



Magnetic float ball liquid level switch

EB87 SERIES PRODUCT INSTRUCTION



Working principle:

ELETTA EB87 series magnetic float level switch and pontoon level switch consist of reed and magnetic float ball, which is based on the floating principle that utilizes magnetic float ball to make the relevant reed close or open according to the height changing of the liquid level, thus controlling and measuring the liquid level.

Features:

1. No external power supply, passive output contact ;
2. Long life span, stable and reliable operation, easy installation, almost no maintenance
3. Independent of mediums' physical and chemical status.
4. Applicable for all kinds of bad medium environment with density $\geq 0.5\text{g/cm}^3$.
5. Available for interface detection of mediums with two different densities.
6. Wide application range. Pressure 0~PN160 (max. up to PN320), temperature $-40\sim+150$ ° c;
7. At most 8 detecting points, delivering signal independently.
8. Anti-explosion design.
9. Customization.

Application:

EB87 magnetic float level switch and pontoon level switch are made of different materials, and can be used in almost all strong and weak corrosion-resistant mediums and none corrosive mediums.

The magnetic float switch condition

Switch condition in magnetic float level switch is normal open type, normal closed type, and transform type, which is defined as follows:

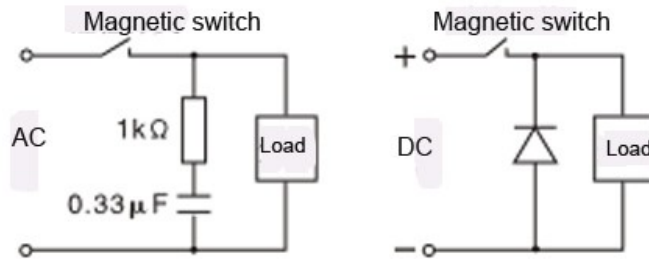
Normally open type(SPST)---From the normal level,float rises or falls and when it passes the switch, the connection will close.

Normally close type(SPST)---From the normal level,float rises or falls and when it passes the switch, the connection will switch off

Conversion type---When float passes the location of switch, the condition will convert.(Tubular type's standard configuration is conversion type)

Measure for protecting contactor of magnetic level switch

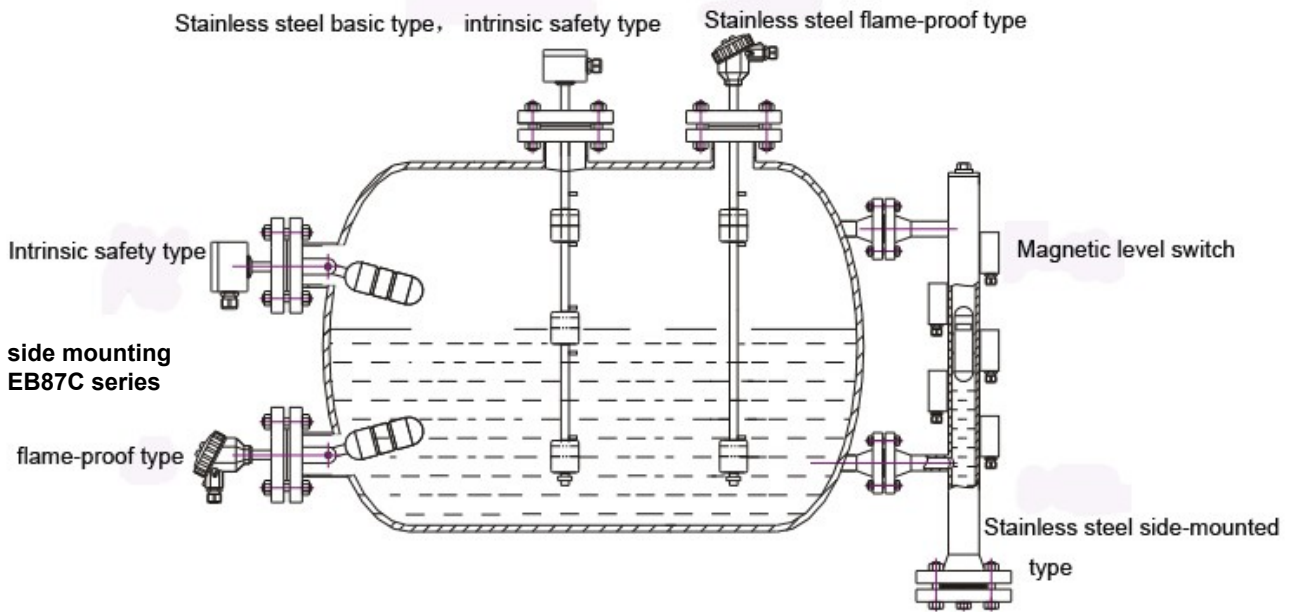
In order to protect magnetic switch well, avoiding damage of contactor. User should take protecting measure as the following sketch.



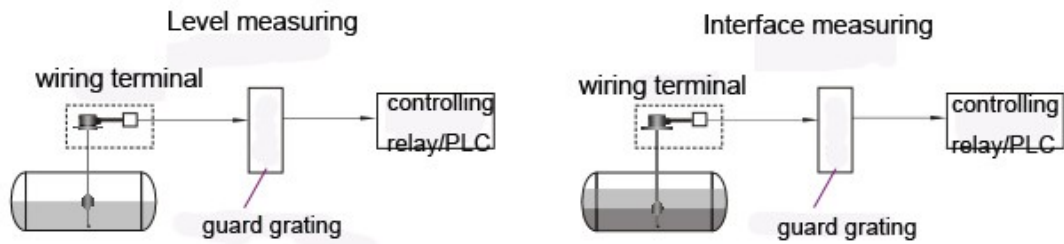
Technical Data:

Adherent point type:	AO -- normally open (250VAC 0.5A 20W)
	AC -- normally closed (250VAC 0.5A 20W)
	BO -- normally open type (250VAC 2.0A 200W)
	BC -- normally closed (250VAC 2.0A 200W)
	C -- transform type (250VAC 1.0A 60W)
Note: voltage, current, power parameters are the maximum value. The switching voltage, switching current should not surpass switch wattage restriction.	
Maximum switch frequency	$\leq 1 \times 10^9$
Switch error	$\leq \pm 8^{\pm 2\text{mm}}$
Min space between switches	50mm(customize while space is less than 50mm)
Transmitting distance	>2000m
Working power supply	No external power supply needed
Medium density	$\cong 0.5\text{g/cm}^3$
Working pressure	PN2.5~ PN160(Max PN320)
Working temperature	-40~80 °C, -40~120 °C, -40~150 °C (250 °C customize)
Float diameter	$\Phi 30\sim\Phi 120$ (depending on pressure and density)
Installation type	Flange: DN50~DN150
	Flange standard: HG/T20592~2009
	1/2"thread (downward install type)
	1/2"thread (upward install type)
Installation angle	3/8"thread (upward install type)
	$\leq \pm 25^\circ$
Wiring box	M20×1.5 female thread
IP grade	IP65
Explosion-proof grade	Exia II CT6Ga or Exd II CT6Gb

Installation Sketch



Wiring sketch of switch



Wiring form of switch



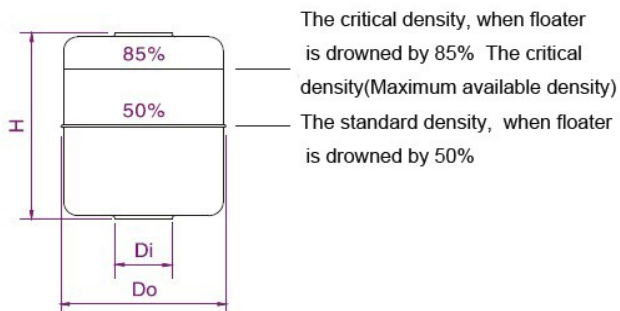
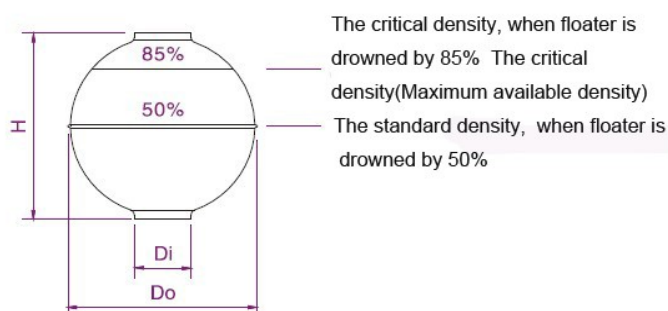
EB87-12345 / 678 / 910

1	installation code								
	flange connection	01	02	03	K	06			
	Std: HG/T20592-2009	G 1 1/2"	G 2"	G 3/8"	DIN clamp	by pass			
2	Std pressure (× 0.1MPa)								
	Z	A	B	C	D	E	F	G	H
	2.5	6	10	16	25	40	63	100	160
	remark: if the pressure ≥ PN16, the flange connection must be ≥ DN100								
3	code of the tube material								
	P1-304	P2-316L	P3-321	P4-1Cr18Ni9Ti	P5-0Cr18Ni9	P6-00Cr17Ni14Mo2			
	PP	T-Ti	F-304+PTFE	QF	TG-carbon steel				
4	code of the float material								
	P1-304	P2-316L	P3-321	P4-1Cr18Ni9Ti	P5-0Cr18Ni9	P6-00Cr17Ni14Mo2			
	PP	T-Ti	F-304+PTFE	QF					
5	dimension of the tube								
	14	16	20	8	T				
	14mm (std)	16mm	20mm	8mm	special				
6	density code								
	<input type="checkbox"/> -level measuring-g/cm or kg/m ³								
	<input type="checkbox"/> / <input type="checkbox"/> -interface measuring-inform two densities (g/cm ³ or kg/m ³)								
7	temperature code								
	L	H	J	K					
	≤80°C	≤120°C	≤150°C (ask supplier)	≤350°C (only for float)					
8	installation code								
	<input type="checkbox"/> -installation length" L" (mm)								
9	switch point Ln								
	<input type="checkbox"/> <input type="checkbox"/> /...../ <input type="checkbox"/> <input type="checkbox"/> — switch point and type								
10	explosion proof								
	N: none			I: Exi II CT6Ga			E: Exi II CT6Gb		

Remark:
for the side mounting EB87C series, please contact with the supplier

ExampleY

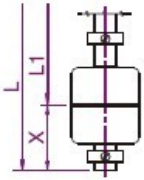
EB87-	1	2	3	4	5	/	6	7	8	/	9	10
EB87-	50/RF/PL	C	P1	P1	14	/	1.15	L	1200	/	100AO/1150AC	E
EB87-	04	E	P1	P1	14	/	1.38	L	1200	/	100BO/280BO/950BC/1150BC	

Column Floater

Globular Floate


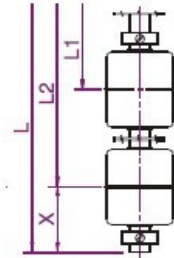
Float ball material	float	Di (mm)	Do (mm)	H (mm)	Max operating pressure(PN)	Operating temperature(°C)	Standard density	Critical density (g/cm ³)
1Cr18Ni9 Ti316L	V24	9	24	24	10-16	150	1.0	0.8
	V28	9	24	28	10-16	150	1.0	0.78
	V38	9	38	27	10-16	150	1.0	0.55
	V45	16	45	50	10-16	150	1.0	0.6
	V51	16	51	60	10-16	150	1.0	0.5
	V75	16	75	75	25	150	1.0	0.55
	V125	22	125	125	25	150	1.0	0.55
	V110	16	110	110-180	10-16	150	1.0	0.8
Titanium	T95	16-22	95	110-180	40-160	150	1.0	0.5
	T110	16-22	110	110-180	40-160	150	1.0	0.5
PTFE	F48	22	48	70-100	6-16	150	1.0	0.7
PP	P48	24.5	48	60-120	6-20	≤80	1.0	0.8
	P58	24.5	58	60-120	6-20	150	1.0	0.6
	P76	24.5	76	70-120	6-16	150	1.0	0.55

- Note: 1.Float ball can be customized. Acceptable when density of medium is less than 0.5g/cm³.
2. Titanium, PTFE, and PP material should be column float, the other is column or ball float.
3. The form is for indication only. Manufacturer can change the size and structure of the float ball depending on operating differential pressure and density.

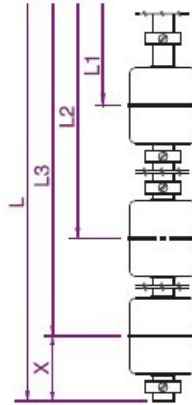
1 switch



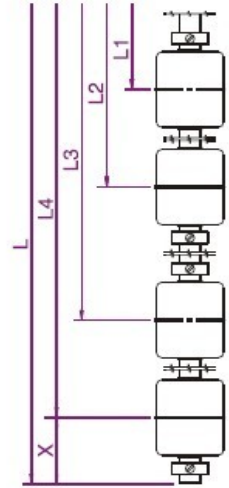
2 switches



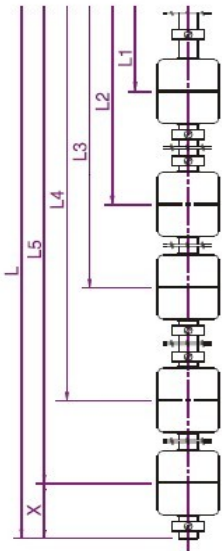
3 switches



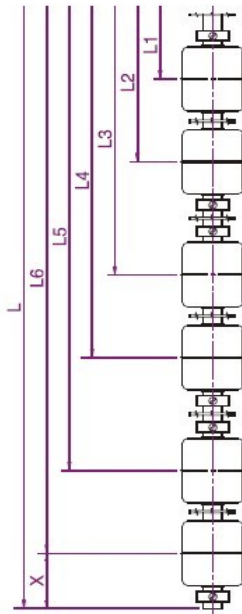
4 switches



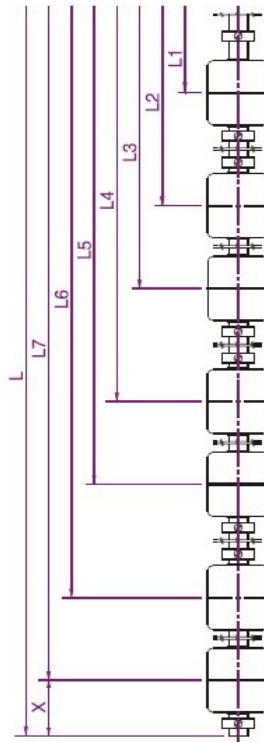
5 switches



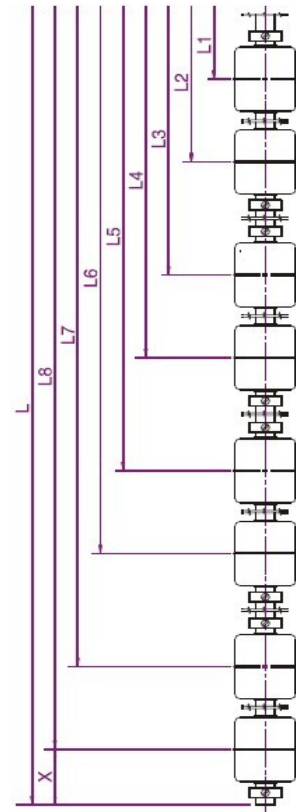
6 switches



7 switches

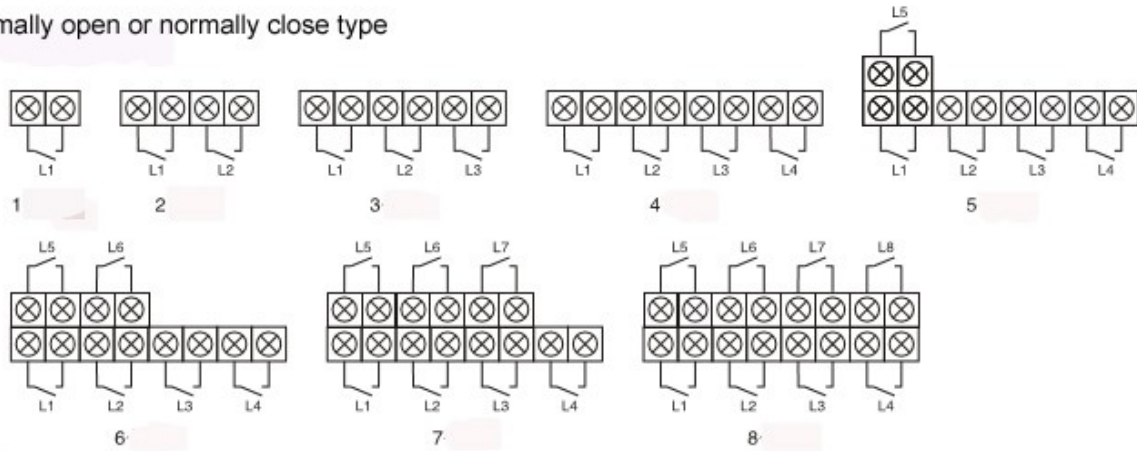
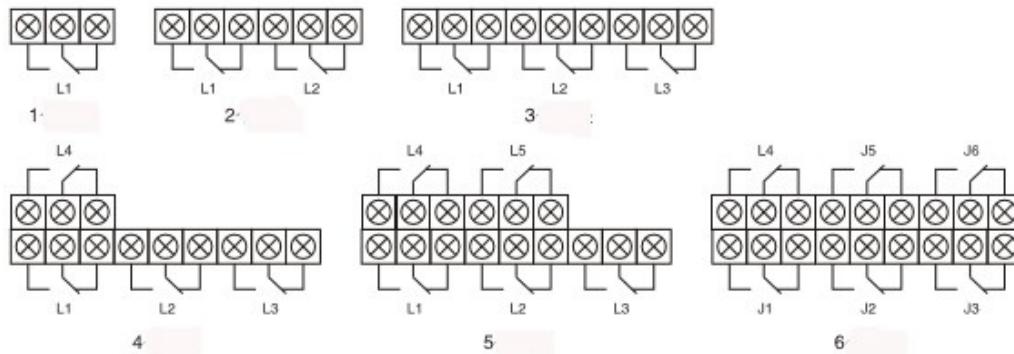
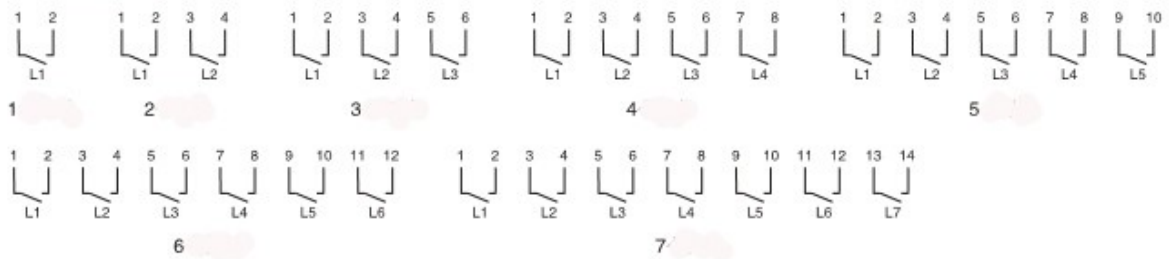
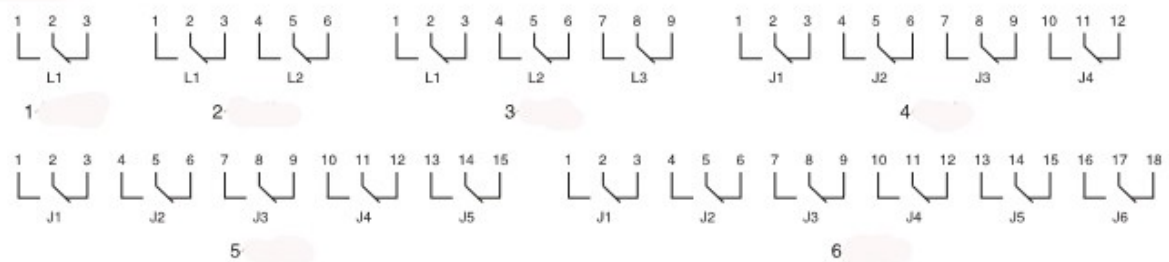


9 switches

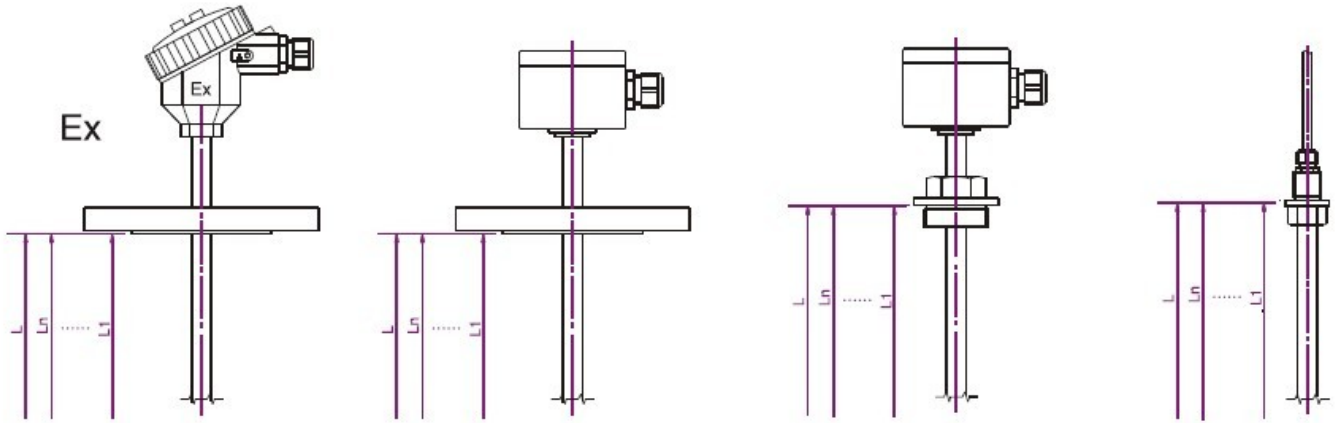


Note: 1 "X" depending on density and pressure.

2 Manufacture may change the place of holding ring if it can reach customer requirement of switch site and condition.

Wiring box sketch
Normally open or normally close type

Conversion type

Cable type wiring sketch
Normally open or normally close

Conversion type


Material: 304,316L, 1Cr18Ni9Ti, 0Cr18Ni9, 00Cr17Ni14Mo2, Titanium etc.



N=2 or 3...or 8

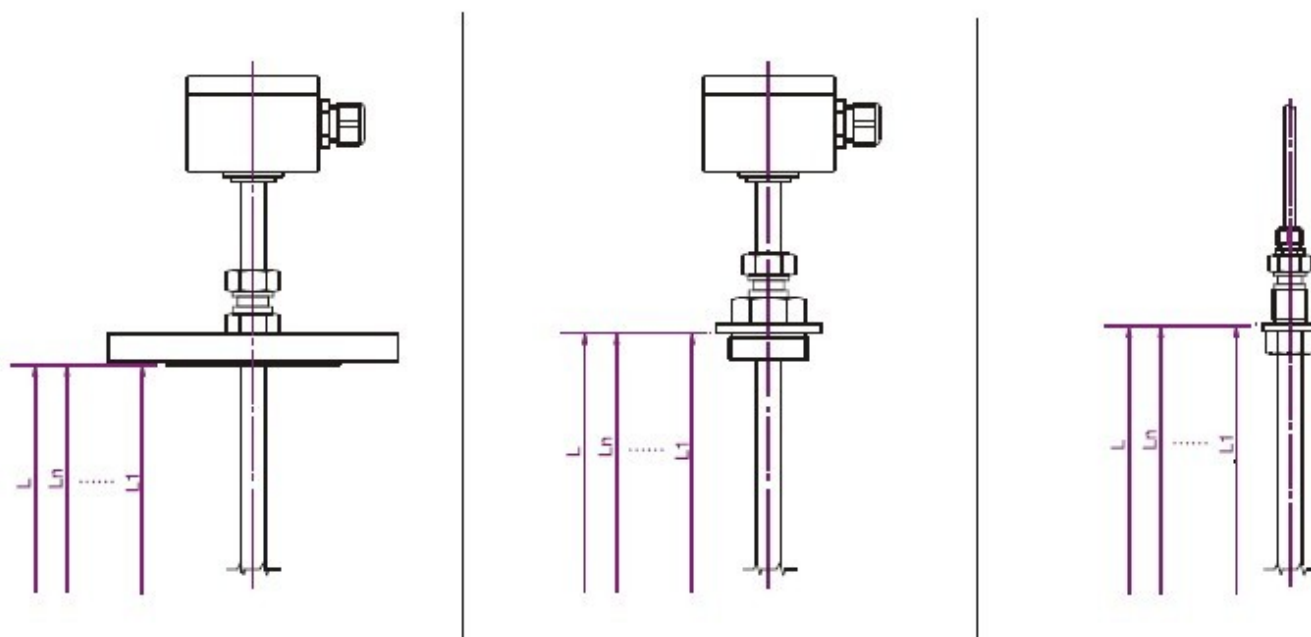
N=2 or 3...or 8

N=2 or 3...or 8

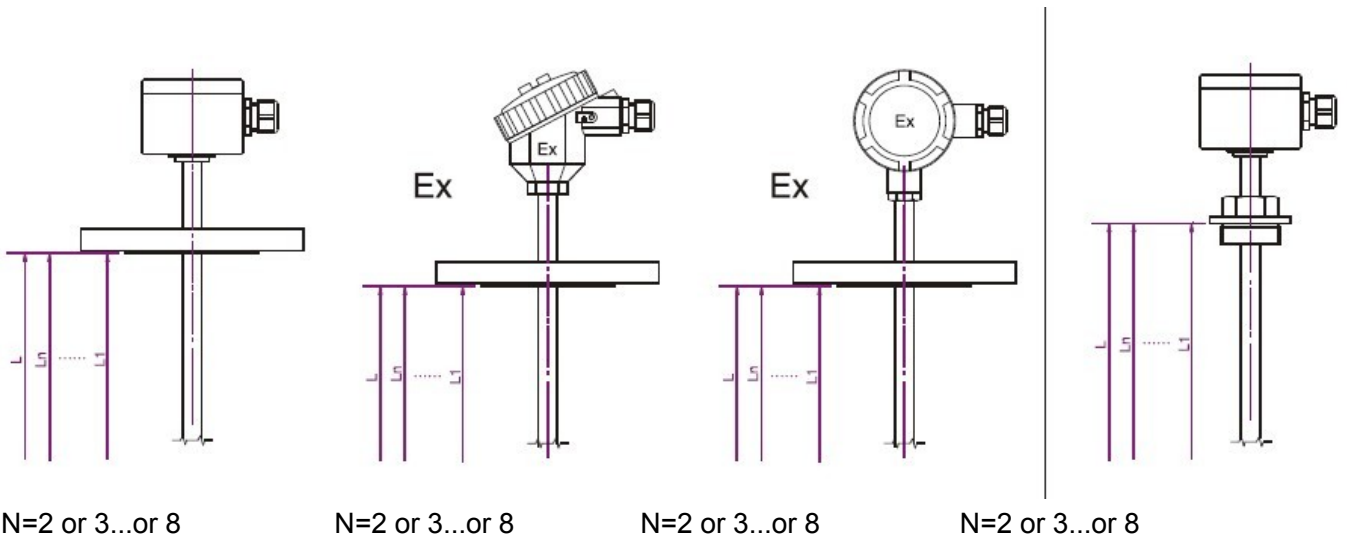
N=2 or 3...or 8

Installation type	Welding flange DN50~DN150 RF (HG/T20592-2009)	Thread G2" or G1 1/2" downward install	Thread G3/8" or G1/2" Upward install
Pipe Dia	14mm,16mm,20mm (manufacturer decides pipe diameter on switch quantity, installation type, and depth)		
Max depth	6000mm		
Float type and Dia	See Page 34(customize)		
Switch condition	normal open type; normal closed type, transform type		
Max quantity of switch	normal open or normal close type: 8 pcs; transform type:6 pcs (related to depth, and mi distance between two switch should more than 50mm)		
Max voltage	See Page 2		
Max current	See Page 2		
Max volume	See Page 2		
Working temperature scope	PP: -30~80°C 304&304+PTFE: -40~120°C		
High temperature type	≅150°C ASK THE SUPPLIER		
Medium density	≅0.5g/cm ³		
Pressure	PN2.5~PN160 (Max pressure: PN320) Note: while pressure ≧PN25, flange should be ≧DN125.		
Connection	M20×1.5 female thread		
Installation angle	≅±25°		
IP grade	IP65		
Anti-explosion grade	Exia II CT6Ga OR Exd II CT6Gb		

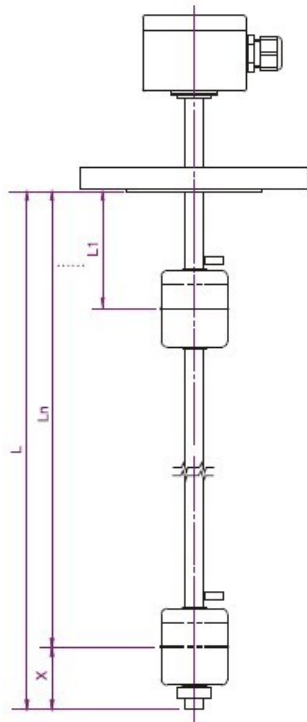
Typical medium: dilute nitric acid, carbonic acid, Organic acid, Weak lye, saline water, fuming sulfuric acid, etc.



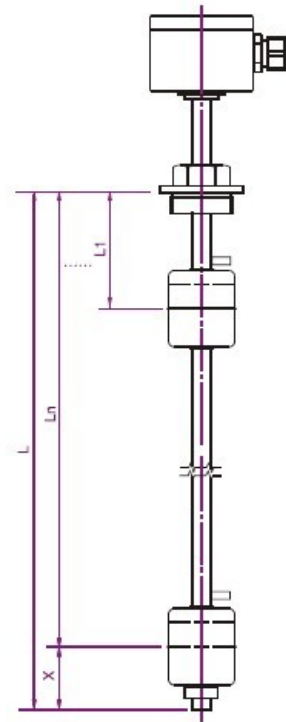
Installation type	Welding langeDN50~DN150 RF (HG/T20592-2009)	Thread G2" or G11/2" downward install	Thread G3/8"or G1/2" Upward install
Pipe Dia	14mm,16mm,20mm (manufacturer decides pipe diameter on switch quantity, installation type, and depth)		
Max depth	6000mm		
Float type and Dia	See Page 34(customize)		
Swith condition	normal open type; normal close type, transform type		
Max quantity of switch	normal open or normal close type: 8 pcs; transform type:6 pcs (related to depth, and mi distance between two switch should mroe than 50mm)		
Max voltage	See Page 2		
Max current	See Page 2		
Max volume	See Page 2		
Working temperature scope	-40~80℃	-40~120℃	-30~80℃
High temperature type	≅ 150℃		
Medium density	≅ 0.5g/cm3		
Pressure	PN2.5~PN63 (Max pressure: PN160) Note: while pressure ≅ PN25, flange should be ≅ DN125.		
Connection	M20×1.5 female thread		
Installation angle	≅ ±25°		
IP grade	IP65		
Anti-explosion grade	Exia II CT6Ga or Exd II CT6Gb		



Installation type	Welding FlangeDN50~DN150 RF (HG/T20592-2009)	Thread G1 1/2" or G2" downward install
Pipe Diameter	16mm,20mm (manufacturer decides pipe diameter on switch quantity, installation type, and depth)	
Max depth	6000mm	
Float type and Dia	See Page 34(customize)	
Swith condition	normal open type; normal close type, transform type	
Max quantity of switch	normal open or normal close type: 8 pcs; transform type:6 pcs (related to depth, and mi distance between two switch should mroe than 50mm)	
Max voltage	See Page 2	
Max current	See Page 2	
Max volume	See Page 2	
Working temperature scope	PP: -30~80℃ 304&304+PTFE::-40~120℃	
Medium density	≧0.5g/cm3	
Pressure	PN2.5~PN25	
Connection	M20×1.5 female thread	
Installation angle	≧±25°	
IP grade	IP65	
Anti-explosion grade	Exia II CT6Ga or Exd II CT6Gb	



N=2 or 3...or 8



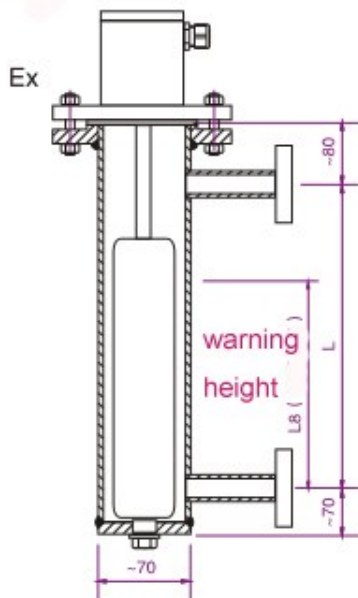
N=2 or 3...or 8

Installation type	Welding Flange DN50~DN150 RF (HG/T20592-2009)	Thread G1 1/2" or G2" downward install
Pipe Diameter	20mm (manufacturer decides pipe diameter on switch quantity, installation type, and depth)	
Max depth	6000mm	
Float type and Dia	See Page 34(customize)	
Switth condition	normal open type; normal close type, transform type	
Max quantity of switch	normal open or normal close type: 8 pcs; transform type:6 pcs (related to depth, and mi distance between two switch should mroe than 50mm)	
Max voltage	See Page 2	
Max current	See Page 2	
Max volume	See Page 2	
Working temperature scope	$\cong 80^{\circ}\text{C}$	
Medium density	$\cong 0.5\text{g}/\text{cm}^3$	
Pressure	PN2.5~PN16	
Connection	M20×1.5 female thread	
Installation angle	$\cong \pm 25^{\circ}$	
IP grade	IP65	
Anti-explosion grade	Exia II CT6Ga or Exd II CT6Gb	

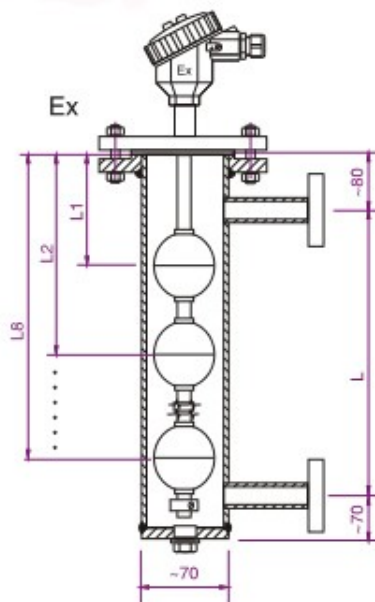
Pontoon type: material 20#,304,316L, 1Cr18Ni9Ti, 0Cr18Ni9, 00Cr17Ni14Mo2, Titanium etc.

Float type: material 304,316L, 1Cr18Ni9Ti, 0Cr18Ni9, 00Cr17Ni14Mo2, Titanium etc

Tubular type floating switch
(1 SPDT)

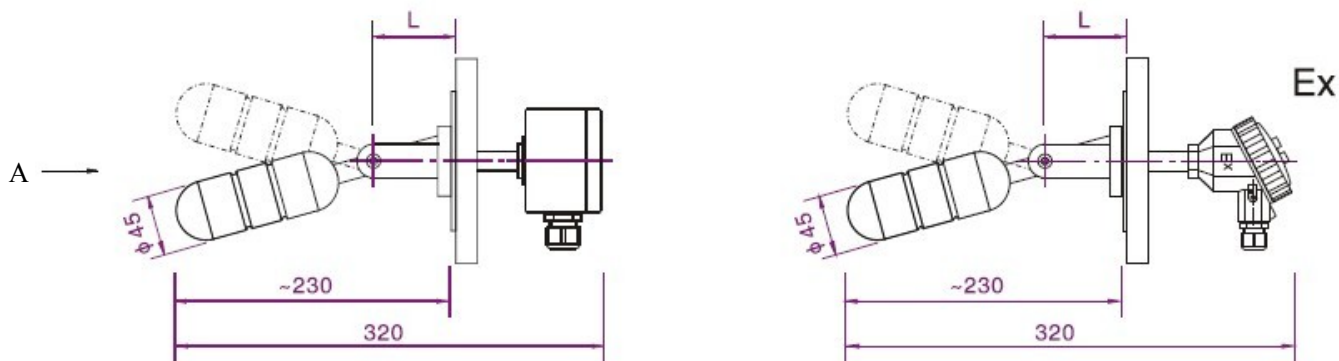


Floating ball level switch
(can be multiple SPDT, SPST)

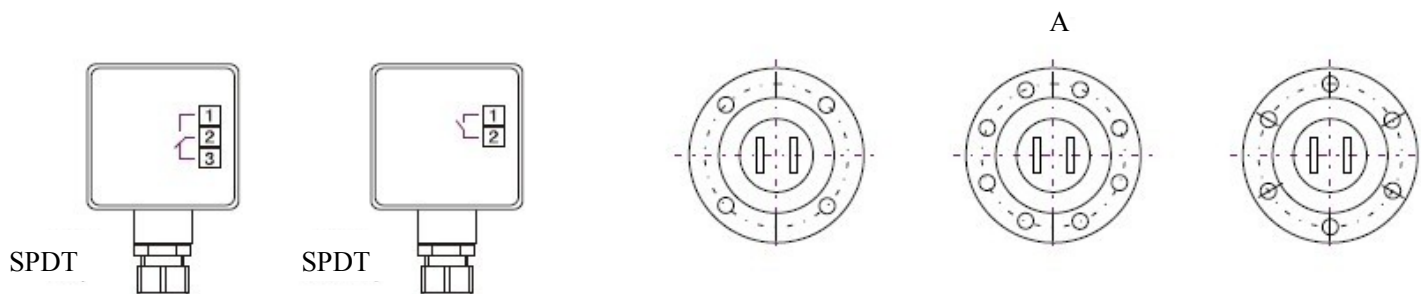


Installation type	Welding Flange DN50~DN150 RF (HG/T20592-2009)
Medium Density	$\geq 0.5\text{g/cm}^3$
Flange distance	150~15000mm
Switch condition	Float model: normal open type; normal close type, transform type Pontoon model: 1 SPDT transform type
Max quantity of switch	normal open or normal close type: 8 pcs; transform type:6 pcs (related to depth, and mi distance between two switch should more than 50mm)
Working temperature scope	-40~80°C -40~120°C
High temperature type	$\leq 350^\circ\text{C}$
Pressure	PN2.5~PN320
Connection	M20×1.5 female thread
Installation angle	$\leq \pm 25^\circ$
IP grade	IP65
Anti-explosion grade	Exia II CT6Ga or Exd II CT6Gb

Material: 304,316L, 1Cr18Ni9Ti, 0Cr18Ni9, 00Cr17Ni14Mo2, Titanium etc.



Connection Diagram



Installation type	DN50/RF/PL(HG/T20592-2009; >PN100,HG/T 20615-2009, DN ≥ 65)
Medium Density	≥ 0.5g/cm ³
Float diameter	PN ≤ 6.3MPa, float diameter=45mm; PN > 6.3MPa, float diameter=65mm
Switch condition&Qty	transform type with one switch
Installation depth L	80~300mm
Max voltage	250VAC, 230VAC
Max current	0.6A(SPDT); 2A(SPST)
Max volume	0.6A:60W(reed pipe type); 2A:200W(jiggle switch)
Working temperature scope	PP:-30~80℃ 304&304+PTFE: -40~120℃
High temperature type	≤ 150℃
Pressure	PN2.5~PN160 (Max pressure: PN320) Note: while pressure > PN100, flange should be ≥ DN65.
Connection	M20×1.5 female thread
Installation angle	≤ ±10°
IP grade	IP65
Anti-explosion grade	Exia II CT6Ga or Exd II CT6Gb