Pressure Level Transmitter

www.fine-tek.com

FineTek
Your Made-To-Order Solutions

PRODUCT INTRODUCTION

FEATURES

1. FineTek Models include: extension cable transducer, Anti-corrosive model, flanged models & pressure transducers.
2. Can be connected to digital panel meters, recorders, PLC, signal controllers.
3. The metal diaphragm is suitable in as weak acid and alkaline liquids or sewage water treatment.
4. Our internal temperature compensation ensures long lasting reliability.
5. Customized flange/screw sizes available.

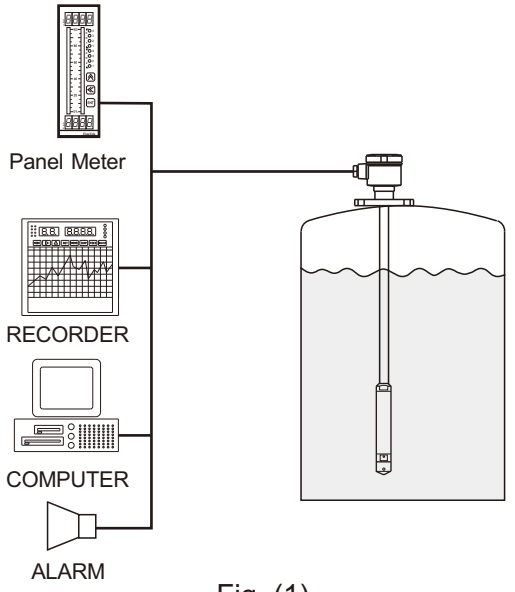


Fig. (1)

THEORY

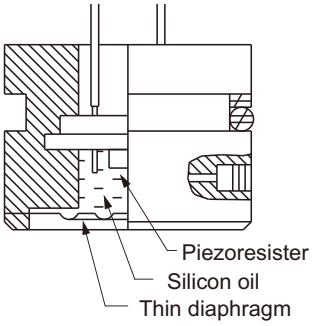
A pressure sensor is made up of a piezoresistor Wheatstone bridge.

As shown in fig.2, the pressure is applied to the diaphragm and passes through the silicon oil onto the Wheatstone bridge.

When the liquid pressure acts directly on the front face of diaphragm, the Wheatstone bridge will creates a differential voltage. This voltage difference will then be amplified to obtain a current signal of 4-20mA. When this current output is connected to an analog meter, we can scale properly to read the level of the applied liquid in a container or a vessel.

The formula used here is: $P = \theta \times H$

Where P is pressure, θ is pressure constant and H is the level of liquid in a container.



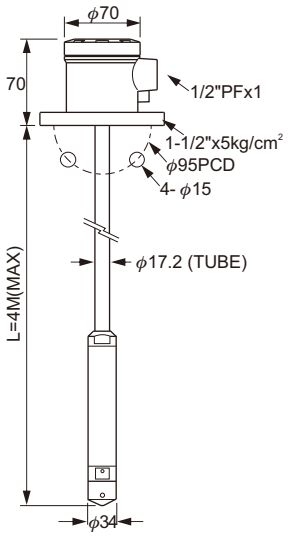
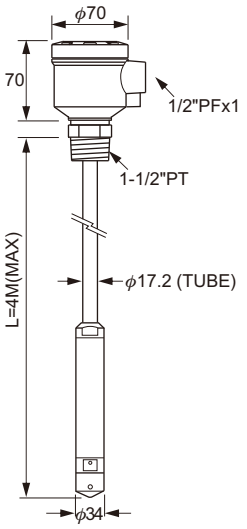
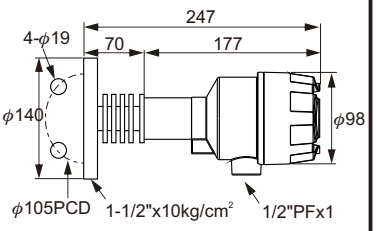
$P = \theta \times H$
P : Pressure
H: The level of liquid
θ : Pressure constant

Fig. (2)

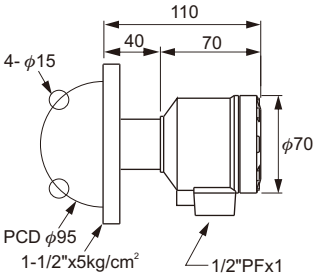
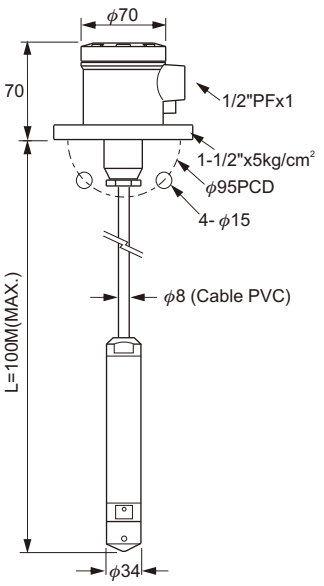
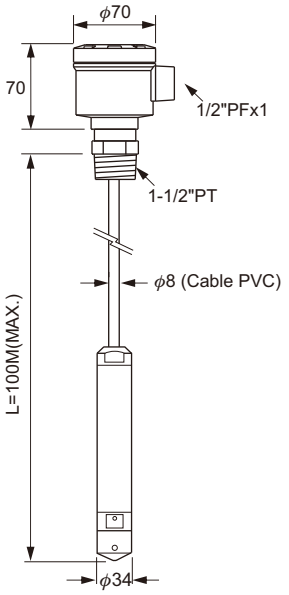
APPLICATIONS

1. EC1100 is a liquid measurement device which can be used in a variety of environments, including water-agitation environments.
2. EC1200 can withstand high temperature liquid environment.
3. The Standard Flange Type, EC1210 can be used in liquid & gas pressure measurement environments (i.e., mildly corrosive environments).
4. EC1300~1320 type is suitable for measurement of very deep water, such as measurement of reservoirs.
5. EC1500 is suitable for pressure measurement or control devices such as those found in hydraulic and pneumatic machines.

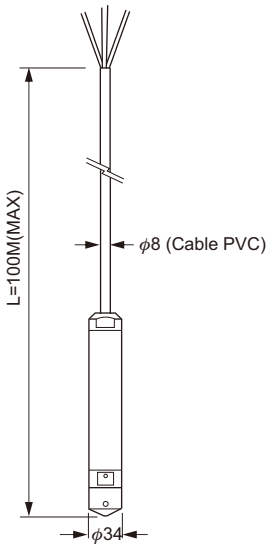
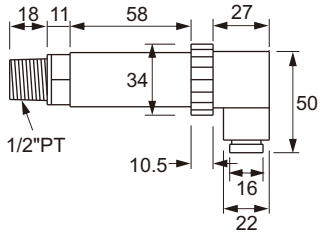
SPECIFICATIONS

Dimensions (unit:mm)			
Model No.	**EC1100 Extension Tube Flange Model**	**EC1110 Extension Tube Screw Model**	**EC1200 Hi-Temp.Flange Model**
Housing material	Aluminum, IP65	Aluminum, IP65	Aluminum, IP65
Pressure range	0.1, 0.2, 0.4 bar	0.1, 0.2, 0.4 bar	0.1, 0.2, 0.5, 1, 2, 5, 10 bar
Measuring range	0~1M,0~2M,0~4M (assumed with the water S.G:1)	0~1M,0~2M,0~4M (assumed with the water S.G:1)	0~1M,0~2M,0~5M,0~10M, 0~20M,0~50M,0~100M (assumed with the water S.G:1)
Linearity	0.3%FS	0.3%FS	0.3%FS
Long term stability	<0.1%	<0.1%	<0.1%
Operating temp	-10~80°C	-10~80°C	-10~150°C
Ambient temp	60°C	60°C	60°C
Supply voltage	13~36 Vdc	13~36 Vdc	13~36 Vdc
Output	4~20mA,Loop resistance should be less than 500 Ω	4~20mA,Loop resistance should be less than 500 Ω	4~20mA,Loop resistance should be less than 500 Ω
Connection	1-1/2" x 5kg/cm^2	1-1/2" PT	1-1/2" x 10kg/cm^2
Wetted material	SUS 304/316	SUS 304/316	SUS 304/316
Weight	approx. 4.2kg (L=1M)	approx. 4kg (L=1M)	approx. 1.8kg (L=1M)

※Special size flange and screws are available.
※OEM/ODM is welcome.

Dimensions (unit:mm)			
Model No.	**EC1210 Flange Standard Model**	**EC1300 Extension Cable Flange Model**	**EC1310 Extension Cable Screw Model**
Housing material	Aluminum, IP65	Aluminum, IP65	Aluminum, IP65
Pressure range	0.1, 0.2, 0.4 bar	0.1, 0.2, 0.5, 1, 2, 5, 10 Bar	0.1, 0.2, 0.4, 1, 2, 5, 10 Bar
Measuring range	0~1M,0~2M,0~4M (assumed with the water S.G:1)	0~1M,0~2M,0~5M,0~10M, 0~20M,0~50M,0~100M (assumed with the water S.G:1)	0~1M,0~2M,0~4M,0~10M, 0~20M,0~50M,0~100M (assumed with the water S.G:1)
Linearity	0.3%FS	0.3%FS	0.3%FS
Long term stability	<0.1%	<0.1%	<0.1%
Operating temp	-10~80°C	-10~80°C	-10~80°C
Ambient temp	60°C	60°C	60°C
Supply voltage	13~36 Vdc	13~36 Vdc	13~36 Vdc
Output	4~20mA,Loop resistance should be less than 500 Ω	4~20mA,Loop resistance should be less than 500 Ω	4~20mA,Loop resistance should be less than 500 Ω
Connection	1-1/2" x 5kg/cm²	1-1/2"x5kg/cm²	1-1/2"PT
Wetted material	SUS 304/316	SUS 304/316	SUS 304/316
Weight	approx. 1.5kg	approx. 2.8kg (L=1M)	approx. 2.9kg (L=1M)

※Special size flange and screws are available.
※OEM/ODM is welcome.

Dimensions (unit:mm)		
Model No.	**EC1320 Extension Cable Model**	**EC1500 Pressure Transducer**
Pressure range	0.1,0.2,0.5,1,2,5,10 bar	0.1,0.2,0.5,1,2,5,10,20,50,100 bar
Measuring range	0~1M,0~2M,0~5M,0~10M, 0~20M,0~50M,0~100M (assumed with the water S.G:1)	———
Linearity	0.3%FS	0.3%FS
Long term stability	<0.1%	<0.1%
Operating temp	-10~80°C	-10~80°C
Ambient temp	N. A.	60°C
Supply voltage	13~36 Vdc	13~36 Vdc
Output	4~20mA,Loop resistance should be less than 500 Ω	4~20mA,Loop resistance should be less than 500 Ω
Protection	———	1/2" PT
Wetted material	SUS 304/316	SUS 304/316
Weight	approx. 0.8kg (L=1M)	approx. 250g

※Special size flange and screws are available.
※OEM/ODM is welcome.

INTERNAL WIRING

1. Ensure power is turned off before connecting. See fig.3, 4 or 5 (depending on the model).
2. Make sure the outlet breather capillary is open for air to flow freely.
3. Please tighten the cover and cable gland after the wiring is finished.
4. The cable should be at least 18 AWG or 16 AWG.

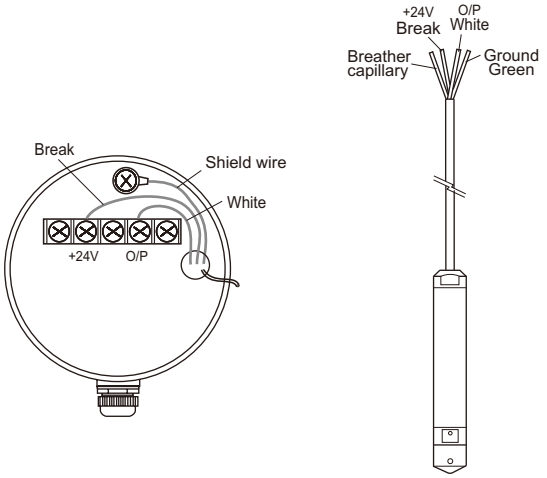


Fig. (3)

EC1100, EC1110, EC1300, EC1310

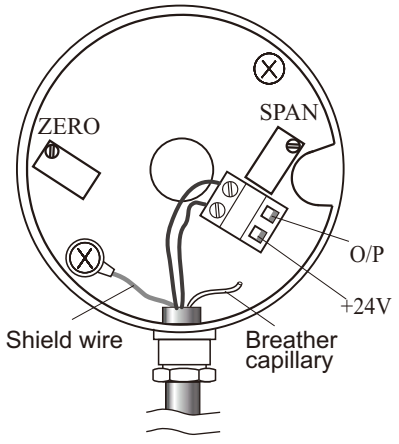


Fig. (4)

EC1200, EC1210

EC1500 TYPE

1. Remove the cover of plug and connect cable to the terminal of plug.

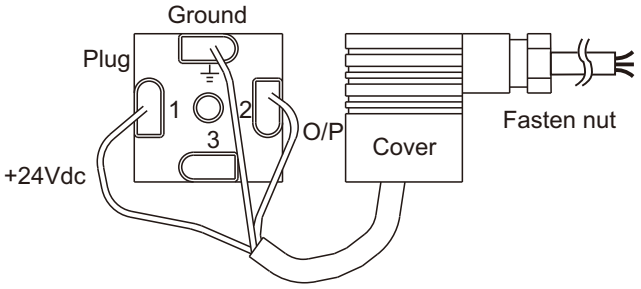


Fig. (5)

2. When wiring is finished, assemble the plug with cover.

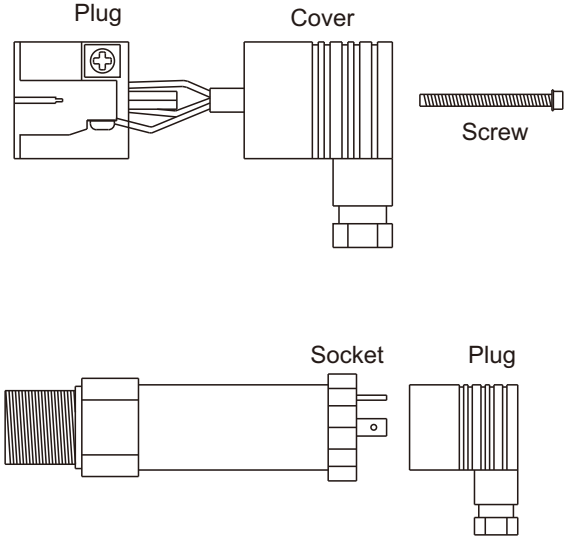


Fig. (6)

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EXTERNAL WIRING

1. When connecting panel meters, please refer to the wiring diagram attached and the related operation manual.
2. Wiring connection should be kept away from high voltage cables, (e.g. power cables) to prevent electrical interference.
3. Operating voltage should be kept higher than 13Vdc.
4. Wiring should be used in shielded insulated cable.
5. Provide additional power supply if required (Diagram 8). If installing 2 panel meters at different location, please refer to diagram 9.

EC1100~1110,1300~1310
Inside view

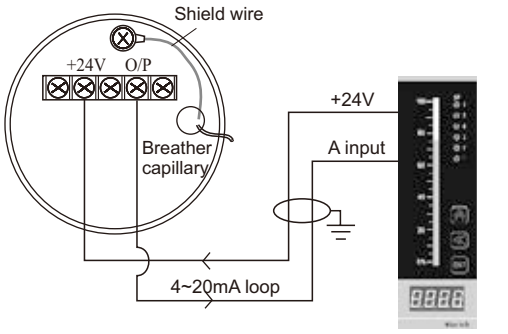


Fig. (7)

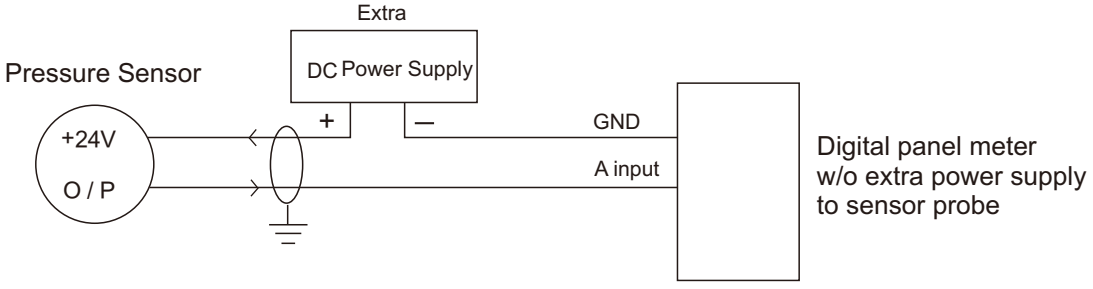


Fig. (8)

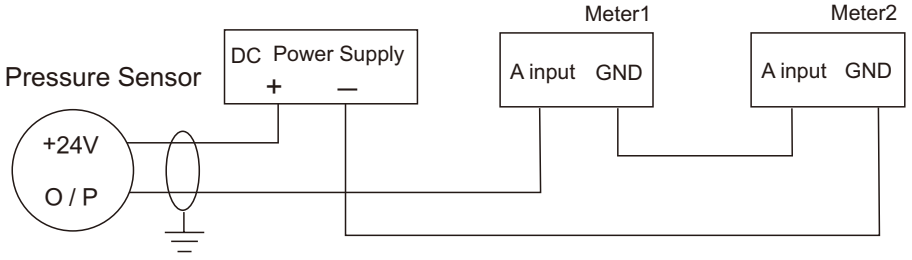


Fig. (9)

INSTALLATION

1. Note the installation diagrams to the right and select your model accordingly.

2. The flange type transducer is equipped with a side mounted electrical housing.

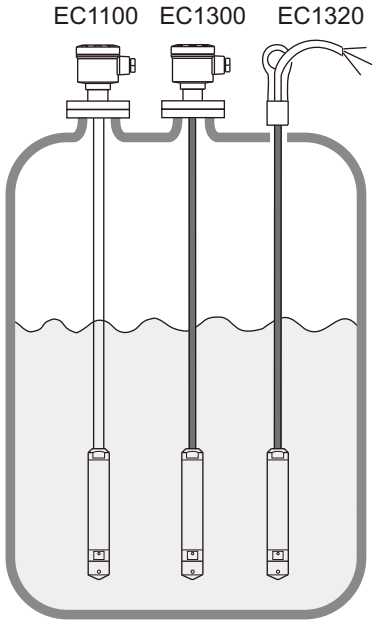
3. The models EC1100 to EC1310 series have 3 multi-thread copper wires and a breather capillary. Avoid bending cables to ensure maximum accuracy.

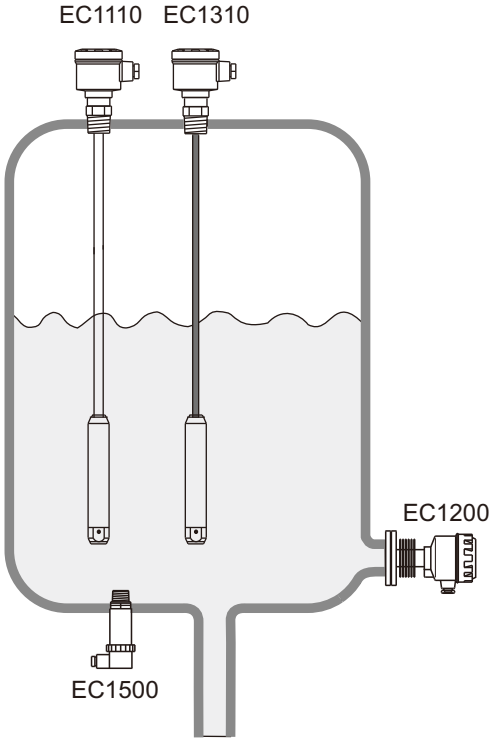
4. 4. Do not use liquid that can crystallize or solidify in the pressure transducers and sensors.

5. The tank or vessel should not be vacuum or no pressure state.

8. Handle the sensor probes with care. The sensor probe is delicate and vibration or shock can damage it.

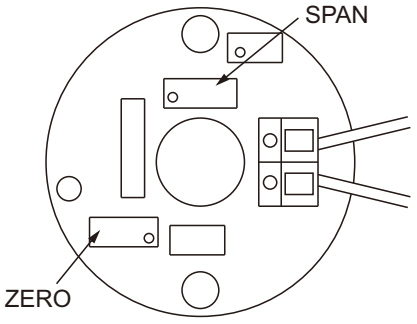
9. Do not use high pressure water jets to wash or contact the sensing diaphragms.



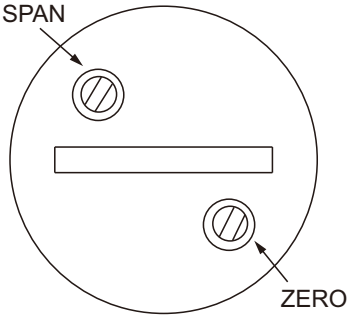


ADJUSTMENT (FOR ZERO-SPAN)

- Since Zero & Span adjustment have been made in the factory. Don't change the setting unless necessary. Zero represents the 4mA for an empty tank and Span represents the 20mA for a full tank.
- Adjustment range: (SPAN) 18~24mA, (ZERO) 3~5mA.
- In the case where sensor output requires more than the 4~20mA signal, a panel meter with programmable input (0~25.5mA) can be used.



The electrical housing for transducer with flange.



The electrical housing for pressure transducer.

Pressure Unit Conversion Constants

	PSI	KPa	mbar	cmH_2O	mmHg	kgf/cm^2
PSI	1	6.89	68.95	70.31	51.71	$70.31x10^{-3}$
KPa	0.15	1	10	10.2	7.5	$1.02x10^{-2}$
mbar	$1.45x10^{-2}$	0.1	1	1.02	0.75	$1.02x10^{-3}$
cmH_2O	$14.22x10^{-3}$	$98.07x10^{-3}$	0.98	1	0.74	10^{-3}
mmHg	$19.34x10^{-3}$	$13.33x10^{-2}$	1.33	1.36	1	$1.36x10^{-3}$
kgf/cm^2	14.22	98.07	980.67	1000	735.56	1

1 MPa=10.2kgf/cm^2=145 PSI 1 kgf/cm^2=0.098MPa=14.22 PSI

HOW TO ORDER

EC 1 1 0 | 0 | E M | (0 1 0 0)

MODEL

110: Extension Tube Flange Type
111: Extension Tube Screw Type
130: Extension Cable Flange Type
131: Extension Cable Screw Type
132: Extension Cable Type

WETTED MATERIAL

0: SUS304
6: SUS316
E: PTFE (EC130 Extension Cable Type)

PROCESS CONNECTION

B: 1/2" (15A)
C: 3/4" (20A)
D: 1" (25A)
E: 1-1/2" (40A)
F: 2" (50A)
G: 2-1/2" (65A)
H: 3" (80A)
I : 4" (100A)
J: 5" (125A)
K: 6" (150A)
S: Others

M: 5 kg/cm^2
N: 10 kg/cm^2
O: 150 Lbs
P: 300 Lbs
Q: PT
R: PF(G)
T : BSP

U: NPT
W: PN10 (10Bar)
X: PN16 (16Bar)
Y: PN25 (25Bar)
Z: PN40 (40Bar)
S: Others
-: None

PROBE LENGTH (unit: mm)

0050: below 500mm
0100: 501~1000mm
0150: 1001~1500mm
:
:
:

※ 500mm per Unit

EC 1 2 0 | 0 | E M | 0 1

MODEL

120: Hi-Temp. Flange Type
121: Flange Standard Type
150: Pressure Transducer(Custom-made)

WETTED MATERIAL

0: SUS304
6: SUS316

PROCESS CONNECTION

B: 1/2" (15A)
C: 3/4" (20A)
D: 1" (25A)
E: 1-1/2" (40A)
F: 2" (50A)
G: 2-1/2" (65A)
H: 3" (80A)
I : 4" (100A)
J: 5" (125A)
K: 6" (150A)
S: Others

M: 5 kg/cm^2
N: 10 kg/cm^2
O: 150 Lbs
P: 300 Lbs
Q: PT
R: PF(G)
T : BSP

U: NPT
W: PN10 (10Bar)
X: PN16 (16Bar)
Y: PN25 (25Bar)
Z: PN40 (40Bar)
S: Others
-: None

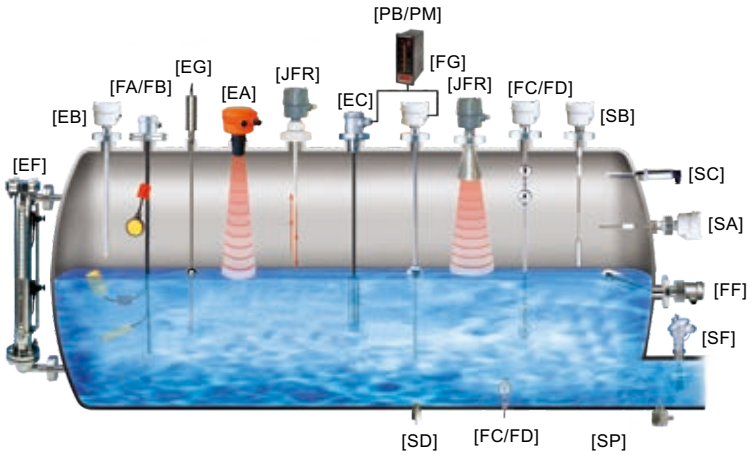
PRESSURE RANGE

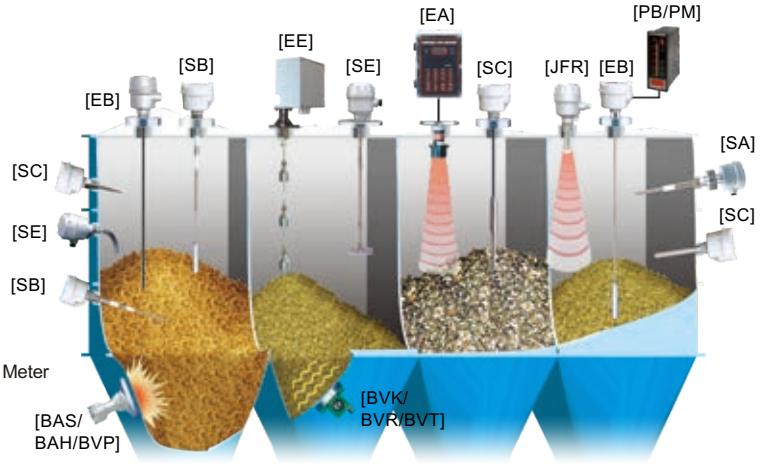
X1 : 0~0.1bar
X2 : 0~0.2bar
X4 : 0~0.4bar
X5 : 0~0.5bar
01 : 0~1bar
02 : 0~2bar
05 : 0~5bar
10 : 0~10bar
20 : 0~20bar
50 : 0~50bar
A0 : 0~100bar

∗ Total product length tolerance: ±5mm
∗ Characteristics, specifications and dimensions are subject to change.
∗ Please contact your nearest distributing office for further informations.

EXAMPLES OF TANK MOUNTING

[FC/FD]	Mini Float/Magnetic Float Level Switch
[FG]	Magnetic Float Level Transmitter
[FF]	Side Mounting Float Switch
[FA/FB]	Cable Float Level Switch
[SP]	Thermal Dispersion Flow Switch
[SF]	Paddle Flow Switch
[SD]	Optical Level Switch
[SE]	Rotary Paddle Level Switch
[SA]	Capacitance Level Switch
[EC]	Pressure Level Transmitter
[SC]	Vibrating Probe Level Switch
[SC]	Tuning Fork Level Switch
[EB]	RF-Capacitance Level Transmitter
[SB]	RF-Capacitance / Admittance Level Switch
[EG]	Magnetostrictive Level Transmitter
[EF]	By-Pass Level Transmitter
[MEF]	Mini By-Pass Level Transmitter
[EA]	Ultrasonic Level Transmitter
[JFR]	FMCW Radar Level Transmitter
[EE]	Electromechanical Level Measuring System
[ED]	Speed Monitor
[SRT/SRS]	Conveyer Belt Misalignment Switch & Safety Cable Pull Switch
[PB/PM]	Microprocessor Based Bargraphic Display Scaling Meter
[BRD/AE]	Valve and Controller for Dust Collector System
[BAS/BAH/BVP]	Air Hammer
[BVK/BVR/BVT]	Pneumatic Vibrator





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