

MODEL FR20 & OLV-20

**MAGNETIC FLOAT
LEVEL SENSOR**



Features

- Custom manufactured to user specifications
- Switch points are field-adjustable (FR series)
- Reliable
- Wide choice of materials
- Long switch life
- Durable float

Technical Advantage

Utility design for shock resistive construction in the metal float

General Description

The FR20 and OLV-20 custom level sensors are engineered and manufactured to meet demanding customer applications for liquid level sensing. Available in a wide range materials and mounting types, these sensors are appropriate in most liquids. The FR20 series is available in lengths up to 3900mm with a variety of mounting configurations. The OLV-20 series is physically smaller and has a maximum total length of 500mm.

Interface of two immiscible liquids can be detected by FR series. The difference of SG is required more than 0.1 for SS float, 0.2 for plastic float.

Operational Description

These level sensors contain hermetically sealed reed switches in the stem and a permanent magnet in the float. As a float rises or falls with the level of liquid, the reed switch activates by the magnet in the float.

Applications

The FR20 and OLV-20 have numerous industrial, machinery and process control applications that include some of the following:

Control

In processing petrochemicals, iron, steels, chemicals and food

Original Equipment Manufacturing

As a reliable component in boilers, hydraulic equipment, air conditioners, etc

Semiconductor Manufacturing

As a non-contaminating pump control for pure water

Automatic Planting Machinery

As a level control in corrosive plated environments

Selecting the Correct Series

The FR20 series offer a wide range of choices in floats, mounting configurations, materials, and number of switch points, while the OLV-20 series offer smaller dimensions, shorter maximum length and lower cost.

1. Determine whether an FR20 or OLV-20 series are required.
2. Select the required material for the stem and floats.
3. Select the required mounting type.
4. Determine the number of actuation levels required.
5. Determine where the actuating levels should be. Distances are measured from the inner surface of the mounting to the end of the stem.
6. Determine switch operation - normally opened (up ON, down OFF) or normally closed (up OFF, down ON).

Ordering Information

FR2	
0	Flat-face flange
1	Raised-face flange
2	Slide Flange
3	Sanitary Ferrule
4	Plug mounted from outside of tank
5	Plug mounted from inside of tank
S	304 stainless steel
S6	316 stainless steel
S6L	316L stainless steel
VS	PVC
HVS	CPVC
PS	PP
PFL	PFA Lining 1500mm Max.
F4T	PTFE Tubing
J	JIS flange and Sanitary Ferrule
A	ANSI flange
D	DIN flange
G	G plug
R	R plug
T	NPT plug
A	15VA, 15W
C	220VA, 55W
A	316SS $\phi 49 \times H50$ for A and C reed switch
B	316SS $\phi 38 \times H50$ for A reed switch
C	304SS $\phi 98 \times H63$ for A and C reed switch
E	316LSS $\phi 38 \times H50$ for A reed switch
G	304SS $\phi 70 \times H70$ for A reed switch
K	BUNA $\phi 50 \times H45$ for A reed switch
M	PVC $\phi 65 \times H80$ for A and C reed switch
N	PP $\phi 65 \times H80$ for A and C reed switch
O	PP $\phi 74 \times H40$ for A reed switch
P	CPVC $\phi 74 \times H80$ for A and C reed switch
R	PVDF $\phi 70 \times H70$ for A reed switch
S	PTFE $\phi 75 \times H100$ for A reed switch
V	PP $\phi 48 \times H58$ for A reed switch

FR2 | 0 | S | J | A1 | 1A = FR20S-JA11A

* The mounting size should be specified when you order.

* The length of probe should be specified in mm.

* The dimension of detection points and actuation should be specified when you order.

* The reed switch of cord "C" is not available with heat proof type.

Ordering Information

OLV2	
0	Flat-face flange
1	Raised-face flange
4	Plug mounted from outside of tank
5	Plug mounted from inside of tank
6	OL flange
7	OL housing
S	304 stainless steel
S6	316 stainless steel
V	PVC
F2	PVDF
P	Select the number of switch points
F	PVDF $\phi 25 \times H25$
K	316LSS $\phi 31 \times H30$
P	PP $\phi 25 \times H25$
R	BUNA $\phi 25 \times H25$
S	316LSS $\phi 28 \times H27$
V	PVC $\phi 42 \times H40$

OLV2 | 0 | S | 1P | S = OLV-20S-1PS

* The mounting size should be specified when you order.

* The length of probe should be specified in mm.

* The dimension of detection points and actuation should be specified when you order.

Specification

Model		FR20		FR21	
Mounting type		Flat Face Flange		Raised Face Flange	
Drawing					
Material	Housing	PVC	ADC12	PVC	ADC12
	Wetted Part	PVC, PP CPVC	SS, PVDF PTFE	PVC, PP CPVC	SS, PVDF PTFE
Protection		IP43*	IP65	IP43*	IP65
Electrical connection		(G3/4)			
Maximum Length		3900mm	3900mm 1500mm for PVDF	3900mm	3900mm 1500mm for PVDF

*IP65 is optionally available.

FR20 Series Float Types

Code		M	N	V	R
Dimensions					
Material		PVC	PP	PP	PVDF
Maximum Temperature		50°C	80°C	80°C	120°C
Maximum Pressure		200kPa/2bar	200kPa/2bar	200kPa/2bar	200kPa/2bar
Minimum S.G.		0.65	0.5	0.75	0.9
Minimum Length of Dimensions					
15VA Reed Switch	A	75mm	85mm	50mm	50mm
	B1	145mm	145mm	120mm	125mm
	B2	125mm	125mm	100mm	110mm
	C	85mm	70mm	75mm	110mm
220VA Reed Switch	A	65mm	80mm	N/A	N/A
	B1	150mm	150mm	N/A	N/A
	B2	130mm	130mm	N/A	N/A
	C	90mm	80mm	N/A	N/A

Note:

Dimension A is minimum length of L1 from the bottom of flange or plug.

(For G plug, minimum length of L1 is shown by A plus thickness of plug.)

Dimension B1 is minimum length of 2 points with 2 stoppers.

Dimension B2 is minimum length of 2 points with 1 stopper.

Dimension C is minimum length of lowest point from bottom of the stem.

FR22 Slide Flange		FR23 Sanitary Ferrule	FR24 Plug Mount Outside		FR25 Plug Mount Inside
PVC	ADC12	ADC12	PVC	ADC12	
PVC, PP CPVC	SS	SS	PVC, PP CPVC	SS	PVC, PP CPVC, SS
IP43*	IP65	IP65	IP43*	IP65	
(G3/4)					300mm, 22AWG
2000mm	3900mm	3900mm	3900mm	3900mm	2000mm for SS 1000mm for Plastics

In case of G plug, the total length of stem includes thickness of plug.
In case of R plug, the thickness of plug is not included.

S	K	P	A	C	B
PTFE	BUNA	CPVC	316SS	304SS	316SS
180°C	80°C	80°C	180°C	180°C	180°C
100kPa/1bar	2MPa/20bar	200kPa/2bar	2MPa/20bar	200kPa/2bar	600kPa/6bar
0.75	0.5	0.7	0.55	0.5	0.65
75mm	55mm	70mm	50mm	60mm	50mm
155mm	90mm	80mm	90mm	105mm	90mm
140mm	80mm	140mm	80mm	95mm	80mm
120mm	50mm	125mm	50mm	55mm	50mm
N/A	N/A	60mm	45mm	60mm	N/A
N/A	N/A	90mm	95mm	110mm	N/A
N/A	N/A	140mm	85mm	100mm	N/A
N/A	N/A	125mm	70mm	70mm	N/A

Switch Rating

	15VA reed switch		220VA reed switch	
Max. Capacity	15VA	15W	220VA	55W
Max. Current	1A AC	1A DC	1A AC	0.5A DC
Max. Voltage	264V AC	200V DC	220V AC	110V DC

Specification

Model	OLV-20		OLV-21	
Mounting type	Flat Face Flange		Raised Face Flange	
Drawing				
Material	Housing	ADC12	ADC12	ADC12
	Wetted Part	PVC	SS	SS
Protection	IP65		IP65	
Electrical connection	(G3/4)			
Maximum Length	500mm	500mm	500mm	500mm

*100mm Max. for over 40°C for PVDF

OLV-20 Series Float Type

Code	V	H*	P	G*
Dimension				
Material	PVC	PP	PP	BUNA
Maximum Temperature	50°C	80°C	80°C	90°C
Maximum Pressure	200kPa/2bar	1MPa/10	1MPa/10bar	1MPa/10bar
Minimum S.G.	0.71	0.9	0.85	0.7
Dimensions	A	48mm	24mm	27mm
	B1	82mm	43mm	43mm
	B2	66mm	N/A	45mm
	C	47mm	27mm	34mm

Note:

- Dimension A is minimum length of L1 from the bottom of flange or plug.
(For G plug, minimum length of L1 is shown by A plus thickness of plug.)
- Dimension B1 is minimum length of 2 points with 2 stoppers.
- Dimension B2 is minimum length of 2 points with 1 stopper.
- Dimension C is minimum length of lowest point from bottom of the stem.
- *Magnet is exposed and in direct contact with liquids.

OLV-24 Plug Mount Outside		OLV-25 Plug Mount Inside		OLV-26 OL Flange	OLV-27 OL Housing
ADC12	ADC12	PVC	SS	SS	Bakelite
PVC	SS	PVC	SS	SS	SS
IP65	IP65				IP23
(G3/4)		300mm, 22AWG			JIS F 20a (G3/4)
500mm	500mm	500mm*	500mm	500mm	500mm

In case of G plug, the total length of stem includes thickness of plug.
 In case of R plug, the thickness of plug is not included.

R	S	K	F
BUNA	316LSS	316LSS	PVDF
90°C	120°C	120°C	100°C
1MPa/10bar	2MPa/20bar	500kPa/5bar	1MPa/10bar
0.85	0.8	0.7	0.9
27mm	25mm	30mm	27mm
53mm	47mm	50mm	53mm
45mm	41mm	44mm	45mm
34mm	30mm	29mm	40mm

Switch Rating

Max. Capacity	50VA	50W
Max. Current	0.5A AC	0.5A DC
Max. Voltage	300V AC	300V DC