



Float Operated Guided Level Switch - FGS

FGS is a single or multiple point switch for detection of liquid level in open/ pressurized tanks. It offers trouble free service in conductive, non-conductive and corrosive liquids.

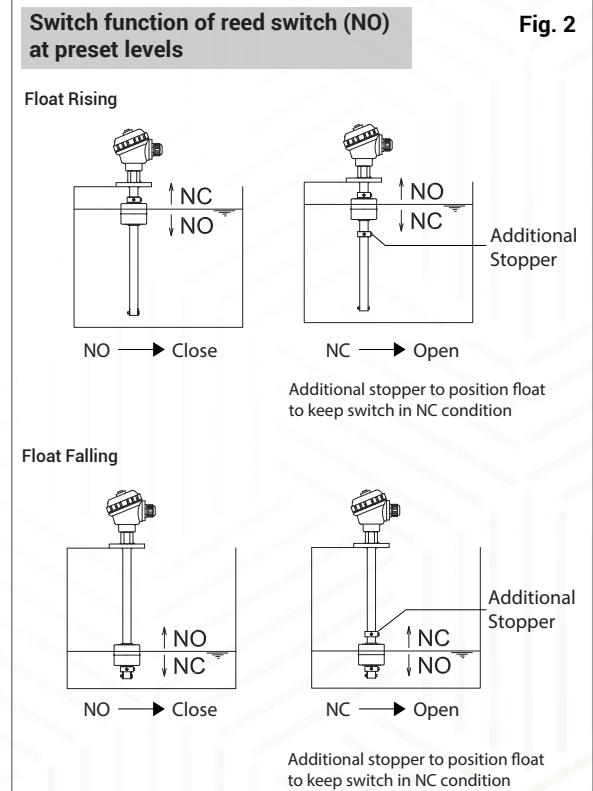
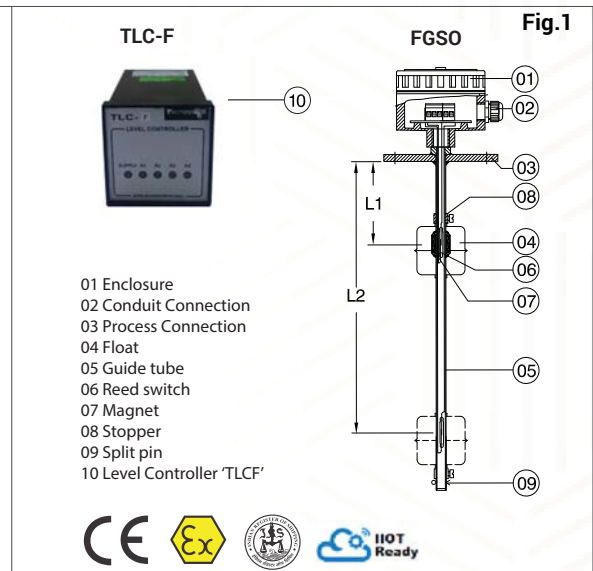
Salient Features

- Hermetically sealed glass encapsulated reed switch
- Liquid level or liquid/liquid interface detection
- Type approval by IRS for marine applications
- Option of switch integral with control unit
- Option of zener barrier for intrinsic safety

Construction & Operation

It consists of magnetic float moving on guide tube, which houses hermetically sealed reed switches at preset levels. The float follows liquid level and magnetically actuates reed switches at preset levels to change over contacts. Single or multiple switching is effected through single or multiple floats as required by applications. FGSO is fitted with weather proof enclosure or flameproof enclosure. FGSI is fitted with plug-in connector or epoxy potted cable. These switches can be provided with 'Zener Barrier' for intrinsic safety. The low power potential free reed contacts can be directly connected to PLC, DCS or SCADA. However, their contact rating can be amplified to 5A, 250VAC through use of controller (TLC-F) for driving higher load devices.

Important: Preset levels & switching function are factory set and should be specified in PO to initiate production



Specifications

Model	FGSO	FGSI
Installation	Outdoor	Indoor
Mounting	Top	
Terminal Enclosure	Cast Al. IP66 or Exd Gr. IIB or IIC T6 IP66 (CCOE Certified) or ATEX Exd Gr. IIBC T6 IP66	Plug-in Connector / Potted Cable Extension (500 mm)
Cable Entry	PG11 Cable Gland x Polyamide or ½" NPT Double Compn Cable Gland x Brass	Nylon 6-10mm / NA
No. of Preset Levels	1 to 4	1 to 4 (with cable extn.) Max 2 with plug connector
No. of Floats	Single / Multiple (Max 4)	Single / Multiple (Max 4)
Float MOC x Size	SS316 x Ø 25, 28, 40, 41, 60, 75 PP x Ø25, 50, PVDF x Ø63	SS316 x Ø 25, 28, 40, 41 PP x Ø25
Liquid Specific Gravity	0.65 to 1.2 depending on float size	
Interface Detection	Min 0.2 difference between SG of upper & lower liquid	
Process Connection	Flanged, Screwed or Tri-clover	
Switch Type	Glass encapsulated hermetically sealed reed switch	
Reed Switch Rating	40 VA or 120 VA, NO (SPST Potential free contacts) 5 VA or 60 VA, 1 C/O (SPDT Potential free contacts)	
Differential	Fixed 10 ± 5 mm	Fixed 3 to 5 mm
Accuracy/ Repeatability	± 2 mm/ ± 1 mm	
Load	Resistive or Inductive	
Insulation	100 M Ohms at 500 VDC	
Max. Temperature	70°C (PP), 100°C (PVDF), 125°C (SS)	
Max. Test Pressure	2 Kg/cm ² (PP/ PVDF), 10 Kg/cm ² (SS)	
CE Certification	As per 2014/35/EU, available with weather proof enclosure/ plug in connector/ cable extension	
Special Feature	Zener barrier for intrinsic safety to Ex ib Gr IIB T6	
Zener Barrier	Used in conjunction with relay contacts viz Techtrol Level Controller (TLC-F)	
Input Supply	24 VDC	
Output	24 VDC/110 mA	
Enclosure MOC & Size	ABS , 40 x 115 x 90 mm	
Mounting	DIN rail	

Level Control and Automation System using Wireless Technology for IIOT Applications is available on Demand

Float Selection Table for FGSI/FGSO

Float Size Ø x L mm	Float MOC	Nominal Bore (NB)	Type	Min. Liquid SG	Max Test Pressure Kg/cm ²	Max Temp °C	Preset Levels				Max GTL mtr
							5VA 1 C/O	40VA NO	60VA 1 C/O	120VA NO	
Ø25 x 25	PP	25	B	≥0.8	1	70	1	3	--	--	1
Ø25 x 25	SS316	25	J	≥1	8	125	1	3	--	--	1
Ø28 x 28	SS316	32	C	≥0.8	10	125	1	3	--	--	1
Ø40 x 50	SS316	40	D	≥0.8	10	125	4	4	4	4	3
Ø41 x 50	SS316L	40	L	≥0.65	15	150	4	4	4	4	3
Ø50 x 60	PP	50	E	≥0.8	2	70	4	4	4	4	3
Ø60 x 130	SS316	65	F	≥0.8	15	150	4	4	4	4	3
Ø63 x 120	PVDF	80	V	≥0.8	2	100	4	4	4	4	3
Ø75 x 85	SS316	80	G	≥0.6	15	150	4	4	4	4	3

Internal Circuit Diagram Illustrating Reed Switch Contacts and Terminations

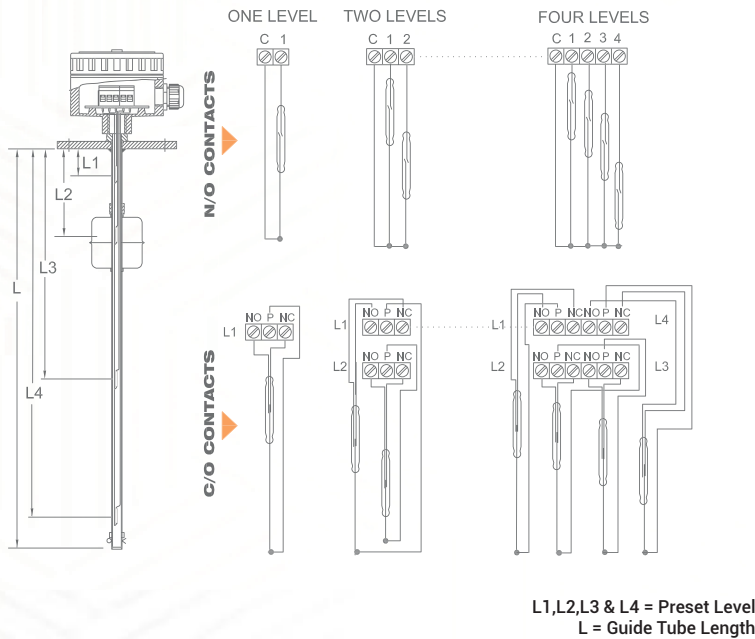


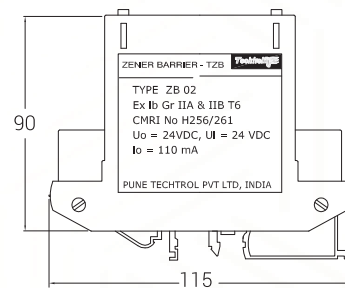
Fig. 3

Zener Barrier



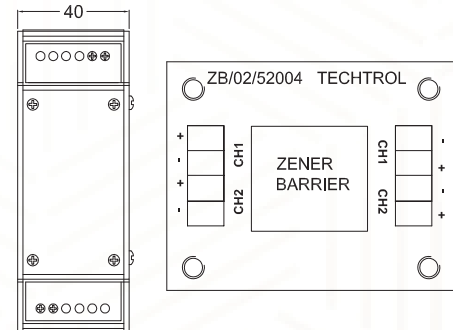
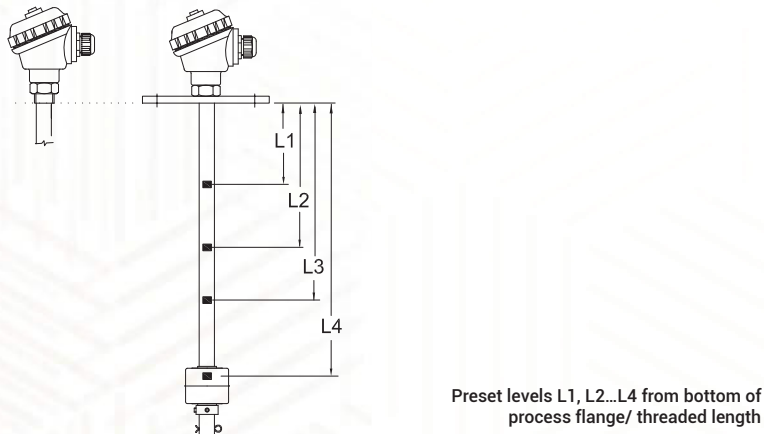
Schematic Diagram of Zener Barrier

Fig. 5



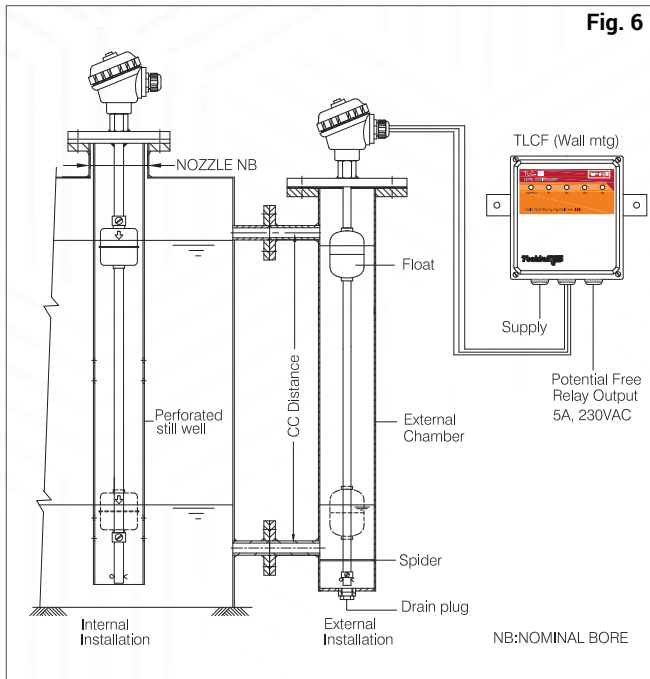
Positioning of Preset Levels

Fig. 4



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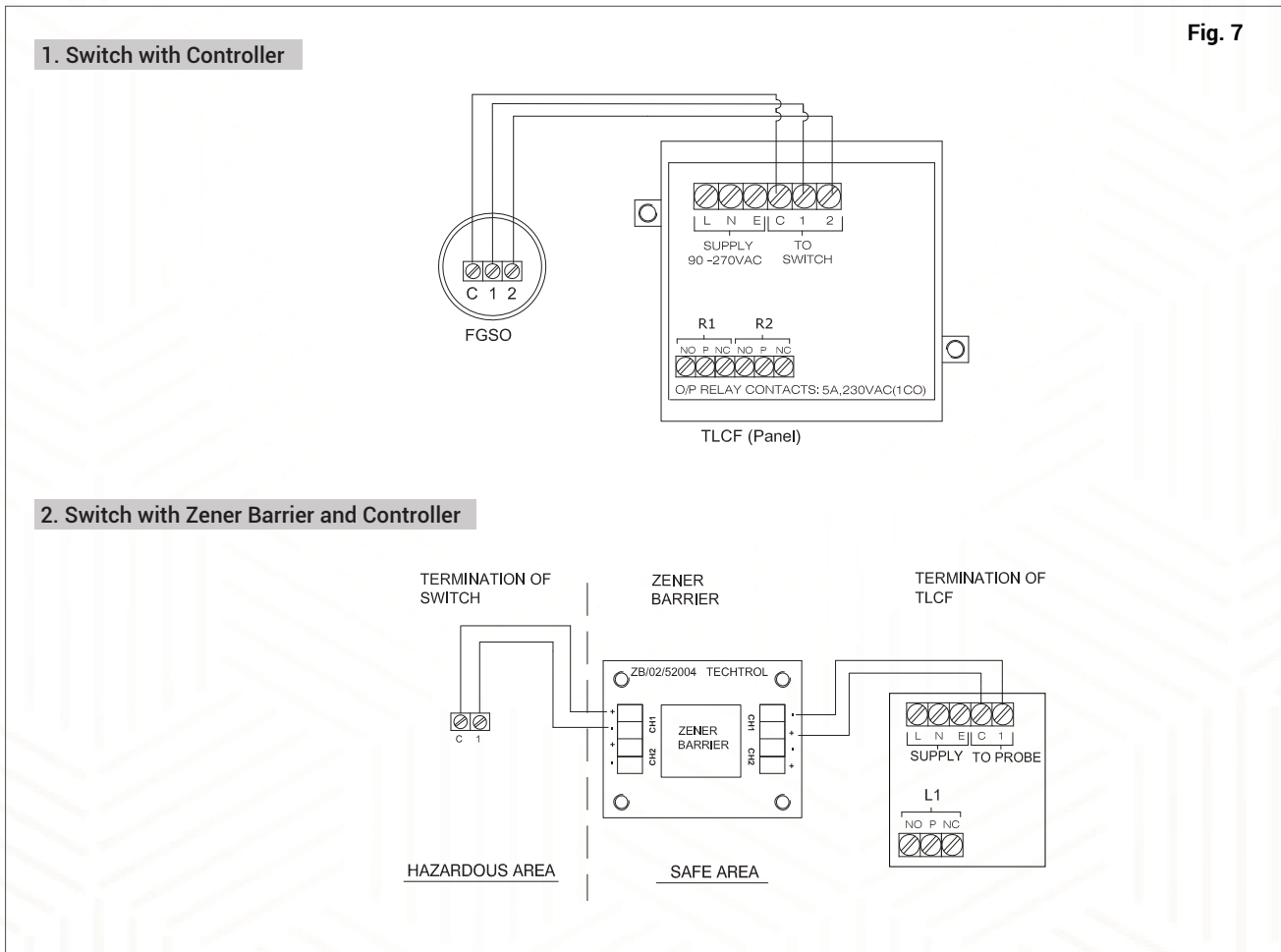
Typical Installation



It can be mounted internally or externally through a chamber as shown in figure 6.

- 1) Internal Mounting:
Perforated stillwell is recommended for liquids under turbulence. For fitment of stillwell, ensure that nominal bore (NB) of tank nozzle is greater than its diameter.
- 2) External Mounting:
Is adopted, where mechanical devices like stirrers operate within the tank or to overcome space limitation.
- 3) Ensure that ID of mounting nozzle is greater than float diameter. In case, float diameter is greater than nominal bore, remove float from guide tube & reinsert the float from bottom of guide tube, after installation

Termination & Wiring



Applications

- ▶ Oil/Water Separators
- ▶ Diesel Tanks
- ▶ Fuel/Oil Tank and Transfer Systems
- ▶ Fuel Tanks Management
- ▶ Dosing Tanks in ETP
- ▶ STP & WTP
- ▶ Chemical Processing and Storage Tanks
- ▶ Lubrication Equipment
- ▶ Heating Ventilation & Air Conditioning
- ▶ Food Processing Equipment and Marine Services

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Model Identification

FGSI



Cable Extension



Plug in Connector

FGSO with Multiple Floats



FGSO with Integral Electronics



Model Identification

FGS		-											
Outdoor installation	0												
Indoor installation	I												
1. Enclosure x Cable Entry													
Cast Al IP66 x PG11 Cable Gland				J									
Cast Al IP66 x ½" NPT Double Comp'n Cable Gland				K									
Cast Al IP66 x ½" NPT (F)				L									
Cast Al Ex d Gr IIB x ½" NPT Double Comp'n Cable Gland				E									
Cast Al Ex d Gr IIC x ½" NPT Double Comp'n Cable Gland				F									
Cast Al ATEX Ex d Gr IIB x ½" NPT Double Comp'n Cable Gland				G									
Cast Al Ex d Gr IIB x ½" NPT (F)				M									
Cast Al Ex d Gr IIC x ½" NPT (F)				N									
Cast Al ATEX Gr IIB x ½" NPT (F)				Q									
Cast Al IP65 with Integral Electronics x PG 11 Gland Cable Gland				I									
Cast Al Ex d Gr IIC with Integral Electronics x ½" NPT Double Comp'n Cable Gland				U									
Cast Al IP66 x Plug & Socket				T									
Epoxy Potted Cable Extension (Indoor Installation)				P									
Plug-in Connector (Indoor Installation, max 2 levels)				C									
Others				O									
2. Reed Switch Rating x Form													
40 VA x NO							1						
60 VA x 1 C/O							2						
5 VA x 1 C/O							3						
120 VA x NO							4						
3. No. of Levels													
1, 2, 3, 4								1...4					
4. Float MOC x Size													
PP x Ø 25 (CS/SS Process Conn.)									B				
SS316 x Ø 25									J				
SS316 x Ø 28									C				
SS316 x Ø 40									D				
SS316L x Ø 41									L				
PP x Ø 50									E				
SS316 x Ø 60									F				
PVDF x Ø63									V				
SS316 x Ø 75									G				
Others									O				
5. Process Connection MOC													
CS										M			
SS304										N			
SS316										S			
SS316L										L			
PVDF										V			



PP (CS Clad) (with Ø 50 PP Float)		P					
Others		O					
6. Process Connection Size & Type							
52 Sq. x 54 PCD Flange			A				
1" NB ASME 150 # Flange			B				
1-1/2" NB ASME 150 # Flange			C				
2" NB ASME 150 # Flange			D				
2-1/2" NB ASME 150 # Flange			E				
3" NB ASME 150 # Flange			F				
1-1/2" Triclover Ferrule			G				
2" Triclover Ferrule			H				
3" Triclover Ferrule			I				
1" BSP (M) Screwed			J				
1-1/2" BSP (M) Screwed			K				
2" BSP (M) Screwed			L				
2-1/2" BSP (M) Screwed			M				
1" NPT (M) Screwed			N				
1-1/2" NPT (M) Screwed			P				
2" NPT (M) Screwed			Q				
2-1/2" NPT (M) Screwed			R				
Others			O				
7. No. of Floats							
1, 2, 3, 4					1...4		
8. Intrinsic Safety							
Without						W	
Zener Barrier for Intrinsic Safety						S	
9. Accessories							
Without							W
External Chamber (Refer ECT Catalog)							C
Counter Flange with Nuts, Bolts & Gasket							F
CS Stillwell							M
SS304 Stillwell							N
SS316 Stillwell							S
PP Stillwell							P
Others							O
10. Remote Level Controller (Refer TLC Catalog)							
Without							W
Provided							P

*All dimensions in mm except specified

Ordering Information

Model No x Liquid & Its SG x Operating Temperature & Pressure, Number & Positioning of Preset Levels and Desired Switching Function at Every Preset Level

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