

MAGNETIC FLOAT OPERATED GUIDED LEVEL TRANSMITTER “FGT”

It is a reliable technique for continuous level measurement of variety of liquids, chemically compatible with the transmitter MOC. The float is designed for variety of liquids and its unique self cleaning construction is well suited for even sticky or dirty liquids with no float hang-ups.

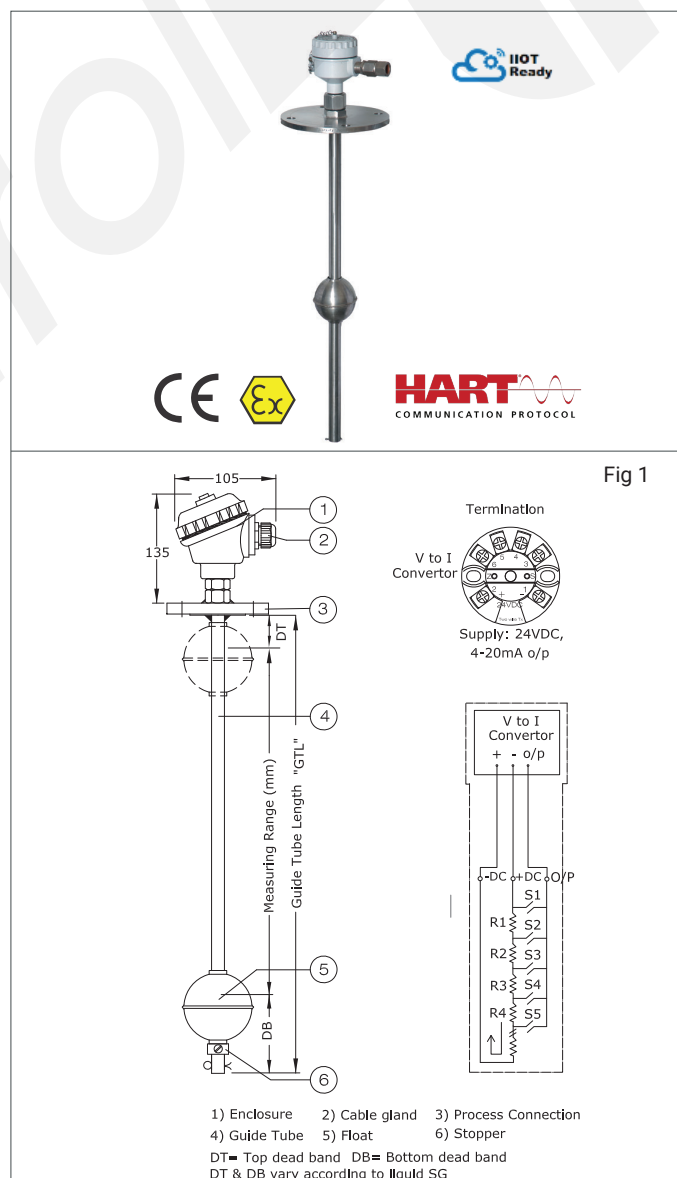
SALIENT FEATURES

- Factory calibrated, ready to install
- Liquid level or liquid/ liquid interface detection
- Customized lengths upto 4 meters
- Option of Integral Display
- Option of HART or RS 485 output
- Option of Zener Barrier for Intrinsic safety for hazardous area

CONSTRUCTION AND WORKING

It consists of a float & guide tube assembly in non-magnetic material, to achieve undisturbed flux. A PCB strip of closely spaced glass encapsulated reed switches and resistors are placed inside the guide tube fig.1.

During rise and fall of liquid level, the magnetic float moves and actuates a reed switch and develops a proportional voltage. The sensed voltage is fed to the transmitter located in the enclosure for conversion to a signal of 4-20 mA to use with PLC or DCS. Alternatively, the signal can be transmitted to a display unit for remote indication or to a display unit integral with transmitter for local indication.

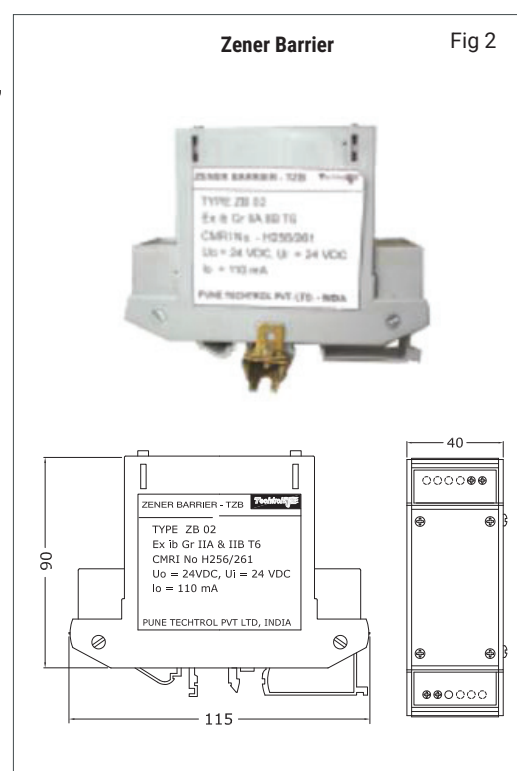


SPECIFICATIONS

Guide Tube Length (GTL)	: 0.5 to 4 mtrs max.
Measuring Range	: GTL - (DT + DB)
Resolution	: ± 12 mm (standard), ± 6 mm (high)
Installation	: Top
Enclosure	: Cast Al. IP66 or Ex d Gr. IIB or IIC T6, IP66 (CCOE certification optional) or ATEX Ex d Gr. IIC T6, IP66
Conduit Connection	: PG11 cable gland, nylon or $\frac{1}{2}$ " NPT DC cable gland, brass
Wetted Parts	: SS304/316/316L, PP or PVDF
Float	: SS316 x $\varnothing 75$, $\varnothing 90$; SS316 x $\varnothing 42$; PP x $\varnothing 75$; PVDF x $\varnothing 63$
Liquid SG	: 0.65 to 1.2 depending on float size. (Refer table 1)
Interface Detection	: Min 0.2 difference between SG of upper and lower liquid
Process Connection	: Screwed, flanged or triclover ferrule
Supply	: 24 VDC ($\pm 10\%$)
Output	: 4-20 mA (2 wire) or 4-20 mA + HART (2 wire) or 1 to 5 VDC or RS-485 MODBUS RTU (Baud rate 9600, 19200, 38400; Slave ID: 1 to 7; Data: 0 to 4095)
Max. Load	: 400 Ohms (with current O/P)
Max. Temperature	: 70°C (PP), 100°C (PVDF), 150°C (SS)
Max. Test Pressure	: 2 kg/cm ² (PP/PVDF), 10 kg/cm ² (SS), 25 kg/cm ² (Optional)
Intrinsic Safety Approval	: Zener barrier for intrinsic safety to Ex ib Gr. IIB T6

Zener barrier

Input Supply	: 24 VDC
Output	: 24 VDC/ 110 mA
Enclosure	: ABS (size 40 x 115 x 90 D mm)
Mounting	: DIN rail

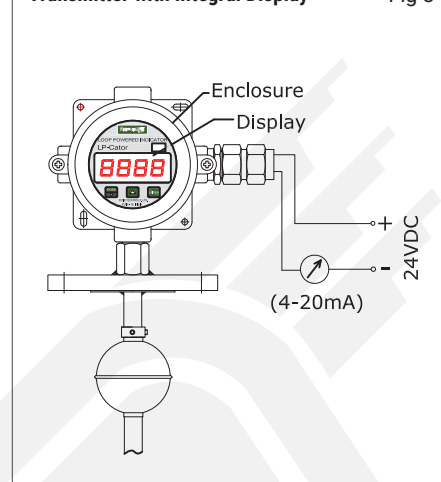


Integral display

- 1) Enclosure : Cast Al. IP65 or Ex d Gr. IIB T6, IP65
Conduit Connection : ½" NPT DC Cable Gland (1 no)
Indication Range : 0 to 9999
Display : 4 digit LCD
Programming : Through keypad
Output : 4-20 mA (2 wire)
Load : 150 Ohm @ 24 VDC
- 2) Enclosure : Cast Al. IP66 or ATEX Ex d Gr. IIC
IP66 T6 (CCOE Optional)
Conduit Connection : ½" NPT DC Cable Gland (1 no)
Display : LCD 2 line, 8 characters
Indication : 6 digit
Programming : Local Operator Interface (with buttons)
Output : 4-20 mA with HART (2 wire)
Load : 500 Ohms @ 24 VDC (including HART resistance)
Option : ATEX (or CCOE) intrinsic safety to Ex ia IIC T4

Transmitter with Integral Display

Fig 3



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

FLOAT SELECTION

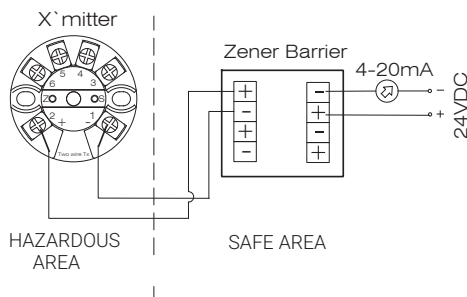
Float selection is based on type of liquid, its specific gravity, max temperature, pressure and tank nozzle ID.

Float MOC	Float Size Ø x L (mm)	Min. SG	Resolution (mm)	DT (mm) at SG 1	DB (mm) at SG 1	GTL Max. (mtr)	Max Temp °C	Max Pressure kg/cm ²	Process Connection Size
SS316	Ø42 x 50	≥0.65	± 12	25	45	1.5	150	10	2" (50) NB Flanged, Screwed or Triclover
SS304/316	Ø75 x 85	≥0.8	± 12, 6	35	75	4	150	10	3" (80) NB Flanged
SS304/316	Ø90 x 90	≥0.6	± 12, 6	45	65	4	150	10	4" (100) NB Flanged
PP	Ø75 x 90	≥0.7	± 12, 6	70	75	3	70	2	3" (80) NB Flanged
PVDF	Ø63 x 120	≥1	± 12, 6	70	115	3	100	2	3" (80) NB Flanged
	Ø63 x 170	≥0.8	± 12, 6	110	125	3	100	2	3" (80) NB Flanged

Note: 1. Ø 42 and Ø 75 float in SS316L available optionally
2. Ø75 float for liquid-liquid interface application

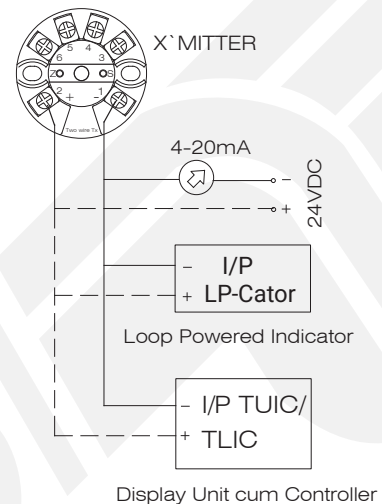
TERMINATION AND WIRING

1) Transmitter with Zener Barrier



2) Transmitter with 4-20mA O/P

Fig.4



INSTALLATION

1. Internal Installation

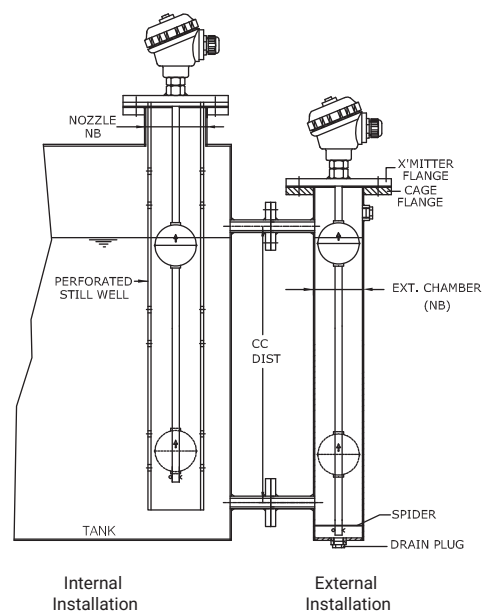
Transmitter is top mounted on the tank. A stillwell with perforation is recommended for liquids under turbulence. For fitment of stillwell, ensure that NB of tank nozzle is greater than the diameter of stillwell.

2. External Installation

Transmitter is top mounted on a chamber, external to the tank. This installation is adopted on the tank, containing mechanical devices like stirrers, ladders & other internals or to overcome space limitation in the tank.

Typical Installation

Fig.5



APPLICATIONS

Storage/ process tanks of Water, Oils, Diesel, Chemicals, Nitric Acid, 98% H₂SO₄, 33% HCL, Critical Inventory, Pressurized Vessels, Interface Applications, WTPs, STPs, ETPs, Nuclear Power Plants and Tank Gauging System for Ships.

MODEL IDENTIFICATION

	FGT-	J	1	1	A	S	1	W	W	W
1. Enclosure x Conduit Connection (refer table 2)										
Cast Al. IP66 x PG 11 Cable Gland	J									
Cast Al. IP66 x ½" NPT DC Cable Gland	K									
Cast Al. Ex d Gr. IIB, T6, IP66 x ½" NPT DC Cable Gland	E									
Cast Al. Ex d Gr. IIC, T6, IP66 x ½" NPT DC Cable Gland	F									
Cast Al. ATEX Ex d Gr. IIC T6, IP66 x ½" NPT DC Cable Gland	S									
Cast Al. IP65 x ½" NPT DC Cable Gland (Integral Display x 4-20mA o/p)	I									
Cast Al. Exd IIB T6, IP65 x ½" NPT DC Cable Gland (Integral Display x 4-20mA o/p)	H									
Others	O									
2. Wetted Parts (Float + Guide Tube) x Float Size										
SS316 x Ø42 (Resolution ±12 mm; GTL 1.5 mtrs max)		1								
SS316 x Ø75		3								
PP x Ø75		4								
SS316 x Ø90		6								
PVDF x Ø63		7								
Others		0								
3. Process Connection MOC										
SS304			N							
SS316			S							
PP with CS Cladding			P							
PVDF			V							
Others			O							
4. Process Connection Type										
2" NB ASME 150# Flange				A						
2" BSP (M) Screwed				B						
3" NB ASME 150# Flange				C						
4" NB ASME 150# Flange				D						
2" Triclover Ferrule				E						
Others				O						
5. Resolution										
Standard ± 12 mm					S					
High ± 6 mm					H					
6. Output										
4-20 mA (2 wire)						1				
4-20 mA with HART (2 wire)						2				
1 to 5 VDC						3				
RS - 485 MODBUS RTU Serial Communication						4				

7. Intrinsic Safety Approval	
Without	W
Ex ib IIB T6 (with Zener Barrier) (4-20mA, w/o integral display)	I
ATEX Ex ia IIC T4	A
Others	O
8. Display Type	
Not Provided	W
With Integral Display (refer table 2)	I
Loop Powered Indicator (LP- Cator)	L
Level Indicator Controller (TLIC)	C
Universal Indicator Controller (TUIC)	U
Others	O
3. Accessories	
Not Provided	W
External Chamber	C
Counter Flange + Nuts & Bolts (CS Zink pltd.) + CAF Gasket	F
Stillwell	S
Others	O

Note: 1. Refer respective catalogs of ECT for external chamber, LP-Cator, TLIC and TUIC
2. Refer table 2 for combinations of enclosures with output and integral display

Table 2 - Combination of Enclosure x Output x Integral Display v

Combinations ↓	Enclosure →	I (IP65)	J/K (IP66)	E (Ex d IIB)	H (Ex d IIB)	F (Ex d IIC)	S (ATEX IIC)
4-20 mA			Provided	Provided	-	Provided	Provided
4-20mA + HART			Provided	Provided	-	Provided	Provided
4-20mA + Intrinsic Safety			Provided	Provided	-	Provided	-
4-20mA + HART + Intrinsic Safety			Provided	-	-	-	Provided
4-20mA + Integral Display	Provided		-		Provided	-	-
4-20mA + HART + Integral Display			Provided	-	-	-	Provided
4-20mA + HART + Intrinsic Safety + Integral Display			Provided	-	-	-	Provided

ORDERING INFORMATION

Model No. x Guide Tube Length x Measuring Range x Liquid & its SG and Operating Temp & Pressure

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