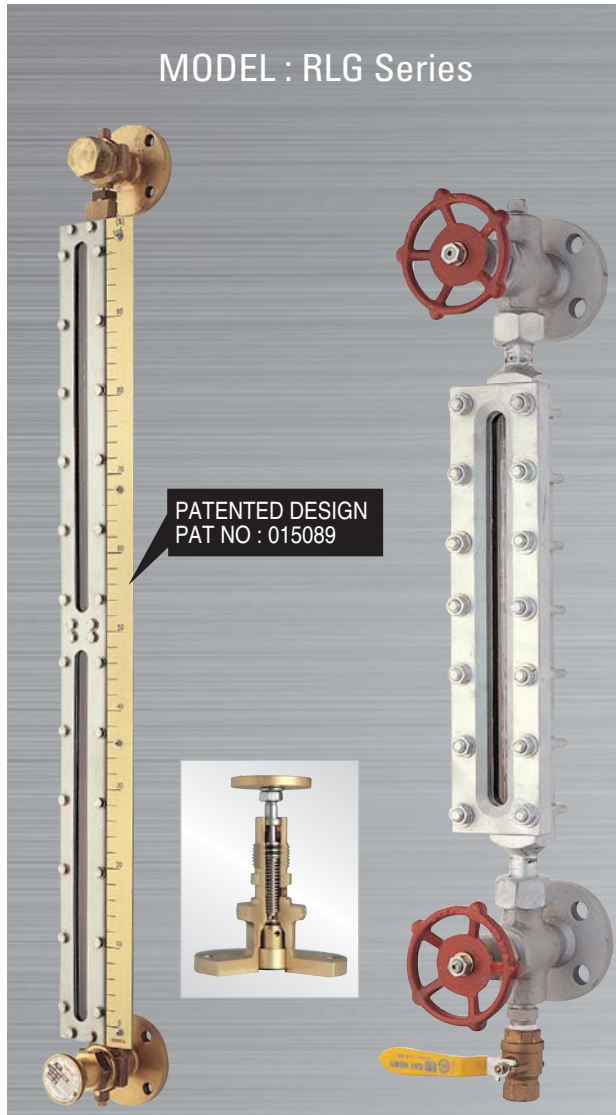


Level Gauges

Flat Type Glass Level Gauge



· RLG-LP Series

· RLG-HP Series

MODEL : RLG Series

PATENTED DESIGN
PAT NO : 015089

HANLA MARINE GAUGE

Flat type glass level gauges have been developed to comply with the requirements of the SOLAS 1981, 1983, 1996, 1997, 1998 amendments. The gauges have been reviewed and a suitable construction is accepted by marine classification authorities throughout the world.

FLAT GLASS DESIGN

The toughened borosilicate glass window is housed and protected in a robust stainless steel column. The excellent level indication even of colourless liquids is provided by reflex glass viewing windows.

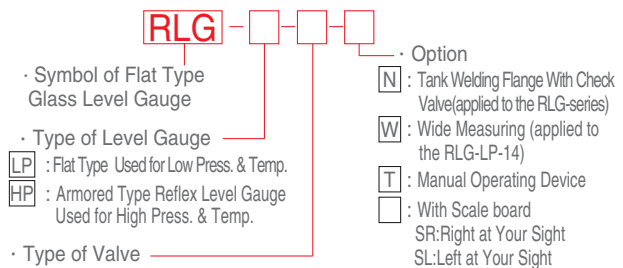
APPLICATION

Flat type glass level gauges are used for water tanks, all oil tanks and boiler drum etc.

EASY MAINTENANCE FOR RLG-LP SERIES

When required, the liquid chambers can be cleaned with the gauge on the tank, alternatively the isolating valves will be able to remove the column without drain of the tank.

MODEL NUMBER CODE SYSTEM



| APPLICATION | MODEL | VALVE TYPE | |
|-------------|-------|------------------|----------------------------------|
| | | Upper | Lower |
| LP | 11 | Self-closing | Self-closing |
| | 13 | Tank return | Self-closing |
| | 14 | Top vent | Self-closing |
| HP | 22 | Screw-down valve | Screw-down valve with check ball |
| | C22 | Chain valve | Chain valve with check ball |
| | CK22 | Cock valve | Cock valve |

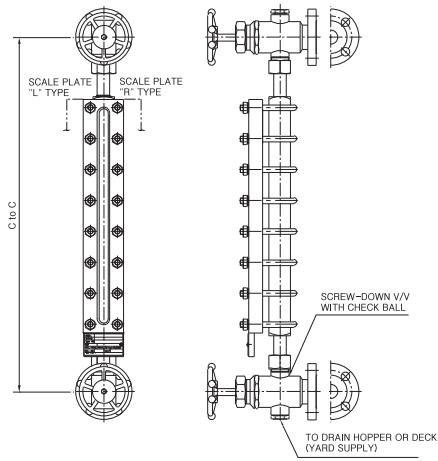
Standard model and specification

| Model | Valve type | | Connection size | Range of pressure | Range of temp. | Material | | | Center to Center | |
|-------------|------------------|----------------------------------|-----------------|----------------------|----------------|----------|---------------|--------------|------------------|-------|
| | Upper | Lower | | | | Valve | Front channel | Back channel | | Glass |
| RLG-LP-11 | Self-closing | Self-closing | JIS 5K20A, 25A | 3kg/cm ² | 150°C | BC6 | SUS304 | SUS304 | Borosilicate | 285 |
| RLG-LP-13 | Tank return | Self-closing | JIS 5K20A, 25A | 3kg/cm ² | 150°C | BC6 | SUS304 | SUS304 | Borosilicate | ~ |
| RLG-LP-14 | Top vent | Self-closing | JIS 5K20A, 25A | 3kg/cm ² | 150°C | BC6 | SUS304 | SUS304 | Borosilicate | (m/m) |
| RLG-HP-22 | Screw-down valve | Screw-down valve WITH CHECK BALL | JIS 16K20A | 50kg/cm ² | 300°C | C,S | C,S | C,S | Borosilicate | 320 |
| RLG-HP-C22 | Chain valve | Chain valve WITH CHECK BALL | JIS 16K20A | 30kg/cm ² | 300°C | C,S | C,S | C,S | Borosilicate | ~ |
| RLG-HP-CK22 | Cock valve | Cock valve | JIS 16K20A | 20kg/cm ² | 300°C | C,S | C,S | C,S | Borosilicate | 2870 |

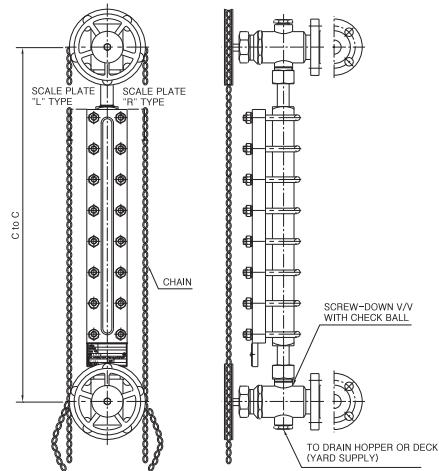
- The level gauges shall be classified into three types 11, 13, 14 according to the shape of the upper body.
- Please consult with our factory when other conditions are required.

OUTLINE / DIMENSIONS

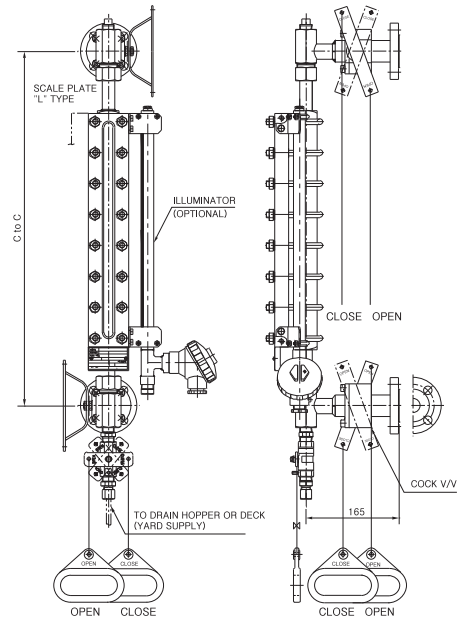
RLG-HP-22



RLG-HP-C22

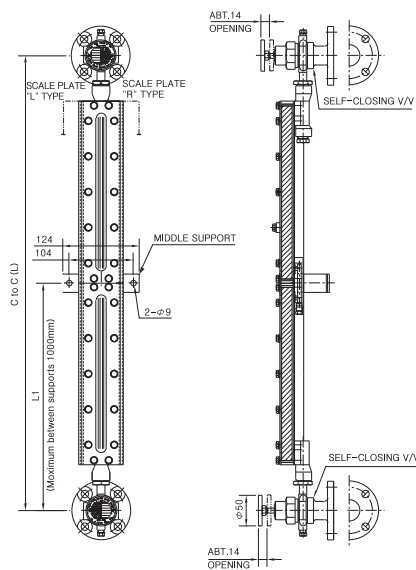


RLG-HP-CK22

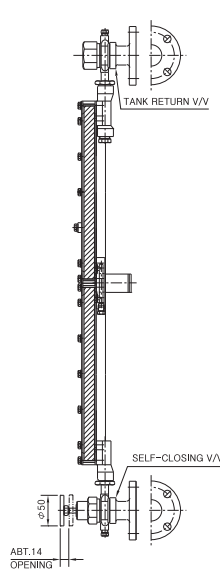


INSTALLATION OF THE FLAT TYPE GLASS LEVEL GAUGE

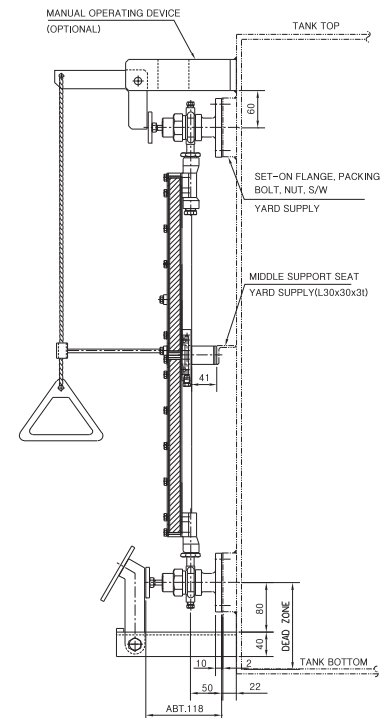
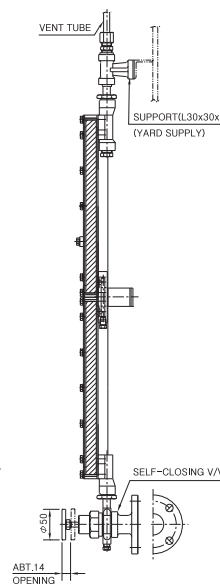
RLG-LP-11(T)



RLG-LP-13



RLG-LP-14



Level Gauges

Tubular Type Glass Level Gauge



· RLG-TB-24
A-TYPE

· RLG-TB-23
B-TYPE

· RLG-TB-22
C-TYPE



· RLG-TB-14
A-TYPE

· RLG-TB-13
B-TYPE

· RLG-TB-12
C-TYPE

HANLA MARINE GAUGE

Tubular type glass level gauges have been developed to comply with the requirement of the SOLAS 1981 1983, 1996, 1997, 1998 amendments.

LIMITATION

The tubular type glass level gauges, RLG-TB-12/13/14 can be used for following condition.

- Fuel oil tank of which the capacity is less than 1000 liter.
- In ship with class notation "Coasting Service" or whose gross tonnage is less than 500 tons.

APPLICATION

These type level gauges are used for water tanks except for fuel oil tanks.

Standard model and specification

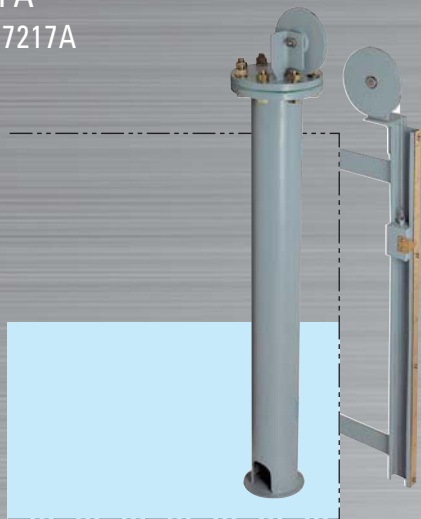
| JIS Code | Model | Upper body type | Valve type | | Connection size | Material | | | Protector type | Center to center | Range of pressure | Range of Temp. |
|------------|-----------|-----------------|-------------|--------------|----------------------|-----------|-------|-------|----------------|--------------------------|-----------------------|----------------|
| | | | Upper | Lower | | Protector | Glass | Valve | | | | |
| JIS F 7211 | RLG-TB-24 | A-type | Vent | Shut-off | 5K 10A | SS41 | HARD | BC6 | K-type | 325 ~ 3765 (mm) | 0-3kg/cm ² | 0-100°C |
| | RLG-TB-23 | B-type | Tank return | Shut-off | | | | | | | | |
| | RLG-TB-22 | C-type | Shut-off | Shut-off | | | | | | | | |
| JIS F 7212 | RLG-TB-14 | A-type | Vent | Self closing | 10K 10A (16K 10A) | SS41 | HARD | BC6 | K-type | 325 ~ 3765 (mm) | 0-3kg/cm ² | 0-100°C |
| | RLG-TB-13 | B-type | Tank return | Self closing | | | | | | | | |
| | RLG-TB-12 | C-type | Shut-off | Self closing | | | | | | | | |

- The level gauges shall be classified into three types A.B.C according to the shape of the upper body.
- Please consult with our factory when other conditions are required.
- The scale board is an optional item.

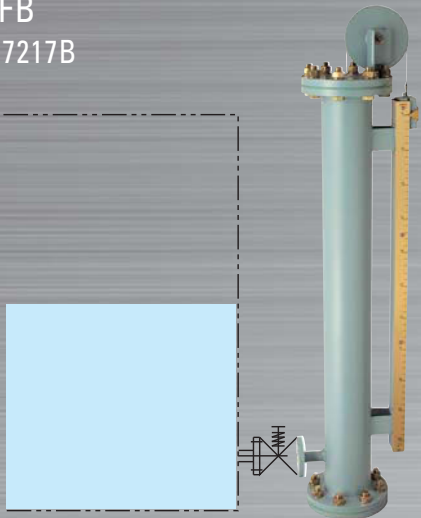
Marine Float Type Level Gauge



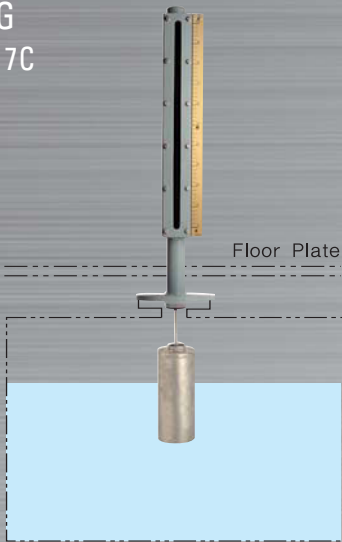
FLG-FA
JIS F 7217A



FLG-FB
JIS F 7217B



FLG-FCG
JIS F 7217C



GENERAL

These float level gauges specified in Japan's Industrial Standard are used for all kinds of tanks in ship.

FEATURE

- FLG-FCG type is a gas tight
- Easy maintenance
- Easy installation
- Easy reading
- Exact indication

Classification

| Model | Mounting type | Nominal dia. | Application |
|----------------------------|----------------------|--------------|---|
| FLG-FA-100 | Inner balance weight | 100 | Medium tanks |
| FLG-FA-150 | Inner balance weight | 150 | Large tanks |
| FLG-FB-100L FLG-FB-100R | Outer balance weight | 100 | Large and medium tanks |
| FLG-FCG-100 | Direct acting | 100 | Removable tanks |
| FLG-FCG-150 | Direct acting | 150 | Double bottom (Lubricating oil, water)tanks |
| FLG-FCG-200 | Direct acting | 200 | |

Standard model and construction material

| Model | Chamber | Float | Sheave | Spindle | Flange | Wire rope | Sight glass |
|---------|---------|--------|--------|---------|--------|-----------|-------------|
| FLG-FA | SGP | SUS304 | SS41 | N/A | SS41 | SUS304 | N/A |
| FLG-FB | SGP | SUS304 | SS41 | N/A | SS41 | SUS304 | N/A |
| FLG-FCG | SGP | SUS304 | N/A | SUS304 | SS41 | N/A | Hard |

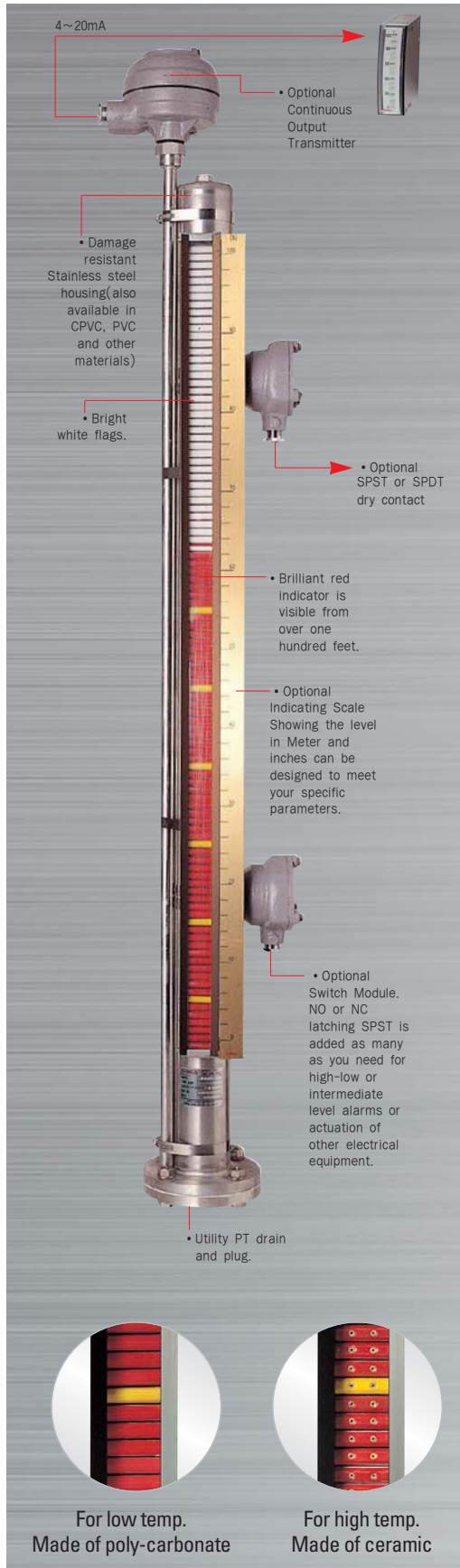
Operating condition

| Model | Working condition | | Conn. size | Chamber size | Max. Measuring range at Sp.Gr 0.92 |
|-------------|---------------------|-------|------------|--------------|------------------------------------|
| | Press. | Temp. | | | |
| FLG-FA-100 | Atm. | 80°C | 5K100A | 100A | - |
| FLG-FA-150 | Atm. | 80°C | 5K150A | 150A | - |
| FLG-FB-100 | Atm. | 80°C | 5K100A | 100A | - |
| FLG-FCG-100 | 3kg/cm ² | 80°C | 5K100A | 100A | 3000m/m |
| FLG-FCG-150 | 3kg/cm ² | 80°C | 5K150A | 150A | 6000m/m |
| FLG-FCG-200 | 3kg/cm ² | 80°C | 5K200A | 200A | 10000m/m |

- The scale board is an optional item.
- The JIS F 7216 angle valve for FLG-FB is an optional item.

Level Gauges

Magnetic Float Type Level Gauge



GENERAL

Hanla magnetic float type level gauges have been developed to comply with the requirements of the SOLAS 1981, 1983, 1996, 1997, 1998 amendments. The gauges construction is accepted by marine classification authorities throughout the world.

HIGH VISIBILITY

Brilliantly colored flags facilitate to read even at great distances. The indicator is isolated from the measured media; therefore suitable indicators can be used where sight glasses are not even a consideration.

ENVIRONMENTAL SAFETY

Monitored liquid is contained inside a pressure tight housing.

EFFICIENCY

Continuous level indication without external power.

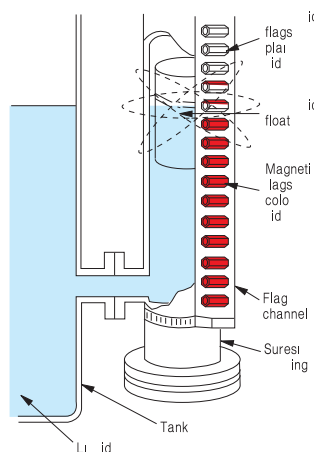
ELECTRONIC CONTROL

Attached optional point level switches and/or continuous level transmitters extend the capabilities beyond those of a simple sight glass replacement.

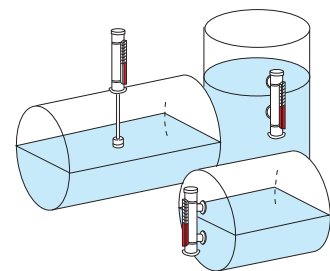
WIDELY USED TO MEASURE

H.F.O, D.O, L.O, F.W, petrochemistry chemical instead of using the gauge glasses.

Operating Principle



As liquid level rises, a magnet-equipped float within the unit inverts the magnetic flags in the external indicator to "color-side-out." The flags are remained magnetically by interlocking in a column until again inverted to "plain-side-out" by the float as liquid level falls. Liquid level is indicated by the junction of the "color" and plain portions of the column.



Model number code system

FLG - [] - [] - [] - []

Symbol of Magnetic Float Type Level Gauge

- Level gauge mounting type
 - MS: Side-side mounting
 - MT: Top mounting

No. of level switch

- 1LS: 1-Level switch
- 2LS: 2-Level switches
- 3LS: 3-Level switches
- 4LS: 4-Level switches

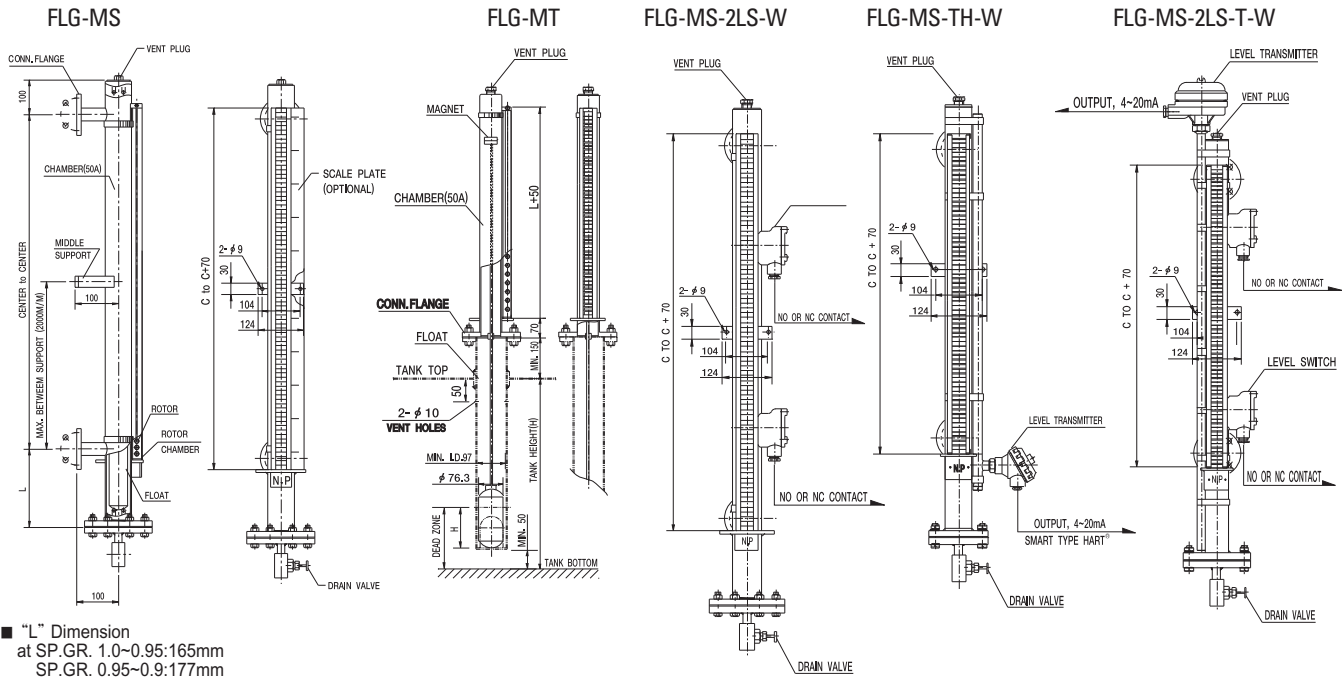
Enclosure

- W: Weather proof(IP56)
- E: Explosion proof(Exd IIC T6)

Output of Level Transmitter

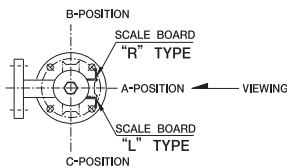
- T: 4 ~ 20mA, 2wire
- TH: 4 ~ 20mA, 2wire, smart type HART®
- TR: 1Kohm

OUTLINE / DIMENSIONS

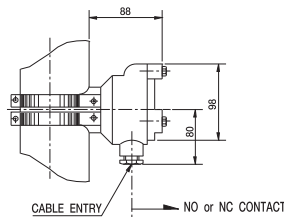


- "L" Dimension
at SP.GR. 1.0~0.95:165mm
SP.GR. 0.95~0.9:177mm
SP.GR. 0.9~0.85:193mm
SP.GR. 0.85~0.8:213mm
SP.GR. 0.8~0.75:240mm

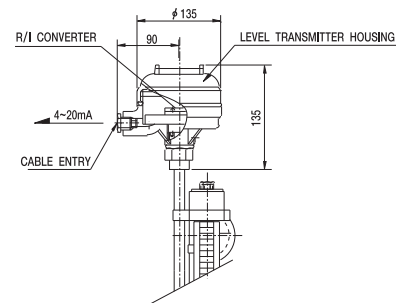
INDICATOR MOUNTING POSITION



LEVEL SWITCH OUTLINE



LEVEL TRANSMITTER OUTLINE



Standard model and specification

| Symbol | Mounting method | Contact size | Measuring range | Working conditions | | Specific gravity | Accuracy | Materials | | | |
|------------|-----------------|--------------------|-----------------|-----------------------|-------|------------------|----------|-----------|----------|----------------|---------------|
| | | | | Press. | Temp. | | | Chamber | Float | Rotor | Rotor chamber |
| FLG-MS-□-□ | Side-Side | JIS, DIN, ANSI 25A | Max.5000mm | 5kg/cm ² | 200°C | Over 0.8 | +/-10m/m | SUS304 | SUS304 | Poly-carbonate | Aluminum |
| | | JIS, DIN, ANSI 25A | Max.5000mm | 120kg/cm ² | 450°C | Over 0.69 | +/-10m/m | SUS304 | Titanium | Ceramic | Aluminum |
| FLG-MT-□-□ | Top | JIS 5K100A or 125A | Max.2500mm | 5kg/cm ² | 200°C | Over 0.8 | +/-10m/m | SUS304 | SUS304 | Poly-carbonate | Aluminum |

■ Please consult with our factory when other conditions are required.

Specification of level switch and level transmitter assembly option

| Description | Module | Output | Contact rating | Contact form | Power source | Accuracy/resolution | Material | | No. of point | Measuring range | Max. working temp. | Enclosure |
|-------------------|----------------------------|----------------------------------|----------------|--------------|--------------|---------------------|----------|-------------|--------------|-----------------|--------------------|---------------|
| | | | | | | | Housing | Transmitter | | | | |
| Level switch | Reed switch | Dry contact | 125VAC, 0.5A | SPDT, SPST | N/A | ±3m/m | AC | N/A | Max.6 | N/A | 120°C | Weather proof |
| Level transmitter | R/I converter | 4~20mA Two-wire | N/A | N/A | DC 24V | 10m/m | AC | SUS304 | N/A | 400m/m~5000m/m | 120°C | Weather proof |
| | Smart type HART® converter | 4~20mA Two-wire Smart type HART® | N/A | N/A | DC 24V | 10m/m | | | | | | |

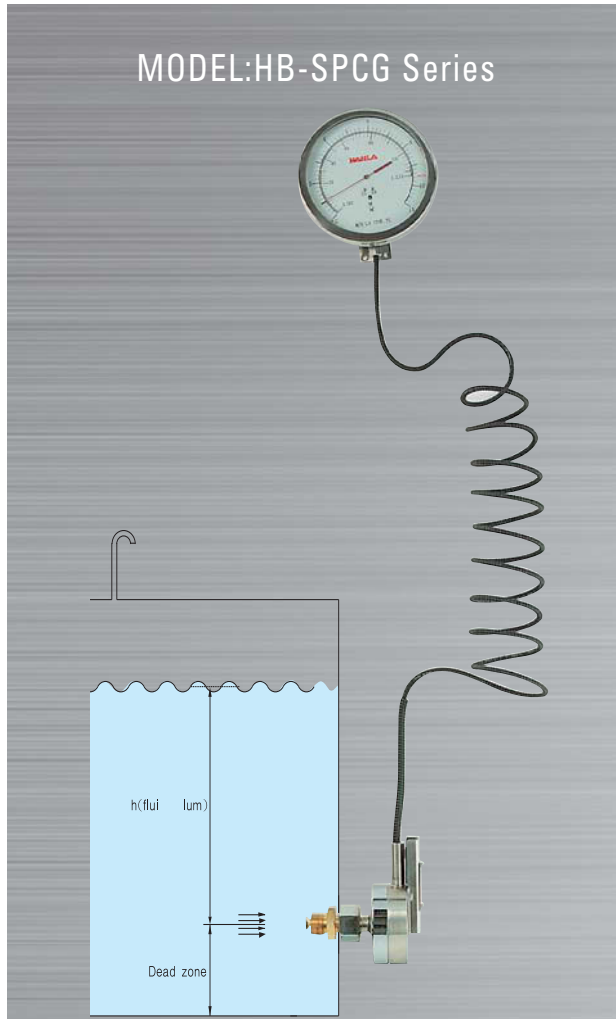
■ These switches & transmitter modules can be intrinsically safe by using the I.S barrier.

■ Please consult with our factory when other conditions are required.

■ The scale board is an optional item.

Level Gauges

Self-Powered Content Gauge



OPERATING PRINCIPLE

Self-powered content gauge unit consists of transmitter chamber, capillary tube and indication gauge. The weight of the fluid column in the tank will be transformed into gas pressure in the transmitter chamber. The gas pressure is transferred to the indicating gauge through the capillary tube. That means, the weight of the fluid column in the tank is directly proportional to the indication. In case of over or under-pressure in the tank, it is impossible to compensate the value of gauging.

FEATURES

- No floats.
- Completely automatic.
- Local indication.
- No requires external power.

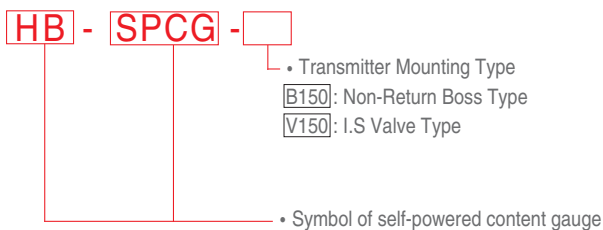
APPLICATION

Self-powered content gauge is widely used for Diesel oil, Lub. oil, Heavy fuel oil, Solvents gas oil, Fresh water, and all no corrosive liquid.

SPECIFICATIONS

- Range(Tank depths):From 1 to 50 meters
- Over load : 100% above maximum range
- Operating temperature
 - Indication gauge : -40 to +70°C
 - Transmitter chamber : -40 to +120°C
- Indication gauge
 - Mounting : Wall mounting
 - Diameters : ϕ 150mm
 - Gauge body mat' l : SUS 304
 - Graduation : Height or Volume/Dual scale available
- Capillary tube
 - Material : SUS 304
 - Available other length on request

Model number code system

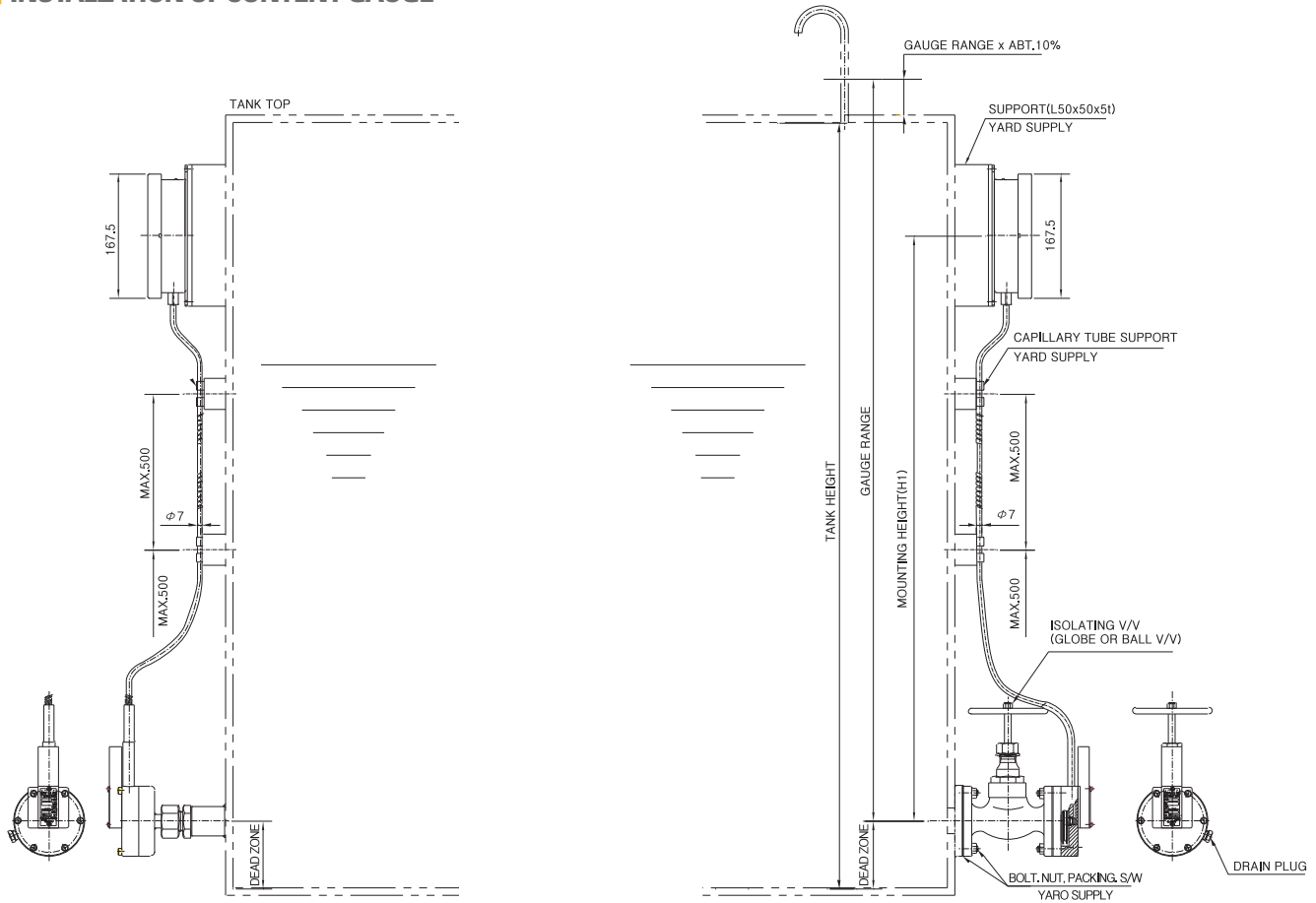


Standard model and specification

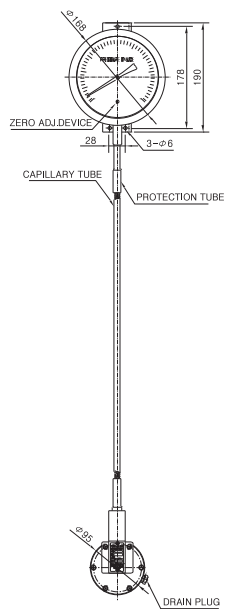
| Model | Application | Connection Size | | Accuracy | Capillary tube Length | Material | | |
|--------------|----------------|-----------------|----------------|---------------------------|-----------------------|------------------|----------------|-----------|
| | | Low viscosity | high viscosity | | | Indication Gauge | Capillary Tube | Diaphragm |
| HB-SPCG-B150 | General Liquid | PF3/4" | N/A | $\pm 1.0\%$ of Full Range | STD. 3M/MAX.16M | SUS304 | SUS304 | SUS316 |
| HB-SPCG-V150 | General Liquid | 5K, 10K25A | 5K, 10K25A | $\pm 1.0\%$ of Full Range | STD. 3M/MAX.16M | SUS304 | SUS304 | SUS316 |

Please consult with factory when other condition are required

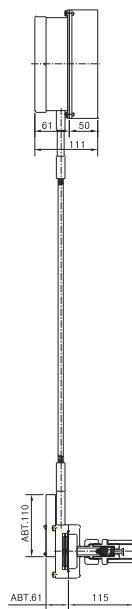
INSTALLATION OF CONTENT GAUGE



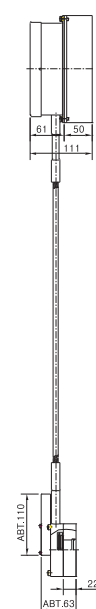
OUTLINE / DIMENSIONS



HB-SPCG-B150

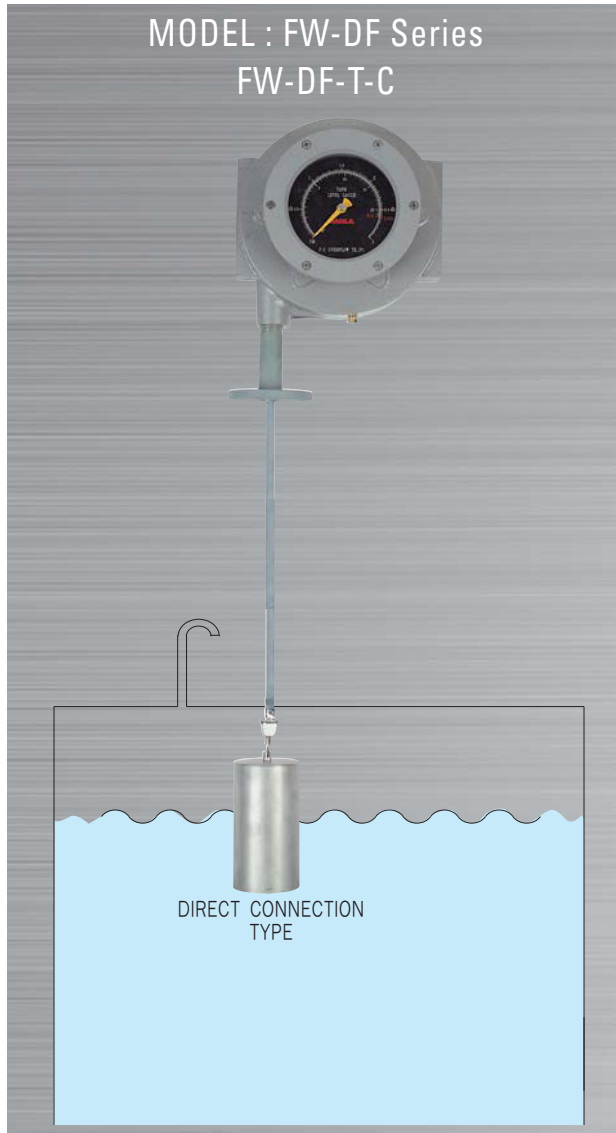


HB-SPCG-V150



Level Gauges

Dial Type Float Level Gauge



APPLICATION

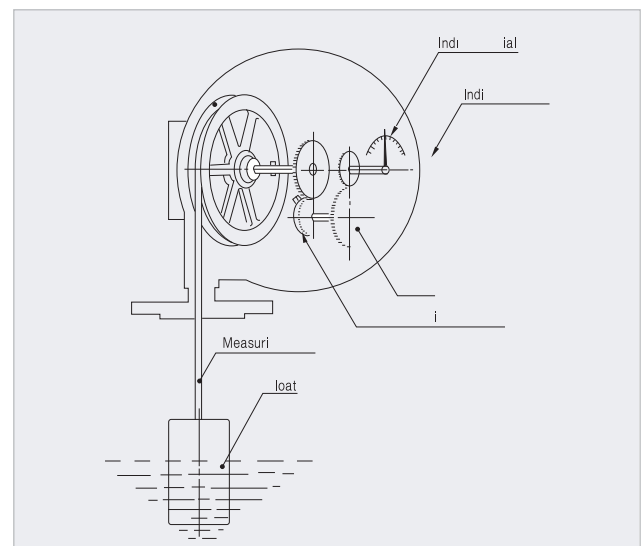
Dial type float level gauges are widely used for H.F.O, D.O, L.O tanks and water tanks, while magnetic coupling type dial float level gauge is especially designed to be used for liquid that can generate poisonous, corrosive or inflammable gases and odor. In addition, the system is excellent in that it is non-corrosive, safe and is facilitated to maintain.

Standard model and specification

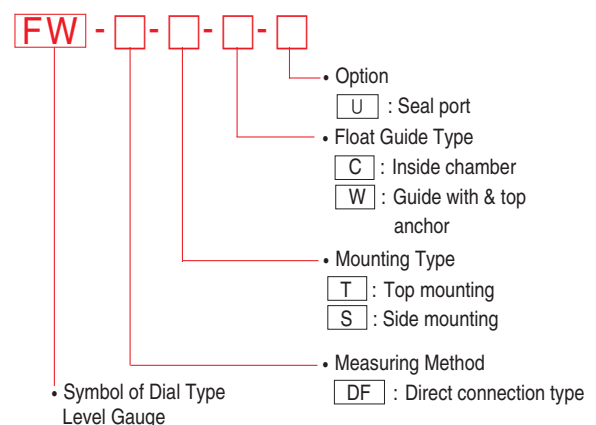
| Type | Model | Mounting type | Measuring range(m) | Indication system | Specific gravity | Accuracy (mm) | Working condition | | Material | | | |
|------------------------|-----------|-----------------------|--------------------|-------------------|------------------|---------------|-------------------|-----------------------|----------|--------|--------|------------|
| | | | | | | | Temp. | Press. | G/G Body | Tape | Float | Guide pipe |
| Direct connection type | FW-DF-T-C | TOP(With chamber) | 0 ~ 6 | One-Point | 0.7~1.5 | ± 15 | 150°C | 0.2kg/cm ² | AC | SUS304 | SUS304 | N/A |
| | FW-DF-T | TOP(With guide wire) | 0 ~ 6 | One-Point | 0.7~1.5 | ± 15 | 150°C | 0.2kg/cm ² | AC | SUS304 | SUS304 | N/A |
| | FW-DF-S | Side(With guide wire) | 0 ~ 6 | One-Point | 0.7~1.5 | ± 15 | 150°C | 0.2kg/cm ² | AC | SUS304 | SUS304 | N/A |
| | FW-DF-S-C | Side(With chamber) | 0 ~ 6 | One-Point | 0.7~1.5 | ± 15 | 150°C | 0.2kg/cm ² | AC | SUS304 | SUS304 | N/A |

OPERATING PRINCIPLE

Dial type float level gauges are composed of float, measuring tape and indicator unit. The measuring tape connected to the float on a liquid level is directly led into the indicator body and wound on tape drum. The rotation of the tape drum is transmitted through gear trains to the scale dial indicator where pointer is turned on dial scale to indicate the level. The tape drum is connected with constant drum which serves to wind excessive length of the tape caused by level variation, thus the tape tension is always kept constant.

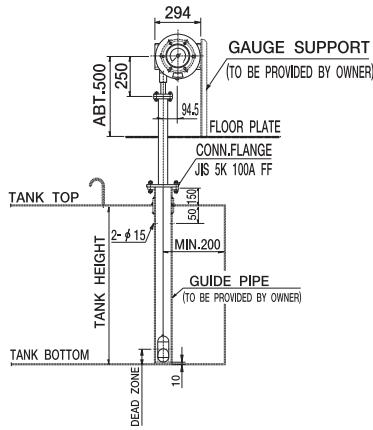


Model number code system

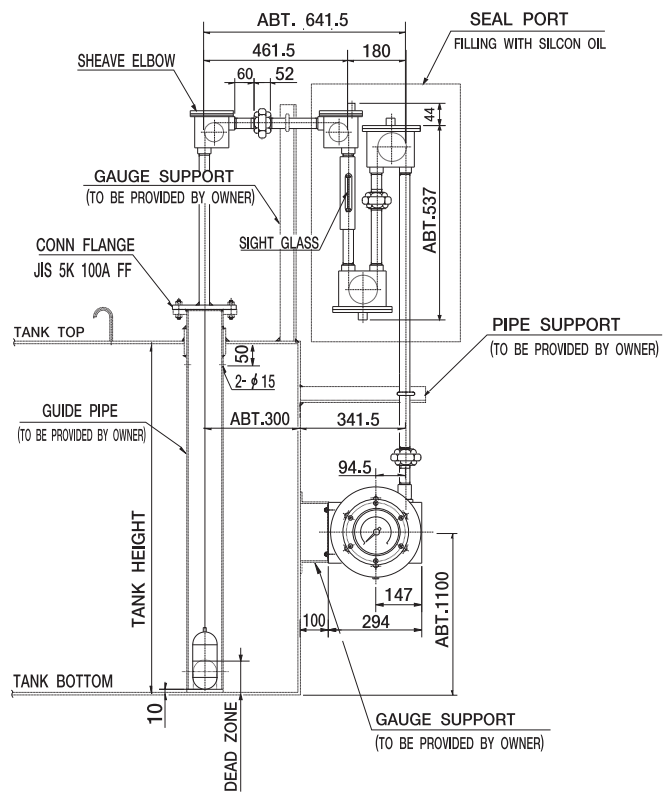


OUTLINE / DIMENSIONS

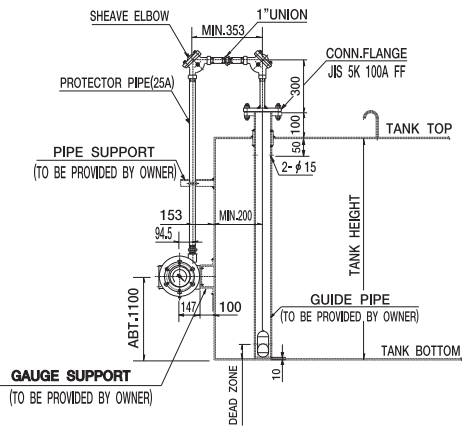
TOP MOUNTING
(FW-DF-T-C)



SIDE MOUNTING WITH SEAL PORT
(FW-DF-S-C-U)

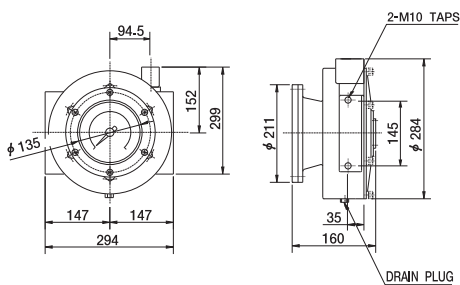


SIDE MOUNTING
(FW-DF-S-C)



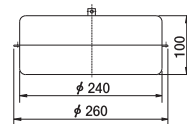
DETAILED DIMENSIONS FOR INDICATOR BODY

FW-DF SERIES

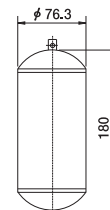


DETAILED DIMENSIONS FOR FLOAT

FLOAT FOR FW-DF-S-W

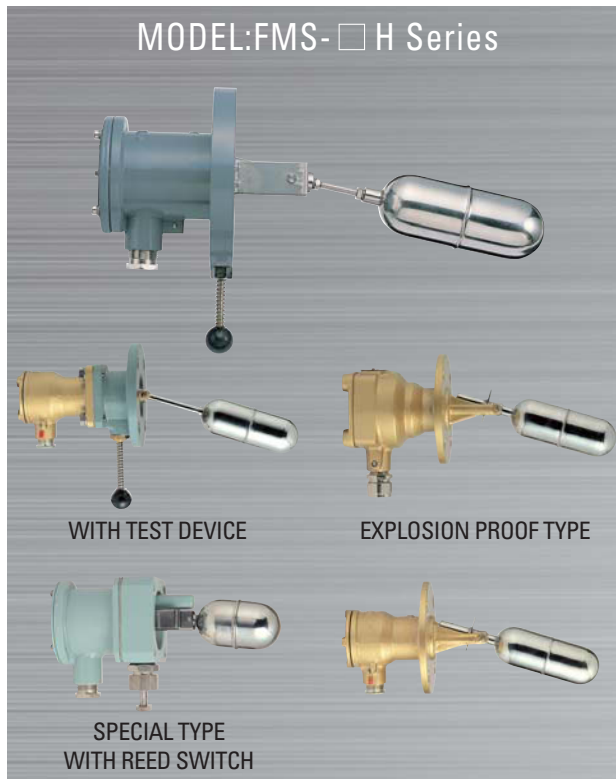


FLOAT FOR FW-DF-□-C SERIES



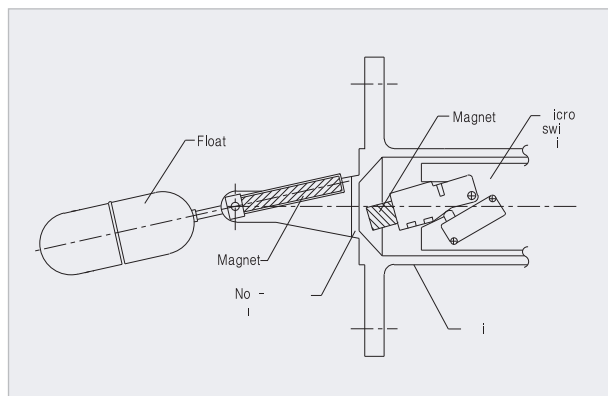
Level Switches

Horizontal Mounted Float Switch



OPERATING PRINCIPLE

Magnetic float type level switches detect the liquid level and send out contact signals of micro switch by ON-OFF action. A magnetic action between two magnet fully separated by each partition wall is utilized. One is built in another end of the float and the other is attached on the switch unit in the housing.



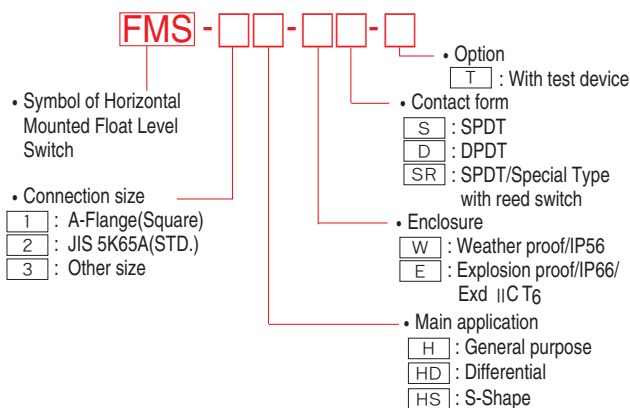
FEATURES

- Fully sealed
- The switch unit is completely separated from the parts inserted within the tank by non-magnetic diaphragm
- Reliable
- Designed compact, it has a large contact rating of 250VAC, 5Amp. and is subject to no troubles.
- Easy maintenance
- Simply designed switch unit for easy maintenance.
- Durable float
- Argon Gas welded stainless steel floats are durable for pressure and temperature.

APPLICATION

Magnetic float type level switches are widely used for Heavy fuel oil tanks, Settling tanks, Sludge tanks, Sewage tanks, Fresh water tanks, Lub. oil tanks, D.O tanks and others.

Model number code system



Standard model and specification

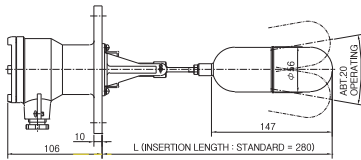
| Model | Application | Max. pressure (kg/cm ²) | Max. temperature (°C) | Switch contact rating | Min. Sp.Gr | Cable entry | Material | | |
|------------|---------------------|-------------------------------------|-----------------------|-----------------------|------------|--------------|----------|--------|-------------|
| | | | | | | | Float | Flange | Switch body |
| FMS-□H-W□ | General liquid | 10 | 180 | 250VAC,5A | 0.65 | 15b (PF1/2") | SUS304 | ALBC 2 | ALBC 2 |
| FMS-□HD-W□ | Widely Differential | 10 | 180 | 250VAC,5A | 0.8 | 15b (PF1/2") | SUS304 | ALBC 2 | ALBC 2 |
| FMS-□HS-W□ | Lowest sensing | 10 | 180 | 250VAC,5A | 0.75 | 15b (PF1/2") | SUS304 | ALBC 2 | ALBC 2 |
| FMS-□□H-E□ | Hazardous area | 10 | 180 | 250VAC,5A | 0.65 | NPT1/2" | SUS304 | ALBC 2 | ALBC 2 |
| FMS-3H-WSR | General liquid | 10 | 120 | 250VAC,0.5A | 0.65 | 15b (PF1/2") | SUS304 | SS41 | SS41 |

■ Optional informations

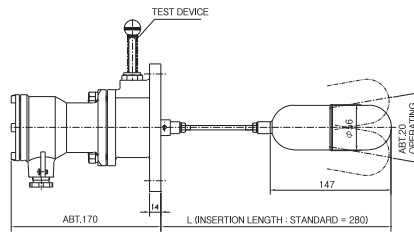
1. Material(SUS 304, SUS316) for wet parts including float and flange is also available on request.
2. Cable entry of 3/4" (JIS F 20 a, b, or c) is also available on request.
3. Flanges of larger nominal diameter than the standard ones are also available on request.
4. Non-explosion proof models can be used as intrinsically safe type joined with I.S barrier.

OUTLINE / DIMENSIONS

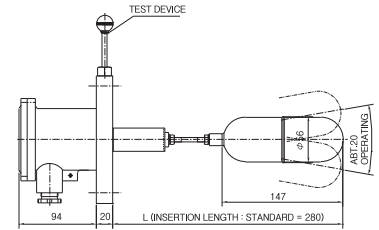
FMS-□H-WS



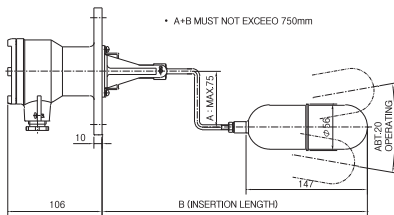
FMS-□H-WS-T



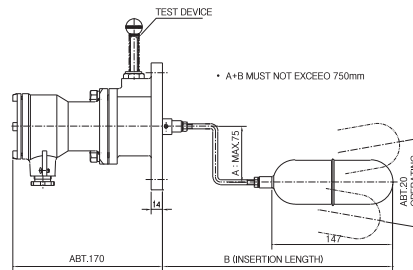
FMS-□H-WS-T “NEW TYPE”



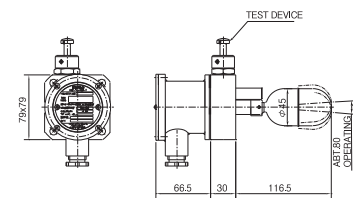
FMS-□HS-WS



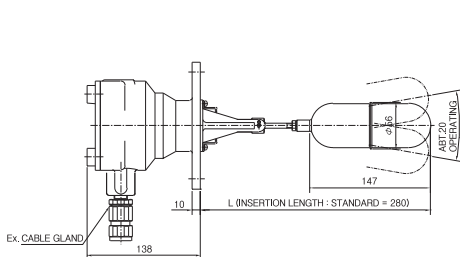
FMS-□HS-WS-T



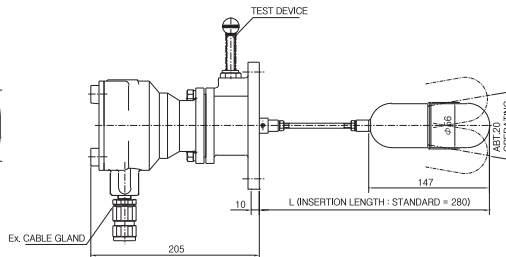
FMS-1HS-WSR-T
(SPECIAL TYPE WITH REED SWITCH)



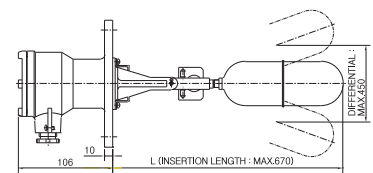
FMS-□H-ES, FMS-□H-ED
EXPLOSION PROOF TYPE : IP66/Exd IIG T6



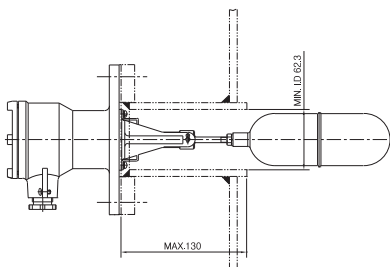
FMS-□H-ES-T, FMS-□H-ED-T
EXPLOSION PROOF TYPE : IP66/Exd IIG T6



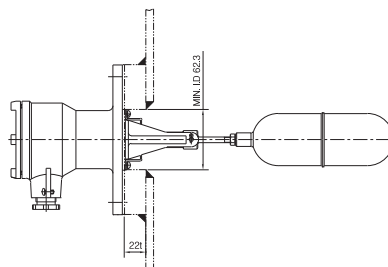
FMS-□HD-WS



□ SLIP-ON FLANGE MOUNTING

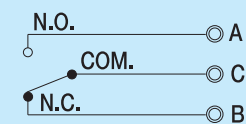


□ SET-ON FLANGE MOUNTING



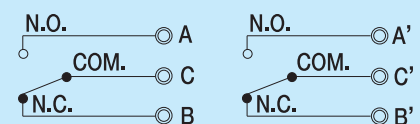
CONTACT FORM

TERMINAL & CONTACTS FOR SPDT



C-A MAKES ON RISING LEVEL
C-B MAKES ON FALLING LEVEL

TERMINAL & CONTACTS FOR DPDT



C-A, C'-A' MAKES ON RISING LEVEL
C-B, C'-B' MAKES ON FALLING LEVEL

CAUTION

- 1) The level switch must be fitted in horizontal position.
- 2) The cable entry points of the switch body should be fitted to downwards to get satisfactory function.

Level Switches

Vertical Mounted Float Switch

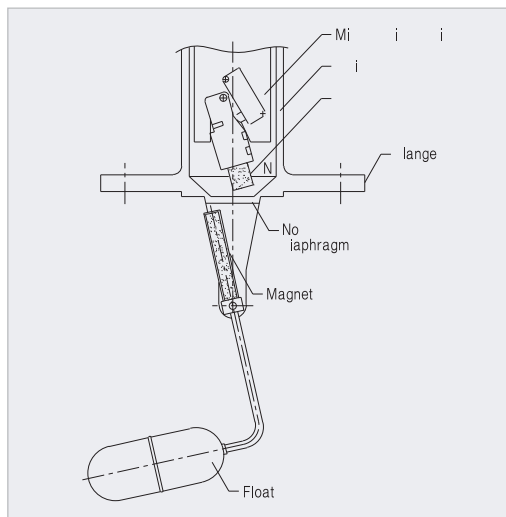


EXPLOSION PROOF TYPE

WITH TEST PEVICE

OPERATING PRINCIPLE

Magnetic float type level switches detect the liquid levels and send out contact signals of micro switches by ON-OFF action. A magnetic action between two magnets fully separated by each partition wall is utilized. One is built in the end of the float and the other is attached on the switch unit in the housing.



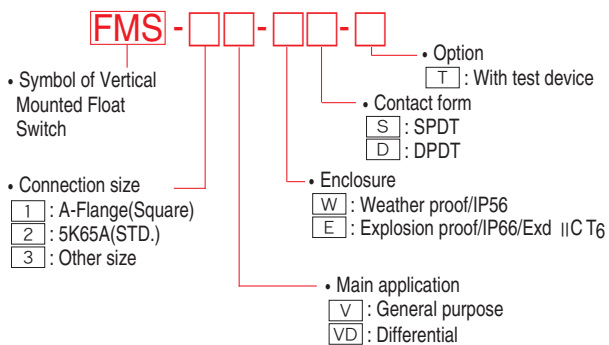
FEATURES

- Fully sealed
- The switch unit is completely separated from the parts inserted within the tank by non-magnetic diaphragm.
- Reliable
- Designed compact, it has a large contact rating of 250VAC, 5Amp, and is subject to no troubles.
- Easy maintenance
- Simply designed switch unit for easy maintenance.
- Durable float
- Argon Gas stainless steel floats are durable for pressure and temperature.

APPLICATION

Magnetic float type level switches are widely used for Heavy fuel oil tanks, Settling tanks, Sludge tanks, Sewage tanks, Fresh water tanks, Lub. oil tanks, D.O tanks, and others.

Model number code system



Standard model and specification

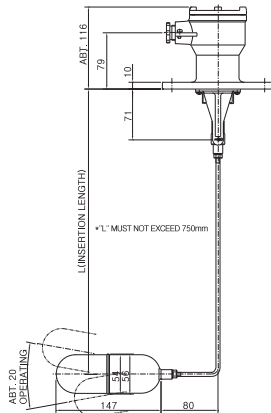
| Model | Application | Max. pressure (kg/cm ²) | Max. temperature (°C) | Switch contact rating | Min. Sp.Gr | Cable entry | Material | | |
|------------|---------------------|-------------------------------------|-----------------------|-----------------------|------------|--------------|----------|--------|-------------|
| | | | | | | | Float | Flange | Switch body |
| FMS-□V-W□ | General liquid | 10 | 180 | 250VAC,5A | 0.78 | 15b (PF1/2") | SUS304 | ALBC 2 | ALBC 2 |
| FMS-□VD-W□ | Widely Differential | 10 | 180 | 250VAC,5A | 0.8 | 15b (PF1/2") | SUS304 | ALBC 2 | ALBC 2 |
| FMS-□□-E□ | Hazardous area | 10 | 180 | 250VAC,5A | 0.78 | NPT1/2" | SUS304 | ALBC 2 | ALBC 2 |

Optional informations

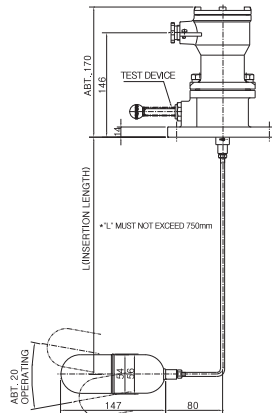
1. Material(SUS304, SUS316)for wet parts including float and flange is also available on request.
2. Cable entry of 3/4" (JIS F 20 a, b, or c)is also available on request.
3. Flanges of larger nominal diameter than the standard ones are also available on request.
4. Non-explosion proof models can be used as intrinsically safe type joined with I.S barrier.

OUTLINE / DIMENSIONS

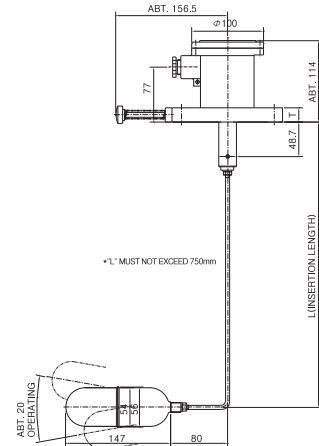
FMS-□V-WS



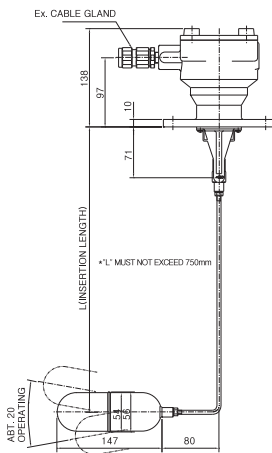
FMS-□V-WS-T



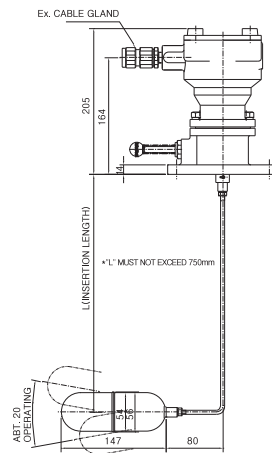
FMS-□V-WS-T “NEW TYPE”



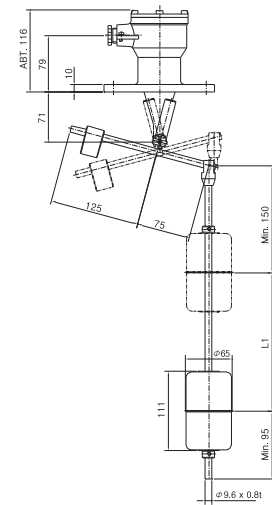
FMS-□V-ES, FMS-□V-ED
EXPLOSION PROOF TYPE : IP66/Exd IIC T6



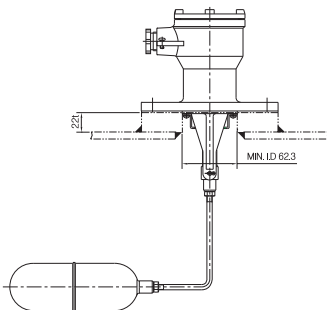
FMS-□V-ES-T, FMS-□V-ED-T
EXPLOSION PROOF TYPE : IP66/Exd IIC T6



FMS-□VD-WS

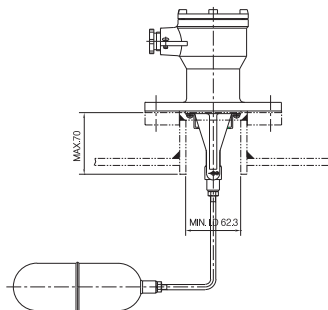


□ SLIP-ON FLANGE MOUNTING



SIZE : JIS 5K 65A FF
MIN. INSERTION LENGTH : 150 mm

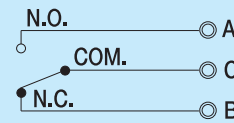
□ SET-ON FLANGE MOUNTING



SIZE : JIS 5K 65A FF
MIN. INSERTION LENGTH : 200 mm

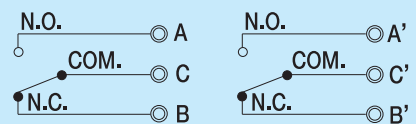
CONTACT FORM

TERMINAL & CONTACTS FOR SPDT



C-A MAKES ON RISING LEVEL
C-B MAKES ON FALLING LEVEL

TERMINAL & CONTACTS FOR DPDT



C-A, C'-A' MAKES ON RISING LEVEL
C-B, C'-B' MAKES ON FALLING LEVEL

CAUTION

1) The level switch must be fitted in vertical position.

Level Switches

Displacement Type Level Switch



FEATURES

- Wide differential
- Fully sealed
- Large contact rating of 250VAC, 15Amp.
- Easy maintenance
- Durable float
- Unaffected by liquid agitation

APPLICATION

Displacement type level switches are widely used for Coal tar fuel tanks, Heavy fuel oil tanks, Settling tanks, Sludge tanks, Sewage tanks, Fresh water tanks, Lub. oil tanks, D.O tanks, Bilge well and others.

OPERATING PRINCIPLE

This level switch consists of compression spring, displacer and switch unit in which micro switch and magnetic are assembled.

The operation is based upon simple buoyancy whereby a spring is loaded with weighted displacer which are heavier than the liquid.

Immersion of the displacers in the liquid results in buoyancy force change, which moves the spring upward. Simultaneously, the spring is retracted or extended and the attraction sleeve moves upward into the field of external magnet in the switch unit.

The contact of micro switch is changed by magnetic force as the attraction sleeve is in the field of magnet point force. This principle allows adjustment of the switching point by moving the displacer along the guide pipe.

Model number code system

DMS - □ - □ - □ - □

• Symbol of Displacement Type Level Switch

• Connection size

- 5 : JIS 5K 80A FF
- 6 : JIS 10K 80A FF
- 7 : JIS 5K 100A FF
- 8 : JIS 10K 100A FF
- 9 : JIS 5K 25A FF for SS Type (side-side mounting type)

• Main application

- 01A : High or low alarm
- 01C : High or low control
- 02A : High and low alarm
- 02C : High and low control
- 03AC : High alarm / Mid. and low control
- 03CA : High and Mid. control/low alarm

• Option

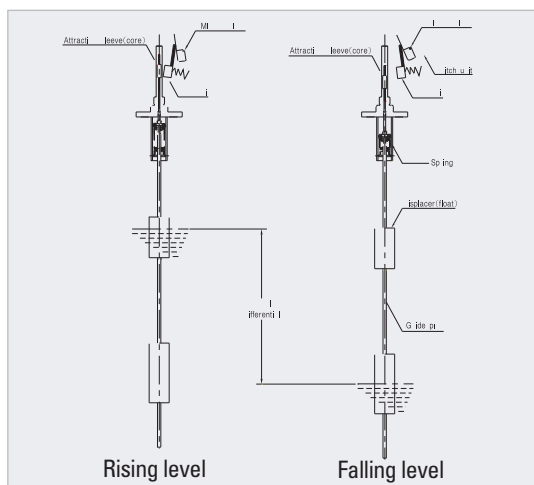
T : With test device

• Enclosure

- W : Weather proof(IP56)
- E : Explosion proof/IP56/Exd II C T₀

• Internal Construction

- G : Without float chamber
- C : With float chamber
- R : Guide wire
- SS : With external float chamber (side-side mounting type)



Standard model and specification

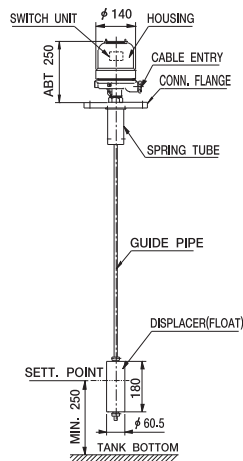
| Model | Main application | Connection | Max. setting range(mm) | Setting accuracy (mm) | Min. Sp.Gr | Max. press. (kg/cm ²) | Max. temp. (°C) | Switch contact rating | Cable entry | Material | | | |
|-----------|-----------------------------------|-----------------|------------------------|-----------------------|------------|-----------------------------------|-----------------|-----------------------|-------------|----------|--------|--------|---------------|
| | | | | | | | | | | Housing | Flange | Float | Float chamber |
| DMS-□01A | High or Low alarm | Top flange type | 220 ~ 5000 | ±8 | 0.85 | 10 | 180 | 250VAC, 15A | 15b | AC | SS41 | SUS304 | SUS 304 |
| DMS-□01C | High or Low control | | 220 ~ 4500 | ±8 | 0.85 | 10 | 180 | 250VAC, 15A | 15b | AC | SS41 | SUS304 | SUS 304 |
| DMS-□02A | High and Low alarm | Top flange type | 220 ~ 4500 | ±8 | 0.85 | 10 | 180 | 250VAC, 15A | 15b | AC | SS41 | SUS304 | SUS 304 |
| DMS-□02C | High and Low control | | 220 ~ 4000 | ±8 | 0.85 | 10 | 180 | 250VAC, 15A | 15b | AC | SS41 | SUS304 | SUS 304 |
| DMS-□03AC | High alarm/ Mid. and low control | Top flange type | 220 ~ 4000 | ±8 | 0.85 | 10 | 180 | 250VAC, 15A | 15b | AC | SS41 | SUS304 | SUS 304 |
| DMS-□03CA | High and Mid. control / Low alarm | | | | | | | | | | | | |

■ Optional informations

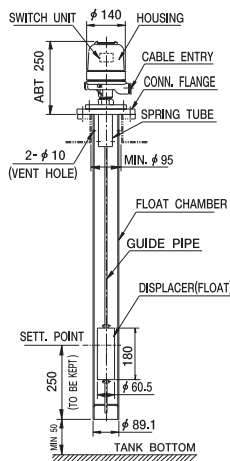
1. Material (SUS304, SUS316) for wet parts including mounting flange, float chamber is also available on request.
2. Cable entry of 3/4" (JIS 20 a, b, or c) is also available on request.
3. Non-explosion proof models can be used as intrinsically safe type jointed with I.S barrier.
4. Please consult with our factory when the other press. / temp. is required.

OUTLINE / DIMENSIONS

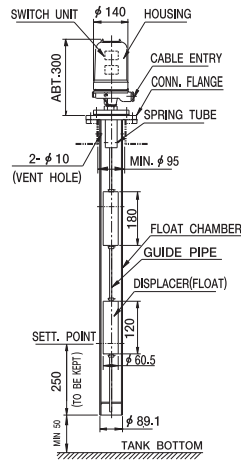
DMS-□01A/01C-GW SERIES



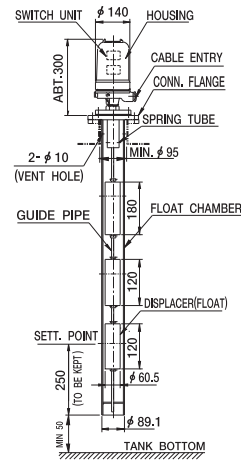
DMS-□01A/01C-CW SERIES



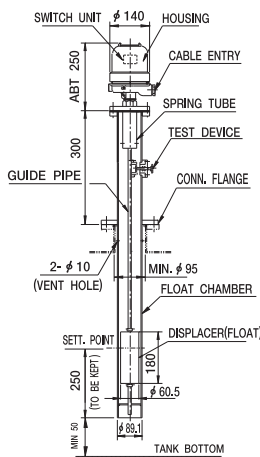
DMS-□02A/02C-CW SERIES



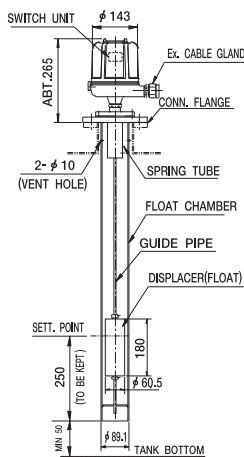
DMS-□03AC-CW SERIES



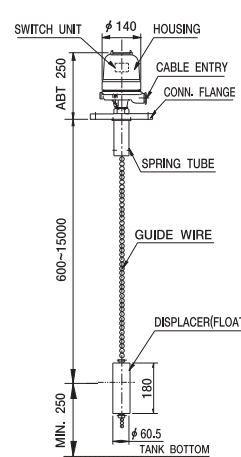
DMS-□01A/01C-CW-T SERIES



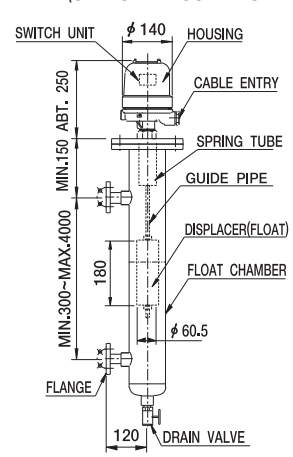
DMS-□01A/01C-CE SERIES
 Explosion Proof Type:IP56/Exd II C T6



DMS-□01A/01C-RW SERIES



DMS-901A/901C-SSW SERIES
 (SIDE-SIDE MOUNTING TYPE)



DIFFERENTIAL RANGE AND CONTACT FORM

| NUMBER OF SWITCH UNIT | ONE(1) | TWO(2) | | |
|-----------------------|--------------|---|---|---|
| MAIN MODEL | DMS-□01A/01C | DMS-□02A/02C | DMS-□03AC | DMS-□03CA |
| DIFFERENTIAL(mm) * 1 | 30 TO 50 | UPPER:30 TO 50 LOWER:30 TO 50 | UPPER:30 TO 50 LOWER:200 TO 4500 | UPPER:200 TO 4500 LOWER:30 TO 50 |
| CONTACT OPERATION | | | | |
| CONTACT CONFIGURATION | SPDT | N.C ○ B COM ○ C N.O ○ A | N.C ○ HB COM ○ HC N.O ○ HA | N.C ○ LB COM ○ LC N.O ○ LA |
| | DPDT | N.C ○ B COM ○ C N.O ○ A N.C ○ B' COM ○ C' N.O ○ A' | N.C ○ HB COM ○ HC N.O ○ HA N.C ○ HB' COM ○ HC' N.O ○ HA' | N.C ○ LB COM ○ LC N.O ○ LA N.C ○ LB' COM ○ LC' N.O ○ LA' |

* 1(Differential) is available for the range from the actuation level of the switch to the reset level

Level Switches

Float Operated Type Level Switch



ELECTRICAL SWITCH MECHANISM

- Dry contact switches are recommended for critical environmental conditions.
- Standard switch mechanisms are offered in rugged stainless steel construction.
- Dry contact mechanisms are supplied in both SPDT & DPDT. Generally a maximum of two mechanisms per single control are available as standard.

FEATURES

- High load carrying capacity
- Environmental safety
- Vibration resistance

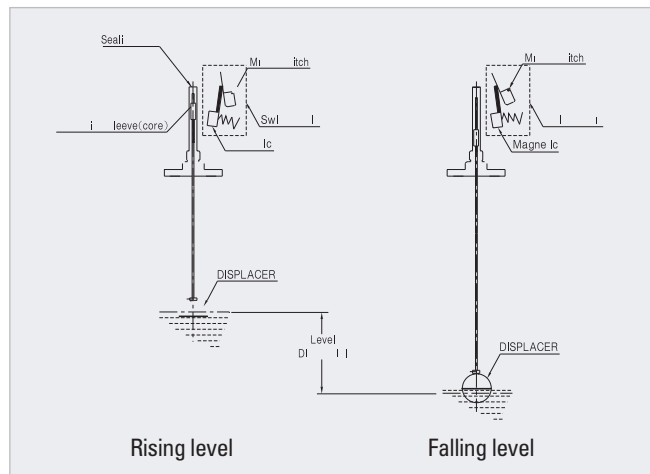
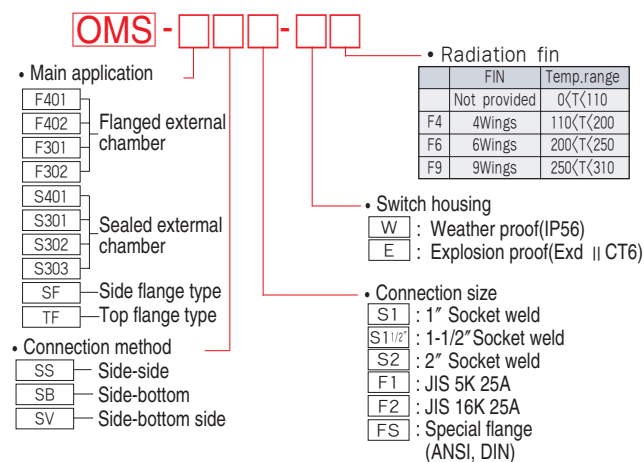
OPERATING PRINCIPLE

This level switch consists of displacer, switch unit in which micro switch and magnetic are assembled. The operation is based upon simple buoyancy.

Immersion of the displacer in the liquid results in buoyancy force change, which moves the attraction sleeve upward or downward. Simultaneously, the contact of micro switch is changed by magnetic force as the attraction sleeve is in the field of magnet force.

This principle allows adjustment of the switching point up to 15mm by moving the switch unit position.

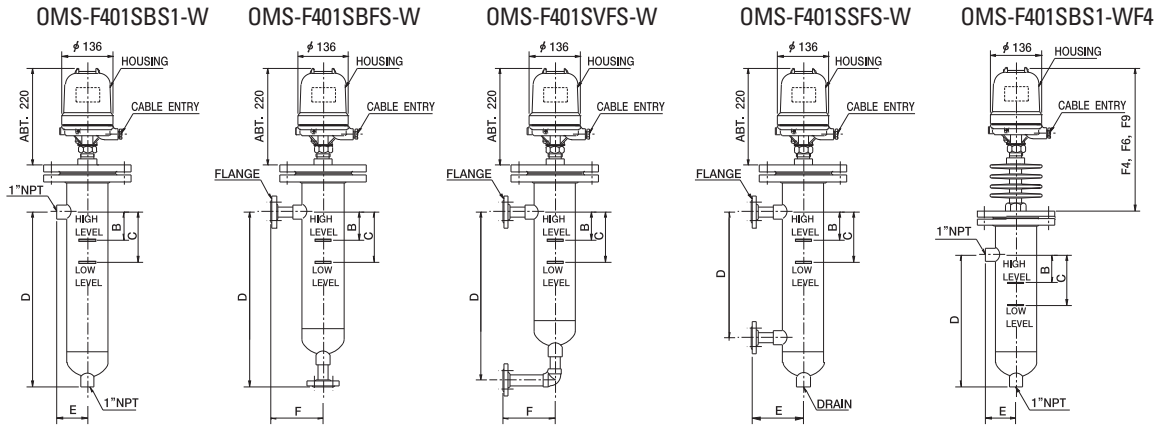
Model number code system



Standard model and specification

| Model | Chamber material and pipe size | Max. No. of switch mechan. | Control press. rating | | | | Minimum liquid Sp.Gr | Switch contact rating | Switch contact type |
|----------|--------------------------------|----------------------------|-----------------------|--------|-------|-------------|----------------------|-----------------------|---------------------|
| | | | Psig | | Bars | | | | |
| | | | 100° F | 750° F | 38° C | 400° C Max. | | | |
| OMS-F401 | Carbon steel (4") | 2 | 285 | 95 | 20 | 7 | 0.57 | 120VAC, 15A | SPDT |
| OMS-F402 | Carbon steel (4") | 2 | 600 | 450 | 41 | 31 | 0.65 | 120VAC, 15A | SPDT |
| OMS-F301 | Carbon steel (3") | 1 | 285 | 95 | 20 | 7 | 0.67 | 120VAC, 15A | SPDT |
| OMS-F302 | Carbon steel (3") | 1 | 350 | 260 | 24 | 18 | 0.67 | 120VAC, 15A | SPDT |
| OMS-S401 | Carbon steel (4") | 2 | 600 | 450 | 41 | 31 | 0.65 | 120VAC, 15A | SPDT |
| OMS-S301 | Carbon steel (3") | 1 | 300 | 225 | 21 | 16 | 0.57 | 120VAC, 15A | SPDT |
| OMS-S302 | Carbon steel (3") | 1 | 350 | 260 | 24 | 18 | 0.67 | 120VAC, 15A | SPDT |
| OMS-SF | Carbon steel | 1 | 230 | 95 | 16 | 7 | 0.50 | 120VAC, 15A | SPDT |
| OMS-TF | Carbon steel | 1 | 225 | 165 | 16 | 11 | 0.81 | 120VAC, 15A | SPDT |
| OMS-S303 | Carbon steel | 1 | 285 | 95 | 20 | 7 | 0.70 | 120VAC, 15A | SPDT |

OUTLINE / DIMENSIONS FOR FLANGE EXTERNAL CHAMBER TYPE

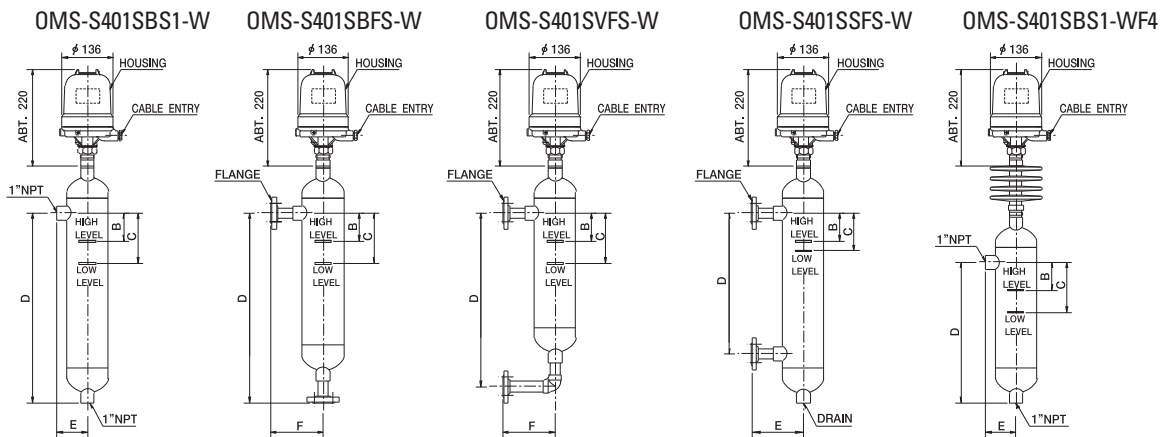


| Model | B(1) | | C(1) | | D(2) | | E(2) | | F | |
|----------|--------|-----|--------|-----|---------|-----|----------|-----|--------|-----|
| | IN. | MM. | IN. | MM. | IN. | MM. | IN. | MM. | IN. | MM. |
| OMS-F401 | 3 | 76 | 4 | 102 | 10 1/2" | 267 | 3 11/16" | 94 | 6 1/2" | 165 |
| OMS-F402 | 2 1/2" | 64 | 3 1/4" | 83 | 10 1/2" | 267 | 3 11/16" | 94 | 6 1/2" | 165 |
| OMS-F301 | 3 | 76 | 4 1/4" | 108 | 9 | 229 | 3 3/16" | 81 | 6 | 152 |
| OMS-F302 | 3 | 76 | 4 1/4" | 108 | 9 | 229 | 3 3/16" | 81 | 6 | 152 |

(mm)

| Height of housing(single switch function) | | | |
|---|-------|-------|-------|
| Number of radiation fins | | | |
| 0(F0) | 4(F4) | 6(F6) | 9(F9) |
| 250 | 357 | 407 | 467 |

OUTLINE / DIMENSIONS FOR SEALED EXTERNAL CHAMBER TYPE



| Model | B(1) | | C(1) | | D(2) | | E(2) | | F | |
|----------|--------|-----|--------|-----|---------|-----|----------|-----|--------|-----|
| | IN. | MM. | IN. | MM. | IN. | MM. | IN. | MM. | IN. | MM. |
| OMS-S401 | 2 1/4" | 57 | 3" | 76 | 10 1/2" | 267 | 3 11/16" | 94 | 6 1/2" | 165 |
| OMS-S301 | 2 5/8" | 67 | 3 1/2" | 89 | 10 1/2" | 267 | 3 11/16" | 94 | 6 | 152 |
| OMS-S302 | 2 1/2" | 64 | 3 3/4" | 95 | 9" | 229 | 3 3/16" | 81 | 6 | 152 |

CONTACT FORM

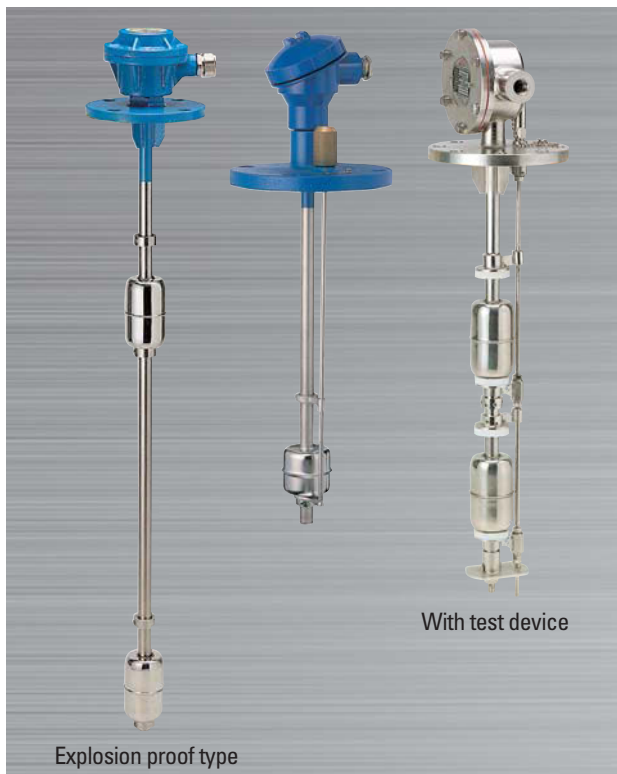
| MAIN MODEL | CONTACT OPERATION | CONTACT CONFIGURATION | |
|-----------------------|-------------------|-----------------------|------|
| | | SPDT | DPDT |
| OMS SERIES | | | |
| NUMBER OF SWITCH UNIT | | | |
| ONE(1) | | | |

NOTE

- 1) Nominal dimensions depend on minimum differential setting, minimum liquid specific gravity and single switch function.
- 2) Dimensions are for 1" NPT or S.W. type only.

Level Switches

Reed Switch Type Float Level Switch

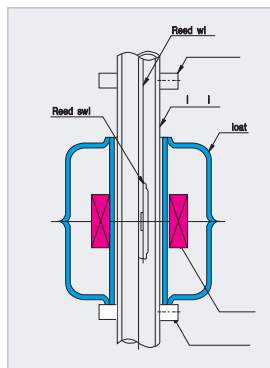


APPLICATION

REED SWITCH TYPE FLOAT LEVEL SWITCHES are widely used for Water, Seawater, Oil and general liquids.

OPERATING PRINCIPLE

Reed switch type float level switches have a magnet built in the float and a reed switch set inside guide pipe. The reed switch is turned on and off with the up-and-down liquid level. The two stoppers located above and below enable float shift range to limit, thereby providing a self-hold reed switch contact operation.



FEATURES

- Compact construction
- Stainless steel and plastic models
- Totally enclosed electric parts
- Wide selection of switch functions and ratings
- Easy maintenance

Model number code system

TMR - [] - [] - [] - [] - []

- Symbol of Reed Switch Type Float Level Switch
- Connection size
 - [4] : JIS 5K 65A FF
 - [5] : JIS 5K 80A FF
 - [6] : JIS 10K 80A FF
 - [7] : JIS 5K 100A FF
 - [8] : JIS 10K 100A FF
 - [P1] : PF 1/4"
 - [P2] : PF 2"
- Main application
 - [1A] : High or Low alarm
 - [2A] : High and Low alarm
 - [2C] : High and Low control
 - [3CA] : High and Mid control/Low alarm
 - [3AC] : High alarm/Mid. and Low control
 - [4AC] : H,H and L,L alarm
 - /High and Low control
 - [6I] : Level indicator(MAX. 6 point)
- Option
 - [T] : With test device
- Enclosure
 - [W] : Weather proof:IP56
 - [E] : Explosion proof:IP56/Exd II C T6
 - [SB] : Submersible Type:IP68
- Internal construction
 - [G] : Without float chamber
 - [C] : With float chamber
- Float size and material
 - [5S] : $\phi 65 \times 111$ L/SUS 304
 - [5S3] : $\phi 65 \times 111$ L/SUS 316
 - [5R] : $\phi 50 \times 45$ L/Resin
 - [6S] : $\phi 50 \times 47.5$ L/SUS 304
 - [5P] : $\phi 76 \times 100$ L/P.V.C
 - [5RS] : $\phi 26.5 \times 25$ L/Resin
 - [5SS] : $\phi 28 \times 25$ L/SUS 304

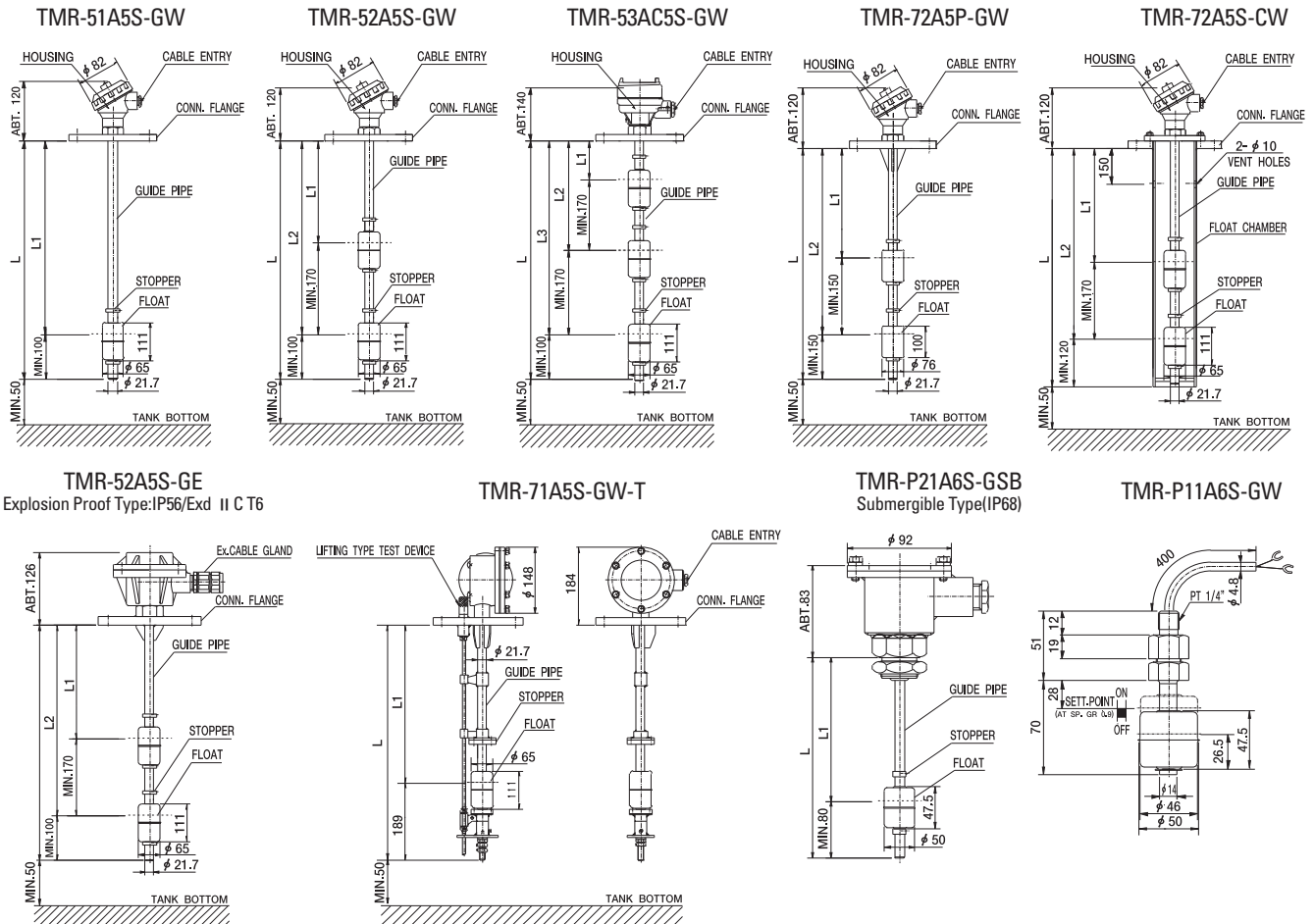
Standard model and specification

| Model | Application | Max. press. (kg/cm ²) | Max. Temp. (°C) | Mounting flange (standard) | Min. Sp.Gr | Connection | Maximum detection point | Cable entry | Contact form/Rating | Material | | | |
|--------------|-----------------------------|-----------------------------------|-----------------|----------------------------|------------|-----------------|-------------------------|-------------|---------------------|----------|--------|--------|------------|
| | | | | | | | | | | Housing | Flange | Float | Guide pipe |
| TMR-5□5S-G | General liquid (Oil, Water) | 10 | 80 | JIS 5K 80A | 0.85 | Top flange type | 6 | 15b | SPST 250VAC,0.5A | AC | SS41 | SUS304 | SUS304 |
| TMR-5□5S3-G | Anti-corrosive liquid | 10 | 80 | JIS 5K 80A | 0.85 | Top flange type | 6 | 15b | SPST 250VAC,0.5A | AC | SUS304 | SUS316 | SUS316 |
| TMR-4□5R-G | Low specific gravity liquid | 5 | 70 | JIS 5K 65A | 0.6 | Top flange type | 6 | 15b | SPST 250VAC,0.5A | AC | SS41 | Resin | SUS304 |
| TMR-8□5P-G | Anti-corrosive liquid | 3 | 50 | JIS 10K 100A | 0.7 | Top flange type | 6 | 15b | SPST 250VAC,0.5A | P.V.C | P.V.C | P.V.C | P.V.C |
| TMR-P1□5RS-G | Mini vessel | 5 | 70 | PF 1/4" | 0.7 | Thread type | 2 | - | SPST 250VAC,0.5A | - | - | Resin | SUS304 |
| TMR-P1□5SS-G | Mini vessel | 10 | 80 | PF 1/4" | 0.9 | Thread type | 2 | - | SPST 250VAC,0.5A | - | - | SUS304 | SUS304 |
| TMR-4□6S-G | General liquid | 10 | 80 | JIS 5K 65A | 0.85 | Top flange type | 6 | 15b | SPST 250VAC,0.5A | AC | SS41 | SUS304 | SUS304 |

OPTIONAL INFORMATIONS

- (1) Non-explosion proof models can be used as intrinsically safe type joined with I.S barrier.
- (2) Cable entry of 3/4" (JIS 20 a, b or c) is also available on request.
- (3) Flanges of larger nominal diameter than the standard ones are also available on request.

OUTLINE / DIMENSIONS



CONTACT FORM

| | | | |
|---|---|--|--|
| <p>FOR HIGH OR LOW LEVEL ALARM</p> <p>1 NO 2 LOW LEVEL ALARM</p> <p>1 NC 2 HIGH LEVEL ALARM</p> | <p>FOR HIGH AND LOW LEVEL ALARM</p> <p>1 NC 2 HIGH LEVEL ALARM</p> <p>3 NO 4 LOW LEVEL ALARM</p> | <p>FOR HIGH LEVEL PUMP AUTO STOP AND LOW LEVEL PUMP START</p> <p>1 NC 2 HIGH LEVEL PUMP AUTO STOP</p> <p>3 NO 4 LOW LEVEL PUMP AUTO START</p> | <p>FOR HIGH LEVEL PUMP AUTO START AND LOW LEVEL PUMP STOP</p> <p>1 NO 2 HIGH LEVEL PUMP AUTO START</p> <p>3 NO 4 LOW LEVEL PUMP AUTO STOP</p> |
| <p>FOR HIGH LEVEL ALARM AND MID LEVEL PUMP AUTO STOP, AND LOW LEVEL PUMP AUTO START</p> <p>1 NC 2 HIGH LEVEL ALARM</p> <p>3 NC 4 MID LEVEL PUMP AUTO STOP</p> <p>5 NC 6 LOW LEVEL PUMP AUTO START</p> | <p>FOR HIGH LEVEL PUMP AUTO STOP AND MID LEVEL PUMP AUTO START, AND LOW LEVEL ALARM</p> <p>1 NO 2 HIGH LEVEL PUMP AUTO STOP</p> <p>3 NO 4 MID LEVEL PUMP AUTO START</p> <p>5 NO 6 LOW LEVEL ALARM</p> | <p>FOR HIGH HIGH & LOW LOW LEVEL ALARM AND HIGH & LOW CONTROL</p> <p>1 NC 2 HIGH LEVEL ALARM</p> <p>3 NO 4 HIGH LEVEL PUMP AUTO START</p> <p>5 NO 6 LOW LEVEL PUMP AUTO STOP</p> <p>7 NO 8 LOW LEVEL ALARM</p> | <p>FOR HIGH HIGH & LOW LOW LEVEL ALARM AND HIGH & LOW CONTROL</p> <p>1 NC 2 HIGH LEVEL ALARM</p> <p>3 NO 4 HIGH LEVEL PUMP AUTO STOP</p> <p>5 NC 6 LOW LEVEL PUMP AUTO START</p> <p>7 NO 8 LOW LEVEL ALARM</p> |

Nominal condition is the empty condition without liquid in the tank.

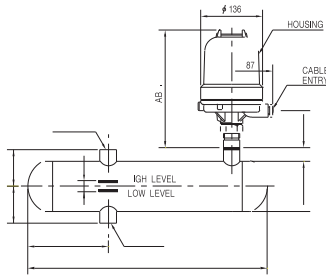
- 1) The arrangement is the same even with more detection point.
- 2) The detection points, if up to 3points, can be independently terminal connected as desired.

Level Switches

Float Operated Type Level Switch

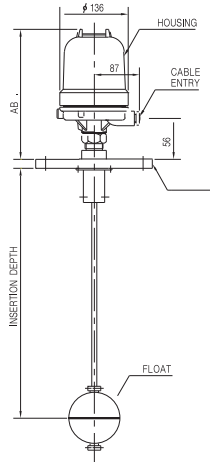
OUTLINE / DIMENSION FOR SEALED EXTERNAL CHAMBER TYPE

Model : OMS-S303 TYPE



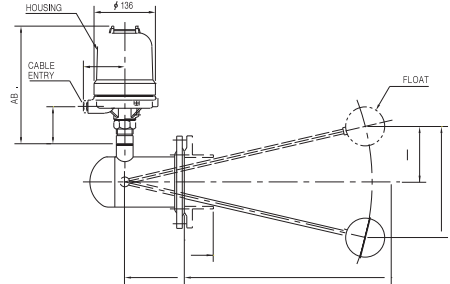
OUTLINE / DIMENSION FOR SEALED EXTERNAL TOP MOUNTED

Model : OMS-TF TYPE



OUTLINE / DIMENSION FOR SEALED EXTERNAL SIDE MOUNTED

Model : OMS-3F TYPE



| Insertion depth | | Min. level differential (D) | | Maximum differential (D) for 4 sch.40 pipe with nozzle length (N) | | | | | | | | | | | | | |
|-----------------|-----|-----------------------------|-----|---|-----|-----|-----|-----|-----|-----|-----|-------|-----|-----|-----|-------|-----|
| | | | | IN. | | MM. | | IN. | | MM. | | IN. | | MM. | | | |
| IN. | MM. | IN. | MM. | 2 | 51 | 4 | 102 | 6 | 152 | 8 | 203 | 10 | 254 | 12 | 305 | 14 | 365 |
| 18 | 457 | 2 | 51 | 13 | 330 | 9 | 229 | 7 | 178 | 5 | 127 | 4 1/2 | 114 | 4 | 102 | 3 1/2 | 89 |
| 10 | 254 | 1 | 25 | 7 | 178 | 5 | 127 | 4 | 102 | - | - | - | - | - | - | - | - |

Flow Detection Switch

PADDLE TYPE FLOW SWITCH



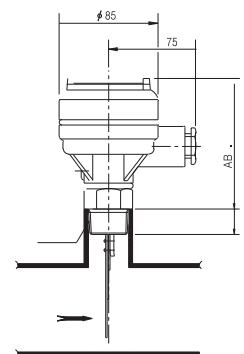
MODEL:FWS-3P

INTRODUCTION

This flow switch is used for protecting equipment or pipe line system from excessive flowing in the pipe when the flow is reduced or increased. When the liquid is flowing excessively, the micro switch in the housing is operated by hydrostatic pressure caused by flowing in the pipe. If flowing is stopped, the lever arm will be returned to the normal position by the spring in the switch housing.

TECHNICAL SPECIFICATION

- Mounting Method : Screw/Flanged
- Mounting Size : 1" PT
- Working Pressure : Atm.
: Max. 0.2kg/cm²
- Process Temp. - std.:60°C
- option:120°C
- Enclosure:Weather proof/IP56
- Material - Head : AC
- Connector : BS
- Paddle : SUS304
- Output : 1 × SPDT
- Conduit conn. : 3/4" PF(F)
- Switch type : Micro switch
- Contact Rating : 250VAC, 15A



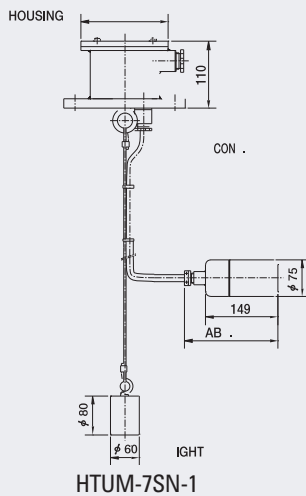
APPLICATION

- When the flowing is higher or lower, it is used for protecting the equipment, pump, motors from them.
- Controls of pumps etc.
- Starts pumps, engines etc.

Quick Float Type Level Switch



OUTLINE / DIMENSIONS



HTUM-7SN-1

OPERATING PRINCIPLE

Quick float level switches contain a switch units(Reed switch or micro switch) inside a float casing connected to a reed cable. Also, the reed cable is assembled with the float casing completely. When a float moves up and down due to buoyancy, electrical contacts in the switch unit converted to close or open.

APPLICATION

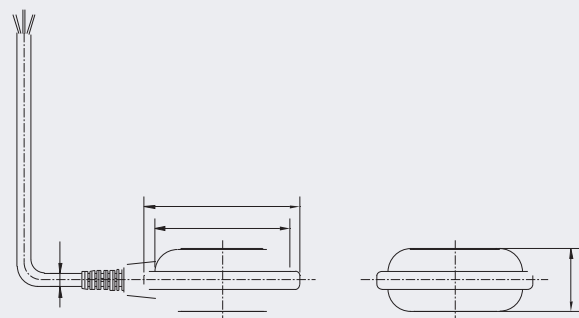
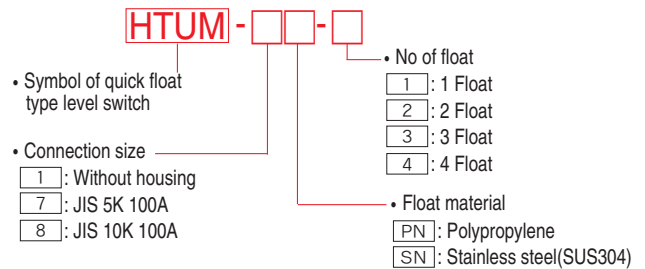
This product is used for atmospheric pressure and ambient temperature applications.

- Wells, locks, rivers etc.
- Waste water, sewage, drain, sludge tank etc.

FEATURES

- Simple and low cost design
- Easy installation and maintenance
- Stainless steel and plastic models

MODEL NUMBER CODE SYSTEM



HTUM-1PN-1

Standard model and specification

| Model | Connection | Float Material | Max. Pressure (kg/cm ²) | Max. Temp. (°C) | Protection (float) | Switch Type | Switching Distance (mm) | Switch Form/ Rating | Cable Max. Length | Cable Entry |
|------------|-----------------|--------------------------|-------------------------------------|-----------------|--------------------|--------------|-------------------------|---------------------------|-------------------|-------------|
| HTUM-7PN-□ | Top flange type | Polypropylene | 10 | 60 | IP68 | Micro switch | 10 ~ 50 | SPDT 250VAC, 10A | 10,000mm | 20 (PF3/4) |
| HTUM-7SN-□ | Top flange type | Stainless steel (SUS304) | 10 | 80 | IP68 | Reed switch | 10 ~ 50 | SPST or SPDT 250VAC, 0.5A | 5000mm | 20 (PF3/4) |

■ Please consult with our factory when the other type is required

Level Switches

Paddle Type Level Switch for Solid

MODEL:RN 3000 Series



APPLICATION

It is used wherever

- Dustlike
- Powdery
- Granulated
- Granular

STANDARD SPECIFICATION

■ Mechanical data

- Material : - Housing:Die-casted housing
- Connector:Steel galvanized or stainless steel
- Vane shaft:SUS304
- Process connection : Thread or flange according to selection
- Enclosure : IP65
- Speed of measuring vane : 11/min
- Pick up delay : approx 1.3 sec.

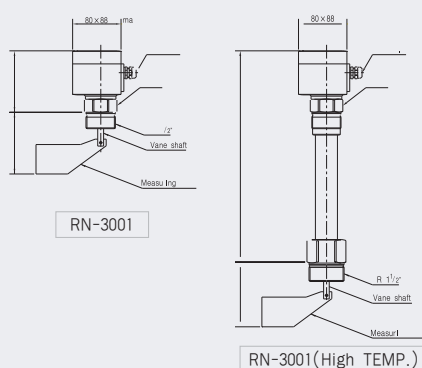
■ Electrical data

- Mains voltage : 220...240V / 50-60Hz
- : 110...200V / 50-60Hz
- Signal output : 1 × SPDT Micro switch
- Cable gland : 1 × PG 13.5

■ Operating conditions

- Pressure : Max. 0.8bar / 5bar / 10bar
- Temperature : Max. 80°C / 150°C / 220°C
- Powder density : Down to 20g/l

OUTLINE / DIMENSIONS



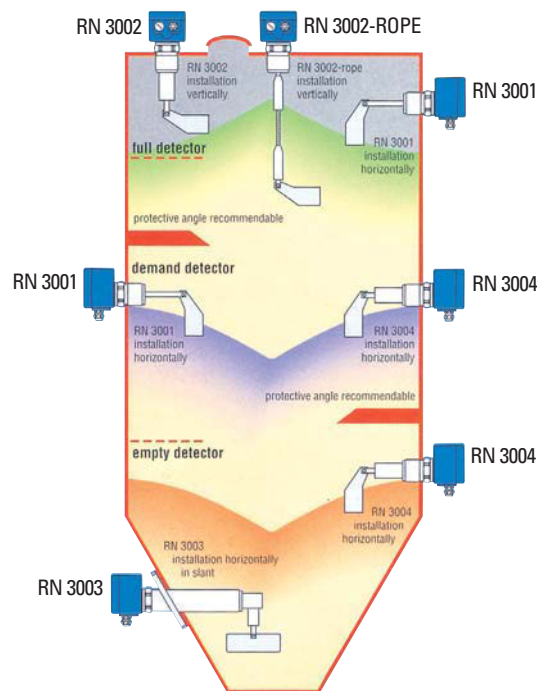
OPERATING PRINCIPLE

A low revolution synchronous induction gearing motor drives a rotating measuring vane, which is mounted at a container. As soon as the material level, which is to be checked, reaches the measuring vane, it is handicapped in his rotation. The synchronous induction motor is freely suspended within the housing. The caused reaction torque is used to operate a micro switch giving a suitable electrical signal and to stopping the motor. When the vane becomes free again due to the drop in material level, a spring draws the motor back into his operating position, the micro switch returns to his initial position and the motor is switched on. The electrical output signal is then switched over.

FEATURES

- Appropriate on powder and granulated bulk goods
- A reliable and simple principle of function
- Maintenance-free
- Small and compact design

MOUNTING INSTRUCTIONS



MODEL SELECTION GUIDE

| Application | Type | RN 3001 | RN 3002 | RN3002-ROPE | RN 3003 | RN 3004 | RN 3005 | RN 3006 |
|---------------------------------------|------|---------|---------|-------------|---------|---------|---------|---------|
| | | | | | | | | |
| full detector | | × | × | × | × | × | | × |
| demand detector | | × | | × | × | × | | × |
| empty detector | | × | | × | × | × | | × |
| loading telescope | | | | | | | × | |
| vertical | | × | × | × | | × | × | × |
| oblique from the top | | × | | | × | × | | × |
| horizontal | | × | | | × | × | | × |
| oblique from the bottom | | × | | | | × | | × |
| dust Ex zone 10/11 | | × | × | × | × | × | × | × |
| temperature up to 220°C** | | × | × | × | × | × | | |
| container over pressure 1 up to 10bar | | × | × | × | × | × | × | × |

* not for zone 10/11

** zone 10/11 upto 200°C

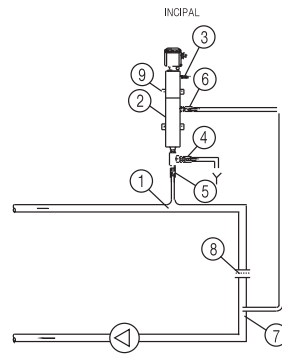
Capacitive Type Oil Detector



• OIL CONTAMINATION DETECTOR ON THE PIPING LINE



PRINCIPAL PIPING DIAGRAM



- ① Tapping point for partial flow 1/2" PT on the top of the cooling water line
- ② Measuring pot with oil detector
- ③ Vent valve
- ④ Sampling & Cleaning cock
- ⑤ Inlet isolating valve
- ⑥ Outlet isolating valve with cleaning process
- ⑦ Return partial flow 3/8" PT
- ⑧ Orifice plate
- ⑨ Wall mounting plate

GENERAL

This device is installed in the cooling water line of ship and is designed to detect oil in cooling water.

This system consists of oil detection pot, capacitive compact switch and control unit. Oil detection pot for separating oil and water has not cock valve for isolating the input and output line.

Capacitive type oil detector is installed in oil detection pot, detecting oil Isolated from water on the top of oil detection pot.

Control unit receive whether it is deteted or not in signal from the capacitive compact switch and convert point of contact to relay contact.

TECHNICAL SPECIFICATION

- Max. Pressure : 5kg/cm²
- Max. Temp. : 110°C
- Flow : 100~300 l /h
- Sensitivity : Approx. 50ml oil
- Power supply : AC 110/220V
- Output : Relay output(DPDT)

• OIL DETECTOR ON THE TANK



GENERAL

Boiler feed filter tank have a inspection chamber or devide area in tank to accumulate oil when oil contamination in boiler water.

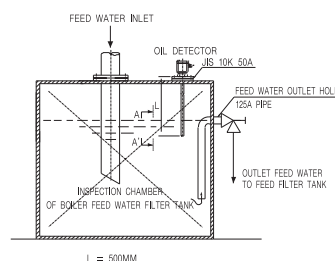
When incoming oil contaminated water in inspection chamber, the feed water only go out to feed filter tank and oil with be accumulate in inspection chamber until drainage.

When the normal conditions, the end part of electrode will be in water level always.

But the water contaminate oil that the oil is accumulate top level in inspection chamber, the electrode will be in oil level instead of water level. The oil detector will activate alarm.

After drain oil in inspection chamber, the oil detector return to normal condition.

INSTALLATION ARRANGEMENT



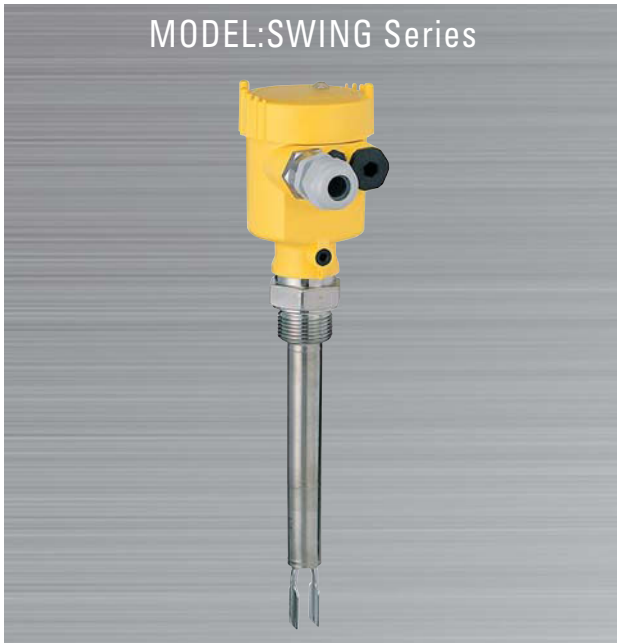
TECHNICAL SPECIFICATION

- Type : Capacitive oil detector
- Power supply : AC 110/220V
- Output : Relay contact(DPDT)
- Operating pressure : 10bar
- Max. Temp. : 100°C
- Protection : IP66
- Conn. size : G 1-1/2"

Level Switches

Vibration Type Level Switch for Liquid and Solid

MODEL:SWING Series



INTRODUCTION

VEGASWING, the vibrating sensor which uses tuning fork technology, finds almost universal applications in industrial liquid level switching, and offers the choice of four output options from compact electronics.

Innovative design has produced several practical, user-orientated features, such as the "universal" power input and modular electronics incorporating self-diagnostics. Attention to quality in design and production has created a level switch of unparalleled sensitivity and reliability, even for "heavy-duty" installations.

SPECIFICATIONS

- Power source:20~250VAC, 20~250VDC
- Power consumption:Max. 3N
- Output: - Relay output/1 × SPDT
- Transistor output
- Non-contact switch
- Viscosity range:0.2~10,000mPas
- Density range:0.7~2.5g/m³
- Protection:IP66

OPERATING PRINCIPLE

The piezo-electrically stimulated oscillating probe vibrates at its mechanical frequency of resonance of 125Hz. If the probe is covered by the bulk material, the damping thus generated is registered electronically and a corresponding signal output is actuated.

The oscillation of the device ensures that it features certain self-cleaning properties.

The device is used for level detecting in all types of containers and silos, it can be used with all powdery and granulated bulk materials that do not show a strong propensity to form crusts or deposits.

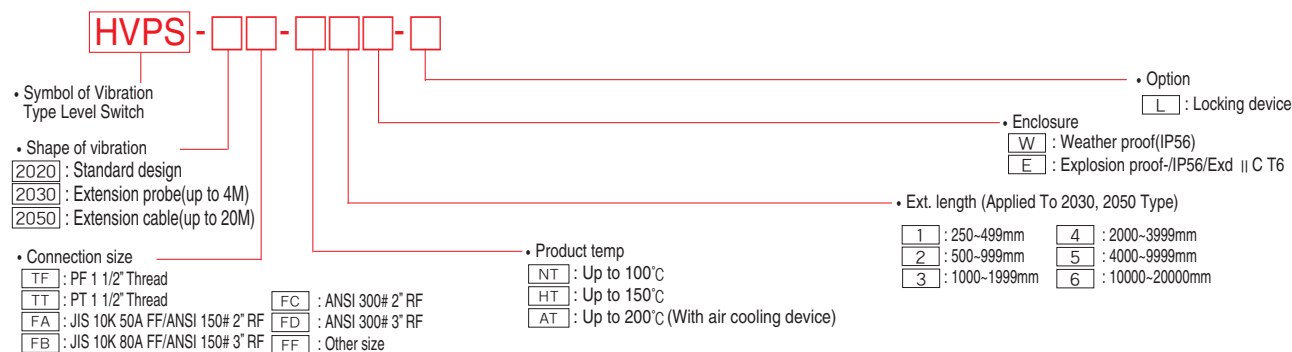
MODEL:HVPS Series



STANDARD SPECIFICATIONS

- Material : - Housing:ADC
- Connector:SUS304
- Tuning fork:SUS304
- Max. Pressure : 16bar
- Max. Temp. : 200°C
- Enclosure : IP65
- Main voltage : AC 230V / AC115V / DC24V
- Installed load : Max. 1A(Relay)
- Output : 1 × SPDT
- Min. Powder density : Approx. 30g/L
- Cable gland : PG 13.5

Model number code system



Microwave Type Level Transmitter



MODEL:VEGAPULS SERIES



INTRODUCTION

Radar is a sophisticated level measuring principle. VEGA's new design of small, compact and price favourable radar sensors VEGAPULS are in its function as loop powered sensors a sensation in radar level measuring technology. First, radar sensor in two-wire technology supply voltage and output signal(4~20mA analog or digital);connectable with max. 15 sensors on a two-core line. VEGAPULS radar sensors offer benefits which meet the technicians requirements:Pressure and temperature independent, Ex-approved, small housing dimensions and process connections(1 1/2" or DN 50);integrated analog and digital display;convenient connection form to all BUS systems. Radar technology can also be realized in low budget applications. The sensors are very informative and can be operated optionally with check card-sized and detachable adjustment module, HART® handheld or self explanatory operating program on PC, hence the operation at any place e.g. signal line, directly on the sensor, switch cabinet or DCS is possible.

APPLICATION

VEGAPULS radar sensors are made of resistant materials. Unaffected by pressure, temperature, density and gas composition, they are not subjected to an aging process.

Communicative and adaptable they speak many languages and are hence used in many systems and industries.

- Waste water, disposal
- Chemicals
- Foodstuffs
- Metal treatment and generation
- Automobile industry
- Power generation and transport
- Process technology
- Shipbuilding
- Recycling
- Pharmaceutical industry
- Mining
- Offshore

FEATURES

- Small housing and small process connection
- Low cost with VEGA high quality
- Two-wire technology loop powered
- Accurate and rugged design
- Adjustment choice

MODEL:VEGA FLEX SERIES



SPECIFICATION

High frequency microwave pulses are coupled on a cable or rod and guided along the probe. The pulses are reflected by the product surface and received by the processing electronics. A microcomputer identifies these level echoes which are measured, evaluated and converted into level information by using the ECHOFOX software. Thanks to this measuring principle, the adjustment with medium in no longer necessary. The sensors are preset to the ordered probe length. The cable and rod versions(can be shortened) can be adapted in an ideal way to the individual conditions on site.

APPLICATION

- Liquids and solids
- Measuring range : cable up to 32m
- Process temperature : -40~150°C (Max.-100~400°C)
- Process pressure : -1~40bar (Max.-1~160bar)

Standard model and specification

| | PULS 61 | PULS 62 | PULS 63 | PULS 65 | PULS 66 | PULS 68 |
|---------------------|---|--|---|--|--|--|
| Application | aggressive liquids in small vessels under easy process conditions | storage and process vessels under arduous process conditions | aggressive liquids under arduous process conditions | aggressive liquids under easy process conditions | storage and process vessels under arduous process conditions | large solid vessels under arduous process conditions |
| Measuring range | up to 20m | up to 35m | up to 20m | up to 35m | up to 35m | up to 70m |
| Process temperature | -40..80°C | -40..200°C | -40..150°C | -40..150°C | -40..500°C | -40..200°C |
| Process pressure | -1..3bar | -1..40bar | -1..16bar | -1..16bar | -1..160bar | -1..40bar |
| Accuracy | ±5mm | ±3mm | ±3mm | ±10mm | ±10mm | ±15mm |

Level Transmitters

Capacitive Level Measurement

MODEL: VEGACAL Series



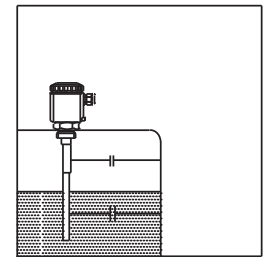
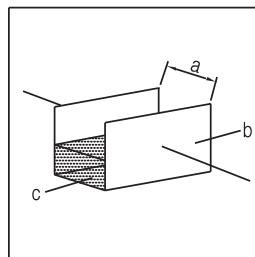
APPLICATION

Capacitive electrodes of series detect levels of virtually every product, such as liquid, powder, granule or pasty. This includes also adhesive products.

MEASURING PRINCIPLE

Electrodes, product and vessel wall form an electrical capacitor. The capacitance is mainly influenced by three factors:

- distance of the electrode plates(a)
- size of the electrode plates(b)
- dielectric value of material between the electrodes(c)



The product is the dielectricum. Due to the higher dielectric constant(DK-value) of the product against air, the capacitance value increases with the height of covering.

The capacitance change is converted by the oscillator into a level proportional, floating current in the range of 4...20mA or into a switching signal.

CONTINUOUS LEVEL MEASUREMENT

With continuous level measurement the product level is continuously monitored and converted into a level proportional signal which is either indicated directly or further processed.

A capacitive electrode of series with oscillator and a VEGAMET signal conditioning instrument converting the proportional current of the oscillator into standardized current and voltage signals is required.

The continuous measurement requires a constant dielectric value ϵ , i.e. the product should have steady features.

The floating measuring signal of the electrode electronics is in the range of 4...20mA and be therefore connected to other processing systems without providing an additional potential equalization. In addition to the continuous measurement, also levels can be detected.

LEVEL DETECTION

Level switches should signal the reaching of certain levels, e.g. max. or min. level.

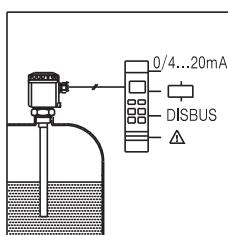
These levels are detected at a fixed point and converted into a switching signal.

For level detection the capacitive electrodes type

A switching signal can be either triggered when the electrode is covered or when the electrode is uncovered(adjustable mode).

CONFIGURATION OF THE MEASURING SYSTEM

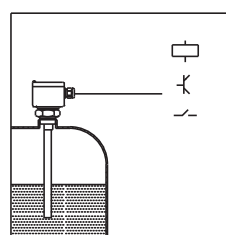
Electrode with signal conditioning instrument



A measuring system consists of:

- a capacitive electrode type
- an oscillator mounted in the electrode housing
- a VEGAMET signal conditioning instrument or a VEGALOG processing system
- connected instruments(e.g. indicating instruments, VEGASEL auxiliary level switches)

Compact level switch VEGACAP



A measuring system consists of:

- a VEGACAP capacitive compact level switch
- an oscillator mounted in the housing
- connected instruments operated with the output signal of VEGACAP

Electric Pressure Type Level Transmitter



OPERATING PRINCIPLE

The Hanla Pressure Type Level Transmitter is for continuously measuring the liquid level of ballast tank, draft and fuel oil tank in the marine ships as well as tanks containing media.

The PL40 is a 2-wire, 4~20mA level transmitter consisting of a transducer and an amplifier connected via a submersible vented cable.

Pressure change in the front of the diaphragm will bring about a capacitance change in the cell of the transducer.

This change will be transmitted to amplifier as a change in the electrical signal.

The PL40 is manufactured in several ranges, and available.

Especially the electro pressure type level transmitter can be connected to C.R.T. display cargo system, loading computer, indicator, and analog type indicator to measure the actual level.

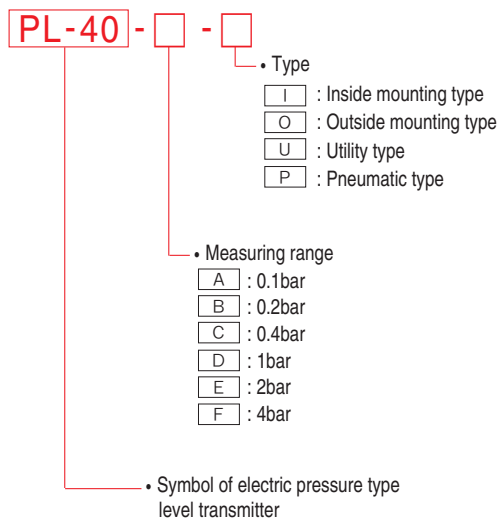
TECHNICAL SPECIFICATION

- Output : 4 ... 20mA adjustable
- Accuracy : $\pm 0.2\%$ F.S at 20°C
- Supply voltage : 12 ... 28VDC
- Range : Gauge 175mbar to 4bar
Absolute 1400mbar to 4bar
- Overpressure : Gauge 6bar to 25bar
Absolute 10bar to 25bar
- Diaphragm cell : Capacitive transmitter with ceramic diaphragm
- Materials
 - Diaphragm : Ceramic
 - Sensor Body : Stainless steel 316L
 - Amplifier box : SCS13(Indoor) / SCS14(Outdoor)
 - Special cable : Sheathed polyethylene cable
- Operating temperature range
 - Transducer : -40~125°C
 - Amplifier : -25~85°C
- Protection class
 - Transducer : IP68/submersible
 - Amplifier : IP66
- Intrinsic safety : EEx ia II c T5
(Max. 50m cable between transducer and amplifier box)
- Cable length : 3m in standard (option : up to 50m)

APPLICATIONS

- Ballast tank remote reading
- Draft remote reading
- Heeling and trim remote reading
- Fuel oil tank remote reading
- Waste waters, wells, locks, rivers etc.

MODEL NUMBER CODE SYSTEM



FEATURES

- High measuring accuracy
- Excellent stability
- Capacitive transmitter with Ceramic diaphragm
- High overload limit
- High temperature stability
- Corrosion resistance
- No hysteresis
- Marine class approval

Level Transmitters

Magnetic Float Type Level Transmitter

Continuous liquid level meter, display, with four separated adjustable alarm points, and Output signal for remote level transmitter.



STANDARD SPECIFICATIONS

- Connection size : JIS 5K 80A, 100A
With float chamber type: JIS 5K 100A only
- Max. pressure : 10 kg/cm²
- Max. temperature - SUS 316 float : 100°C
- RESIN float : 70°C
- P.V.C float : 60°C
- Min. Sp. Gr - SUS 316 float : 0.85
- RESIN float : 0.6
- P.V.C float : 0.7
- Measuring range : Max. 30m
- Sensor resistance : about 1k Ω
- Max. current : 25mA
- Power source : 12~32VDC
- Output : 4~20mA DC
- 2 Wire system balancing type
- Cable entry : 15b
- Enclosure : Weather proof/IP56
- Material - Housing : AC and SUS 304
- Flange : Carbon steel
- Float : SUS 304
- Guide pipe : SUS 304

OPERATING PRINCIPLE

Reed switches arranged with a certain pitch inside a pipe as shown on fig. 1, activated by means of the magnet inside float, the detecting circuit electric equivalent to the potentiometer is constituted.

By adjusting the size and power of the magnet inside the float so as one or two reed switches could be operated in any time. Resolution of the potentiometer would become 1/2 of the pitch of the reed switches. Consequently, when the pitch is 10mm, a resolution of 5mm can be obtained.

A necessary accuracy can be ensured in the FLT-100 series by modifying the pitch of the reed switches and the divided number of the measuring range conforming with the total measuring range.

FEATURES

- Consistent accuracy regardless of the tank depth.
- High accuracy.
- Service-proven reliability.
- Simple installation.
- Magnet-float type in which the construction is simple.
- The maintenance is easy.
- Only single 2core cable.
- Wide measuring range.

APPLICATIONS

Level measurement continuously indicates the actual level and can provide an analogue and digital indication as well as operation of switching contacts predetermined levels.

Typical applications are the measurement of water, H.F.O, D.O, L.O, Vegetable oil, and others.

Model number code system

FLT - 100 - [] - [] - [] - []

• Symbol of Magnetic Float Type Level Transmitter (Output 4~20mA, 2WIRES)

• Mounting type
 [RT] : Top mounting
 [RI] : Inside mounting
 [RS] : Side mounting

• Float size and material
 [S] : ϕ 65 x 111L/SUS304
 [R] : ϕ 50 x 45L/Resin
 [P] : ϕ 76 x 100L/P.V.C
 [T] : Teflon
 [SF] : Special type

• Option

[H] : 4~20mA, SMART TYPE HART®

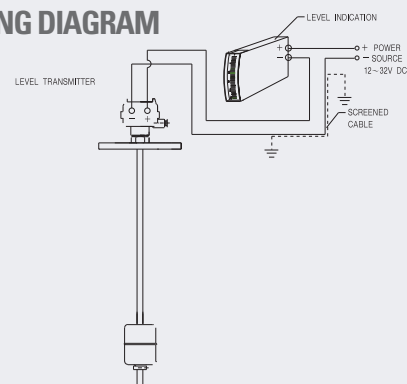
• Enclosure

[W] : Weather proof:IP56
 [E] : Explosion proof:IP56/Exd II c T6
 [I] : Intrinsically safe: EEx ia II C T6/With I.S Barrier

• Internal construction

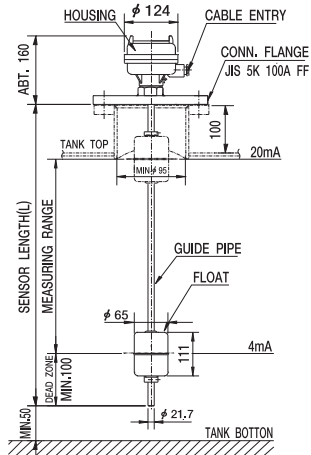
[G] : Without float chamber
 [C] : With float chamber

WIRING DIAGRAM



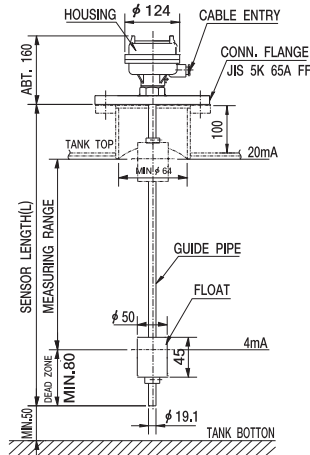
OUTLINE / DIMENSIONS

FLT-100RT-SGW



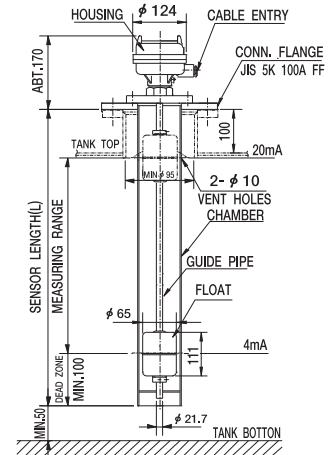
- Installation : Top mounting
- Connection Flange : Min. JIS 5K 80A FF
- Minimum Sp.Gr : 0.85
- Measuring Range : Max.3M
- Material - Float : SUS304
 - Guide pipe : SUS304
 - Housing : AC

FLT-100RT-RGW
(FOR LOW VISCOSITY FLUID)



- Installation : Top mounting
- Connection Flange : Min. JIS 5K 65A FF
- Minimum Sp.Gr : 0.60
- Measuring Range : Max.3M
- Material - Float:Resin
 - Guide pipe:SUS304
 - Housing:AC

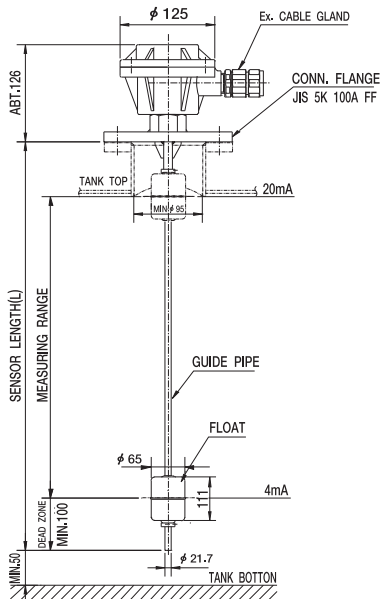
FLT-100RT-SCW



- Installation : Top mounting
- Connection Flange : Min. JIS 5K 100A FF
- Minimum Sp.Gr : 0.85
- Measuring Range : Max.4M
- Material - Float:SUS304
 - Guide pipe:SUS304
 - Chamber:SGP
 - Housing:AC

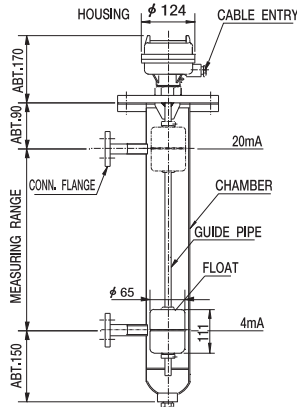
FLT-100RT-SGE

Explosion Proof Type : IP56/Exd II C T6



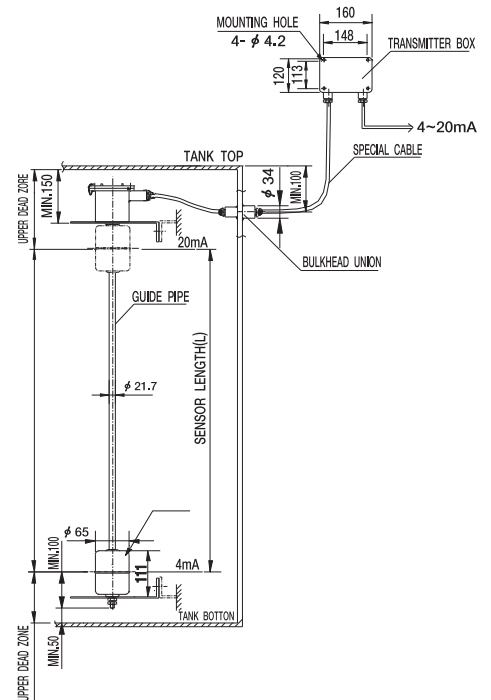
- Installation : Top mounting
- Connection Flange : Min. JIS 5K 80A FF
- Minimum Sp.Gr : 0.85
- Measuring Range : Max.3M
- Material - Float : SUS304
 - Guide pipe : SUS304
 - Housing : AC

FLT-100RS-SCW



- Installation : Side mounting
- Connection Flange : Min. JIS 5K 25A FF(STD.)
- Minimum Sp.Gr : 0.85
- Measuring Range : Max.4M
- Material - Float : SUS304
 - Guide pipe : SUS304
 - Chamber : SGP
 - Housing : AC

FLT-100RI-SGW



- Installation : Inside mounting
- Minimum Sp.Gr : 0.85
- Measuring Range : Max.3M
- Material - Float : SUS304
 - Guide pipe : SUS304

Level Transmitters

Electric Pressure Sensor



DESCRIPTION

The PERAMIC is a solid state, all stainless, pressure sensor based on a ceramic pressure cell with a very high burst pressure. The amplifier system is based on a single integrated circuit, which ensures a perfect linearity in the 4-20mA output. Also the sensor is fully temperature compensated. The PERAMIC is made for applications in liquids, gases and vapours. All materials in contact with the process are made of SS-316(AISI), a lot of other materials are available. Zero and Span are internally adjustable in wide ranges. A local indicator (programmable) is available (option).

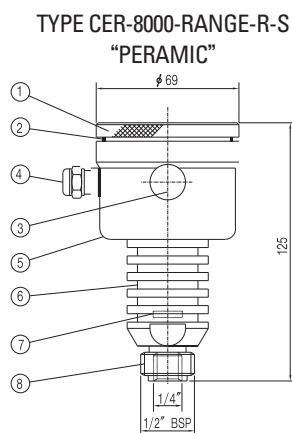
APPLICATION

The "PERAMIC" is an universal pressure sensor for all gauge and absolute pressure measurements on liquids, gases and vapours. When a flush diaphragm has to be used for food or paper industry, ask for our transmitters series 8000 or 8000-SAN.

MEASURING RANGE(CER-8000)

| Order code key measuring range bar | max. over pressure bar | SERIE CER-8000- adjustable span range bar min.-max. |
|---|------------------------------|--|
| 0~0.1...0.4 | 2 | 0~0.1 / 0~0.4 |
| 0~0.2...0.8 | 5 | 0~0.2 / 0~0.8 |
| 0~0.8...1.6 | 12 | 0~0.8 / 0~1.6 |
| 0~1.6...4 | 20 | 0~1.6 / 0~4 |
| 0~2.5...10 | 50 | 0~2.5 / 0~10 |
| 0~10...40 | 120 | 0~10 / 0~40 |
| 0~40...150 | 350 | 0~40 / 0~150 |
| 0~100...350 | 600 | 0~100 / 0~350 |

DIMENSIONS



| ITEM | QUANTITY | DESCRIPTION | MATERIAL |
|------|----------|--|-------------|
| 1 | 1 | Cover | AISI 304 |
| 2 | 1 | O-ring | EPDM |
| 3 | 1 | Venting | |
| 4 | 1 | PG9 cable connector | |
| 5 | 1 | Electronic housing | AISI 304 |
| 6 | 1 | Foot/Cooling fins | AISI 316 |
| 7 | 1 | Ceramic sensor | Al2O3 (96%) |
| 8 | 1 | Gauge connection 1/2" BSP DIN 16288 | AISI 316 |

STANDARD SPECIFICATION

- Measuring ranges : from 0-0.1 to 350 bar
- Output signal : 2-wire, 4-20mA
- Overall accuracy : $\pm 0.2\%$
- Power supply : 12 to 40VDC
- Electrical connection : PG 9/1/2" NPT or M20
- Load(max.) : 600 Ohm/24V till 1400Ohm/40V
- Protection grade : IP65
- Weight : 0.6kg
- Over pressure : see measuring range
- Process temperature : standard-30°C to 100°C (1/2 hour 150°C)
- Temperature effect : $\pm 0.015\%K$ adjusted span
- Housing temperature : -20°C +70°C
- Storage temperature : -30°C +80°C
- Adjustment : zero and span internally
- Process connections : see ordering information
- Wetted parts measuring cell : ceramic(Aluminiumoxyde 96%)
- Sensor sealing : standard viton
O-ring(other materials on request)
- Other wetted parts standard : AISI 316
- Material housing : AISI 304
- Zero elevation / suppression available
- Vacuum and compound ranges available, please specify
- Specifications can change without notice

FEATURE

- ALL STAINLESS STEEL MATERIAL
- CERAMIC PRESSURE CELL
- WITHSTAND FULL VACUUM
- OUTPUT 4-20 mA/2-WIRE
- NO OIL FILLING
- ACCURACY 0.2%(ADJUSTED SPAN)
- ZERO/SPAN INTERNAL ADJUSTABLE
- VERY HIGH BURST PRESSURES
- LOCAL INDICATOR AVAILABLE
- INTRINSICALLY SAFE, EEx ia IIC T4

Alarm Annunciator



MODEL:AU-100



- Channel number : 10 contacts
- Alarm Input time delay : 0-99 sec
- Alarm escape time delay : 0-99 sec
- Channel outputs : NC or NO
- Common relay output
- Internal Buzzer
- Buzzer Stop button
- Flicker Stop button
- Supply voltage : 24VDC(18-32VDC)
100-240 VAC(option)

- Indication LEDs : 10 × red/green, 1 × yellow, 1 × green
- First alarm flashing
- Serial Communication : RS-485
- Channel setting : by internal rotary switch
by windows setting program
- Power consumption : Max. 160mA at 24VDC
- Operating temperature : -10°C to +55°C (70°C peak)
- Alarm module enclosure : standard DIN 144 x 72 x 166.5 mm
- Type code selection : AU-100D-AB
 - A : Channel Output
 - 0 : None
 - 1 : Isolated Output
 - B : Power
 - 0 : 24VDC
 - 1 : 100-240VAC
- AU-100D : High Level Alarm, Overfill Alarm application
Inhibit buttons for each channel
Navigation function
- AU-100D(W) : Water Ingress Detection System application
Overriding buttons for Pre-alarm and Main-alarm
- Optional repeater unit : AU-100R by RS-485

MODEL:AU-160



- Channel number: 16 contacts
- Alarm Input time delay: 0-99 sec
- Alarm escape time delay: 0-99 sec
- Channel outputs: NC or NO
- Common relay output
- Internal Buzzer
- Buzzer Stop button
- Flicker Stop button
- Supply voltage: 24VDC(18-32VDC)
100-240VAC(option)

- Indication LEDs : 16 × red/green, 1 × yellow, 1 × green
- First alarm flashing
- Serial Communication : RS-485
- Channel setting : by internal rotary switch
by windows setting program
- Power consumption : Max. 4.5 Watt at 24VDC
- Operating temperature : -10°C to +55°C (70°C peak)
- Alarm module enclosure : standard DIN 144 x 144 x 86 mm
- Type code selection : AU-160D-AB
 - A : Channel Output
 - 0 : None
 - 1 : Isolated Output
 - B : Power
 - 0 : 24VDC
 - 1 : 100-240VAC
- AU-160D : High Level Alarm, Overfill Alarm application
Inhibit buttons for each channel
Navigation function
- AU-160D(W) : Water Ingress Detection System application
Overriding buttons for Pre-alarm and Main-alarm
- Optional repeater unit : AU-160R by RS-485

MODEL:AU-240L



- Channel number : 24
- Input type : Current 4-20mA, Contact
- Scaling : -999999-999999
- Accuracy : +/- 0.2%FS
- Channel outputs : NC or NO
- Common relay output
- Power failure output
- Internal Buzzer
- Buzzer Stop button
- Flicker Stop button
- Supply voltage : 100-240VAC
24VDC(18-32VDC)(option)

- Indication LEDs : 48 × red, 24 × yellow, 1 × green
- Menu Button : 8
- Max. 8 channel display by LCD 128 × 64
- Unit display
- Channel setting : by menu button
by windows setting program
- Power consumption : Max. 6.6 Watt at 220VAC
- Operating temperature : -5°C to +55°C (10-90%)
- Weight : Approximately 1.1kg
- Alarm module enclosure : standard DIN 144 x 144 x 120 mm
- Serial Communication : RS-485 MODBUS RTU
Long Integer Type(4byte/channel)

MODEL:OVMS-50



- Channel number : 5
- Input type : Current 4-20mA, Contact
- Scaling : -999999-999999
- Accuracy : +/- 0.2%FS
- Channel outputs : NC or NO
- Common relay output
- Power failure output
- Internal Buzzer
- Buzzer Stop button
- Flicker Stop button
- Supply voltage : 100-240VAC only

- Indication LEDs : 8 × red(Max.10), 5 × yellow, 1 × green
- Menu Button : 8
- Front/Rear Power Switches
- Max. 5 channel display by LCD 128 × 64
- Unit display
- Channel setting : by menu button
by windows setting program
- Power consumption : Max. 8.8 Watt at 220VAC
- Operating temperature : -5°C to +55°C (10-90%)
- Weight : Approximately 1.1kg
- Alarm module enclosure : standard DIN 144 x 144 x 120 mm
- Serial Communication : RS-485 MODBUS RTU
Long Integer Type(4byte/channel)
- Application : Oxygen/Vapour Pressure monitoring

Electric Equipments

Level Indicator

MODEL:SIL-100



- Total/Individual channel indication by selecting "AUTO/FIX"
- Input: MODBUS RTU(RS-485/232)
- Level, Temp., Pressure display with unit
- Bar-graphic indication
- Display of Channel name
- Channel auto scanning
- Common relay output(NC,NO)
- Power: AC100-240V Max.0.25A. optional DC24V
- Internal Buzzer
- Indication LEDs: 1xred, 1xgreen
- Dimension: 95x95x134mm
- Dimming function

MODEL:SIL-200



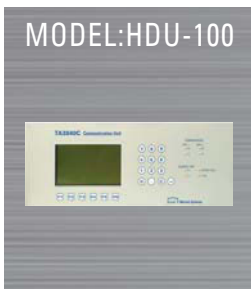
- Total/Individual channel indication by selecting "MANUAL/FIX"
- Input: MODBUS RTU(1xRS-485/232)
- Output: MODBUS RTU(3xRS-485/422/232)
- Alarm relay outputs: 4EA(HH,H,L,LL)
- Level, Temp., Pressure display with unit
- Bar-graphic indication
- Display of Channel name
- Channel auto scanning
- Common relay output(NC,NO)
- Power: AC100-240V Max.0.25A optional DC24V
- Internal Buzzer
- Indication LEDs: 1xred, 1xgreen
- Dimension: 213x129x200mm
- Dimming function

MODEL:HDI-200



- Input: 4-20mA
- 16bit A/D conversion
- Range and Scale: -9999-9999
- 2point alarm(AL1, AL2) and Dead band
- Alarm outputs: NC or NO
- Optional output: 4-20mA
- 10 points linearized transform function
- Accuracy: +/- 0.2%F.S
- Power: DC24V 4Watt optional AC100-240
- Internal Buzzer
- Dimension: 96x48x112mm
- Dimming function

MODEL:HDU-100



- Large Display : graphic LCD with 240x128
- Display Channel : 8 ch. per one page
- Display of Individual tank name
- Corrected Level/Volume display
- Display of Date/Time
- 1xRS-232/ 3xRS-485 communication ports
- Relay output for Common Alarm
- 6 Status LEDs
- Alarm Buzzer

MODEL:TME-150



- Model : TME-150
- Size : 50.7 × 152.3mm
- Mounting method : Panel front mounting
- Input signal : DC 4-20mA
- Internal resistance : 2.5 Ω
- Accuracy : ± 1.5% of F.S
- Scale length: 100mm
- Scale range : 0-100% of F.S or Owner requirement
- Indicating type : Vertical
- Case material : ABS resin
- Weight : 1.2kg
- Temperature : 0-40°C
- Application : Panel and local indicator

MODEL:NRE-152



- Model : NRE-152
- Size : 50.7 × 152.3mm
- Mounting method : Panel front mounting
- Power source : AC100/110V 200/220V(50/60Hz)
- Input signal : DC 4-20mA
- Internal resistance : 2 Ω
- Accuracy : ± 1.5% of F.S
- Scale length : 100mm
- Scale range : 0-100% or Owner requirement
- Output contact : 1 Transfer contact each on "H" and "L" sides
- Contact rating : AC230V 2.5A DC 30V 2.5A
- Setting range : 0-100% of scale range on each of "H" and "L" sides
- Proximity limit : 3% of scale range
- Temperature : 0-50°C
- Weight : 1.3kg

Electric Converter



MODEL:KN-1000 series



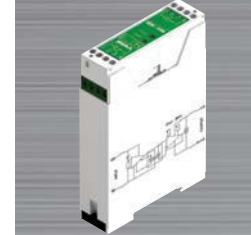
- Model: KN-1000 series
- Size: 36(W) × 144(H) × 169.5(D)
- Mounting method: Panel front mounting
- Display: Bar-101 segment LED
- Digit: 4 digit
- Power source: AC 85-265V(50/60 Hz)
DC 24V(option)
- Input signal: 4-20mA
- Accuracy: ± 0.2%(Digit),and ± 1.0%(Bar)of F.S
- Scale range: 0-100%
- Option: output alarm(2 or 4point)
output signal 4-20mA
RS-422A interface

MODEL:HLI-110A



- Model: HLI-110A
- Size: 110 × 110mm squaresquare
- Mounting method
: Panel front mounting
- Input signal: 4-20mA
- Internal resistance: 1.5 Ω
- Accuracy: ± 1.5% of F.S
- Scale range
: 0-100% or Owner requirement
- Indicating angle: 250deg
- Color: black
- Weight: 450g
- Temperature: 0-40°C
- Application
: Panel and local indicator

MODEL:TMP-100



- 4-20mA output Temperature Transmitter
- Input range: 0-100°C / 0-200°C (selectable)
- Input: Pt-100 Ω
- Output: Current 4-20mA, 2-wire
- Power supply: 7.5-36VDC
- Current limit
- Response time: Nom. 0.3sec.(10-90%)
- Accuracy: < 0.2%F.S
- Operating temp.: -10-60°C
- Storage temp.: -40-85°C
- Dimension: 109.5x75x22.5mm
- DIN-rail mounting: DIN EN 50022-35
- Weight: 0.1kg

MODEL:HIC-100



- 4-20mA Isolation Converter
- Input: Current 4-20mA, 2-wire
- Voltage drop: Max. 3.0V
- Protection: +/- 35VDC
- Output: Current 4-20mA, 2-wire
- Power supply: 7.5-36VDC
- Protection: +/- 35VDC
- Current limit: Nom. 26mA
- Response time: Nom. 0.3sec.(10-90%)
- Isolation voltage: 3.75kVAC
- Linearity error: < 0.1%F.S
- Operating temp.: -10-60°C
- Storage temp.: -40-85°C
- Dimension: 109.5x75x22.5mm
- DIN-rail mounting: DIN EN 50022-35
- Weight: 0.1kg

MODEL:AD-82



- Analog to Digital Converter
- Channel number: 8
- Input: Current 4-20mA
- Output value: 400-2000 (default)
(Long Integer Type(4byte/channel))
- Serial Communication: RS-485 MODBUS RTU
- 24bit A/D conversion
- Scaling: -999999-999999
- Accuracy: +/- 0.2%FS
- Supply voltage: 24VDC(18-32 VDC)
- Indication LEDs: 1 × red, 2 × green
- Menu Button: 4
- Display by LCD(8 character × 2 line)
- Unit display
- Channel setting: by menu button
by windows setting program
- Power consumption: Max. 6.6 Watt at 220VAC
- Operating temperature: -5°C to +55°C
(10-90%)
- Weight: Approximately 1.1kg
- Dimension: 70x110x109.5 mm

MODEL:DA-82



- Digital to current 4-20mA output
- Channel number: 8
- Input: MODBUS RTU, RS-485
- Output: 3.5-24mA(reliable operating span)
- 17bit D/A conversion
- Supply voltage: 24VDC(18-32VDC)
- Channel Power Power: External Power of 24VDC
- Indication LEDs: 1xred, 2xgreen
- Internal DIP Switch for setting(baudrate, address)
- Calibration of Channel output by serial communication
- Operating temperature: -5°C to +55°C (10-90%)
- Weight: Approximately 230g
- Dimension: 70x110x109.5mm