 1 ½ (from outside)	45 mm [1.8 in]	-	-
G 2 (from outside)	-	55 mm [2.2 in]	65 mm [2.6 in]
G ⅜ B (from inside)	50 mm [2.0 in]	55 mm [2.2 in]	60 mm [2.4 in]
G ½ B (from inside)	50 mm [2.0 in]	55 mm [2.2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

Dead band T2 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 [2.2 in] PVDF
T2	40 mm [1.6 in]	45 mm [1.8 in]	55 mm [2.2 in]

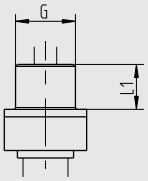
Process connection

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** ■ Low voltage directive ■ RoHS directive	European Union

Manufacturer‘s information and certificates

Logo	Description
-	**China RoHS directive**

Approvals and certificates, see website

Ordering information
Model / Output signal / Switching function / Switch point position / Electrical connection / Material / Process connection / Guide tube length L / Medium temperature / Float

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