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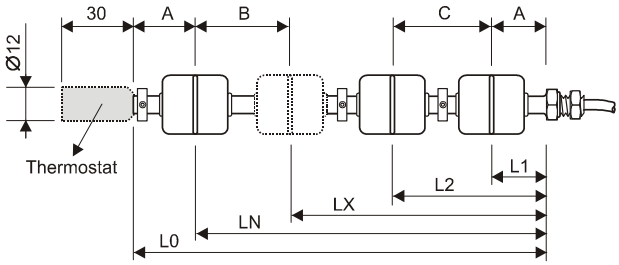
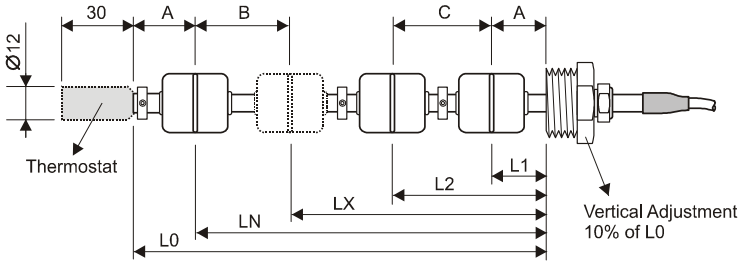
Multi-point Float Level Switch with Cable MPS

- **Inside or outside installation**
- **Up to 5 floats**
- **Up to 15 switching points**
- **135 °C maximum liquid temperature**
- **Various float and cable types**
- **Vertical adjustment option**
- **Temperature measurement option**

The operation of level probe MPS is based on the switching of reed switches by a magnetic float, moving alongside a protective tube. Large variety of versions based on different floats is available. The float can be made of stainless steel or plastic; floats with various dimensions and specific gravity are available for use with liquid density down to 0.45 g/cm^3 and temperature up to 135 °C. Up to 15 switching points can be mounted in a single probe, and the reed switches are capable of switching directly different loads. Cable wiring is available with various insulations and lengths depending on the application requirements. Various process connections for inside or outside mounting are available as well as an option for vertical adjustment.

Technical specifications

Model	MPS w/ SS floats															
Specifications	INSIDE INSTALLATION  OUTSIDE INSTALLATION  														
Float type	S0 / S1 / S7 / S10		S2		S3		S4		S5		S6		S8 / S9		S20	
Liquid density [g/cm^3]	> 0.80		> 0.70		> 0.65		> 0.55		> 0.55		> 0.50		> 0.50 / > 0.45		> 0.75	
Number of floats	1…3		1…3		1…4		1…4		1…5		1…5		1…5		1…3	
Ext. tube diameter ('d')	8 mm		10 mm		14 mm		14 mm		16/18 mm		16/18 mm		18/25 mm		8 mm	
Contact type [1]	NO,NC	NO/NC	NO,NC	NO/NC	NO,NC	NO/NC	NO,NC	NO/NC	NO,NC	NO/NC	NO,NC	NO/NC	NO,NC	NO/NC	NO,NC	NO/NC
Maximum wire leads	4		6		8		8		10/12		10/12		12/16		4	
Max. common-lead contacts	3	-	5	2	7	3	7	3	9/10	4/5	9/10	4/5	10/15	5/7	3	-
Max. separated contacts	2	1	3	2	4	2	4	2	5/6	3/4	5/6	3/4	6/8	4/5	2	1
Contact ratings	'1': max. 120 VAC, max. 0.5 A, max. 10 W; '2': max. 230 VAC, max. 0.5 A, max. 10 W; '3': max. 230 VAC, max. 2 A, max. 50 W															
Temp. sensor / thermostat	built-in RTD (Pt100, Pt1000) or bimetallic thermostat (see specifications overleaf) ***(option)***															
Probe length ('L0')	100…1000 mm		100…2000 mm		200…3000 mm		200…3000 mm		300…4000 mm		300…5000 mm		300…5000 mm		100…1000 mm	
End-to-float distance ('A')	min. 22/25/25/29 mm		min. 34 mm		min. 40 mm		min. 39 mm		min. 50 mm		min. 70 mm		min. 65/90 mm		min. 36 mm	
Float running distance ('B')	min. 25/30/30/34 mm		min. 40 mm		min. 57 mm		min. 54 mm		min. 75 mm		min. 110 mm		min. 102/152 mm		min. 42 mm	
Float-to-float distance ('C')	min. 45/50/50/58 mm		min. 68 mm		min. 82 mm		min. 78 mm		min. 100 mm		min. 136 mm		min. 126/157 mm		min. 72 mm	
Process temperature	-20...135 °C															
Ambient temperature	PVC cable: -20...75 °C; silicone or Teflon® cable: -20...150 °C; PUR cable: -20...80 °C															
Max. process pressure	8 / 10 / 30 / 50 bar		30 bar		12 bar		30 bar		30 bar		10 bar		30 bar		30 bar	
Outside process connection	min. 1" (M33)		min. 1½"		min. 2"		min. 2"		min. 3" or flange		min. 3" or flange		flange		min. ¾" (M27)	
Inside process connection	M10, M12, M14, M16, M18, M20, 1/8", 1/4", 3/8", 1/2"		M12, M14, M16, M18, M20, M27, 1/4", 3/8", 1/2", 3/4"		M16, M18, M20, M27, M33, 1/2", 3/4", 1"		M16, M18, M20, M27, M33, 1/2", 3/4", 1"		M20, M27, M33, 1/2", 3/4", 1"		M20, M27, M33, 1/2", 3/4", 1"		M27, M33, 3/4", 1"		M10, M12, M14, M16, M18, M20, 1/8", 1/4", 3/8", 1/2"	
Wiring	up to 20 m flexible cable: PVC, silicone, or Teflon® (2...16 x 0.25 mm^2, OD 4...8 mm) or PUR [2] (2...16 x 0.50 mm^2, OD 6...12 mm)															
Wetted parts	stainless steel															
Protection	IP67 (inside installation) or IP65 (outside installation)															

[1] Different contact types can be ordered.
[2] Ask for compatibility with d=8/10 mm!

Built-in temperature sensor / thermostat *(option)*		
	RTD sensor	thermostat
Type	Pt100 or Pt1000	NC (under set point)
Ratings	2-wire	max. 250 VAC / 1.6 A
Set point	-	40…130 °C (step 5 °C)
Accuracy	class 'B'	± 5 °C
Wires occupied	2	2 or 1 (+ common)
Probe extension	-	≈ 30 mm

How to choose cable:

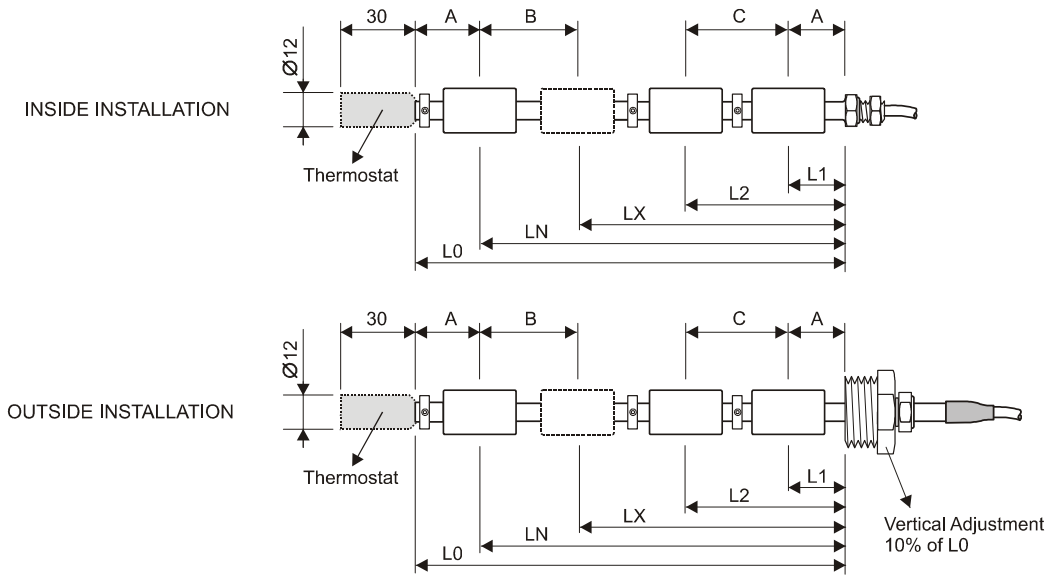
1. Use the above table to calculate the maximum number of wires occupied by the level contacts, by multiplying the number of contacts by the number of leads for the selected type.
2. Decide on the need of temperature measurement.
3. Add the wires occupied by the built-in temperature sensor or thermostat (use the table on the left). The resultant sum must not exceed the maximum number of wire leads!
4. Decide on the need of grounding for your probe - it will occupy 1 wire.
5. Check the ambient temperature and chemical properties.
6. Find the proper cable from the table above.

Ordering code MPS - nG1.G2'2"/G2'2"/.../G2'2".G6.G8.G9.G10.G14 - #1.#2

Code	Feature or option		Code values
G1	Float [3] ('n' - number of floats)		**S0** - stainless steel, ø25x25, **S1** - stainless steel, ø28x28, **S2** - stainless steel, ø41x38, **S3** - stainless steel, ø45x55, **S4** - stainless steel, ø52x52, **S5** - stainless steel, ø73x73, **S6** - stainless steel, ø75x108, **S7** - stainless steel, ø30x28, **S8** - stainless steel, ø100x100, **S9** - stainless steel, ø150x150, **S10** - stainless steel, ø30x32 [8], **S20** - stainless steel, ø22x40 [8]
G2'	Contact function (no float) [4]		**A** - NO (closes at float down), **AU** - NO (closes at float up), **B** - NC (opens at float down), **BU** - NC (opens at float up), **C** - NO/NC
G2"	Contact ratings		**1** - 120 V / 0.5 A / 10 W, **2** - 230 V / 0.5 A / 10 W [5], **3** - 230 V / 2 A / 50 W
G6	Operating lengths [mm] [6]		**L0/L1/L2/L3/.../LN**
G8	Cable length 'k' [m] and type		**1PV…10PV** - PVC, **1SL…10SL** - silicone, **1TF…10TF** - Teflon®, **1PU…10PU** - polyurethane
G9	Process connection	inside installation	**X** - none, **Q0** - M16x1.5, **Q1** - M18x1.5, **Q2** - M20x1.5, **Q3** - G3/8", **Q4** - G1/2", **Q5** - M27x2, **Q6** - G3/4", **Q7** - M12x1.5, **Q8** - M14x1.5, **Q10** - 1/2" NPT, **Q11** - 3/4" NPT, **Q12** - G1", **Q15** - 1" NPT, **Q18** - G1/8", **Q19** - 1/8" NPT, **Q20** - M10x1, **Q23** - G1/4", **Q24** - 1/4" NPT, **Q25** - M33x2, **Q30** - M10x1.5, **Z** - other (specify!)
		outside installation	**X** - none, **Q5** - M27x2, **Q6** - G3/4", **Q11** - 3/4" NPT, **Q12** - G1", **Q13** - G1½", **Q14** - G2", **Q15** - 1" NPT, **Q16** - 1½" NPT, **Q17** - 2" NPT, **Q21** - G3", **Q22** - 3" NPT, **Q25** - M33x2, **Q27** - G1¼", **Q28** - 1¼" NPT, **F** - flange (specify!), **Z** - other (specify!)
G10	Sheath material		**M1** - 1.4301, **M2** - 1.4541, **M3** - 1.4571, **M9** - 1.4404, **M15** - 1.4362
G14	Grounding		**X** - none, **G** - grounded
#1	Vertical adjustment		**X** - none, **A** - vertical adjustment via stainless steel ferrule installed [7]
#2	Built-in temperature sensor / thermostat		**X** - none, **D** - Pt100, **G** - Pt1000, **T__** - thermostat (specify switching temperature in °C!)

[3] All the floats on one probe must be of a same type!
[4] Specify (function, ratings) and separate with "/" each of the contacts for the 1st float, then for the 2nd, and so on, separating specifications per each float with '.'; e.g.: MPS - 2S1.**A2/B1/A3.A1/C3**
[5] B2 and C2 are not available!
[6] Specify the exact length (step 50 mm) from the thread or flange bottom to the respective contact according to the limits given in the specification table, strictly observing 'A', 'B', and 'C' minimum distances! 1st contact → 'L1'; e.g.: MPS - 2S1.A2/B1/A3.A1/C3.**500/50/100/200/250/350**
[7] Only with outside installation!

Model	MPS w/ plastic floats



Specifications

Float type	P0	N1		P1		P10		P2		P3		P4	
Float material	PP	NBR		PP		PP		PP		PP		PVDF	
Liquid density [g/cm³]	> 0.73	> 0.60		> 0.60		> 0.72		> 0.60		> 0.50		> 0.70	
Number of floats	1	1…3		1…3		1…3		1…4		1…5		1…5	
Ext. tube diameter ('d')	6 mm	8 mm		8 mm		10 mm		12 mm		16 mm		16 mm	
Contact type [1]	NO, NC	NO, NC	NO/NC	NO, NC	NO/NC	NO, NC	NO/NC	NO, NC	NO/NC	NO, NC	NO/NC	NO, NC	NO/NC
Maximum wire leads	2	4		4		6		7		10		10	
Max. common-lead contacts	-	3	-	3	-	5	2	6	3	9	4	9	4
Max. separated contacts	1	2	1	2	1	3	2	3	2	5	3	5	3
Contact ratings	'1': max. 120 VAC, max. 0.5 A, max. 10 W; '2': max. 230 VAC, max. 0.5 A, max. 10 W; '3': max. 230 VAC, max. 2 A, max. 50 W												
Temp. sensor / thermostat	built-in RTD (Pt100, Pt1000) or bimetallic thermostat (see specifications below) ***(option)***												
Probe length ('L0')	50…500 mm	100…1000 mm		100…1000 mm		50…2000 mm		100…2000 mm		200…4000 mm		200…4000 mm	
End-to-float distance ('A')	min. 18 mm	min. 23 mm		min. 21 mm		min. 15 mm		min. 37 mm		min. 47 mm		min. 47 mm	
Float running distance ('B')	min. 20 mm	min. 27 mm		min. 24 mm		min. 17 mm		min. 52 mm		min. 62 mm		min. 62 mm	
Float-to-float distance ('C')	-	min. 45 mm		min. 42 mm		min. 30 mm		min. 76 mm		min. 86 mm		min. 86 mm	
Process temperature	-20…80 °C	-20…100 °C		-20…80 °C		-20…80 °C		-10…80 °C		-10…80 °C		-30…125 °C	
Ambient temperature	PVC cable: -20...75 °C; silicone or Teflon® cable: -20...150 °C; PUR cable: -20...80 °C												
Max. process pressure	5 bar	0 bar		5 bar		5 bar		3 bar		3 bar		2 bar	
Outside process connection	min. ¾" (M24)	min. ½" (M20)		min. 1" (M33)		min. 1" (M33)		min. 1" (M33)		min. 1 ¼"		min. 1 ¼"	
Inside process connection	M8, M10, M12, M14, M16, M18, M20, 1/8", 1/4", 3/8", 1/2"	M10, M12, M14, M16, M18, M20, M27, 1/8", 1/4", 3/8"		M10, M12, M14, M16, M18, M20, 1/8", 1/4", 3/8", 1/2"		M12, M14, M16, M18, M20, M27, 1/4", 3/8", 1/2"		M14, M16, M18, M20, M27, 1/4", 3/8", 1/2"		M20, M27, M33, 1/2", 3/4"		M20, M27, M33, 1/2", 3/4"	
Wiring	up to 20 m flexible cable: PVC, silicone, or Teflon® (2...16 x 0.25 mm², OD 4...8 mm) or PUR [2] (2...16 x 0.50 mm², OD 6...12 mm)												
Wetted parts	stainless steel (except floats)												
Protection	IP67 (inside installation) or IP65 (outside installation)												

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	RTD sensor	thermostat
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Code	Feature or option		Code values
G1	Float [3] ('n' - number of floats)		**N1** - NBR, ø17.5x25, **P0** - PP, ø19x16, **P1** - PP, ø24x22, **P2** - PP, ø29x50, **P3** - PP, ø38x60, **P4** - PVDF, ø38x60, **P10** - PP, ø29x11
G2'	Contact function (no float) [4]		**A** - NO (closes at float down), **AU** - NO (closes at float up), **B** - NC (opens at float down), **BU** - NC (opens at float up), **C** - NO/NC
G2"	Contact ratings		**1** - 120 V / 0.5 A / 10 W, **2** - 230 V / 0.5 A / 10 W [5], **3** - 230 V / 2 A / 50 W
G6	Operating lengths [mm] [6]		**L0/L1/L2/L3/.../LN**
G8	Cable length 'k' [m] and type		**1PV...10PV** - PVC, **1SL...10SL** - silicone, **1TF...10TF** - Teflon®, **1PU...10PU** - polyurethane
G9	Process connection	inside installation	**X** - none, **Q0** - M16x1.5, **Q1** - M18x1.5, **Q2** - M20x1.5, **Q3** - G3/8", **Q4** - G1/2", **Q5** - M27x2, **Q6** - G3/4", **Q7** - M12x1.5, **Q8** - M14x1.5, **Q10** - 1/2" NPT, **Q11** - 3/4" NPT, **Q12** - G1", **Q15** - 1" NPT, **Q18** - G1/8", **Q19** - 1/8" NPT, **Q20** - M10x1, **Q23** - G1/4", **Q24** - 1/4" NPT, **Q25** - M33x2, **Q30** - M10x1.5, **Z** - other (specify!)
		outside installation	**X** - none, **Q2** - M20x1.5, **Q4** - G1/2", **Q5** - M27x2, **Q6** - G3/4", **Q10** - 1/2" NPT, **Q11** - 3/4" NPT, **Q12** - G1", **Q13** - G1½", **Q14** - G2", **Q15** - 1" NPT, **Q16** - 1½" NPT, **Q17** - 2" NPT, **Q21** - G3", **Q22** - 3" NPT, **Q25** - M33x2, **Q27** - G1¼", **Q28** - 1¼" NPT, **F** - flange (specify!), **Z** - other (specify!)
G10	Sheath material		**M1** - 1.4301, **M2** - 1.4541, **M3** - 1.4571, **M9** - 1.4404, **M15** - 1.4362
G14	Grounding		**X** - none, **G** - grounded
#1	Vertical adjustment		**X** - none, **A** - vertical adjustment via stainless steel ferrule installed [7]
#2	Built-in temperature sensor / thermostat		**X** - none, **D** - Pt100, **G** - Pt1000, **T__** - thermostat (specify switching temperature in °C!)

[3] All the floats on one probe must be of a same type!
[4] Specify (function, ratings) and separate with "/" each of the contacts for the 1st float, then for the 2nd, and so on, separating specifications per each float with '.'; e.g.: MPS - 2P1.**A2/B1/A3.A1/C3**
[5] B2 and C2 are not available!
[6] Specify the exact length (step 50 mm) from the thread or flange bottom to the respective contact according to the limits given in the specification table, strictly observing 'A', 'B', and 'C' minimum distances! 1st contact → 'L1'; e.g.: MPS - 2P1.A2/B1/A3.A1/C3.**500/50/100/200/250/350**
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