Direct Insert Type Level Switches



Features

- Float level switch with application upto 60 bar and 350 deg cent application
- Heavy walled floats for critical application
- Tight sealing versions for float sensors with switch to enable correct application solutions, with sealing internals at 10(-3/-4) mbar ltr / sec available
- Insertion length defined for 3000mm
- Switching differential upto 2mm
- 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

- Special magnet attractor to meet high temperature and pressure
- Versions with flange, screwed, welded available
- Applicable for H2S, NACE, certified
- Switch is CCOE approved and certified for IP67
- Switch certified for group IIA/IIB, IIC
- Switch enclosure at die cast alluminium and SS available
- Application with PTFE lined at special 1.6 mm thickness and PTFE floats for critical media available
- Versions with ATEX and FM certified available

Concept and Principle of Operation

Direct insert or direct mounted level switch uses the counterbalance principle. It consists of float and float stem with counterbalance weight and switch mechanism with magnet attractor.

In this type there are two versions applicable:

- Direct insert side mounted LS1000-SM
- Direct insert top mounted LS1000-MT

LS1000-SM: Side Mounted direct insert mounted level switch

Principle of operation:

In this type of Level Switch Float held in horizontal position and moves upwards and downwards with rising and falling level in the tank / vessel. This movement results in a rotary motion of the attractor causes actuation of microswitch. To improve reliability it employs dual opposed magnet design which provides snap action.

Application

This type of level switch is mounted directly on the tank / vessel having horizontal nozzle as shown in figure. The tank / vessel connection must be located at the elevation where set level is to occur. Applications are suitable in cryo tanks and applications for high temperature with special material are also applicable



Exproof IIC version for LS1000-SM



Weather proof version of LS1000-SM

Direct Insert Type Level Switches



LS 1000: Top Mounted Direct Insert Mounted Level Switch

This is direct mounted type level switch. This provides contact changeover at a selected elevation level in the tank / vessel. Switch is mounted on top of the tank / vessel and coupled with float assembly rides on the liquid surface with rising and falling of level. The magnet attracter is connected on the isolating tube as shown in figure. As the level rises stem head of float assembly reaches upto attractor causes actuation of microswitch. To improve reliability the stem guide isolated just above the float. This type of level switch issued for lengths upto 3000mm.



Exproof IIC version for LS1000MT

Specific gravity



Weather proof version of top mounted LS1000MT

Technical Specifications: Table-1 Technical data

Type Direct Insert Type

Mounting Side Mounted / Top Mounted

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

Switch Type Snap Acting 1SPDT / 2SPDT Microswitch, 5A, 230VAC / 0.5A, 24VDC

Cable Entry 1 no / 2 nos. of 3/4"ET(F), 1/2"NPT(F), M20x1.5(F)

Process Connection Flanged in various sizes

Flange MOC SS304, SS316, SS316L, Monel400, Titanium, Inconel 600, Hastelloy-C

Others on request

Float/Stem MOC SS304, SS304L, SS316, SS316L, Monel400, Titanium, Inconel 600, Hastelloy-C

Others on request Please specify

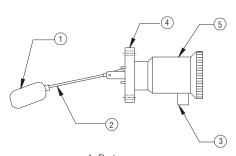
 Pressure
 Up to 100kg/cm²g

 Temperature
 (-100) to 350°C

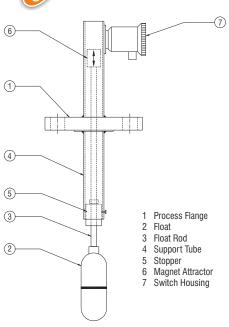
Switch certification CCOE, FM, ATEX, CE (Versions applicapibility on request)

Direct Insert Type Level Switches





- 1 Float
- 2 Float Stem
- 3 Cable Entry
- 4 Process Connection
- 5 Switch Housing



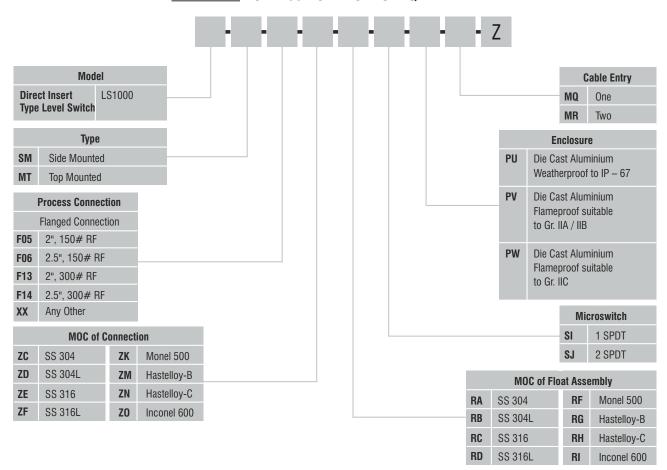
Side mounted direct insert level switch

Top mounted direct insert level switch

G A Drawing for assembly and mounting

Ordering Information





Displacer Type Level Switches



Features

- Level Switch with application upto 40 bar and 250 deg cent application
- Heavy walled level sensor for critical application
- Insertion length defined for 10000mm
- Switching differential upto 10mm
- 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
- Applicable for 2S, NACE, certified
- Switch is CCOE approved and certified for IP67
- Switch certified for group IIA/IIB, IIC
- Switch enclosure at die cast alluminium and SS available
- Application with PTFE lined at special 1.6 mm thickness and PTFE floats for critical media available
- Versions with ATEX and FM certified available



Concept and Principle of Operation

General offers Top Mounted Sensor Operated Level Switches for single and multiple level set points:

Series TMLS/3000

This is top mounted type level switch provided single or multiple set points. It uses Level sensor that do float on the surface of liquids with certain immersed section with respect to design. Working principle of the level switch is based on a buoyancy principle.

This level switch is consists of Switch Assembly, Wire Rope with Spring Assembly and level sensor suspended on spring. Level sensor having more density than the process liquid is used. Spring selection is determined by the weight of the level sensor. When level rises it the level sensor is submerged as per the design consideration and amount of weight equal to the weight of process liquid is displaced. This displacement relieves the spring tension which is related to tension constant R, causes the actuation of microswitch. This type of level switch is used for lengths upto 10000 mm.

Technical Specifications: Table-1 Technical Data

Type Displacer Operated Level Switch

Mounting Top Mounted

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

Switch Type Snap Acting 1SPDT/2SPDT Microswitch, 5A, 230VAC /0.5A, 24VDC

Cable Entry 1 no / 2 nos. of 3/4"ET(F), 1/2"NPT(F), M20x1.5(F)

Process Connection Flanged in various sizes

Flange MOCCS,SS304, SS316, SS316L, PP Other on requestDisplacer MOCSS304, SS304L, SS316, SS316L, PP Other on requestWire Rope MOCSS304, SS304L, SS316, SS316L, PP Other on requestSpring MOCSS304, SS304L, SS316, SS316L, PP Other on request

 Specific gravity
 Please specify

 Pressure
 Up to 40kg/cm²g

Temperature 250°C

Switch certification CCOE, FM, ATEX, CE (Versions applicapibility on request)

Switch Insertion Length Up to 10000mm

Ordering Information

LS3000 F05-ZA-OV-VR-WQ-SI-PU-MQ Model **Cable Entry** LS 3000 Displacer Type **Level Switch** MQ One MR Two **Process Connection** Enclosure Flanged Connection PU Die Cast Aluminium **F05** 2", 150# RF Weatherproof to IP – 67 **F06** 2.5", 150# RF Die Cast Aluminium **F07** 3", 150# RF Flameproof suitable F08 4", 150# RF to Gr. IIA / IIB **F13** 2", 300# RF **F14** 2.5", 300# RF Die Cast Aluminium Flameproof suitable **F15** 3", 300# RF to Gr. IIC **F16** 4", 300# RF XX Any Other Microswitch **MOC** of Connection SI 1 SPDT SS 316 SJ 2 SPDT ZA CS (A105) ZE SS 304 ZF SS 316L **MOC** of Wire Rope **ZD** SS 304L ZI PP **WQ** SS 304 WR SS 304L **MOC** of Diaplacer WS SS 316 0V SS 304 WT SS 316L 0W SS 304L WU PP 0X SS 316 XX Any Other SS 316L **0**Y 0Z PP **MOC of Spring** VR SS 304 VS SS 304L SS 316

VU

SS 316L

External Chamber Type Level Switches



Features

- Float level switch with application upto 100 bar and 350 deg cent application
- Heavy walled floats for critical application
- CCD length defined for upto 2500mm
- Switching differential upto 10mm
- 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
- Special magnet attractor to meet high temperature and pressure
- Versions with flange, screwed, welded available
- Applicable for H2S, NACE, certified
- Switch is CCOE approved and certified for IP67
- Switch certified for group IIA/IIB, IIC
- Switch enclosure at die cast alluminium and SS available
- Application with PTFE lined at special 1.6 mm thickness and PTFE floats for critical media available
- Versions with ATEX and FM certified available



Series LS2000-SM

Concept and Principle of Operation

General Instruments Consortium offers External Cage Type Level Switches for single level set point. This is trouble free, consistent and inexpensive solution to control Level in the tanks / vessels.

In this type there are two versions applicable

- External cage chamber side mounted with side mounted switch LS 2000SM
- External cage chamber side mounted with top mounted switch LS 2000MT

Principle of operation:

1. External cage chamber side mounted with side mounted switch LS 2000SM

This type of level switch consists of fabricated external cage with inlet-outlet process connections having fixed distance. The switch assembly is mounted horizontally on the external cage as shown in figure-1.

Application:

The external cage type level switch is mounted outside the tank / vessel which significantly reduce effect of turbulence. It also provides ease of online maintenance without impeding the process conditions.

2. External cage chamber side mounted with top mounted switch LS 2000MT This type of level switch assembly is mounted vertically on the external cage as shown in figure-2. The external cage type level switch is mounted outside the tank/vessel which significantly reduces effect of turbulence.

Fig- 2



External cage chamber side mounted with top mounted switch LS2000

External Chamber Type Level Switches



Technical Specifications: Table-1 Technical data

Type External Chamber Type **Mounting** Side Mounted on tank

Switch MountingSide / Top mounted on external cage chamberSwitch HousingDie Cast Aluminium Weatherproof to IP-67

Die Cast Aluminium Explosionproof suitable for Gr. IIA, IIB Die Cast Aluminium Explosionproof suitable for Gr. IIC

Switch Type Snap Acting 1SPDT/2SPDT Microswitch, 5A, 230VAC /0.5A, 24VDC

Cable Entry 1 no / 2 nos. of 3/4"ET(F), 1/2"NPT(F), M20x1.5(F)

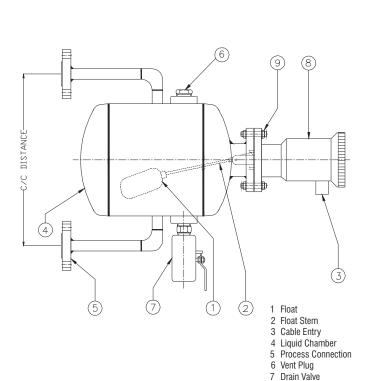
Process Connection Flanged in various sizes

Flange MOC SS304, SS316, SS316L, Monel400, Titanium, Inconel 600, Hastelloy-C. Others on request

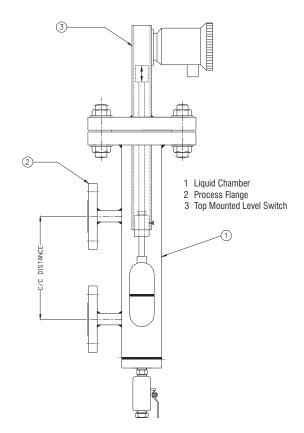
Float/Stem MOC SS304, SS304L, SS316, SS316L, Monel400, Titanium, Inconel 600, Hastelloy-C. Others on request CS, SS304, SS304L, SS316, SS316L, Monel400, Titanium, Inconel 600, Hastelloy-C. Others on request

Switch certification CCOE, FM, ATEX, CE (Versions applicapibility on request)

Switch CCD Length Up to 2000mm



Side Mounted Switch

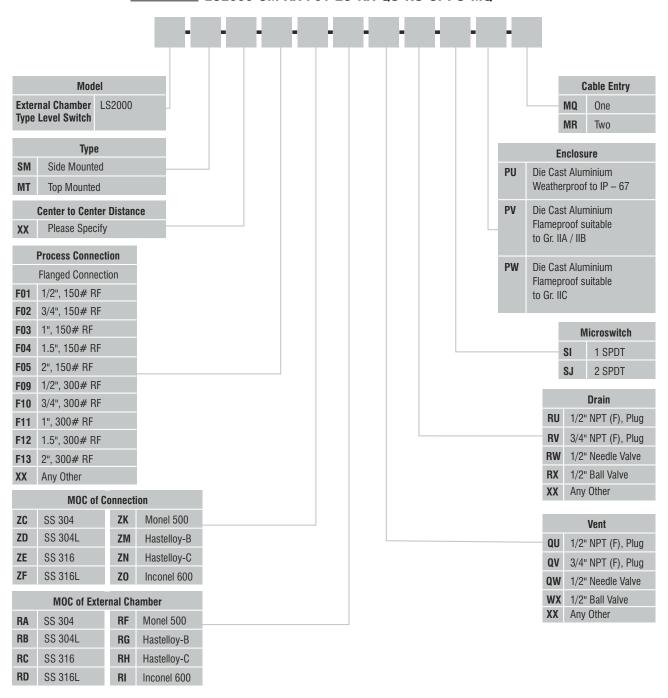


Top Mounted Switch

Switch Housing Fastener

Ordering Information

LS2000 LS2000-SM-XX-F01-ZC-RA-QU-RU-SI-PU-MQ



Flow Switches



Features

- Flow control designed for upto 5000 LPM with process connection upto 2"
- Applications upto 40 bar and upto 250 deg cent available
- Flow switch with options of special bellows to cater to high flows, high pressure and high temperature
- Bellows with better hysteresis for the overall flow switch accuracy
- IBR versions available
- Applicable for H2S, NACE, certified
- Switch is CCOE approved and certified for IP67

- Switch certified for group IIA/IIB, IIC
- Switch enclosure at die cast alluminium and SS available
- Versions with ATEX and FM certified available
- 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

Concept and Principle of Operation

General Instruments Consortium has designed flow switches for the direct control of fluid flow in pipelines and ducts. These switches are magnetically or mechanically actuated. This is simple, reliable and economical solution to control or monitor flow in process lines. GIC offers two types of Flow Switches:

- Inline type
- Top mounted version

This is direct mounted type flow switch in pipe line. This consists of Switch assembly, Body, Bellowsand Flapper. This is mounted in horizontal position. Flapper is connected to bellow assembly. When flow reaches beyond set flow the flapper moves in the direction of flow. The displacement of flapper causes actuation of the microswitch through bellow assembly. Inline type flow switch is available upto 50 NB line size and above 50 NB Top mounted is recommended. There are no vertical moving parts and is therefore maintenance free. These flow switches can be mounted in horizontal as well as vertical lines.



Technical Specifications: Table-1 Material of Construction

Displacer Flapper

Flange Switch enclosure Cable gland Bellows SS316, SS304, SS316L, SS304L, Monel, Titanium, Hastelloy, others on request PTFE lined SS, PP lined SS, PVDF lined SS, SS316, SS304, SS316L, SS304L,

Monel, Titanium, Hastelloy

SS316, SS304, SS316L, SS304L, Monel, Titanium, cast carbon steel, Hastelloy

Die cast alluminium, SS304, SS316, SS316L Brass, PBS plastic, SS316, SS304, 316L

SS316, SS316L, Monel, SS304, Phosphor Bronze

Flow Switches



Technical Specifications: Table-2 Technical Data

Flapper length 12mm till 200mm depending on flow for control

Flapper thickness 0.15mm till 2.3 mm depending on pressure and temperature

Bellow Double walled with 20, 30 and 40 convolutions and thickness of bellow more than the convolutions

travel/length of the bellow

Process connection ½" till 2", ANSI RF, FF, 125-250AARH, DIN std DN15, 20, 25, 40, 50, socket weld, butt weld,

weld neck flange in ANSI and screwed connection NPT and BSP

Float Pressure design till 40 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, PG 16

Switch SPDT, 230 VAC, 5 A or 24VDC, 0.5 A

No of cable entries Max two Switch enclosure IP65, IP66, IP67

Switch enclosure EExia IICT6, EExd IIA/IIB, EExd IIC

Switch accuracy Max upto 1%

Switch hysterisis Max upto 0.5% to 1%

Switch repeatability Max upto 1%

Switch certifications CCOE, FM, ATEX, CE (versions applicability on request)

Flange Forged, cast versions, radiography level - 1 / 2 versions available Flow switch weight 1.6 kg till 8 kg depending on configure of flow requirement

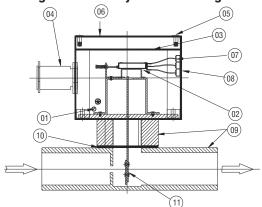
Temperature application
Pressure application
Upto 250 deg cent
Upto 40 kg/cm² g

Flow in LPM in control 2 LPM till 20 LPM for ½" process connection and pipe size

8 LPM to 40 LPM for ¾" pipe size 15 LPM to 190 LPM for 1" pipe size 30 LPM to 215 LPM for 11/2" pipe size 40 LPM to 360 LPM for 2" pipe size 60 LPM to 700LPM for 3" pipe size 90 LPM to 1500 LPM for 4" pipe size 125 LPM to 3000LPM for 6" pipe size 200 LPM to 4000 LPM for 8" pipe size 250 LPM to 5000LPM for 10" pipe size

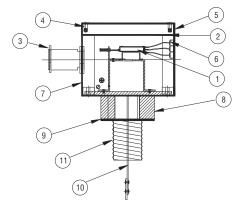
Differential pressure 75mmwc till 150 mmwc

G A Drawing for assembly and mounting



- 1 Earthing Screw
- 2 Micro Switch
- 3 Cover Gasket
- 4 Cable Entry
- 5 Cover Bolts
- 6 Enclosure Cover
- 7 Terminals
- 8 Enclosure
- 9 Body
- 10 Body Gasket
- 11 Flapper

Inline



- 1 Micro Switch
- 2 Cover Gasket
- 3 Cable Entry
- 4 Cover Bolts
- 5 Enclosure Cover
- 6 Terminals
- 7 Enclosure
- 8 Enclosure
- 9 Body Gasket 10 Flapper
- 11 Process Conn.

Top Mounted

Ordering Information

ZE

SS 316 SS 316L

FS IN-F01-ZA-ZC-SI-PU-MQ-Z Cable Entry Type IN Inline MQ One Top Mounted MR Two Z NIL **Process Connection** Flanged Connection Enclosure **F01** 1/2", 150# RF PU Die Cast Aluminium Weatherproof to IP - 67 3/4", 150# RF 1", 150# RF Die Cast Aluminium F03 Flameproof suitable F04 1.5", 150# RF to Gr. IIA / IIB F05 2", 150# RF 1/2", 300# RF F09 Die Cast Aluminium Flameproof suitable 3/4", 300# RF to Gr. IIC **F11** 1", 300# RF **F12** 1.5", 300# RF Microswitch **F13** 2", 300# RF 1 SPDT **Threaded Connection** 2 SPDT 1/2"BSP (M) B05 **MOC** of Flapper 3/4"BSP (M) B06 1"BSP (M) SS 304 B07 1.5"BSP (M) SS 304L B08 2"BSP (M) ZE SS 316 N04 1/2"NPT (M) SS 316L N05 3/4"NPT (M) N06 1"NPT (M) N07 1.5"NPT (M) N08 2"NPT (M) **MOC** of Body ZA CS(A105) CS(A106) ZC SS 304 ZD SS 304L

Multiport Level Top Mounted Level Switches



Features

- Float level switch with application upto 100 bar and 350 deg cent application
- Heavy walled floats for critical application
- Insertion length defined for 4500mm
- Switching differential upto 10mm
- 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 SS, hastelloy, monel, PTFE, PP, Titanium available
- Versions with flange, screwed, welded available
- Applicable for H2S, NACE, certified
- Switch is CCOE approved and certified for IP67, IP65
- Switch certified for group IIA/IIB, IIC
- Switch enclosure at die cast alluminium and SS available
- Application with PTFE lined at special 1.6 mm thickness and PTFE floats for critical media available
- Versions with ATEX and FM certified available





Concept and Principle of Operation

This is top mounted type level switch provided single or multiple 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 Float with magnets assembled inside. This type of level switch can be used for single or multiple level controls. When level rises float travels with the liquid on the float stem and when it comes in contact with the reed switches located at a predetermined length of the stem, due to magnetic force reed switch changes its contact. This type of level switch is used for lengths upto 4500 mm. It is recommended to use perforated still well for lengths more than 2500 mm.



Technical Specifications: Table-2 Technical Data

Type Multiport Level Top Mounted Level Switch

Mounting Top Mounted

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

Switch Type Reed Switch-0.5A, 230VAC

Cable Entry 1 no / 2 nos. of 3/4"ET(F), 1/2"NPT(F), M20x1.5(F)

Process Connection Flanged in various sizes

Flange MOC CS, SS304, SS316, SS316L, PP. Others on request Float MOC SS304, SS304L, SS316, SS316L, PP. Others on request Stem MOC SS304, SS304L, SS316, SS316L. Others on request **Stopper** Metal Stopper of relevant material compatible to media

Specific gravity Please specify Up to 100kg/cm²g **Pressure Temperature** (-100) to 350°C

Switch certification CCOE, FM, ATEX, CE (Versions applicability on request)

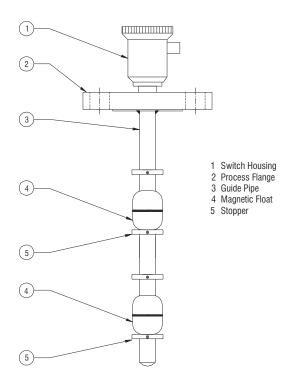
Switch Insertion Length Upto 4500mm

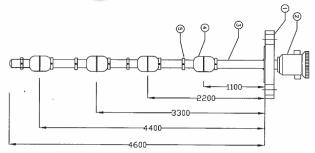




Multiport Level Top Mounted Level Switches







A specified application for multilevel set point in chemical industry with PTFE lined floats and float stem with 3" flange at 300# rating with pressure at 40 bar and at 140 deg cent

Four set point level switch applicable for:

- Paper industry
- Chemical industry
- Petrochemicals
- Refineries
- Fertilizers
- Food industry
- Pharma industry

Float Operated Level Switch

Ordering Information

LS4000 F05-ZA-YK-QU-PU-MQ

