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Magnetic Float Level Transmitter



RusAutomation

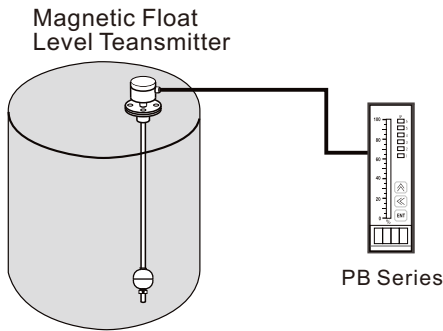


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INTRODUCTION

WORKING PRINCIPLE

The "Magnet Float Level Transmitter" is composed of a float and sensing rod (shown below). As the float is raised or lowered by the liquid level, the sensing rod will induce a resistance output, which is directly proportional to the liquid level. The Magnet Float Level Transmitter is a sturdy, reliable and durable device that is applicable to most industries.



FEATURES

- Optional TAB-2100 (see p4) to produce a 0/4~20mA signal
- Optional PB series bargraphic display scaling panel meter for level control and display
- Sensing elements are protected with a plastic package for safety in use and transport.
- High performance and reliable electric circuit modular design (fig.2)
- Explosion Proof certificate available
- Marine certificate: ABS, DNV, BV, LR, GL available

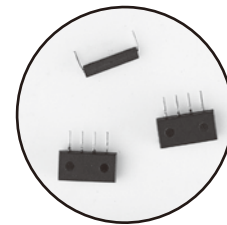


Fig.1
Sensing Element

APPLICATIONS

Waste water treatment
 Turn-key facilities
 Electric power plants
 Shipping vessels
 Hydraulic facilities
 Chemical industrial equipment
 Petrochemical industries
 Hot coal boiler
 e.g. diesel engine generators, motor
 oil meters, oil material storage tanks

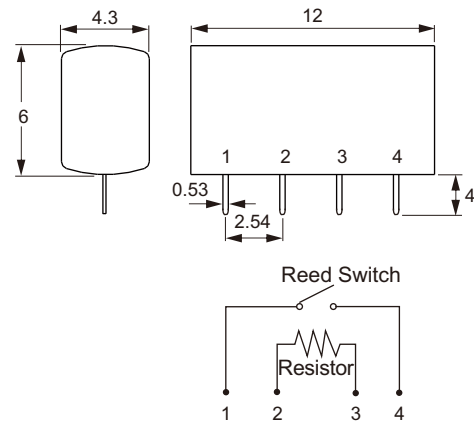
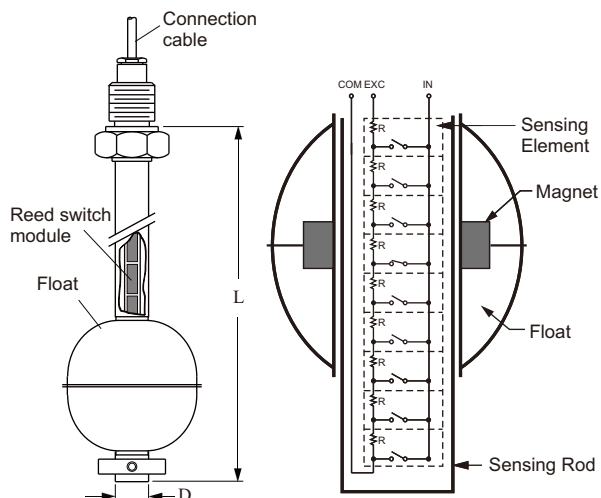


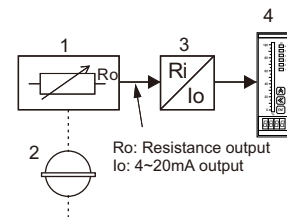
Fig.2
Sensing Element Size

CONSTRUCTION



SCHEMATIC DIAGRAMS

1. Sensing Rod
2. Float
3. Transducer
4. Display Unit



HOUSING DIMENSIONS

B

Material : Aluminum
Enclosure : IP65
Max.Temp.: -20°C ~200°C

C

Material : PP+Fiber
Enclosure : IP65
Max.Temp.: -20°C ~80°C

D


Material : Aluminum
Enclosure : IP65
Max.Temp.: -20°C ~200°C


E

Material : Aluminum
Enclosure : IP65
Max.Temp.: -20°C ~200°C

G

Material : PC
Enclosure : IP65
Max.Temp.: -20°C ~80°C

K Explosion-proof 

Material : Aluminum
Enclosure : CESI 03 ATEX 108
ATEX  II 2G Ex d IIB T6
Max.Temp.: -20°C ~100°C

N

Material : SUS316
Enclosure : IP65
Max.Temp.: -20°C ~200°C

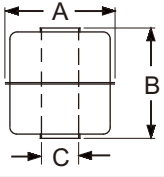
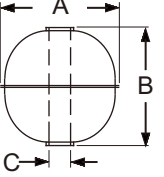
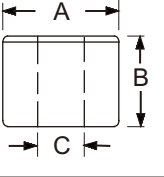
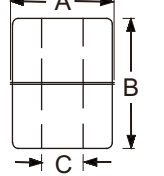
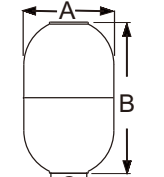
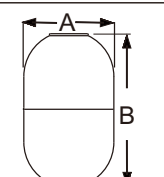
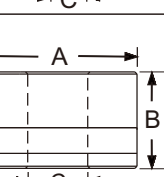
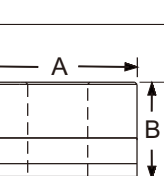
X

Material : Aluminum
Enclosure : IP65
Max.Temp.: -20°C ~100°C

A

Material : Aluminum
Enclosure : IP67
Max.Temp.: -40°C ~80°C

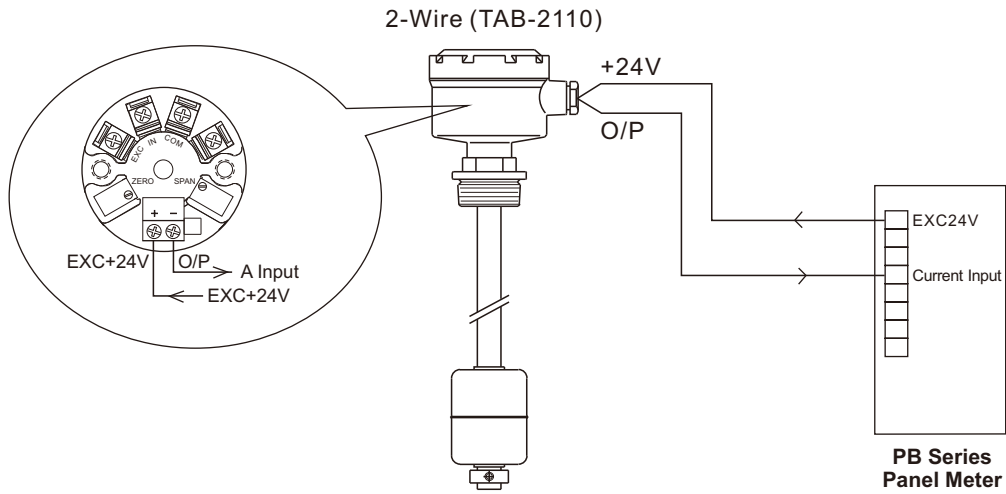
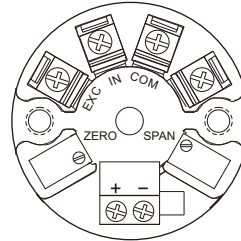
FLOAT SPECIFICATIONS

Dimension	Type	AxBxC(mm)	S.G.	Max. Pressure (kg/cm ²)	Material	Max. Temp. (°C)	Approx. Weight (g)
	S3	45x55x15	0.65	12	SUS 316	200°C	37.6
	S6	75x108x19	0.5	10	SUS 304	200°C	165
	S4	52x52x15	0.55	30	SUS 316	200°C	33.4
	S5	75x73x19	0.61	30	SUS 304	200°C	105
	S8	100x100x20	0.5	15	SUS 304	200°C	249.7
	S9	150x150x30	0.45	15	SUS 304	200°C	534
	P3	48x45x18.5	0.6	5	PP	80°C	35.5
	F4	48x62x18	0.75	5	PVDF	120°C	65.3
	R6	72x118x28	0.62	22.5	SUS316	200°C	193
	RF	72x118x28	0.95	22.5	SUS316	200°C	296
	P9	74x45x28	0.64	5	PP	80°C	111
	PI	74x45x28	0.96	5	PP	80°C	165

TRANSDUCER

MODEL: TAB-2110 (TAXAA1X) Transducer

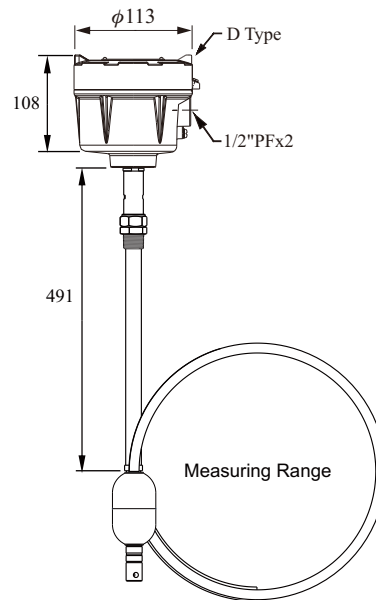
- Power Supply : 12~36Vdc
- Output Current : Loop power 4~20mA
- Load Resistance : $RL(\text{Max})=50(Vs-8)$
- Ambient Temperature : -40~80°C
- Ambient Humidity : 0~80% RH
- Accuracy : $\pm 0.1\%$ (25°C)
- Temperature Effect : 0.01%F.S./°C
- Adjustment Range : Span Adjustment 20% FS
Zero Adjustment 5% FS



FLEXIBLE MODEL DIGITALE DISPLAY TYPE / ECONOMICAL TYPE

MODEL: Flexible Magnetic Float Level Transmitter (Economical type)

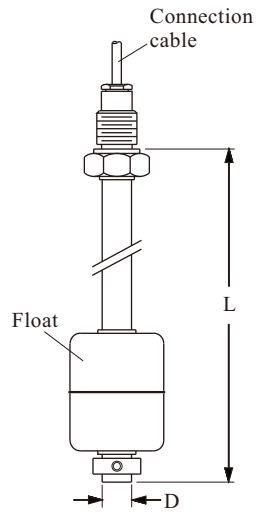
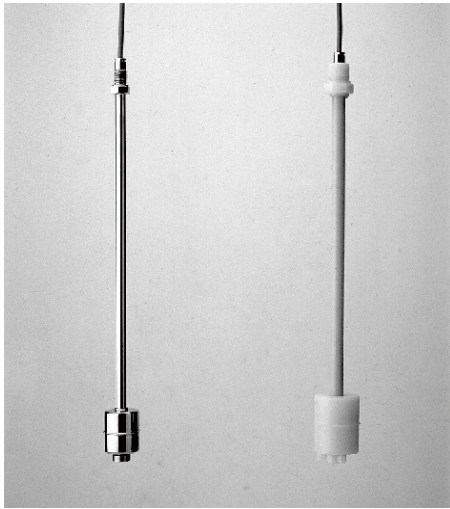
Power Supply	: 12~36Vdc
Measuring range	: 3000mm~30000mm
Analog output	: 4~20mA loop power
Resolution	: 12.7mm
Load impedance	: RL (Max.) = 50 (Vs-8)
Accuracy	: $\pm 0.1\%$ (25°C)
Ambient temp.	: -40~80°C
Operating temp.	: -40~80°C
IP rating	: IP65



FEATURE

- Cover protection for reed module, to prevent any damage during transportation.
- Not effect by temperature and pressure variaion.
- Easy to record and set up with digital display.
- Easy to install, need not to do periodic calibration and maintenance.

ECONOMICAL



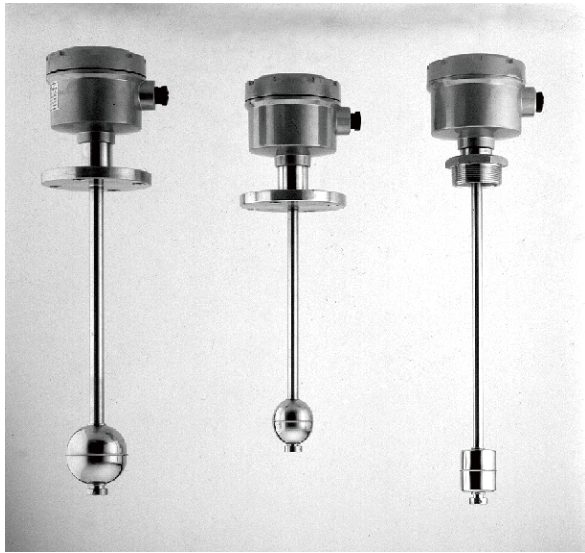
● SPECIFICATIONS

Connection Cable: Silicon cable 3C x 1M
Output: 3-wire resistance output
Total Resistance: 1MΩ (Max.)

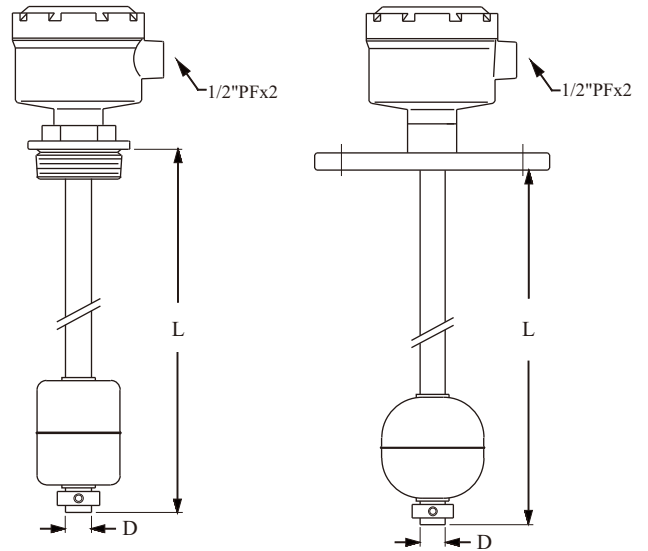
Operating Temp.: PP tube -10 °C ~ 80 °C
 PVDF tube -20 °C ~ 120 °C
 SUS tube -20 °C ~ 120 °C

Order No.	Connection	Tube size & Material (D)	Float type & Material	Suitable S.G.	Measuring Range
FG□-AR4	3/8"PF	φ14 SUS 304 SUS 316	S3: φ45x55 SUS 316 S4: φ52x52 SUS 316	>0.65 >0.55	FGA...Max.6M FGB...Max.6M
FG□-AR7	3/8"PF	φ17.2 SUS 304	S5: φ75x73 SUS 304 S6: φ75x108	>0.61 >0.5	FGA...Max.6M FGB...Max.6M
FGB-CR5P3	3/4"PF	φ17.2 PP	P3: φ48x45 PP	>0.6	FGB...Max.6M
FGB-CR6F4	3/4"PF	φ16 PVDF	F4: φ48x62 PVDF	>0.75	FGB...Max.6M

STANDARD



★ B type housing, dimension see page 2.



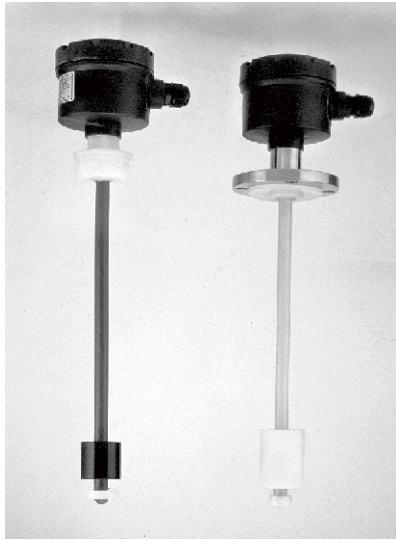
● SPECIFICATION

Terminal Housing: Aluminum, IP65
Output: 4~20mA, 2-wire
Total resistance : 1MΩ (Max.)

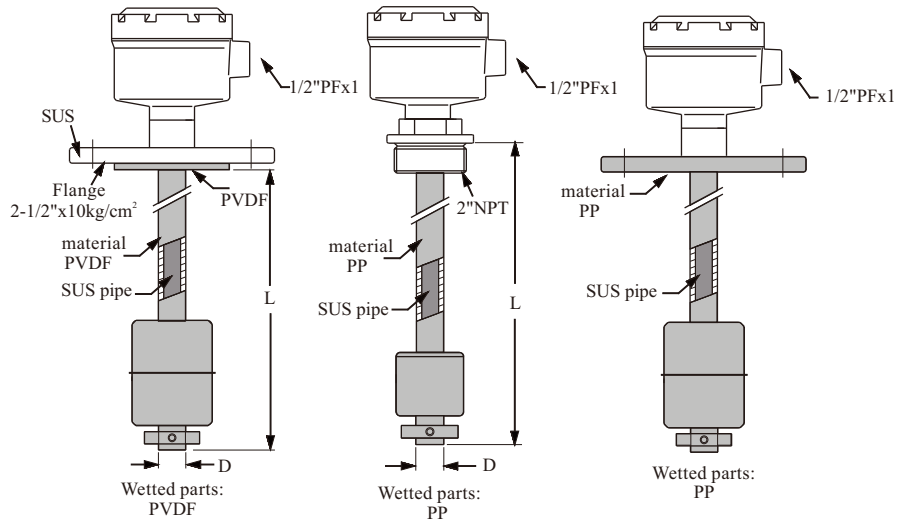
Operating Temperature: -20 ~ 120 °C
Ambient Temperature: 0~70 °C

Order No.	Connection	Tube size & Material (D)	Float type & Material	Suitable S.G.	Measuring Range
FG□BFQ4	2"PT	φ14 SUS 316 SUS 304	S3: φ45x55 SUS 316 S4: φ52x52 SUS 316	>0.65 >0.55	FGC/D...Max.6M
FG□BGN4	2-1/2"x10kg/cm ²	φ14 SUS 316 SUS 304	S3: φ45x55 SUS 316 S4: φ52x52 SUS 316	>0.65 >0.55	FGC/D...Max.6M
FGDBHN7	3"x10kg/cm ²	φ17.2 SUS 304	S5: φ75x73 SUS 304 S6: φ75x108 SUS 304	>0.61 >0.5	FGD...Max.6M
FGDBIQ7	4"PT	φ17.2 SUS 304	S8: φ100x100 SUS 304	>0.5	FGD...Max.6M
FGDBKN8 FGDBKN9	6"x10kg/cm ²	φ21.7 SUS 304 φ27.2	S9: φ150x150 SUS 304	>0.45	FGD...Max.12M

ANTI-CORROSIVE



★ C type housing, dimension see page 2.



● SPECIFICATIONS

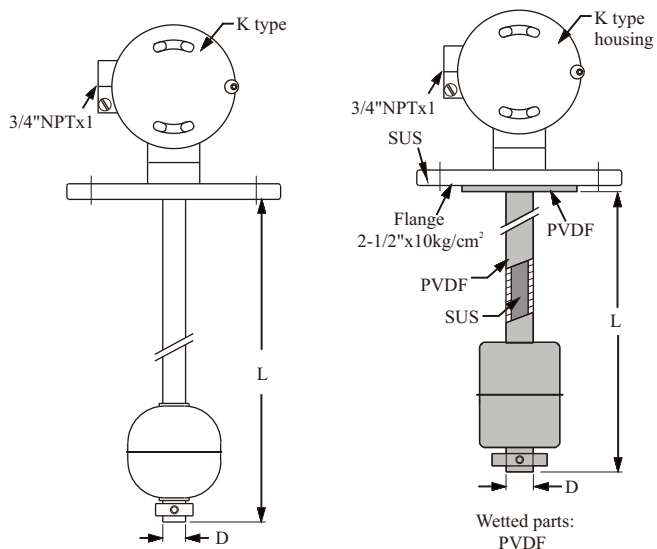
Terminal Housing: PP +Fiber, IP65
Output: 4~20mA, 2-wire
Ambient Temperature: 0~70 °C

Operating Temperature: PP jacket tube-10 ~ 80 °C
 PVDF jacket tube -20 ~ 120 °C
Total resistance: 1MΩ (Max.)

Order No.	Connecting	Tube size & Material (D)	Float type & Material	Suitable S.G.	Measuring Range
FGDCFQ5P3	2"PT	φ17.2 PP	P3: φ48x45 PP	>0.55	FGD...Max.6M
FGDCFQ6F4	2"PT	φ16 PVDF	F4: φ48x62 PVDF	>0.75	FGD...Max.6M
FGDCGN5P3	2-1/2"x10kg/cm ²	φ17.2 PP	P3: φ48x45 PP	>0.6	FGD...Max.6M
FGDCGN6F4	2-1/2"x10kg/cm ²	φ16 PVDF	F4: φ48x62 PVDF	>0.75	FGD...Max.6M

Every unit is protected by a PP or PVDF flange to prevent the sensing rod from corrosion.

★K type ATEX Explosion proof enclosure can be selected (see p2).



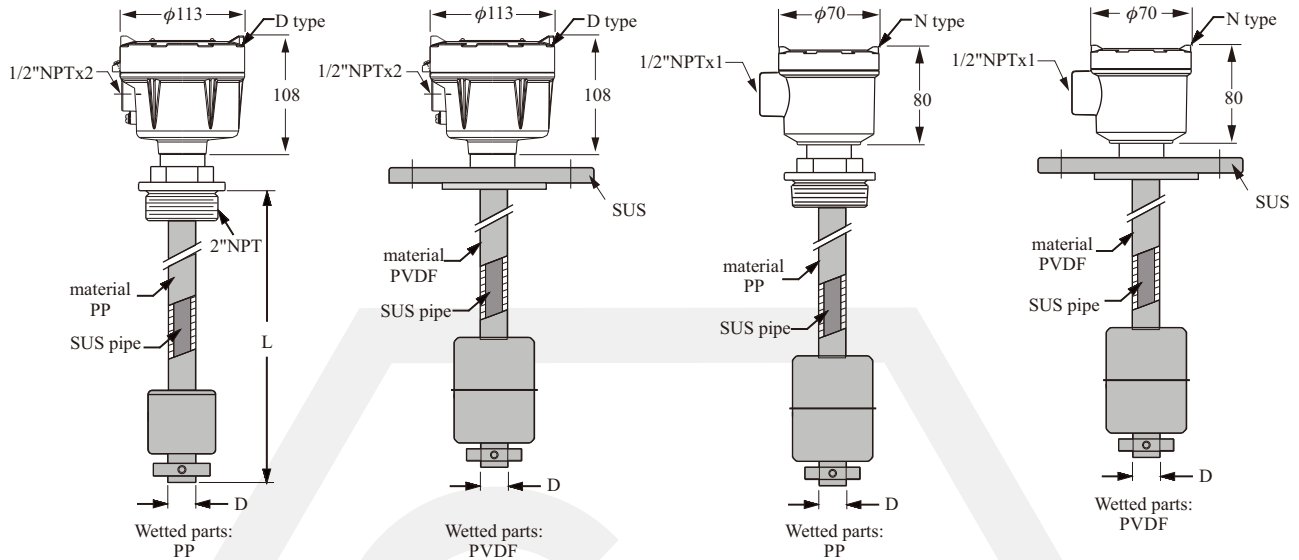
● SPECIFICATION

Terminal Housing: K type --- Aluminum, ATEX Ex d IIB T6 **Operating Temperature:** PP tube -10 ~ 80°C
Output: 4~20mA, 2-wire PVDF tube -20 ~ 120°C
Ambient Temperature: 0~70 °C SUS tube -20 ~ 120°C
Total resistance: 1MΩ (Max.)

Order No.	Connection	Tube size & Material (D)	Float type & Material	Suitable S.G.	Measuring Range
FG□KFQ4	2"PT	φ14 SUS 304	S4: φ52x52 SUS 316	>0.55	FGA/B...Max.6M FGC/D...Max.6M
FG□KGN4	2-1/2"x10kg/cm ²	φ14 SUS 304	S4: φ52x52 SUS 316	>0.55	FGA/B...Max.6M FGC/D...Max.6M
FGDKHN7	3"x10kg/cm ²	φ17.2 SUS 304	S6: φ75x108 SUS 304	>0.5	FGD...Max.6M
FGDKIQ4	4"PT	φ17.2 SUS 304	S8: φ100x100 SUS 304	>0.5	FGD...Max.6M
FGDKFQ5P3	2"PT	φ17.2 PP	P3: φ48x45 PP	>0.6	FGD...Max.6M
FGDKFQ6F4	2"PT	φ16 PVDF	F4: φ48x62 PVDF	>0.75	FGD...Max.6M
FGDKGN5P3	2-1/2"x10kg/cm ²	φ17.2 PP	P3: φ48x45 PP	>0.6	FGD...Max.6M
FGDKGN6F4	2-1/2"x10kg/cm ²	φ16 PVDF	F4: φ48x62 PVDF	>0.75	FGD...Max.6M

ENCLOSURE EXPLOSION PROOF

★ D or N type housing can be selected.



● SPECIFICATIONS

Terminal Housing: D type --- Aluminum
 N type --- SUS

Output: 4~20mA, 2-wire

Ambient: 0~70 °C

Total Resistance: 1MΩ (Max.)

Operation Temperature: PP tube -10 ~ 80 °C
 PVDF tube -20 ~ 120 °C

MODEL NO. FG7	Connecting	Tube size (D) & Material	Float type & Material	Suitable S.G.	Measuring Range
FG7□DFQ4	2"PT	φ14 SUS 316	S3: φ45x55 SUS 316	>0.65	FG7...Max.3M
FG7□DGN4	2-1/2"x10kg/cm ²	φ14 SUS 316	S3: φ45x55 SUS 316	>0.65	FG7...Max.3M
FG7DDHN7	3"x10kg/cm ²	φ17.2 SUS 304	S5: φ75x73 SUS 304	>0.61	FG7...Max.6M
FG7DDIQ4	4"PT	φ17.2 SUS 304	S8: φ100x100 SUS 304	>0.5	FG7...Max.6M
FG7DDKN8 FG7DDKN9 FG7DDKN8 FG7DDKN9	6"x10kg/cm ²	φ21.7 φ27.2 SUS 304	S9: φ150x150 SUS 304	>0.45	FG7...Max.6M
FG7DDFQ5P3	2"PT	φ17.2 PP	P3: φ48x45 PP	>0.6	FG7...Max.6M
FG7DDFQ6F4	2"PT	φ16 PVDF	F4: φ48x62 PVDF	>0.75	FG7...Max.6M
FG7DDGN5P3	2-1/2"x10kg/cm ²	φ17.2 PP	P3: φ48x45 PP	>0.6	FG7...Max.6M
FG7DDGN6F4	2-1/2"x10kg/cm ²	φ16 PVDF	F4: φ48x62 PVDF	>0.75	FG7...Max.6M

MODEL NUMBER / ORDER CODE COMPARISON TABLE

Model Number	Order Code
FG□-AR4	FGX10100-A10AAA403CMA2B
FG□-AR7	FGX10100-A10AAA403CMA2D
FGB-CR5P3	FGX10100-B10AAA703E182D
FGB-CR6F4	FGX10100-AAA703E242C
FG□BFQ4	FGX10000-A1BAAB201CMA2B
FG□BGN4	FGX10000-A1BAKB442
FGBBHN7	FGX10000-A1BAKB542EMA2D
FGBBIQ7	FGX10000-A1BAKB701EMA2D
FGBBKN8	FGX10000-A1BAKB942EMA3A
FGBBKN9	FGX10000-A1BAKB942EMA3B
FGDCFQ5P3	FGX10000-B1CAAB201E182DP3
FGDCFQ6F4	FGX10000-B1CAAB201E242CF4
FGDCGN5P3	FGX10000-B1CAKB442E182DP3
FGDCGN6F4	FGX10000-B1CAKB442E242CF4
FG□KFQ4	FGX10000-A1KAAB201CMA2B
FG□KGN4	FGX10000-A1KAKB442CMA2B
FGDKHN7	FGX10000-A1KAKB542EMA2D
FGDKIQ4	FGX10000-A1KAAB701EMA2D
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FGDKFQ6F4	FGX10000-A1KAAB201E242CF4
FGDKGN5P3	FGX10000-A1KAKB442E182DP3
FGDKGN6F4	FGX10000-A1KAKB442E242CF4
FG7□DFQ4	FGX100□□-A1DAAB201CMB2BS3
FG7□DGN4	FGX100□□-A1DAKB442CMB2BS3
FG7DDHN7	FGX100□□-A1DAKB542EMA2DS5
FG7DDIQ4	FGX100□□-A1DAAB707EMA2DS8
FG7DDKN8	FGX100□□-A1DAKB942EMA3AS9
FG7DDKN9	FGX100□□-A1DAKB942EMA3BS9
FG7DDFQ5P3	FGX100□□-A1DAAB207E182DP3
FG7DDFQ6F4	FGX100□□-A1DAAB207E242CF4
FG7DDGN5P3	FGX100□□-A1DAKB442E182DP3
FG7DDGN6F4	FGX100□□-A1DAKB442E242CF4

FGX1 ⁰⁵□⁰⁶□⁰⁷□⁰⁸□ - ⁰⁹□¹⁰□¹¹□¹²□¹³□¹⁴□¹⁵□¹⁶□¹⁷□¹⁸□¹⁹□²⁰□²¹□²²□²³□²⁴□ 00 ²⁷□ 0 ²⁹□³⁰□³¹□³²□³³□

¹⁹ ²⁰ **Probe material**

MA: SUS 304
 MB: SUS 316
 18: PP
 24: PVDF

²¹ ²² **Probe diameter**

1G: φ9.5mm 2D: φ17.2mm
 2A: φ12.7mm 3A: φ21.7mm
 2B: φ14.0mm 3B: φ27.2mm
 2C: φ16.0mm

²³ ²⁴ **Float 1**

00: None
 S3: 45*55*15 E>0.65 S9: 150*150*30 E>0.45 P3: 48*45*18.5 E>0.6
 S4: 52*52*15 E>0.55 F4: 48*62*18 E>0.8 P9: 74*45*28 E>0.64
 S5: 75*73*20.5 E>0.65 R6: 72*118*28 E>0.62 PI: 74*45*28 E>0.96
 S6: 75*108*20 E>0.5 RF: 72*118*28 E>0.95
 S8: 100*100*20 E>0.5

²⁷ **Analog output**

B: 4~20mA
 E: 3-wire resistance output

²⁹ **Material and surface roughness**

0: None
 A: Ra < 0.3
 B: Ra < 0.5
 C: Ra < 0.8

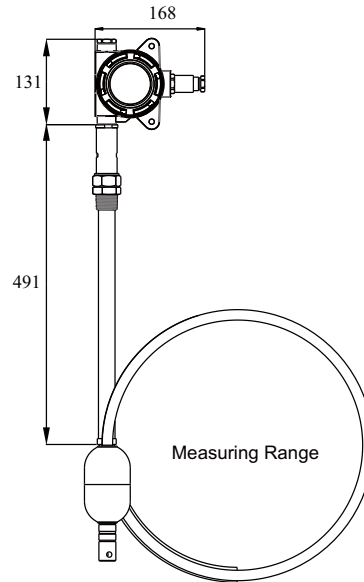
³⁰ ³¹ ³² ³³ **Length**

Code	Probe Length
0150~A300	150~30000mm

DISPLAY MODEL

MODEL: Flexible Magnetic Float Level Transmitter (Digital display type)

Power Supply: 12~36Vdc
Measuring range: 3000mm~30000mm
Analog output: Loop power 4~20mA
Resolution: 12.7mm
Digital communication: HART、RS485
Load impedance: RL(Max)=50(Vs-8)
Accuracy: $\pm 0.1\%$ (25°C)
Ambient temp.: 40~80°C
Operating temp.: 40~80°C
IP rating: IP67



FEATURE

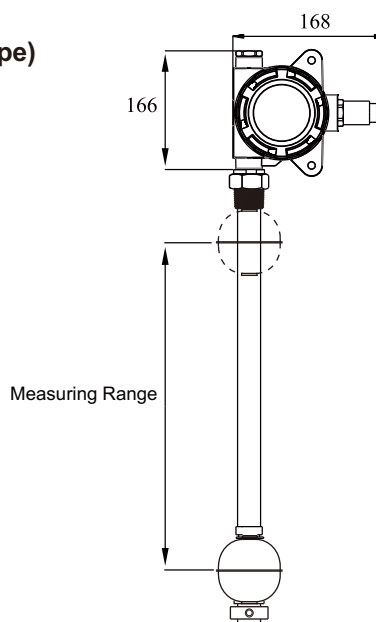
- Cover protection for reed module, to prevent any damage during transportation.
- Not effect by temperature and pressure variaion.
- Easy to record and set up with digital display.
- Easy to install, need not to do periodic calibration and maintenance.

EXPLOSION PROOF DISPLAY MODEL

MODEL: Explosion proof Magnetic Float Level Transmitter (Digital display type)

Power Supply: 12~36 Vdc
Measuring range: 150mm~3000mm
Analog output: 4~20mA, 2Wire(Loop power)
Resolution: 6.35mm / 12.7mm
Digital communication: HART/RS-485
Ambient temp.: 40~85°C
Operating temp.: 40~125°C
IP rating: IP67

NEPSI PROOF No.GYB16.1444X
Ex d IIC T3~T6 Gb



ORDER INFORMATION

FGX2 ⁰⁵ ⁰⁶ ⁰⁷ ⁰⁸ - ⁰⁹ ¹⁰ ¹¹ ¹² ¹³ ¹⁴ ¹⁵ ¹⁶ ¹⁷ ¹⁸ ¹⁹ ²⁰ ²¹ ²² ²³ ²⁴ 00 ²⁷ ²⁸ ²⁹ ³⁰ ³¹ ³² ³³

⁰⁵ ⁰⁶ **Model**
00: Standard

⁰⁷ ⁰⁸ **Certification**
00: None
7C: NEPSI-Exd

⁰⁹ ¹⁰ **Probe type**
A1: rod type
A2: FLEXIBLE MODEL
B1: Corrosion-proof rod type

¹¹ **Housing type**
A: A type housing (Aluminum)

Connection

¹² ¹³	¹⁴ ¹⁵	¹⁶ ¹⁷
Flange	B2: 2"	01: PT male
AK: JIS-FF	B4: 2-1/2"	03: PF male
AN: ANSI-RF	B5: 3"	07: NPT male
AS: DIN-FF	B7: 4"	40: 5 kg/cm ²
	B8: 5"	42: 10 kg/cm ²
Thread	B9: 6"	48: 150 Lbs
AA: JIS	E2: DN50	49: 300 Lbs
AC: ANSI	E4: DN80	57: PN10
	E5: DN100	58: PN16

¹⁸ **Resolution**
C: 6.35mm
E: 12.7mm

¹⁹ ²⁰ **Probe material**
MA: SUS 304
MB: SUS 316
21: PTFE

(Next page)

MR SENSOR FLOAT LEVEL TRANSMITTER

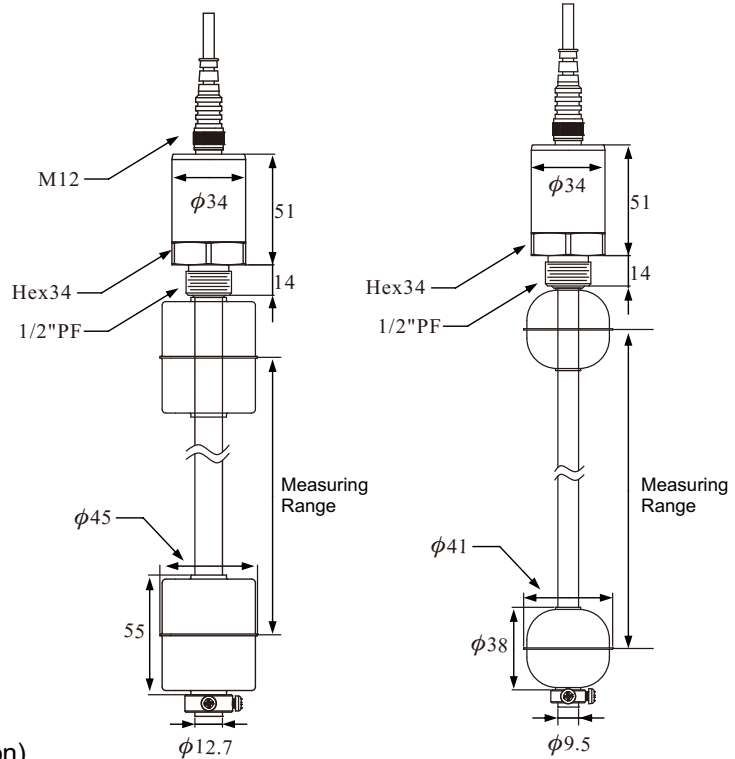
MODEL: FG3 MR Sensor Float Level Transmitter

PRINCIPLE

MR Sensor Float Level Transmitter is utilizing the position of magnetic float change along with fluid level. The sensing rod is composed of resistance and MR sensor as a voltage divider circuit. The smaller the MR Sensor interval, the higher the accuracy. The signal from voltage divider circuit will be converted to 4~20 mA, RS-485 and HART are also available.

SPECIFICATION

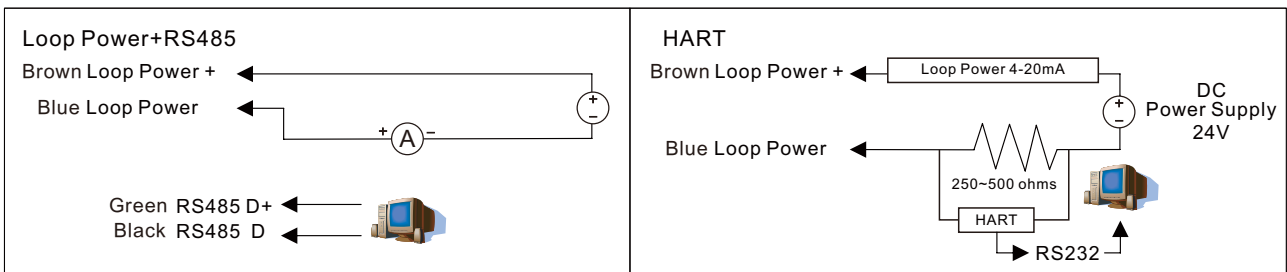
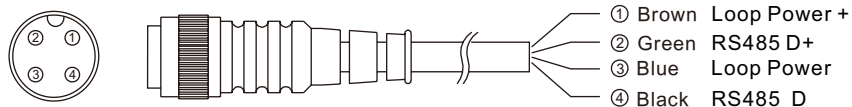
Power Supply: 12~36Vdc
 Measuring range: 150mm~3000mm
 Analog output: 4~20mA
 Ambient temp.: 40~85°C
 Operating temp.: 40~85°C
 IP rating: IP67
 Resolution: 5mm / 3mm
 Digital communication: RS485 / HART(option)



FEATURE

- Easy installation without calibration & maintenance.
- Not effect by temperature and pressure variaion.
- high accuracy Optional 5mm / 3mm
- Protection:IP67

WIRING



ORDER INFORMATION

FGX3 0 0 0 0 0 - ⁰⁹ ¹⁰ ¹¹ ¹² ¹³ ¹⁴ ¹⁵ ¹⁶ ¹⁷ ¹⁸ ¹⁹ ²⁰ ²¹ ²² ²³ ²⁴ 0 0 ²⁷ ²⁸ ²⁹ ³⁰ ³¹ ³² ³³

⑨⑩ Probe type

A1: Rod type

⑪ Housing type

0: Without housing

Connection

⑫⑬

Flange
AK: JIS-FF
AN: ANSI-RF
AS: DIN-FF

⑭⑮

A5: 1/2"
A7: 3/4"
A8: 1"
B1: 1-1/2"
B2: 2"
B4: 2-1/2"
B5: 3"
B7: 4"
B8: 5"
B9: 6"
E2: DN50
E4: DN80
E5: DN100

⑯⑰

01: PT male
03: PF male
07: NPT male
40: 5 kg/cm²
42: 10 kg/cm²
48: 150 Lbs
49: 300 Lbs
57: PN10
58: PN16

⑱ Resolution

A: 3mm
B: 5mm

⑲⑳ Probe material

MA: SUS 304
MB: SUS 316

㉑㉒ Probe diameter

1G: ϕ 9.5mm
2A: ϕ 12.7mm
2C: ϕ 16.0mm

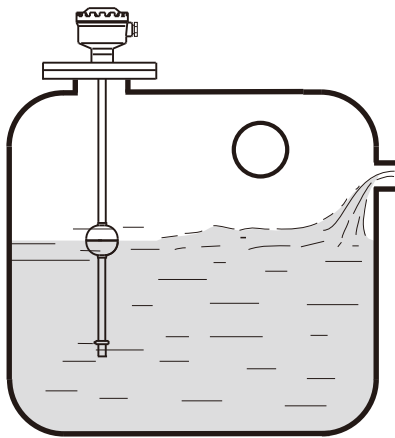
* ϕ 9.5mm Only available for resolution 5mm

* While the total length is over 2000mm, the stem size is only ϕ 16mm

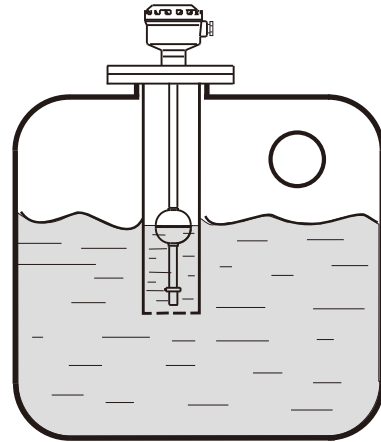
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INSTALLATION

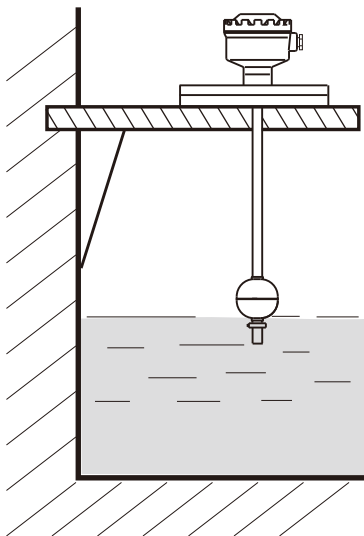
- ▶ The float level transmitter should be mounted far away from the inlet. Any rigorous liquid turbulence will produce error output signals.



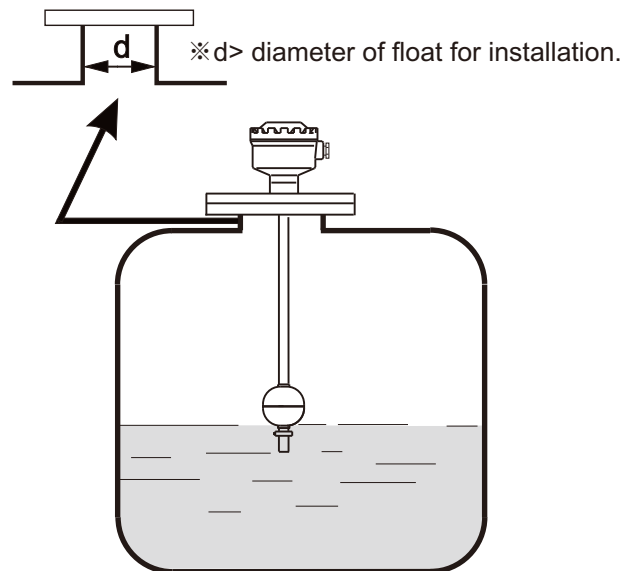
- ▶ A pipe shield or an equivalent device can help normalize the indicator actuation especially when an agitator is present.



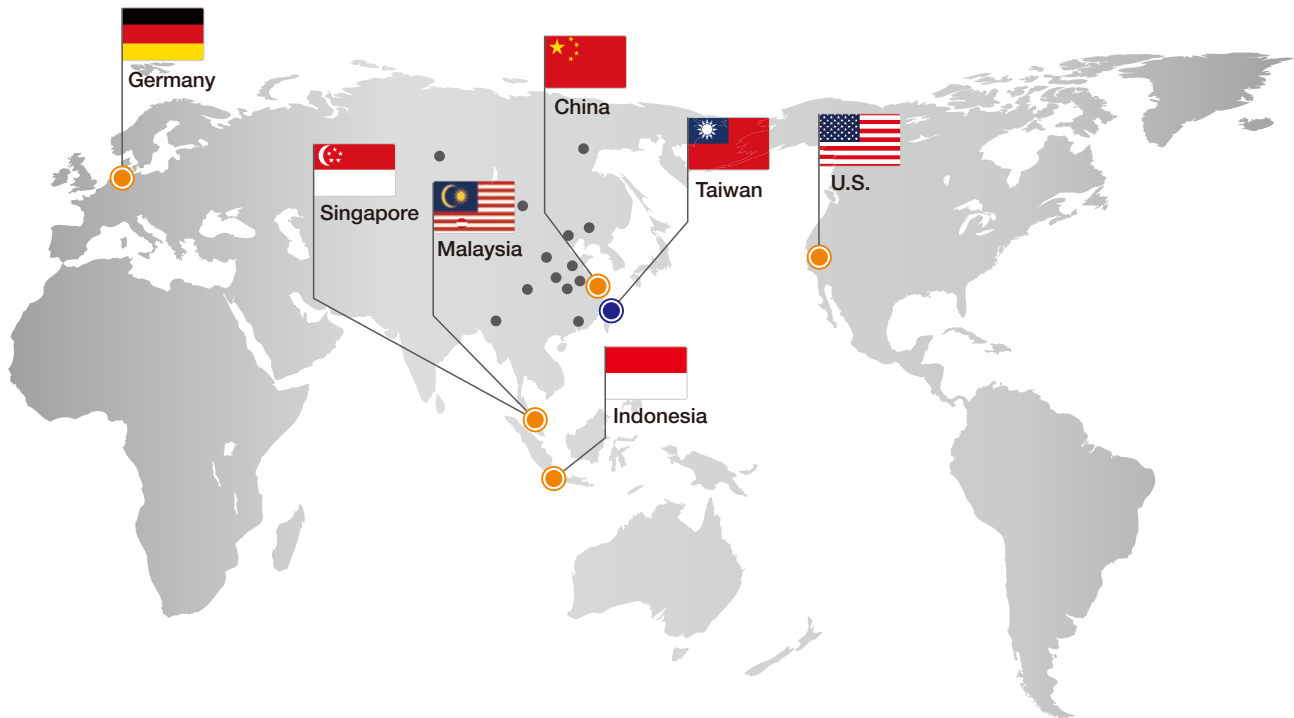
- ▶ Another useful alternative is an L type support frame when the level indicator is mounted in concrete wall tank as figure below.



- ▶ It is recommended to select the standpipe with diameter (d) larger than the float for the installation process.



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