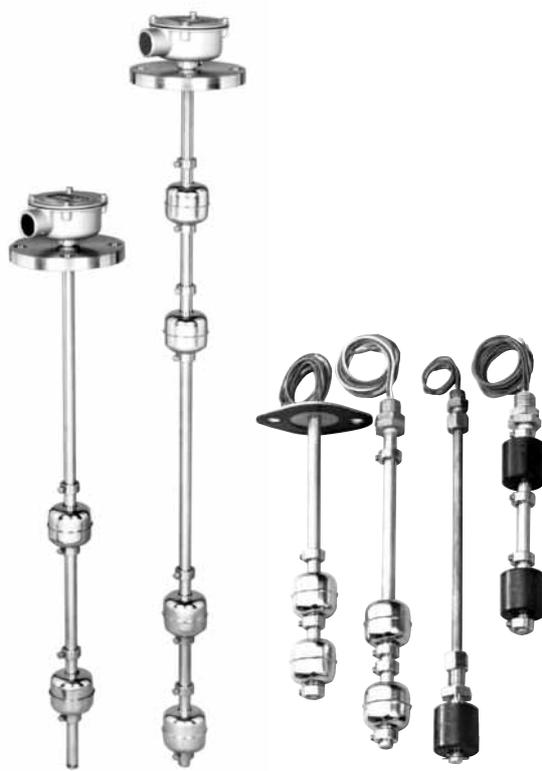


MODEL FR20 & OLV-20

**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

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).

Conformity and Approval

CE (Low Voltage Directive)

The FR20 and OLV-20 series without housing is in conformity of EN61010-1: 2nd edition (2001).

RoHS Directive

The FR20 and OLV-20 series with material of 304SS, 316SS, and 316LSS, but without housing, can be in conformity of RoHS Directive.

NK (Marine Approval)

The FR20 and OLV-20 series are approved to suite ship building regulation by Nippon Kaiji Kyokai who is a ship classification foundation in Japan, but limited application.

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, 7 Points Max.
C■	220VA 55W, 5 Points Max.
■A	316SS ϕ 49×H50 for A and C reed switch
■B	316SS ϕ 38×H50 for A reed switch
■C	304SS ϕ 98×H63 for A and C reed switch
■E	316LSS ϕ 38×H50 for A reed switch
■G	304SS ϕ 70×H70 for A reed switch
■K	BUNA ϕ 50×H45 for A reed switch
■M	PVC ϕ 65×H80 for A and C reed switch
■N	PP ϕ 65×H80 for A and C reed switch
■O	PP ϕ 74×H40 for A reed switch
■P	CPVC ϕ 74×H80 for A and C reed switch
■R	PVDF ϕ 70×H70 for A reed switch
■S	PTFE ϕ 75×H100 for A reed switch
■V	PP ϕ 48×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 ϕ 25×H25
K	316LSS ϕ 31×H30
P	PP ϕ 25×H25
R	BUNA ϕ 25×H25
S	316LSS ϕ 28×H27
V	PVC ϕ 42×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
Mounting		JIS10K50A FF		JIS10K50A RF	
Cable Entry		G3/4			
Maximum Length		3900mm	3900mm 1500mm for PVDF	3900mm	3900mm 1500mm for PVDF

*IP65 is optionally available.

Code	M	N	V	R
Dimensions				
FR20 Series Float Types				
Material	PVC	PP	PP	PVDF
Maximum Temperature	50°C	80°C	80°C	120°C
Maximum Pressure	200 kPa	200 kPa	200 kPa	200 kPa
Minimum S.G.	0.65	0.5	0.75	0.9
Minimum Length of Dimensions				
15VA Reed Switch	A	75mm	85mm	50mm
	B1	145mm	145mm	120mm
	B2	125mm	125mm	100mm
	C	85mm	70mm	75mm
220VA Reed Switch	A	65mm	80mm	N/A
	B1	150mm	150mm	N/A
	B2	130mm	130mm	N/A
	C	90mm	80mm	N/A

Note:

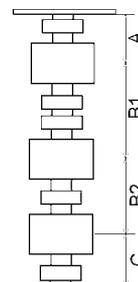
Dimension A is minimum length of $\varnothing 1$.

(For G Plug, minimum length of $\varnothing 1$ is shown by A plus thickness of plug.)

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

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

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



FR22	FR23	FR24	FR25
Slide Flange	Sanitary Ferrule	Plug Mounted From Outside	Plug Mounted from Inside
PVC	ADC12	PVC	ADC12
PVC, PP CPVC	SS	PVC, PP CPVC	SS
IP43*	IP65	IP43*	IP65
JIS10K50A FF	ISO 2.5S	R3"	R2"
	G3/4		
2000mm	3900mm	3900mm	3900mm
			300mm, 22AWG 2000mm for SS 1000mm for Plastics

In case of G plug, the total length of stem includes thickness of plug.

In case of R and NPT plug, the total length of stem does not include thickness of plug.

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

Switch Rating

	15VA reed switch		220VA reed switch	
	15VA	15W	220VA	55W
Max. Capacity	1A AC	1A DC	1A AC	0.5A DC
Max. Current	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	PVC	ADC12	PVC	ADC12
	Wetted Part	PVC	SS	PVC	SS
Protection		IP65		IP65	
Mounting		JIS5K50A FF	JIS5K25A FF	JIS5K50A RF	JIS5K25A FF
Cable entry		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	200 kPa	1 MPa	1 MPa	1 MPa
Minimum SG	0.71	0.9	0.85	0.7
Dimensions	A	48mm	23mm	26mm
	B1	82mm	41mm	41mm
	B2	66mm	N/A	43mm
	C	47mm	26mm	33mm

Note:

Dimension A is minimum length of ℓ_1 .

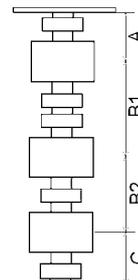
(For G plug, minimum length of ℓ_1 is shown by A plus thickness of plug.)

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

Dimension B2 is minimum length of 2 detection 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
PVC	ADC12	PVC	SS	SS	Bakelite
PVC	SS	PVC	SS	SS	SS
IP65	IP65	G1/8"	G1/4"	OL flange	IP23
G2"	G1"	G1/8"	G1/4"	OL flange	G2"
G3/4		300mm, 22AWG			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 and NPT plug, the total length of stem does not include thickness of plug.

R	S	K	F
BUNA	316LSS	316LSS	PVDF
90°C	120°C	120°C	100°C
1 MPa	2 MPa	2 MPa	1 MPa
0.85	0.8	0.7	0.9
31mm	25mm	30mm	32mm
51mm	47mm	50mm	51mm
N/A	41mm	44mm	43mm
28mm	30mm	29mm	40mm

Switch Rating

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