Float Operator Level Transmitters

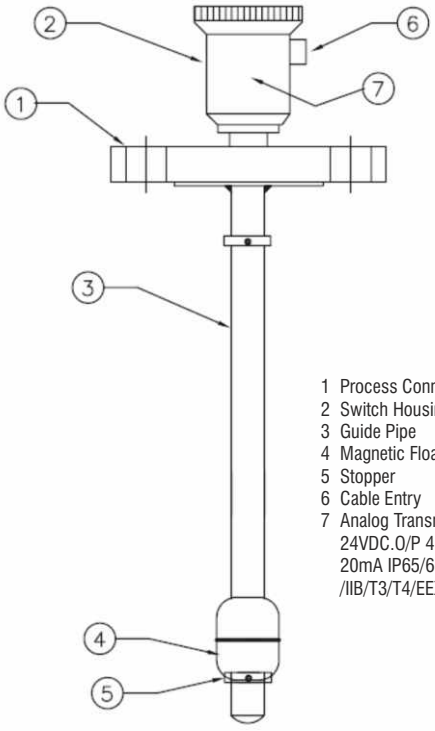
Features

- Displacer type level transmitter with application upto 100 bar and 350 deg cent application
- Heavy walled floats for critical application
- Tight sealing versions for float sensors with level transmitter to enable correct application solutions, with sealing internals at 10(-3/-4) mbarltr/sec available
- Insertion length defined for 5000mm, other lengths on request and confirmation on design
- Durability defined on sealing and pressure and temperature application
- Improved reliability with dual opposed magnet design which provides snap action
- Applicable with various versions of MOC's depending on pressure and temperature, versions with Stainless and steel, hastelloy, monel, PTFE, PP, Titanium available
- Versions with flange, screwed, welded available
- IBR versions available
- Applicable for H2S, NACE, certified
- Level transmitter is CCOE approved and certified for IP67, IP65
- Certified for group IIA/IIB, IIC
- Enclosure at die cast alluminium and SS available
- Application with PTFE lined coating at special 1.6 mm thickness and PTFE floats for critical media available
- Versions with ATEX and FM certified available on request
- Local Display

Application in petrochemical complex with varied specific gravity

Concept and Principle of Operation

This is top mounted displacer type level transmitter provided continues set points. It uses float that glides on the surface of liquids. This level switch consists of Terminal Enclosure, Float Stem with Reed Switches and resistor and Float with magnets assembled inside. This type of level transmitter can be used for continuos level controls for both closed and open tanks. When level rises float travels with the liquid on the float stem and when it comes in contact with the reed switches, due to magnetic force reed switch changes its contact. This type of level transmitter is used for lengths upto 5000 mm, other lengths on request and confirmation on design. It is recommended to use perforated still well for lengths more than 3000 mm.



1 Process Connection
2 Switch Housing
3 Guide Pipe
4 Magnetic Float
5 Stopper
6 Cable Entry
7 Analog Transmitter 24VDC.O/P 4 to 20mA IP65/67EEXDIIA /IIB/T3/T4/EEXIAIIC/T6

G A Drawing for assembly and mounting

Float Operator Level Transmitters

Technical Specifications: Table-1 Material of Construction

Float	PTFE, PP, PVDF, SS316, SS304, SS316L, SS304L, Monel, Titanium, Hastelloy
Float stem	PTFE lined SS, PP lined SS, PVDF lined SS, SS316, SS304, SS316L, SS304L, Monel, Titanium, Hastelloy
Flange	PTFE, PP, PVDF, SS316, SS304, SS316L, SS304L, Monel, Titanium, Cast Carbon Steel, Hastelloy
Switch enclosure	Die cast alluminium, SS304, SS316, SS316L
Cable gland	Brass, PBS Plastic, SS316, SS304, SS316L
Stopper	Metal stoppers of relavant material compatible to media

Technical Specifications: Table-2

Float	38X200mm upto 60X160mm and upto 68X100mm
Float	Specific gravity = 0.4, till 1.2
Float Stem	500mm to 5000mm, other lengths on request and confirmation on design
Float stem width	12.5mm and 16mm
Flange	2" till 6", ANSI RF, FF, 125-250AARH, DIN std DN50 till 150, BS10TabE, socket weld, butt weld, weld neck flange in ANSI
Float	Pressure design till 40 kg / 60 kg / 100 kg
Flange rating	max rating ANSI 600# and DN PN 100
Cable gland	Double compression, metal cable normal glands, ½" NPT F, ¾" ET, M20, PG 13.5, PG16
Flange	Forged, cast versions, radiography level - 1 / 2 versions available
Float weight	60gms to 200 gms depending specific gravity
Float stem weight	Max upto 200 gms depending on size / length
Flange weight	500gms till 30 kg depending float dimensions which inturn would density of media and other accessories
Temperature application	-100 deg cent till 350 deg cent
Pressure application	Upto 100 kg/cm^2 g
Analog transmitter output	4- 20 m A
Analog transmitter principle	Reed switch
Analog transmitter power supply	230 VAC, 5 A or 24VDC, 0.5 A
Analog transmitter out put in split range	Split range of 4…12 m A and 12…20 m A, others on request
Analog transmitter internal resistance	200M ohms
Transmitter accuracy	3%
Transmitter repeatability	0.15%
Transmitter certifications	CCOE, FM, ATEX, CE (versions applicability on request)
Transmitter enclosure	EExia IICT6, Eexd IIA/IIB, Eexd IIC and IP65
HART transmitter principle	Reed switch, LVDT
HART transmitter accuracy	1.5 %
HART transmitter output in split range	Adjustable as per HART software
HART programmable software	With serial interface adapter with HART interface to calibrate
HART transmitter feature	SIL2 certified
HART transmitter feature	Slave circuitry operation with MASTER as an additional option on request
HART output	4 to 20 m A, other on request
HART transmitter internal resistance	440 ohms
HART transmitter enclosure	EExia IICT6, EExd IIA/IIB, EExd IIC and IP65
HART transmitter certifications	CCOE, FM, ATEX, CE (Versions applicability on request)

Magnetic Level Gauges & Level Transmitters

Magnetic Level Gauges provides clear, high clarity indication of liquid level. Magnetic Level Gauges are principally designed as an alternative to glass level gauges. MLGs are now widely used in all industries as they avoid direct contact with indicator system; it eliminates need of glass for direct level indication and prevents chemical spillage due to breakage of glass.

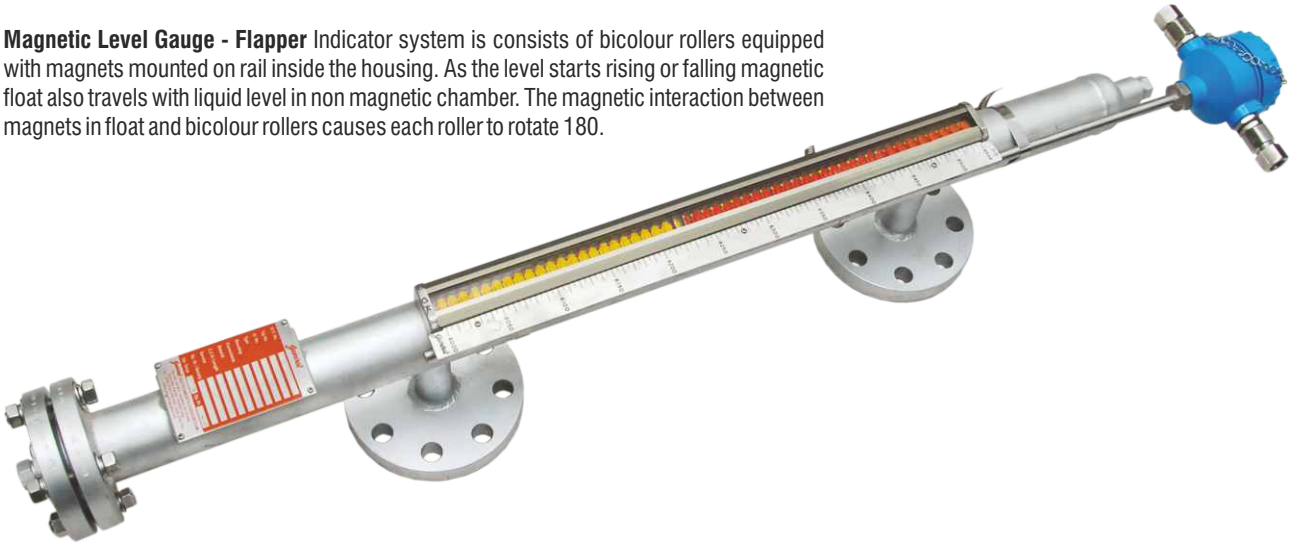
Features

- Magnetic level gauge applicable upto 100 kg/cm^2 and upto 300 deg cent
- Cryo applications upto -196 deg cent
- Jacketed design applicable
- For applicability in critical, acidic, cryo and high temperature zone
- IBR certified device available
- NACE, H2S service compatibility applicable
- Heat tracing available
- Viscous media (max upto 380 cst and upto 100 deg cent) besides other acidic, non acidic, steam water media
- CE applicability
- Device fully compatible for conductive and non conductive media
- Special float design to enable to meet low critical specific gravity
- Design applicability test with special media available
- Applicable for refinery, petrochemical, chemical, power, radioactive, fertilizer, food, pharma, metal industry applications
- CCOE approved switches available, ATEX, FM certified available on demand
- Versions available with analog and digital (HART) and FIELDBUS transmitters fully integrated with the system for level gauge and transmitter
- CCOE approved and ATEX and FM versions applicable for HART and analog transmitters available

Concept and Principle of operation

Magnetic Level Gauges operates on the principle of magnetic field coupling to provide fluid level information. Float chamber is typically constructed having process connections that matches to the vessel connections. Float size and weight is determined by the process fluid, pressure, temperature and the specific gravity of the process fluid. Float contains magnets to provide 360 magnetic flux field.

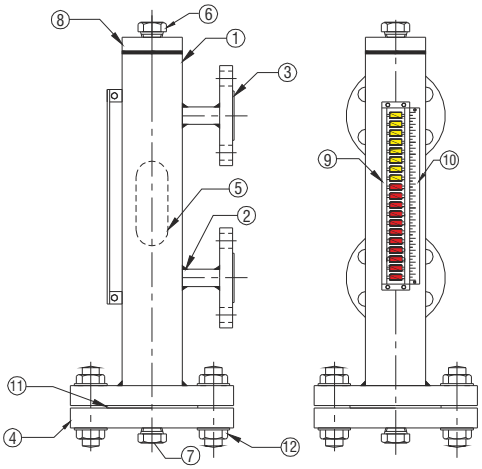
Magnetic Level Gauge - Flapper Indicator system is consists of bicolour rollers equipped with magnets mounted on rail inside the housing. As the level starts rising or falling magnetic float also travels with liquid level in non magnetic chamber. The magnetic interaction between magnets in float and bicolour rollers causes each roller to rotate 180.



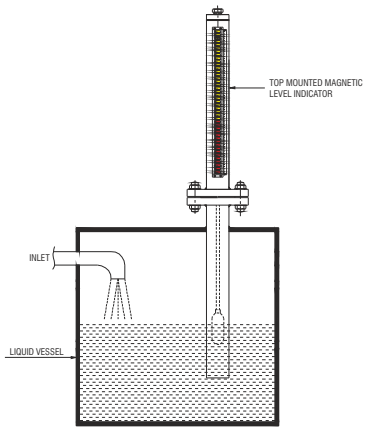
Technical Specifications: Table-1 Technical Data

Type of Gauge	Magnetic Level Gauge - MLG
Mounting Orientation	Top Mounted Side Mounted
Pressure	Upto 100 kg/cm^2
Temperature	Upto 300^{0}C
CCD	Max. upto 7000mm
Liquid Chamber	In forged construction: SS304, SS304L, SS316, SS316L, PP, Titanium, Inconnel 600, Hastelloy C, Other on request subject to pressure & temperature condition
MOC of Float	In forged construction: SS304, SS304L, SS316, SS316L, PP, Titanium, Inconnel 600, Hastelloy C
Gasket	CAF, PTFE, Grafoil with SS pregnated
Fastner	CS Plated, SS
Scale	Aluminium, Aluminium anticorossion powder coated and SS engraved in mm
Indicating System	Bicolour flapper in ABS/ Aluminium/ SS with 4mm length & 0.25mm thickness with aligned magnets
Protection box for bicolour flapper & follower type	In mild steel, Aluminium, SS304, SS316 base on the requirements of atmospheric condition
Process Connection	Flanged
Vent	½" Plugged / ½" Needle Valve / ½" Ball Valve / ½" Globe Valve / ½" Gate Valve
Drain	½" Plugged / ½" Needle Valve / ½" Ball Valve / ½" Globe Valve / ½" Gate Valve
Specific gravity	Please specify
Limit Switch Assembly	Snap acting 1 SPDT Microswitch, 5A,230VAC
Switch Housing	Die Cast Aluminium Weatherproof to IP-67
	Die Cast Aluminium Explosionproof suitable for Gr. IIA, IIB
	Die Cast Aluminium Explosionproof suitable for Gr. IIC
Cable Entry	1 no / 2 nos. of 3/4"ET(F)
Optional	Still well for top mounted construction

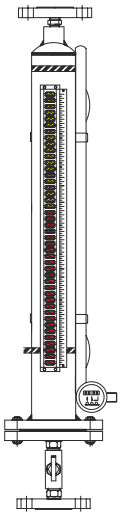
Construction and Dimensional Cross Sectional Overview



1 Liquid Chamber
2 Nozzle
3 Process Flange
4 Bottom Flange
5 Magnetic Float
6 Vent Plug
7 Drain Valve
8 Top Cap
9 Indicating System
11 Scale
12 Gasket
13 Fastener



G A drawing for mounting and assembly



Front View

With HART transmitter mounted on a 900# application gauge at CCD of 4000 mm with magnetostrictive principle for chemical plant application.

Ordering Information

MLG SM-1000-F03-ZE-VD-XD-VW-XW-QU-RU-SO-LX-Z

Orientation of Process Connection	
MT	Top Mounted
SM	Side Mounted

Centre to Centre Distance	
1000	Indicate the required Centre to Centre Distance in mm

Process Connection			
Flanged Connection			
F01	1/2", 150# RF	F13	2", 300# RF
F02	3/4", 150# RF	F17	1/2", 600# RF
F03	1", 150# RF	F19	1", 600# RF
F04	1.5", 150# RF	F20	1.5", 600# RF
F05	2", 150# RF	F21	2", 600# RF
F09	1/2", 300# RF	F48	1", 900# RTJ
F10	3/4", 300# RF	F49	1.5", 900# RTJ
F11	1", 300# RF	F50	2", 900# RTJ
F12	1.5", 300# RF	XX	Any Other*

MOC of Connection			
ZC	SS 304	ZK	Monel 500
ZD	SS 304L	ZL	Titanium
ZE	SS 316	ZM	Hastelloy B
ZF	SS 316L	ZN	Hastelloy C
ZI	PP	ZO	Inconel 600
XX	Any Other*		

MOC of Chamber			
VB	SS 304	VH	Monel 500
VC	SS 304L	VI	Titanium
VD	SS 316	VJ	Hastelloy 'B'
VE	SS 316L	VK	Hastelloy 'C'
VF	PP	VL	Inconel 600
XX	Any Other*		

MOC of Float			
XB	SS 304	XH	Monel 500
XC	SS 304L	XI	Titanium
XD	SS 316	XJ	Hastelloy 'B'
XE	SS 316L	XK	Hastelloy 'C'
XF	PP	XL	Inconel 600
XX	Any Other*		

Optional	
LX	Limit Switch with Die cast Aluminium Weatherproof IP-67
LY	Limit Switch with Die cast Aluminium Flameproof suitable to Gr. IIA/ IIB
LZ	Limit Switch with Die cast Aluminium Flameproof suitable to Gr. IIC
IB	IBR
Z	NIL

Calibration Scale	
SO	Aluminium with Powder coat
SP	Aluminium
SQ	SS304
SR	SS316
SS	Acrylic

Drain			
RU	1/2" NPT (F), Plug	RX	1/2" Ball Valve
RV	3/4" NPT (F), Plug	RY	1/2" Gate Valve
RW	1/2" Needle Valve	RZ	1/2" Globe Valve

Vent			
QU	1/2" NPT (F), Plug	WX	1/2" Ball Valve
QV	3/4" NPT (F), Plug	QY	1/2" Gate Valve
QW	1/2" Needle Valve	QZ	1/2" Globe Valve

Gasket	
XW	C.A.F.
XX	P.T.F.E.
XY	Graphoil

Fasteners	
VV	ASTM A 193 Gr. B7 / ASTM A 194 Gr. 2H
VW	SS
VX	Anodized Aluminium
VY	CS Plated

Note: * Please consult factory