

Magnetic, Float Operated, Guided Level Switch - "FGSO", "FGSI" with Control unit "TLCF"

It is an established and reliable technique in industry for single / multiple liquid level sensing and control in open or pressurized vessels. It offers trouble free service in conductive / non-conductive liquids under widely varying temperatures, pressures, liquid viscosity and corrosive conditions. Besides, it provides high repeatability, and effects of shocks / vibrations are minimal.

Sailent Features:

- Hermetically sealed glass encapsulated reed switch.
- Option of Remote or Integral control unit.
- Option of Remote Counter & Totalizer for volume calculation.
- Option of Intrinsically Safe Switch.

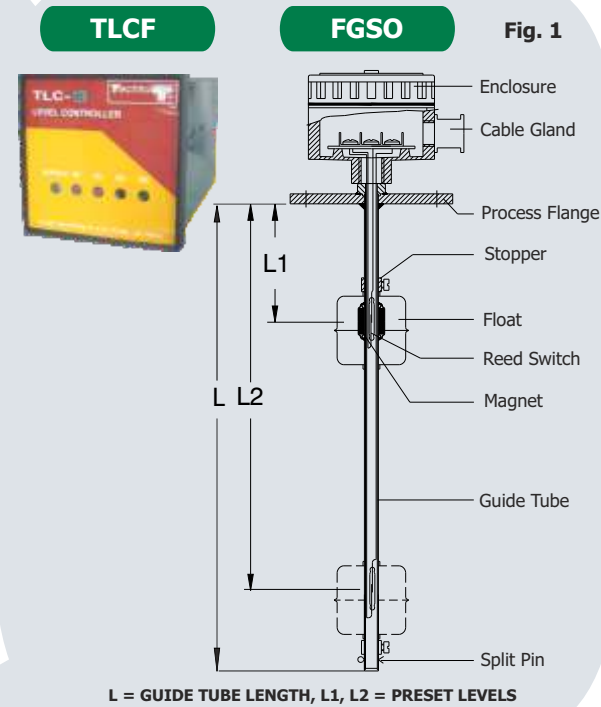
Construction & Operation:

Simple & sturdy construction, consisting of a float and guide tube, made of nonmagnetic material to achieve undisturbed magnetic flux (Fig.1). The float has a magnetic system within it and moves freely along the guide tube, which contains glass encapsulated hermetically sealed reed switches, located at preset positions. Float follows liquid level and magnetically actuates reed switch at preset positions to give a change over contact. Single / multiple switching is effected through single or multiple floats as required by application. Model FGSO is fitted with Cast Al. enclosure to Weather proof or Ex-proof to suit outdoor installations. Model FGSO is fitted with Nylon plug-in connector or epoxy potted to suit indoor installations only. Both models are available with "Techtrol Zener Barrier" for intrinsic safety. Low power, potential free contacts of reed switch can be directly connected PLC, DCS or SCADA. Its contact rating is enhanced by using switch along with Techtrol controller, its relay contacts (5A, 230VAC) can be used to drive higher electric load.

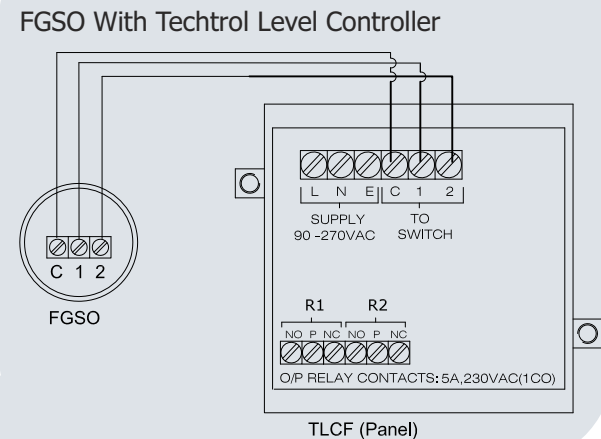
Installation & Wiring:

Mounted internally or externally through a chamber as shown in (Fig 3). External mounting is adopted to overcome limited space within the tank or where mechanical devices like stirrers operate or where isolation tank is required for regular servicing. For installation without float removal, ensure 'Nozzle and Cage pipe' nominal bore is greater than float diameter

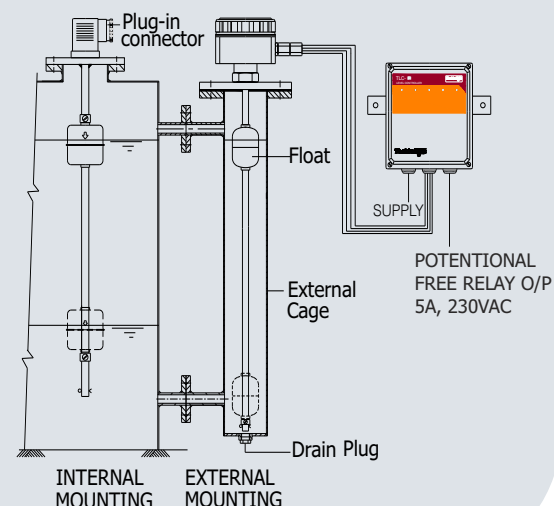
Also available with CE certification as per 73/23/EEP



Termination and Wiring Fig. 2



Installation Fig. 3



SPECIFICATIONS :

FGSO (Outdoor)

FGSI (Indoor)

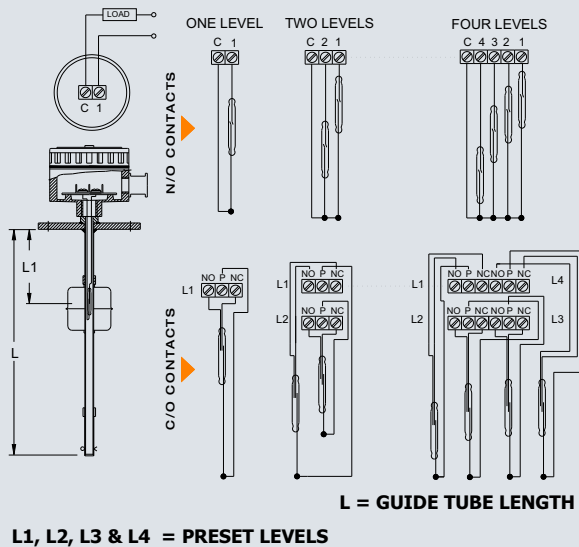
Installation	: Outdoor	Indoor
Mounting	: Top	Top
Terminal Enclosure	: Cast Al, IP 66 or Ex-p IIB or IIC	Nylon, Plug-in Connector / Epoxy Potted x Flying extension leads (PVC-300mm)
Cable Gland	: Polyamide x PG 9/11 or 1/2" NPT	Nylon, 6 to 10mm / NA
Guide Tube MOC	: SS316 / PP	SS316
No. of Floats	: Single / Multiple (Max.4)	Single (Max. 3)
Float MOC x Size	: SS316 x Ø25, 28, 41, 60, 75 & 90mm PP x Ø50, Nitrophyl x Ø17.5	SS316 x Ø25, 28, Ø41mm PU (Solid) x Ø25mm, Nitrophyl x Ø17.5
Process Connections	: Flanged or Screwed or Triclover Ferrule (sanitary application)	Flanged or Screwed or Triclover Ferrule (sanitary application)
Preset levels	: 1 to 4 (Factory set)	a) Three (N/O Switch), b) One (C/O Switch)
Switch type	: Glass encapsulated hermetically sealed reed contacts	Glass encapsulated hermetically sealed reed contacts
Switching capacity	: 40VA (N/O) or 60VA(1C/O) or 120VA (N/O) or 5VA (1C/O)	40VA (N/O) or 60VA(1C/O) or 120VA (N/O) or 5VA (1C/O)
Differential	: Fixed (10 ± 5mm)	Fixed (3 to 5mm)
Accuracy / Repeatability	: ± 2mm / ± 1mm	± 2mm / ± 1mm
Load	: Resistive or Inductive	Resistive or Inductive
Insulation	: 100M ohms at 500 VDC	100M ohms at 500 VDC
Max Temperature	: 150°C (Metallic) / 70°C (PP)	100°C (Metallic) / 70°C (PP)
Max Test Pressure	: 10Kg/cm ² (Metallic) / 3Kg/cm ² (PP) / 25Kg/cm ² (optional)	10Kg/cm ² (Metallic) / 2Kg/cm ² (PP)
Special Features	: Intrinsically Safe to Ex ib Gr IIB T6 (with Zener Barrier 24VDC / 110mA)	Intrinsically Safe to Ex ib Gr IIB T6 (with Zener Barrier 24VDC / 110mA)
CE Certification	: Available with WP enclosure	Available with plug in connector

Float Selection Table for FGSO, FGSI

FLOAT SIZE Ø x L mm	MOC	NOMINAL BORE (NB)	TYPE	MIN LIQUID SP GR	TEST PRESS. Kg/cm ²	MAX TEMP	PRESET LEVELS				MAX GTL
							40VA N/O	60VA 1C/O	5VA 1C/O	120VA N/O	
Ø17.5 x 26	Nitrophyl	15 NB	A	≥ 0.8	1	70°C	3	—	1	—	1 MTR
Ø25 x 25	PU (Solid)	25 NB	B	≥ 0.8	1	70°C	3	—	1	—	1 MTR
Ø25 x 25	SS316	25 NB	J	≥ 0.8	8	150°C	3	—	1	—	1 MTR
Ø28 x 28	SS316	32 NB	C	≥ 0.8	10	150°C	3	—	1	—	1 MTR
Ø41 x 38/52	SS316	40 NB	D	≥ 1/0.65	10	150°C	4	4	4	4	3 MTR
Ø50 x 60	PP	50 NB	E	≥ 0.8	3	70°C	4	4	4	4	3 MTR
Ø52 x 62	SS316	50 NB	K	≥ 0.6	15	150°C	4	4	4	4	3 MTR
Ø60 x 130	SS316	65 NB	F	≥ 0.8	15	150°C	4	4	4	4	3 MTR
Ø75 x 80	SS316	80 NB	G	≥ 0.6	15	150°C	4	4	4	4	3 MTR
Non std			O								

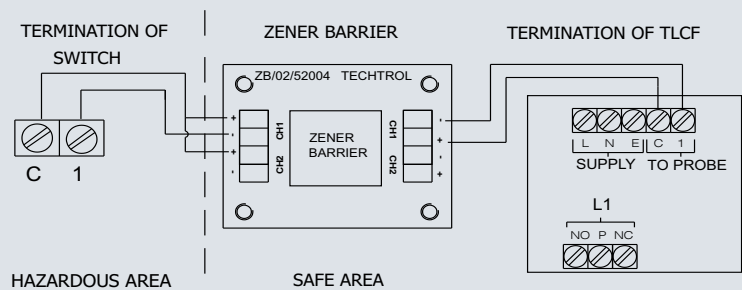
Internal Circuit Diagram Illustrating Reed Switch contacts & Termination

Fig. 4



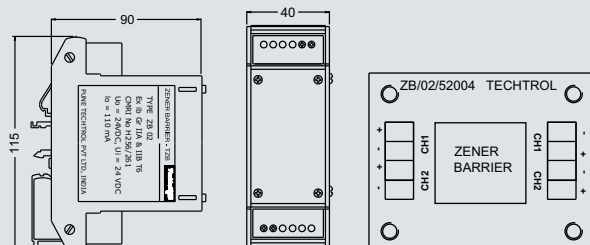
FGS with Zener Barrier & techtrol Level Controller

Fig. 5



Zener Barrier

Fig. 6



FGSI x Single Float x Plug In Connector



FGSI x Single Float x WP Enclosure



FGSO x Multiple Float x WP Enclosure



FGSO x Single Float x Integral Electronics



Applications:

Water / waste water treatment plants, Cooling towers, Lubrication / Filtration systems, Paint shops, Food / Drug / Pharmaceutical / Chemical & Petrochemical industries.

Model Identification

Installation

Outdoor _____
Indoor _____

Enclosure

Cast Al IP66 x PG9/11 _____
Cast Al Ex-PIIB x 1/2" NPT _____
Cast Al Ex-P Gr.IIC x 1/2" NPT _____
Cast Al IP65 with Integral Electronics _____
*Nylon Plug-in connector (upto 2 set points) _____
*Epoxy potted (with extended leads) _____
Others _____
(* For indoor Installation)

Reed Switch Rating x Form

40VA x N/O _____
60VA x 1 C/O (SPDT) _____
5VA x 1 C/O(SPDT) _____
120VA x N/O _____
Others _____

No of Preset Levels

One _____
Two _____
Three _____
Four _____
Others _____

Float MOC x Size

Nitrophyl x Ø17.5 _____
PU (Solid) x Ø25 _____
SS316 x Ø25 _____
SS316 x Ø28 _____
SS316 x Ø41 _____
PP x Ø50 _____
SS316 x Ø52 _____
SS316 x Ø60 _____
SS316 x Ø75 _____
Others _____

Process Conn MOC x Size

CS x 52mm sq x 54PCD x 10mm thk Flange _____
CS x 40NB ANSI 150# Flange _____
PP (MS clad) x 50NB ANSI 150# Flange _____
CS x 65NB ANSI 150# Flange _____
CS x 80NB ANSI 150# Flange _____
CS x 50NB ANSI 150# Flange _____
Others _____

No of Floats

One _____
Two _____
Three _____
Four _____
Others _____

Special Features

None _____
Intrinsically Safe _____

Accessories

Without _____
External Cage _____
Counter Flange with nuts, bolts & gaskets _____
Still well _____
Others _____

Level Controller (TLCF)

Not provided _____
Provided _____

FGS:

O														
I														
J	1													
E	2													
F	3													
I	4													
C	O	A												
P		B												
O		J												
		C												
		D												
		E												
		K												
		F												
		G												
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			4											
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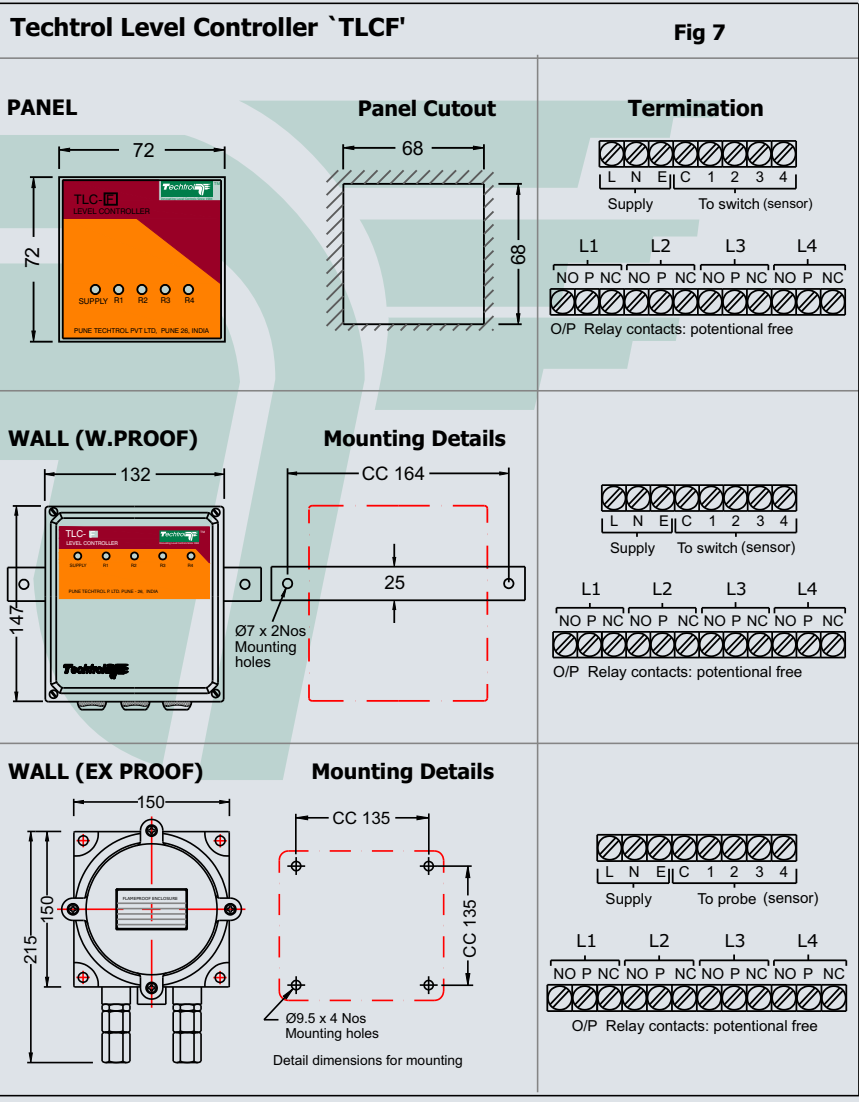
Ordering Information

Model no, liquid along with its density, Optg. Temp. & Pressure, Guide Tube Length (mm), Preset levels & Level Controller. In case of Ext. cage, specify CC dist, Process conn size & MOC.

TECHTROL LEVEL CONTROLLER 'TLCF'



TECHNICAL DATA	PANEL	WALL(W.PROOF)	WALL(EX-PROOF)
Size	72 x 72 x 120 D., Cutout 68 x 68	147x 132 x 112Ht	150 x 150 x 122Ht
MOC	ABS	Cast Al (Powder ctd)	Cast Al (Powder ctd)
Protection	IP-41	IP-65	Ex-p IIB
Supply	90-270VAC or 24VDC	90-270VAC or 24VDC	90-270VAC or 24VDC
O/P Relay contacts	5A, 250VAC (SPDT / DPDT)	5A, 250VAC (SPDT / DPDT)	5A, 250VAC (SPDT / DPDT)
Conduit conn	NA	Polyamide, PG 11	Brass, 1/2"NPT (Double Comp'n)
Terminals	Suitable for 1.5mm ² conductor size	Suitable for 1.5mm ² conductor size	Suitable for 1.5mm ² conductor size
AMB Temperature	0 to 50°C	0 to 50°C	0 to 50°C
No of set points	1 to 4	1 to 4	1 to 4
Power consumption	2VA	2VA	2VA
Humidity	90% Rh	90% Rh	90% Rh
Delay time	2 sec	2 sec	2 sec
Weight	470 gms	1125 gms	2000 / 3300gms
Options	a) Auto / Manual mode thro toggle switch b) Buzzer (only for panel mounted version)		
Special features	Site settable Relay latching between L1, L2 & L3, L4 through DP switch		
Relay status at preset level	LED 'ON' Relay energized. 'OFF' Relay de-energized		
CE Certification	Available	NA	NA



Model Identification

TLCF-

Level Controller Version x Protection

Panel mtd _____ **P**

Wall mtd x IP65 _____ **J**

Wall mtd x Ex-p IIB _____ **E**

Others _____ **O**

No. of Set Points

One x SPDT _____ **1**

Two x SPDT _____ **2**

Three x SPDT _____ **3**

Four x SPDT _____ **4**

One x DPDT _____ **5**

Two x DPDT _____ **6**

*Three x DPDT _____ **7**

*Four x DPDT _____ **8**

Others _____ **O**

Relay Latching

No _____ **N**

Yes _____ **Y**

(* Three / Four x DPDT is available with 2 controllers)

Also available with CE certification as per EMC 89/336/EEC

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Custom built specs./options available on demand. We reserve the right to modify design and specifications without prior notice.



Units in mm