TECHINICAL INFO

VIBRATING PROBE TYPE LEVEL SWITCH

Techvib LSV series

Application

Most materials in powder can be detected, includes coffee, milk powder, chocolate, coal ash, bulk, sugar, salt, wheat, grains, glass debris, plastic pellet, cement
Sludge level detection in waste water.

Features

- Glass window, to review power supply and output directly
- Dual insulation can reduce damage on PCB board caused by temperature, humidity, and condensation effects.
- Wide voltage supply rage 20~250, 50~60Hz VAC/ VDC
- SPDT Relay output, SSR MOSFET output.
- No calibration required, easy use, sturdy and durable design.
- Avoid media accumulation on probe.
- High/ Low failure safe modes.
- Sensitivity adjustment is available for different density of media. Fine powder can be detected.
- Interface detection between solid liquid is available.
- Strong vibration force, suitable foe powder and solid applications
-

TABLE OF CONTENT

INTRODUCTION

Level sensors detect the level of substances that flow, including liquids, slurries, granular materials, and powders. All such substances flow to become essentially level in their containers (or other physical boundaries) because of gravity. The substance to be measured can be inside a container or can be in its natural form (e.g. a river or a lake). The level measurement can be a point values. Point-level sensors only indicate whether the substance is above or below the sensing point. Generally the latter detect levels that are excessively high or low.

Working Principle

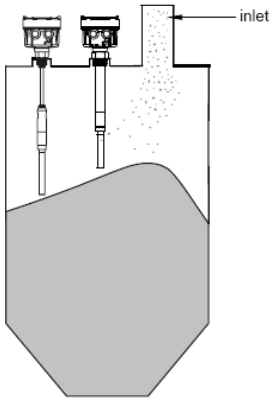
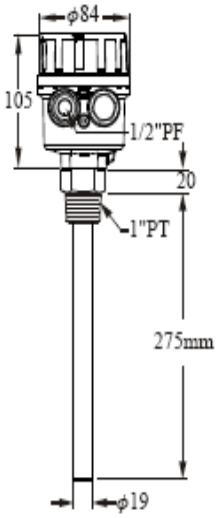
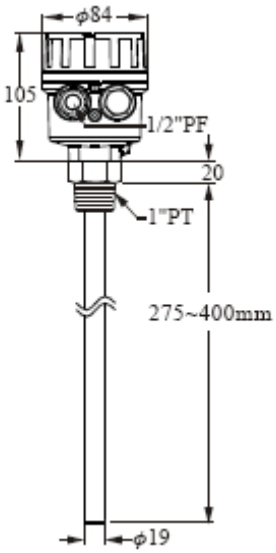
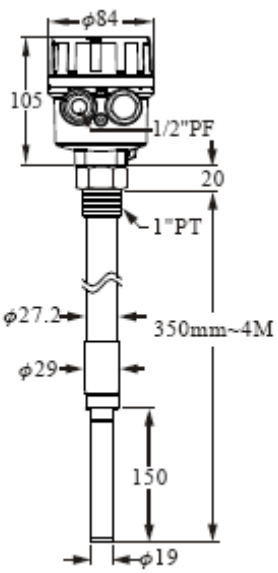


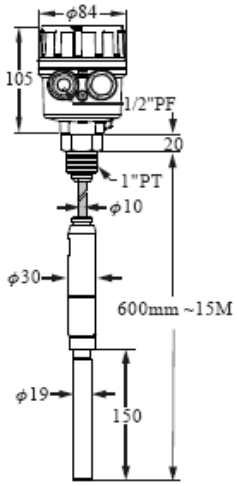
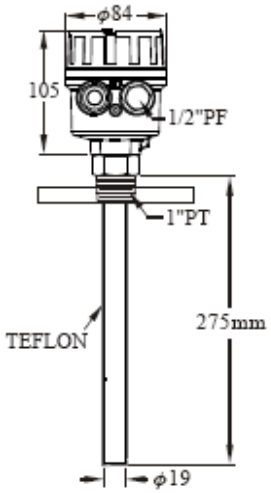
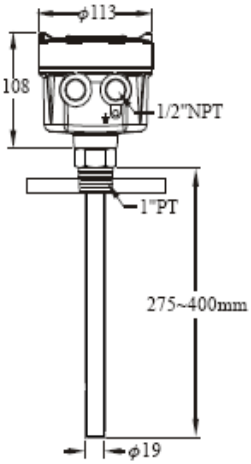
Figure: 1

The vibrating probe of level switch operated by using two piezoelectric elements built-in on vibration tube. The first piezoelectric element triggered by pulse signal that created from circuit to transport vibration energy out, and the other piezoelectric element receives the vibration and transmits it to output electric signal. While the probe contacts material, the detection signal will be decayed and the vibration will hold and send out the relay on. Vibrating probe of level switch provides reliable & maintenance-free for bulk solids. Just a simple mounting and calibration procedure that keep your facility in save and monitoring. This device can withstand fiercely lateral loads and static electricity.
For friendly use, Fail-safe is equipped as standard to prevent malfunction caused by power shortage.

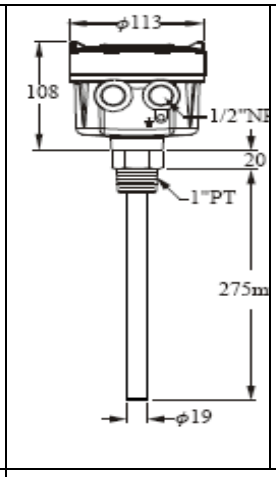
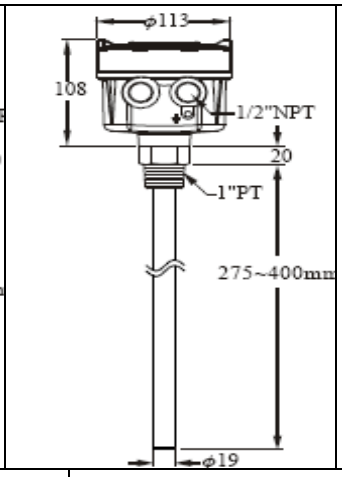
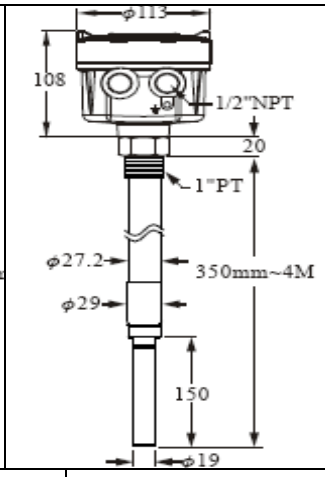
PRODUCT SPECIFICATION (Multi-Function type)

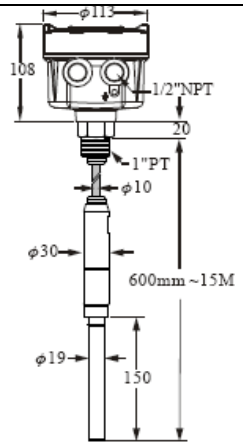
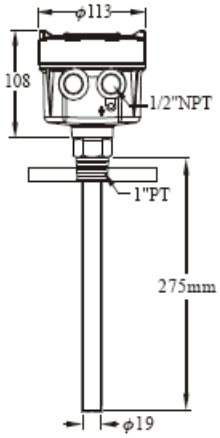
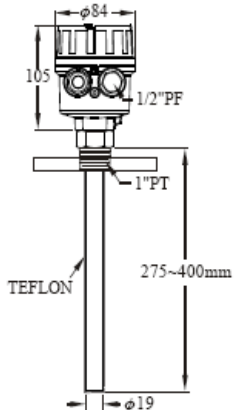
Description			
Order Code	**LSV 3100** **Standard**	**LSV 3110** **Probe Extension**	**LSV 3120** **Ultra Extension**
Level Sensor Housing	Aluminum / IP65		
Probe Material	SS304/ SS316		
Mounting	1" PT		
Electrical Connection	1/2"NPTx2		
Max. Vertical load on Rod.	177in.Lbs(20Nm)		
Operating Pressure.	-1 to 10 Bar		
Power Supply	20~250, 50/60Hz Vac/ Vdc		
Power Consumption	15VA (Max.)		
Operating Temp. In Ambient Air	-40 to 60 oC		
Operating Temp. In Bin	-40 to 80 oC		
Signal Output	Relay, SPDT, 5A/250Vac, PNP/NPN(MOSFET) 400mA/60 Vac/ Vdc		
Min. material Density sensed	Solid: ≥0.32g/cm3		
Time Delay	0.6~1 Second / Operate; 2~5 Seconds / Reset		
Vibrating Frequency	395~405HZ		
Selectable Fail Safe	Hi. / Lo.		
Selectable Sensitivy	Hi./ Mid. / Lo.		

PRODUCT SPECIFICATION

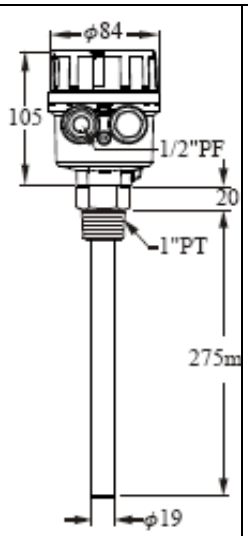
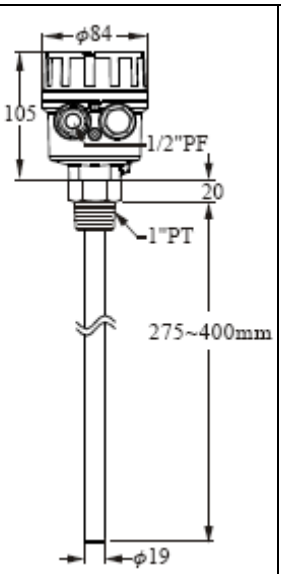
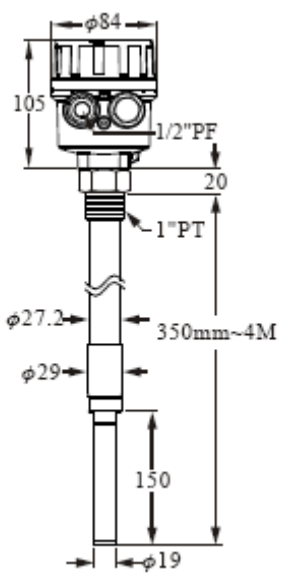
DESCRIPTION			
Order Code	**LSV 3300 Cable Extension**	**LSV3500 Corrosion Proof**	**LSV2510 Corrosion Proof &Exten.**
Level Sensor Housing	Aluminum / IP65		
Probe Material	SUS 304 / 316	SUS 304/316 Coating TEFLON	SUS 304/316 Coating TEFLON
Mounting	1"PT	Flange 1"(min.)	Flange 1"(min.)
Electrical Connection	1/2"PFx2		
Max. Vertical load on Rod.	177in.Lbs(20Nm)		
Operating Pressure.	-1 to 10 Bar		
Power Supply	20~250, 50/60Hz Vac/ Vdc		
Power Consumption	15VA (Max.)		
Operating Temp. In Ambient Air	-40 to 60 oC		
Operating Temp. In Bin	-40 to 80 oC		
Signal Output	Relay, SPDT, 5A/250Vac, PNP/NPN(MOSFET) 400mA/60 Vac/ Vdc		
Min. material Density sensed	Solid: ≥0.32g/cm3		
Time Delay	0.6~1 Second / Operate; 2~5 Seconds / Reset		
Vibrating Frequency	395~405HZ		
Selectable Fail Safe	Hi. / Lo.		
Selectable Sensitivity	Hi./ Mid. / Lo.		

PRODUCT SPECIFICATION

Dimensions (Unit : mm)			
Order code	LSV2100	LSV2110	LSV2120
Type	Standard	Solid Extension	Solid Extension
Level Sensor Housing	Aluminum / IP65		
Probe Construction	SS304/SS316		
Mounting	1" PT		
Conduit	½" NPT X 2		
Max. Vertical load on rod.	177in.Lbs(20Nm)		
Operating Pressure.	-1~150PSI (10BAR)		
Power Supply	20~250, 50/60Hz Vac/ Vdc		
Power Consumption	15VA (Max.)		
Operating Temp. In Ambient Air	-40degC~60degC		
Operating Temp.	-40degC~80degC		
Signal Output	Relay, SPDT, 5A/250Vac, PNP/NPN(MOSFET)400mA/60 Vac/ Vdc		
Min. material density sensed	Solid: ^{3}0.32g/cm3		
Time Delay	0.6~1 Second / Operate; 2~5 Seconds / Reset		
Remote-test	Yes		
Selectable Fail-safe	Hi./ Lo.		
Selectable Sensitivity	Hi./ Mid. / Lo.		

Dimensions (Unit : mm)			
Order code	LSV2300	LSV2500	LSV2510
Type	Cable Extension	Corrosion Proof	Corrosion proof Extension Type
Level Sensor Housing	Aluminum / IP65		
Probe Construction	SS 304 / 316	SS 304/316 Coating TEFLON	SS 304/316 Coating TEFLON
Mounting	1"PT	Flange 1"(min.)	Flange 1"(min.)
Conduit	1/2"NPTx2		
Max. Vertical load on rod.	177in.Lbs(20Nm)		
Operating Pressure.	-1~150PSI (10BAR)	-1~150PSI (10BAR)	-1~150PSI (10BAR)
Power Supply	20~250, 50/60Hz Vac/ Vdc		
Power Consumption	15VA (Max.)		
Operating Temp. In Ambient Air	-40degC~60degC		
Operating Temp.	-40LC~80LC		
Signal Output	Relay, SPDT, 5A/250Vac, PNP/NPN(MOSFET)400mA/60 Vac/ Vdc		
Min. material density sensed	Solid: ≥0.32g/cm3		
Time Delay	0.6~1 Second / Operate; 2~5 Seconds / Reset		
Remote-test	Yes		
Vibrating Frequency	395~405HZ		
Selectable Fail-safe	Hi./ Lo.		
Selectable Sensitivity	Hi./ Mid. / Lo.		

PRODUCT SPECIFICATION

Description			
Order Code	**LSV 1700** **Standard**	**LSV 1701** **Probe Extension**	**LSV 1710** **Ultra Extension**
Level Sensor Housing	Aluminum / Ex d IIC T3-T6		
Probe Material	SS304/ SS316		
Mounting	Screw : 1” PT or PF, Flange : 1”-6” JIS/DIN/ANSI		
Electrical Connection	1/2"NPTx2		
Max. Vertical load on Rod.	177in.Lbs(20Nm)		
Operating Pressure.	-1 to 10 Bar		
Power Supply	20~250VAC		
Power Consumption	15VA (Max.)		
Operating Temp. In Ambient Air	-40 to 60°C		
Operating Temp. In Bin	-40 to 80°C		
Signal Output	Relay, SPDT, 3A/250VAC		
Min. material Density sensed	Solid: ≥0.32g/cm3		
Time Delay	0.6~1 Second / Operate; 2~5 Seconds / Reset		
Vibrating Frequency	395~405HZ		
Selectable Fail Safe	Hi. / Lo.		
Selectable Sensitivity	Hi./ Mid. / Lo.		

Designing Structure

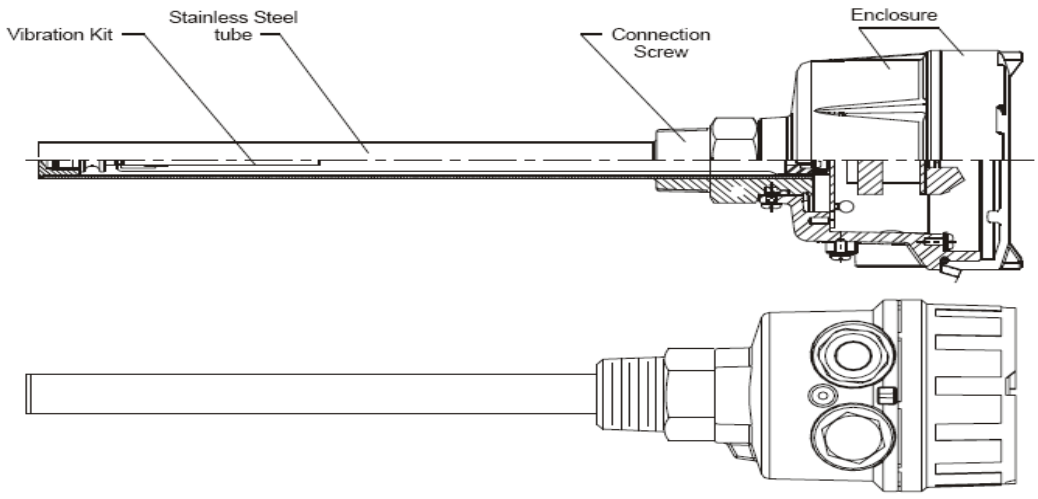


Figure : 2

INSTALLATION SETUP

Vertical Installation

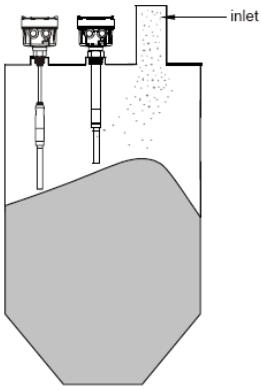


Figure : 3

1. It is suggested to install the vibrating probe away from the inlet to avoid material impact or false readings.

2. Users have to be aware of the material flow pattern and placing the vibrating probe in the appropriate position to avoid overflow.

Horizontal Installation

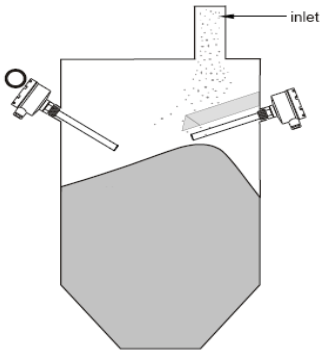


Figure : 4

1. It is suggested to install the vibrating probe away from the inlet to avoid of material impact. If it has to install the vibrating probe near an inlet, it is recommended to add a shield for protection.
2. Installing the vibrating probe at 20 degree inclined will optimize the result and increase the sensitivity.
3. Keep the conduit downward to avoid moisture getting inside the housing.

Mounting Position

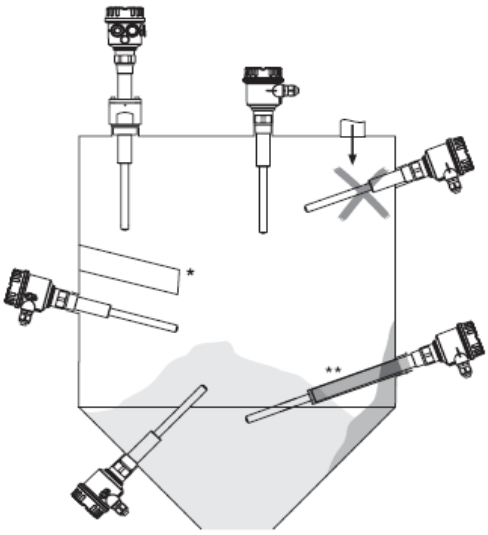


Figure : 5

Note:

1. Please DO NOT climb on the vibrating probe while installation.
2. Users are advised to tighten the connection by using the spanner.
3. Please DO NOT bend the vibrating probe or modify the probe length.
4. The max. vertical pressure of the vibrating probe is 177in.Lbs (20Nm)

TERMINAL / SENSITIVITY ADJUSTMENT (EURO TYPE) (LSV 2100X , LSV2110X, LSV2210X, LSV2300X, LSV2500X, LSV1700X, LSV1701X, LSV1710X)

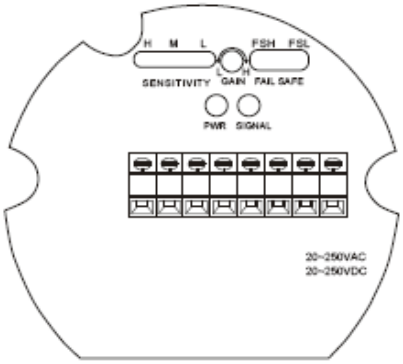


Figure: 6

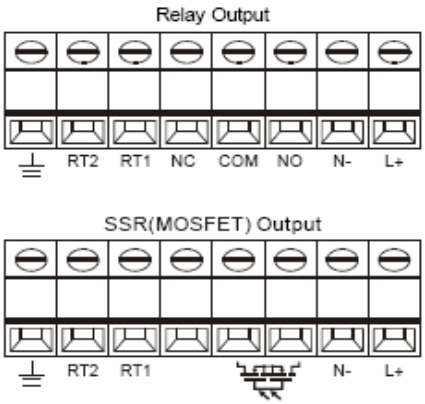


Figure : 7

Terminal Function

L+, N- : Power Supply

NC, COM, No: Relay Output

RT1, RT2 : Remote-Test

⏚ : Ground Connection

: SSR(MOSFET) Output

Panel Function

PWR: Power Supply (Green Light)

SIGNAL: Output Indication (Red Light)

FSH: Power On. The signal lamp is on and the relay is conductive. While the vibrating probe senses the material, the signal lamp is off and relay is not conductive.

FSL: Power On. The signal lamp is off and the relay is not conductive. While the probe senses the material, the signal lamp is on and relay is conductive.

SENSITIVITY L: Low Sensitivity

SENSITIVITY H: High Sensitivity

Sensitivity Adjustment

1. **GAIN:** Located upside of PCB and not allow users o do the adjustment.

2. **SENSITIVITY:** Located above PCB. Three options
(L.M.H) are offered for the adjustment. When switching to H position, it has the highest sensitivity.
When switching to L position, it has the lowest Sensitivity. The original setting is at L position and users are able to adjust the sensitivity depends on the specific gravity of material.

Fail Safe High / Low Protection

FSH (Fail-Safe High) Protection

Switch to FSH mode.
Normal Status: The signal lamp is on. It means that the vibrating probe does not sense the material and the relay is conductive.
Failure: When the power shuts down, the signal lamp is off. It means that the vibrating probe is voided and the relay is not conductive.

FSL (Fail-Safe Low) Protection

Switch to FSL mode.

Normal Status: The signal lamp is on. The vibrating probe senses the material and the relay is conductive.

Failure: When the power shuts down, the signal lamp is off. The vibrating probe is voided and the relay is not conductive.

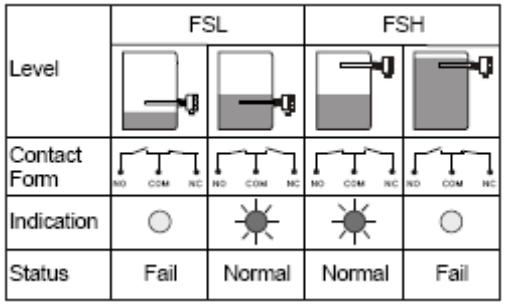


Figure : 8

Note

- *H : High Sensitivity (Suitable for detecting low specific gravity material)*
- *M: Medium Sensitivity (Suitable for detecting medium specific gravity material)*
- *L : Low Sensitivity (Suitable for detecting low specific gravity material)*

TERMINAL / SENSITIVITY ADJUSTMENT

(MULTI-FUNCTION TYPE)

(LSV3100, LSV3110, LSV3120, LSV3300, LSV3500)

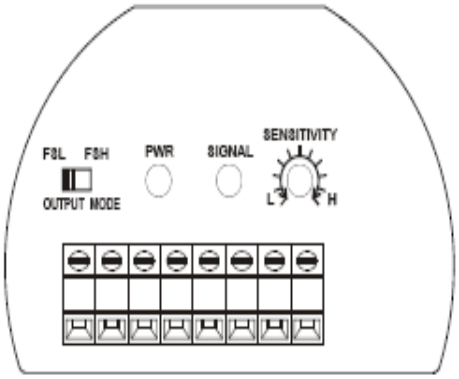


Figure : 9

L+, N- : Power Supply

NC, COM, No: Relay Output

RT1, RT2 : Remote-Test

: Ground Connection

: SSR(MOSFET) Output

Panel Function

PWR: Power Supply (Green Light)

SIGNAL: Output Indication (Red Light)

FSH: Power On. The signal lamp is on and the relay is conductive. While the vibrating probe senses the material, the signal lamp is off and relay is not conductive.

FSL: Power On. The signal lamp is off and the relay is not conductive. While the probe senses the material, the signal lamp is on and relay is conductive.

Terminal Function

SENSITIVITY L: Low Sensitivity
SENSITIVITY H: High Sensitivity

Sensitivity Adjustment

SENSITIVITY: Located upside of PCB. When switching to H position, it has the highest sensitivity.
When switching to L position, it has the lowest sensitivity. The original setting is at L position and users are able to adjust the sensitivity depends on the specific gravity of material.

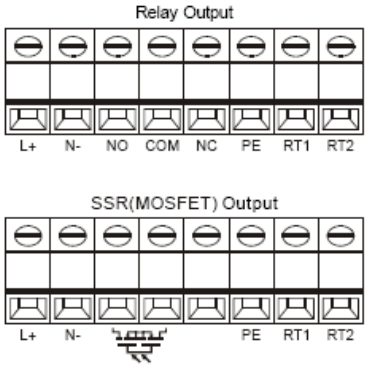


Figure : 10

Fail Safe High / Low Protection

FSH (Fail-Safe High) Protection:
Switch to FSH mode.

Normal Status: The signal lamp is on. It means that the vibrating probe does not sense the material and the relay is conductive.
Failure: When the power shuts down, the signal lamp is off. It means that the vibrating probe is voided and the relay is not conductive.

FSL (Fail-Safe Low) Protection:
Switch to FSL mode.
Normal Status: The signal lamp is on. The vibrating probe senses the material and the relay is conductive.
Failure: When the power shuts down, the signal lamp is off. The vibrating probe is voided and the relay is not conductive.

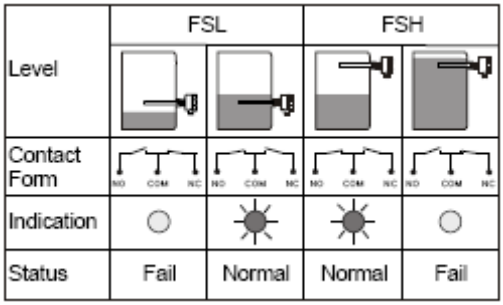


Figure : 11

Note

- *H : High Sensitivity (Suitable for detecting low specific gravity material)*
- *L : Low Sensitivity (Suitable for detecting low specific gravity material)*

Some of the Application Examples

- Powdered Milk Frozen potato chips
- Beans
- Sugar
- Sweets
- Coffee beans
- Coffee Powder
- Tea (leaf)
- Salt
- Flour
- Foundry sand
- Spices
- Animal food
- Pellets
- Peanuts
- Tobacco
- Wood shavings
- Chalk
- Steering chips
- Powdered cellulose
- Glass finely powder
- Granular plastics
- Gravel
- Powdered clay
- Polystyrene powder
- Styrofoam
- Soda
- Soot dry

ORDERING INFORMATION
LSV _ _ _ _

Order No

3100 : Multi-Function Vibrating Probe Standard Type
3110 : Multi-Function Vibrating Probe Extension Type
3120 : Multi-Function Vibrating Probe Ultra Extension Type
3300 : Multi-Function Vibrating Probe Cable Extension Type
3500 : Multi-Function Vibrating Probe Corrosion Proof Type
2100 MV 10/11 : Vibrating Probe Standard Type
2110: MV20 : Vibrating Probe Extension Type
2120: MV21 :Vibrating Probe Ultra Extension Type
2300: MV30 : Vibrating Probe Cable Extension Type
2500: MV50: Vibrating Probe Corrosion Proof Type
1700: MV70: Explosion Proof Vibrating Probe Standard Type
1701: MV70: Explosion Proof Vibrating Probe Extension Type
1710: MV71: Explosion Proof Vibrating Probe Ultra Extension Type

Power & Output Module (20~250Vac/ Vdc, 50/60Hz)

A: Relay O/P (Barrier terminal Block)(Limited Series of 3106,3107,3108)
B: Transistor PNP/NPN (Barrier terminal Block)(limited Series of 3106,3107,3108 series)
R: Relay O/P (Green terminal)-EuroType
N: Transistor PNP/NPN-EuroType

Material

0: SUS304
6: SUS316
P: PTFE

Connection Dimension

D---1"(25A)
3---1-1/4"(32A)
E---1-1/2"(40A)
F---2"(50A)
G---2-1/2"(65A)
H---3"(80A)
I---4"(100A)
J---5"(125A)
K---6"(150A)
S---others

Connection Specification

M---5kg/cm2
N---10kg/cm2
O---150 Lbs
P---300 Lbs
Q---PT
R---PF(G)
T---BSP
U---NPT
W---PN 10
X---PN 16
Y---PN 25
Z---PN 40
S---others
9---Sanitary

Length in mm (Last 4 digits are Length (Eg. 0250mm)

(i) < 500mm (ii) 501 TO 1000mm (iii) 1001 TO 1500mm

Head Office

RLT Instrumentation Pvt.Ltd.,

#2, Rangaraj puram 1st Street, Kodambakam, Chennai – 600024.

Ph : 044-24806500 (10 Lines); Fax : 044-24806555

E-mail : chennai@rltech.in ; Website : www.rltech.in