

RF-Capacitance Level Transmitter

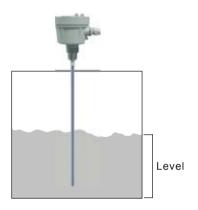


PRODUCT INTRODUCTION

PRINCIPLE

RF-Capacitance level Transmitter utilizes the capacitance formed between the sensing probe and the reference probe or the metal vessel wall to calculate the level of the liquid/medium inside the vessel according to the capacitance theory that the capacitance and vessel are proportional increased.

When sensing probe and detected media are fixed, media dielectric constant (Kmedia) is normally bigger than air (Kair=1). Capacitnce for media (Cmedia) increases when liquid/ power/ solid level raise. EB prouduct detects media level by calculating capacitance inside the tank.



FEATURES

EB2 Series

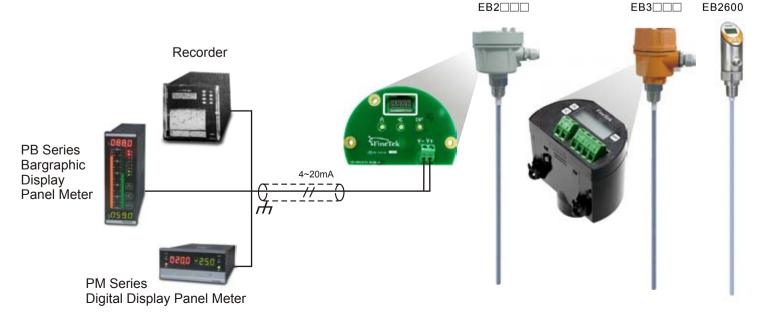
- 4~20mA 2 wire Loop power
- Low consumption of power (22mA Max)
- High accuracy of linearity (< ± 1% FS)
- Temperature compensation, low temperature effect(\pm 0.02% FS /°C)
- Easy calibration (Any 2 points for calibration)
- Wide measuring range for capacitance (0~5000pF)
- No blind distance, ideal for different tanks.
- Suitable for high temperature, high pressure and corrosive environment.

EB3 Series

- Dual protection prevents fog from damaging PCB.
- LCD indication is easy for observation from top.
- Power Supply: 12~36Vdc
- Photocoupler x 2
- Protective housing with high stability prevents from any damages during transportation, installation and operation.
- Measuring accuracy is not affected by temperature and pressure.
- Display range-1999~9999

EB2600 Series

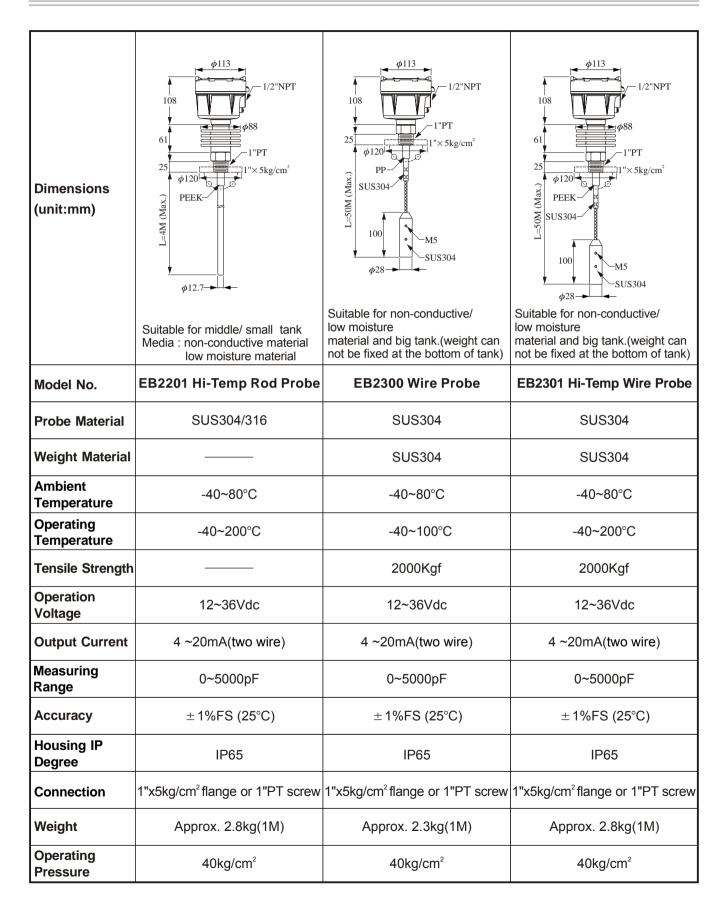
- Settings can be done directly with 3 buttons on the housing.
- 270° reversible direction for display.
- Easy wiring with quick connector.
- Easy installation with small product size.
- Inclined plane desige,LCD display is easy to be read.



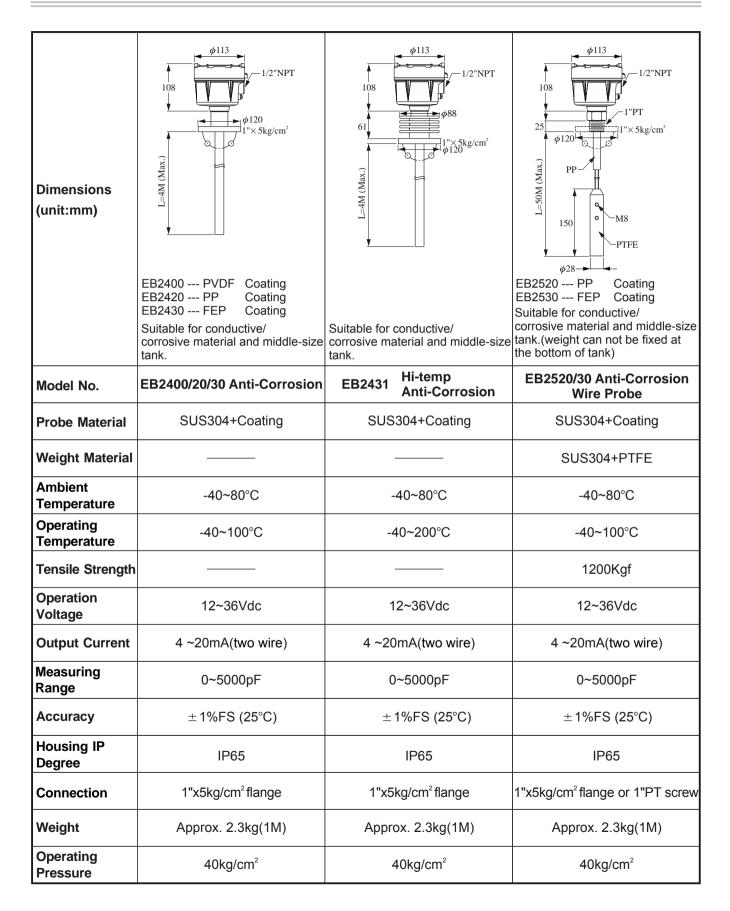


Dimensions (unit:mm)	φ113 1/2"NPT 108 1"PT 25 φ120 3"×5kg/cm² SUS304 Suitable for big tank	φ113 φ113 φ88 61 1"PT 25 φ120 3"× 5kg/cm² PEEK SUS304 Suitable for big tank	φ113 108 1"PT 25 φ120 PP 412.7 Suitable for middle/ small tank
	Media : non-conductive material low moisture material	Media : non-conductive material low moisture material	Media : non-conductive material low moisture material
Model No.	EB2100 Wire Probe	EB2101 Hi-Temp Wire Probe	EB2200 Rod Probe
Probe Material	SUS304	SUS304	SUS304/316
Weight Material	CERAMIC	CERAMIC	
Ambient Temperature	-40~80°C	-40~80°C	-40~80°C
Operating Temperature	-40~100°C	-40~200°C	-40~100°C
Tensile Strength	2000Kgf	2000Kgf	
Operation Voltage	12~36Vdc	12~36Vdc	12~36Vdc
Output Current	4 ~20mA(two wire)	4 ~20mA(two wire)	4 ~20mA(two wire)
Measuring Range	0~5000pF	0~5000pF	0~5000pF
Accuracy	±1%FS (25°C)	±1%FS (25°C)	± 1%FS (25°C)
Housing IP Degree	IP65	IP65	IP65
Connection	3"x5kg/cm² flange or 1"PT screw	3"x5kg/cm² flange or 1"PT screw	1"x5kg/cm² flange or 1"PT screw
Weight	Approx. 3.7kg(1M)	Approx. 4.2kg(1M)	Approx. 2.3kg(1M)
Operating Pressure	40kg/cm ²	40kg/cm ²	40kg/cm ²











Dimensions (unit:mm)	φ113 φ88 61 1"PT 25 φ120 1"EX 5kg/cm² PEEK PTFE Suitable for conductive/ corrosive material and middle-size tank. (weight can not be fixed at the bottom of tank)	
Model No.	EB2531 Anti-Corrosion Hi-Temp Wire Probe	
Probe Material	SUS304+Coating	
Weight Material	SUS304+PTFE	
Ambient Temperature	-40~100°C	
Operating Temperature	-40~200°C	
Tensile Strength	th 2000Kgf	
Operation Voltage	12~36Vdc	
Output Current	4 ~20mA(two wire)	
Measuring Range	0~5000pF	
Accuracy	±1%FS (25°C)	
Housing IP Degree	IP65	
Connection	1"x5kg/cm² flange or 1"PT screw	
Weight	Approx. 2.3kg(1M)	
Operating Pressure	40kg/cm²	

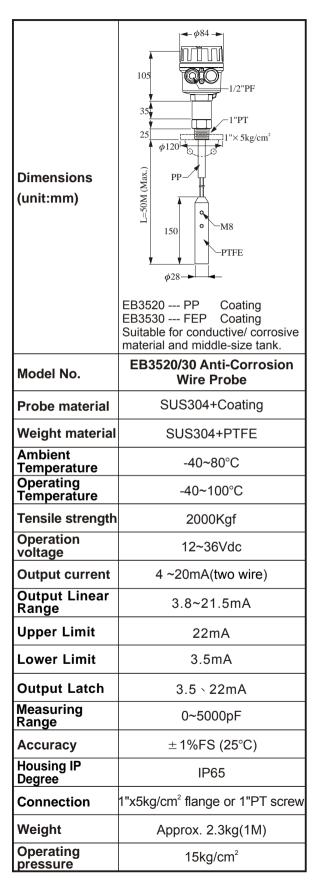


STANDARD TYPE (MULTI-FUNCTION)

Dimensions (unit:mm)	105 35 1"PT 25 φ120 PP 412.7 Suitable for non-conductive	105 1/2"PF 35 1""PT 25 4120 1""× 5kg/cm² PP 11"× 5kg/cm² SUS304 Suitable for non-conductive	EB3400 PVDF Coating EB3420 PP Coating EB3430 FEP Coating Suitable for conductive/ corrosive	
Model No.	material and middle-size tank. EB3200 Rod Probe	material and big tank. EB3300 Wire Probe	material and middle-size tank. EB3400/20/30 Anti-Corrosion	
Probe material	SUS304/316	SUS304	SUS304+Coating	
Weight material		SUS304		
Ambient Temperature	-40~80°C	-40~80°C	-40~80°C	
Operating Temperature	-40~100°C	-40~100°C	-40~100°C	
Tensile strength		2000Kgf		
Operation voltage	12~36Vdc	12~36Vdc	12~36Vdc	
Output current	4 ~20mA(two wire)	4 ~20mA(two wire)	4 ~20mA(two wire)	
Output Linear Range	3.8~21.5mA	3.8~21.5mA	3.8~21.5mA	
Upper Limit	22mA	22mA	22mA	
Lower Limit	3.5mA	3.5mA	3.5mA	
Output Latch	3.5 \ 22mA	3.5 \ 22mA	3.5 \ 22mA	
Measuring Range	0~5000pF	0~5000pF	0~5000pF	
Accuracy	±1%FS (25°C)	±1%FS (25°C)	± 1%FS (25°C)	
Housing IP Degree	IP65	IP65	IP65	
Connection	1"x5kg/cm² flange or 1"PT screw	1"x5kg/cm² flange or 1"PT screw	w 1"x5kg/cm² flange	
Weight	Approx. 2.3kg(1M)	Approx. 2.3kg(1M)	Approx. 2.3kg(1M)	
Operating pressure	40kg/cm ²	40kg/cm ²	40kg/cm ²	



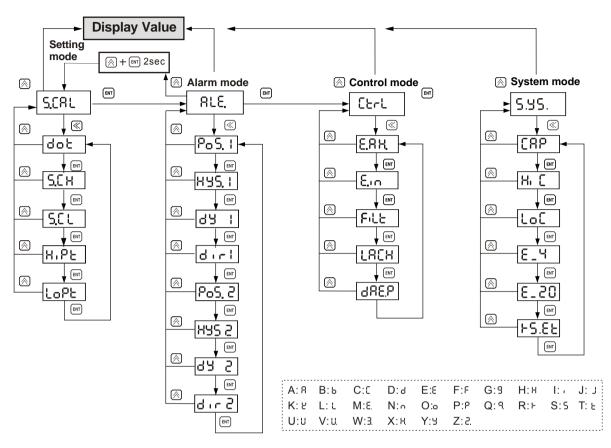
STANDARD TYPE (MULTI-FUNCTION) / COMPACT RAMP



Dimensions (unit:mm)	\$\phi_{38.1}\$ \$\phi_{39.5}\$ \$\phi_{49.5}\$ HEX38 \$\frac{1}{22}\$ \$\phi_{1/2"PT}\$ L=1M(Max.) Suitable for conductive/ corrosive material and small tank.	
Model No.	EB2600 Compact Ramp	
Power supply	12~36Vdc	
Measuring range	0~1000pF	
Output current	t 4~20mA(two wire)	
Output Linear Range	3.8~21.5mA	
Upper Limit	22mA	
Lower Limit	3.5mA	
Output Latch	3.5 \ 22mA	
Accuracy	±1%FS (25°C)	
Load Resistance	(Vs- 12)x 50 VsPower Voltage	
Environment Temperature	-40°C~80°C	
Operation Temperature	-40°C~100°C	
Environment Humidity	0~85%	
Temperature Coefficient	±0.02% FS./°C	
LCD Display	-1999 ~ 9999	
Housing IP Degree	IP 65	



CALIBRATION & SETUP



Main Menu	Sub- Menu	Range	Default	Description	EB3 Series	EB2 Series	EB2600 Series
	dot	0~3	1	Decimal point setting	•	•	•
	S.CH	-1999~9999	100.0	20mA corresponding display value	•	•	•
SCAL	5.0 t	-1999~9999	0	4mA corresponding display value	•	•	•
	ዘ፣ዖኒ	-1999~9999	100.0	Corresponding calibration value for high point (Hipt).	•	•	•
	LoPt	-1999~9999	0	Corresponding Calibration Value for low point (Lopt).	•	•	•
	Po5.1	-1999~9999	50.00	Process High Alarm Alarm position	•	_	_
	H95.1	-1999~9999		Hysteresis Alarm	•	_	_
	981	0~99	0	Alarm delay time(sec)	•	_	_
ALE.	dicl	noP/nCL	noP	Alarm direction o P :normal open o E L :normal close	•	_	_
	Po 5, 2	-1999~9999	50.00	Process Low Alarm Alarm position	•	_	_
	H9 5.2	-1999~9999	0	Hysteresis Alarm	•	_	_
	985	0~99	0	Alarm delay time(sec)	•	_	_
	91.5	noP/nCL	noP	Alarm direction	•	_	_
	ня,з	SAVE,RSET BACK	SAVE	Memory for max & mini value during operation. SAVE:Save value into Eeprom	•	•	•
նեհն	E., n	SAVE,RSET BACK	SAVE	REST:Clean present value and memory BACK:Go back to sub-menu	•	•	•
	Filt	Lo,MID,HI	LO	Software Filter	•	•	•
	LACH	ON, OFF	OFF	Output latch	•	•	•
	48E.P	1~60sec	1	Reflash time	_	•	_
	CRP	0~9999		Capacity Value	•	•	•
	H ₁ C	0~9999	5056	High point Capacity Value	•	•	•
5.95.	LoC	0~9999	54	Low point Capacity Value	•	•	•
2.23.	٤_4	-1999~9999	0	4mA fine turn	_	•	_
	6150	-1999~9999	0	20mA fine turn	_	•	_
	FS.EE			Load default	_	•	_



ORDER INFORMATION

EB 2 1 6 0 HM 5 0 0 0 Order No. -3: Multi-function Type 2: Standard ype Order No. -32 --- Rod Type 33 --- Wire Probe Type 34 --- Anti-Corrosion (3400: PVDF 3420: PP 3430: FEP) 35 --- Anti-Corrosion with Wire-probe weight (3520: PP 3530: FEP) 21 --- Wire Probe Type 21 --- Hi-Temp Wire Probe Type 22 --- Rod Type 22 --- Hi-Temp Rod Probe Type 23 --- Wire Probe Type 23 --- Hi-Temp Wire ProbeType 24 --- Anti-Corrosion (2400: PVDF 2420: PP 2430: FEP) 25 --- Anti-Corrosion with Wire-probe weight (2520: PP 2530: FEP) 26 --- Compact Ramp Material -Metal Probe: 0:SUS304 **%**US316 Plastic Coated Probe: 0:PVDF 2PP 3:FEP **Temperature Resistance** 0: Standard (max.100°C) 1: Hi-Temp Type (max.200°C)

Connecting

Dimension	Specification
B 1/2" (EB2600) C 3/4" (EB2600) D 1" E 1-1/2" F 2" G 2-1/2" H 3" I 4" J 5" K 6" S others	M 5kg/cm ² N 10kg/cm ² O 150 Lbs P 300 Lbs Q PT R PF(G) T BSP U NPT V GAS S others

Probe Length (unit: mm)

0500: below 500mm **1000:** 501~1000mm

* 500mm per Unit **1500**: 1001~1500mm

* Use English letter as first code for probe length over 10m. A150 represents 15m, A200 represents 20m

* Tolerance of the total product length is ± 5 mm



^{*} Characteristics, specifications and dimensions are subject to change without notice.

^{*} Please contact your nearest distributing office for further informations.

EXPLOSION PROOF TYPE

Dimensions (unit:mm)	φ113 125 1-1/2"NPT 125 1-1/2"PT 25 φ180 φ145 φ20 4-φ145 4-φ19 Ex Suitable for non-conductive material and big tank.	$\begin{array}{c} \phi 113 \\ \hline \\ 108 \\ \hline \\ 108 \\ \hline \\ 108 \\ \hline \\ 42 \\ \hline \\ 43 \\ \hline \\ 44 \\ \hline \\ 44 \\ \hline \\ 40 \\ 40$	φ113 1/2"NPT 108 1-1/2"PT 25 4-φ12.7 Suitable for non-conductive material and middle-size tank.
Model No.	EB1710 Wire Probe	EB1711 Hi-Temp Wire Probe	EB1720 Rod Probe
Probe material	SUS304	SUS304 SUS304/316	
Weight material	CERAMIC	CERAMIC ———	
Ambient Temperature	-20~70°C	-20~70°C -20~70°C	
Operating Temperature	-40~80°C	-40~200°C	-40~80°C
Tensile strength	2000Kgf	2000Kgf	
Operation voltage	12~36Vdc	12~36Vdc	12~36Vdc
Output current	4 ~20mA(two wire)	4 ~20mA(two wire)	4 ~20mA(two wire)
Measuring Range	0~5000pF	0~5000pF	0~5000pF
Accuracy	±1%FS (25°C)	±1%FS (25°C)	±1%FS (25°C)
Housing IP Degree	IP65	IP65	IP65
Connection	3"x5kg/cm² flange or 1-1/2"PT screw	3"x5kg/cm² flange or 1-1/2"PT screw	1-1/2"x5kg/cm² flange or 1-1/2"PT screw
Weight	Approx. 3.7kg(1M)	Approx. 4.2kg(1M) Approx. 2.3kg(1M)	
Operating pressure	40kg/cm ²	40kg/cm ² 40kg/cm ²	



EXPLOSION PROOF TYPE

Dimensions (unit:mm)	$\phi 113$ $\phi 88$ $\phi 88$ $\phi 88$ $\phi 88$ $\phi 1 - 1/2"PT$ 25 $\phi 1 - 1/2"Y \times 5 \text{kg/cm}^2$ $\phi 95$ $\phi 21$ $\phi 95$ $4 - \phi 15$ Suitable for non-conductive material and middle-size tank.	φ113 1/2"NPT 108 1-1/2"PT 25 φ180 φ145 φ20 φ145 φ20 φ38 Ex Suitable for non-conductive material and big tank.	$\phi 113$ $\phi 88$ 42 42 25 27 27 49 48 6180 49 40 40 40 40 40 40 40 40
Model No.	EB1721 Hi-Temp Rod Probe	EB1730 Wire Probe	EB1731 Hi-Temp Wire Probe
Probe material	SUS304/316	SUS304	SUS304
Weight material		SUS304	SUS304
Ambient Temperature	-20~70°C	-20~70°C	-20~70°C
Operating Temperature	-40~200°C	-40~80°C	-40~200°C
Tensile strength		2000Kgf	2000Kgf
Operation voltage	12~36Vdc	12~36Vdc	12~36Vdc
Output current	4 ~20mA(two wire)	4 ~20mA(two wire)	4 ~20mA(two wire)
Measuring Range	0~5000pF	0~5000pF	0~5000pF
Accuracy	±1%FS (25°C)	±1%FS (25°C)	± 1%FS (25°C)
Housing IP Degree	IP65	IP65	IP65
Connection	1-1/2"x5kg/cm² flange or 1-1/2"PT screw	2"x5kg/cm² flange or 1-1/2"PT screw	2"x5kg/cm² flange or 1-1/2"PT screw
Weight	Approx. 2.8kg(1M)	Approx. 2.3kg(1M)	Approx. 2.8kg(1M)
Operating pressure	40kg/cm ²	40kg/cm ²	40kg/cm ²



EXPLOSION PROOF TYPE

Dimensions (unit:mm)	φ113 1/2"NPT 108 1-1/2"PT 25 4-φ120 φ95 4-φ15 EB1740 PVDF Coating EB1742 PP Coating EB1743 FEP Coating Suitable for conductive/ corrosive material and middle-size tank.	φ113 125 1-1/2"NPT 125 1-1/2"PT 25 1-1/2"PT 25 1-1/2"PT 20"×5kg/cm² φ145 φ20 4-4-919 150 EB1752 PP Coating EB1753 FEP Coating ES1753 FEP Coating Suitable for conductive/ corrosive material and big tank.(weight can not be fixed at the bottom of tank)	
Model No.	EB1740/42/43 Anti-Corrosion	EB1752/53 Anti-Corrosion Wire Probe	
Probe material	SUS304+Coating	SUS304+Coating	
Weight material		SUS304+PTFE	
Ambient Temperature	-20~70°C	-20~70°C	
Operating Temperature	-40~80°C	-40~80°C	
Tensile strength		2000Kgf	
Operation voltage	12~36Vdc	12~36Vdc	
Output current	4 ~20mA(two wire)	4 ~20mA(two wire)	
Measuring Range	0~5000pF	0~5000pF	
Accuracy	±1%FS (25°C)	±1%FS (25°C)	
Housing IP Degree	IP65	IP65	
Connection	1-1/2"x5kg/cm² flange or 1-1/2"PT screw	2"x5kg/cm² flange or 1-1/2"PT screw	
Weight	Approx. 2.3kg(1M)	Approx. 2.3kg(1M)	
Operating pressure	40kg/cm ²	40kg/cm²	



ORDER INFORMATION

EB 1 7 1 0 HM 5 0 0 0

Order No.

1710 --- Wire Probe Type

1711 --- Hi-Temp Wire Probe Type

1720 --- Rod Type

1721 --- Hi-Temp Rod Probe Type

1730 --- Wire Probe Type

1731 --- Hi-Temp Wire ProbeType

174 --- Anti-Corrosion (1740: PVDF 1742: PP 1743: FEP)

175□ --- Anti-Corrosion with Wire-probe weight

(1752: PP 1753: FEP)

Connecting —

Dimension	Specification
D 1" E 1-1/2" F 2" G 2-1/2" H 3" I 4" J 5" K 6" S others	M 5kg/cm ² N 10kg/cm ² O 150 Lbs P 300 Lbs Q PT R PF(G) T BSP U NPT V GAS S others

Probe Length (unit: mm) —

0500: below 500mm **1000:** 501~1000mm

1500: 1001~1500mm

※ Use English letter as first code for probe length over 10m. A150 represents 15m, A200 represents 20m

* Tolerance of the total product length is ± 5 mm

* Characteristics, specifications and dimensions are subject to change without notice.

* Please contact your nearest distributing office for further informations.



INSTALLATION

- The rod probe or cable probe (depending upon which one you purchased) should be parallel to the tank wall and be positioned as close as possible to the tank wall. Make sure the medium does not stick in between the probe and the tank wall.
- 2. If the tank is not electrically conductive, a metal strap should be added outside of tank wall (fig. 1) for either liquid or non-liquid medium. Or place a metal tube, usually made out of stainless steel, around the rod (fig. 2) for liquid medium. This metal tube should come with a vent hole at top of the tube to allow the medium to go up inside of the tube.
- If the container is irregular-shaped, such as a cylindrical, and the medium is liquid with low viscosity, the rod should be placed inside a metal tube with vent hole at the top. (Fig. 2)
- 4. For non-conductive medium of powder or granuules in a new or empty tank, the cable probe should be fixed to the bottom of tank with ceramic isolator (EB2100 Series. If the tank is not empty, please use the EB2300 Series. (fig. 3)
- 5. Make sure to fix the rod probe or cable probe to the container wall with non-conductive supporting material. If an agitator is in place (see fig. 4). This will prevent the deformation of the rod probe and tangling of the cable probe around the agitator.
- 6. If the medium is conductive, make sure to coat the rod probe or cable probe with PVDF or PP material.
- 7. During the installation, the process connection should be grounded. An installation without proper grounding will not guarantee normal operation of the device later on.
- 8. When all electrical connections inside of a Capacitance Level Transducer housing are finished, the housing cover and the conduit opening should be sealed and tightened to prevent moisture from soaking in.

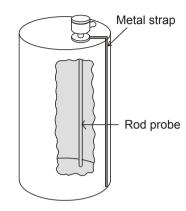
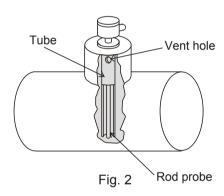


Fig. 1



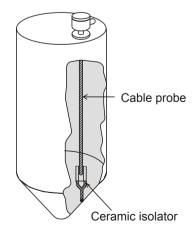


Fig. 3

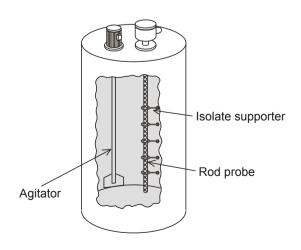


Fig. 4



[FC/FD] Mini Float/Magnetic Float Level Switch

Magnetic Float Level Transmitter

[FF] Side Mounting Float Switch

[FA/FB] Cable Float Level Switch

[SP] Thermal Dispersion Flow Switch

Paddle Flow Switch [SF] Optical Level Switch [SD]

[FG]

Rotary Paddle Level Switch [SE]

[SA] Capacitance Level Switch [EC] Pressure Level Transmitter

[LR] Loop Power Indicator

[SC] Vibrating Probe Level Switch Tuning Fork Level Switch [SC]

[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

Electromechanical Level Measuring System [EE]

[ED] Speed Monitor

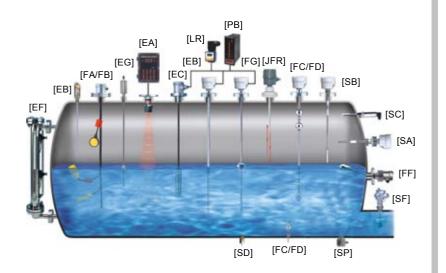
[SRT/SRS] Conveyer Belt Misalignment Switch &

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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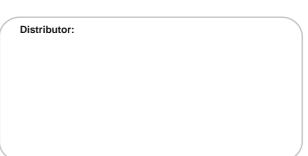
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