



RF-Capacitance Level Transmitter



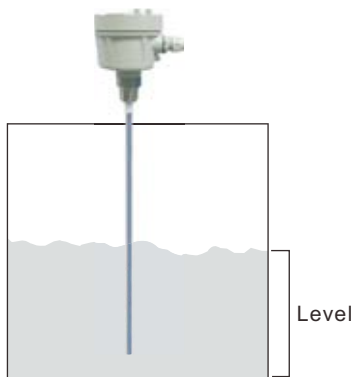
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PRODUCT INTRODUCTION

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 (K_{media}) is normally bigger than air ($K_{air}=1$). Capacitance for media (C_{media}) increases when liquid/ power/ solid level raise. EB product detects media level by calculating capacitance inside the tank.



FEATURES

EB2□□□ Series

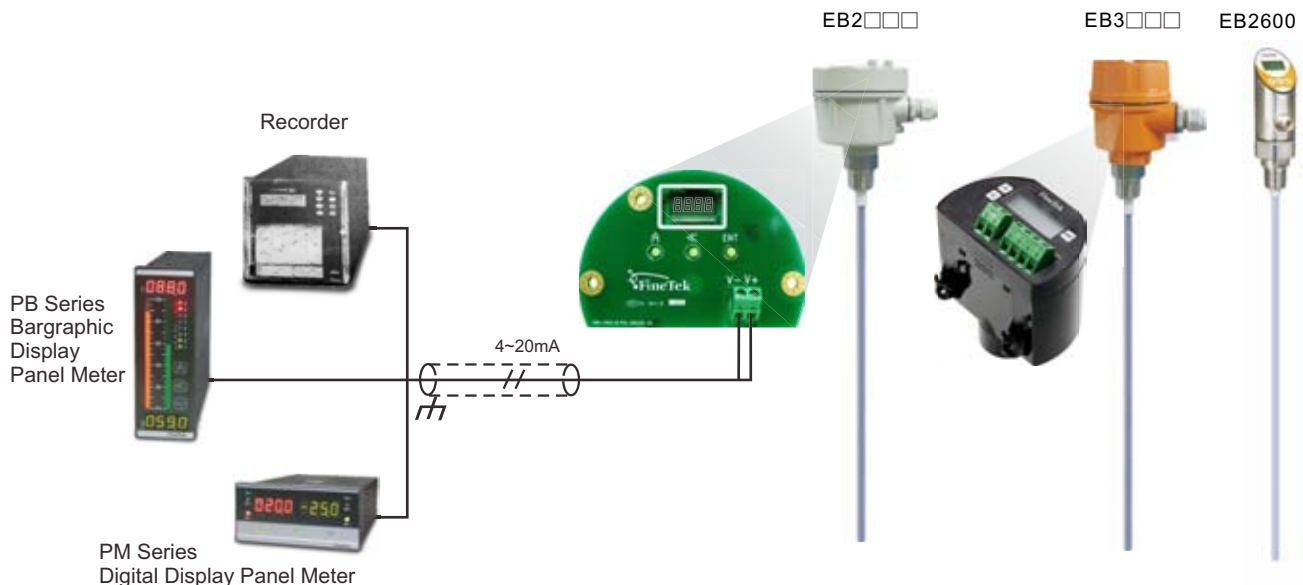
- 4~20mA 2 wire Loop power
- Low consumption of power (22mA Max)
- High accuracy of linearity ($<\pm 1\%$ FS)
- Temperature compensation, low temperature effect ($\pm 0.02\%$ FS $^{\circ}\text{C}$)
- Easy calibration (Any 2 points for calibration)
- Wide measuring range for capacitance (0~5000pF)
- No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

EB3□□□ Series

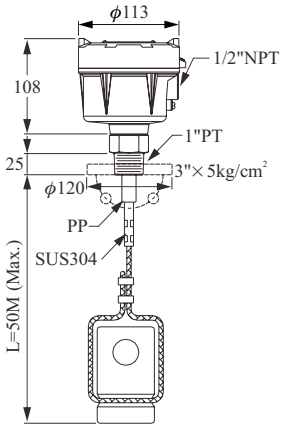
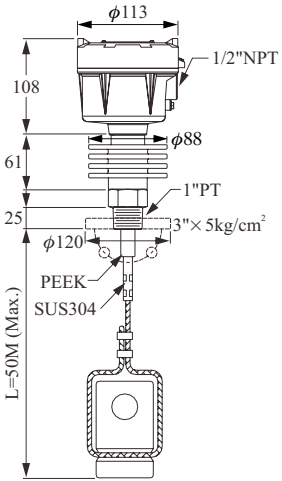
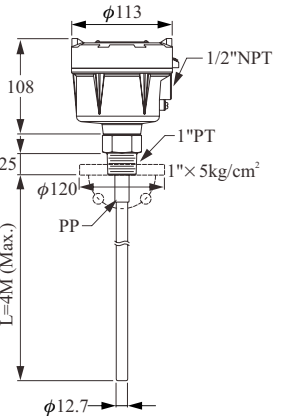
- Dual protection prevents fog from damaging PCB.
- LCD indication is easy for observation from top.
- Power Supply: 12~36Vdc
- Photocoupler x 2
- Protective housing with high stability prevents from any damages during transportation, installation and operation.
- Measuring accuracy is not affected by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

EB2600 Series

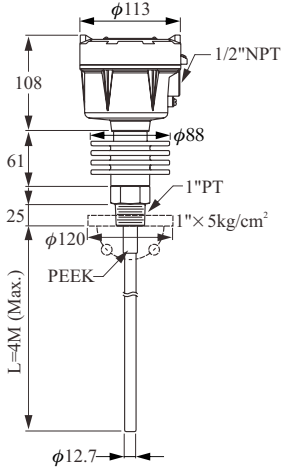
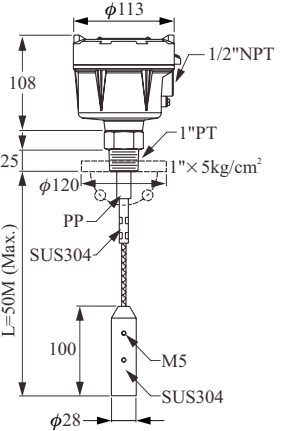
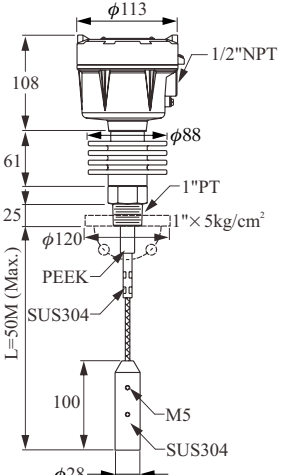
- Settings can be done directly with 3 buttons on the housing.
- 270° reversible direction for display.
- Easy wiring with quick connector.
- Easy installation with small product size.
- Inclined plane design, LCD display is easy to be read.



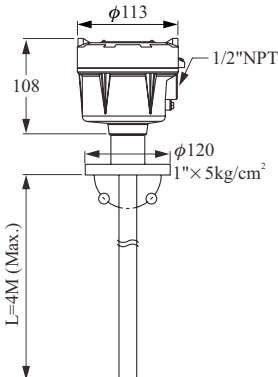
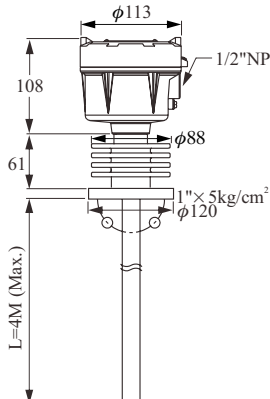
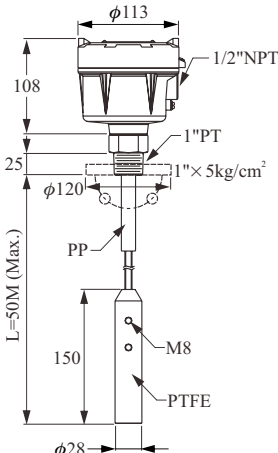
STANDARD TYPE

Dimensions (unit:mm)	 <p>Suitable for big tank Media : non-conductive material low moisture material</p>	 <p>Suitable for big tank Media : non-conductive material low moisture material</p>	 <p>Suitable for middle/ small tank Media : non-conductive material low moisture material</p>
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/cm ² flange or 1"PT screw	3"x5kg/cm ² flange or 1"PT screw	1"x5kg/cm ² 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

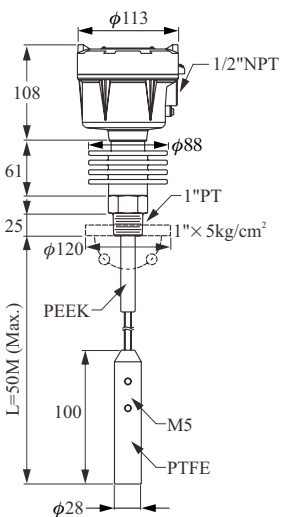
STANDARD TYPE

Dimensions (unit:mm)	 <p>Suitable for middle/ small tank Media : non-conductive material low moisture material</p>	 <p>Suitable for non-conductive/ low moisture material and big tank.(weight can not be fixed at the bottom of tank)</p>	 <p>Suitable for non-conductive/ low moisture material and big tank.(weight can not be fixed at the bottom of tank)</p>
Model No.	EB2201 Hi-Temp Rod Probe	EB2300 Wire Probe	EB2301 Hi-Temp Wire Probe
Probe Material	SUS304/316	SUS304	SUS304
Weight Material	————	SUS304	SUS304
Ambient Temperature	-40~80°C	-40~80°C	-40~80°C
Operating Temperature	-40~200°C	-40~100°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"x5kg/cm² flange or 1"PT screw	1"x5kg/cm² flange or 1"PT screw	1"x5kg/cm² flange or 1"PT screw
Weight	Approx. 2.8kg(1M)	Approx. 2.3kg(1M)	Approx. 2.8kg(1M)
Operating Pressure	40kg/cm²	40kg/cm²	40kg/cm²

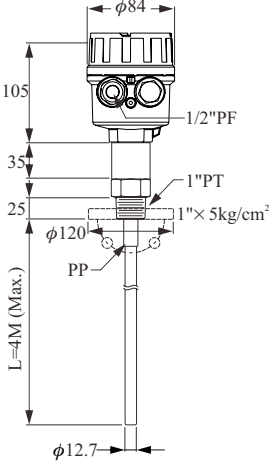
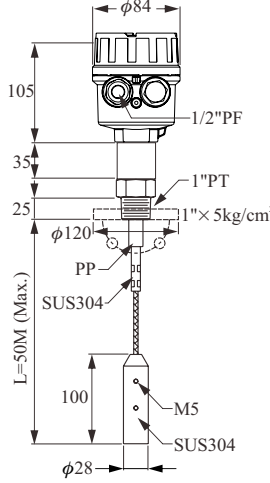
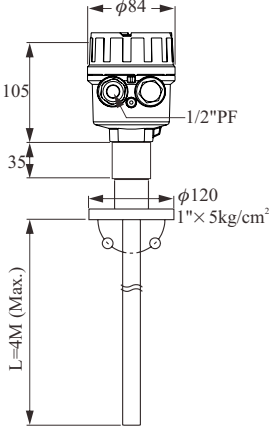
STANDARD TYPE

Dimensions (unit:mm)	 <p data-bbox="343 786 710 959"> EB2400 --- PVDF Coating EB2420 --- PP Coating EB2430 --- FEP Coating Suitable for conductive/ corrosive material and middle-size tank. </p>	 <p data-bbox="718 873 1085 959"> Suitable for conductive/ corrosive material and middle-size tank. </p>	 <p data-bbox="1093 786 1468 959"> EB2520 --- PP Coating EB2530 --- FEP Coating Suitable for conductive/ corrosive material and middle-size tank.(weight can not be fixed at the bottom of tank) </p>
Model No.	EB2400/20/30 Anti-Corrosion	EB2431 Hi-temp Anti-Corrosion	EB2520/30 Anti-Corrosion Wire Probe
Probe Material	SUS304+Coating	SUS304+Coating	SUS304+Coating
Weight Material	————	————	SUS304+PTFE
Ambient Temperature	-40~80°C	-40~80°C	-40~80°C
Operating Temperature	-40~100°C	-40~200°C	-40~100°C
Tensile Strength	————	————	1200Kgf
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"x5kg/cm ² flange	1"x5kg/cm ² flange	1"x5kg/cm ² flange or 1"PT screw
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

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

STANDARD TYPE (MULTI-FUNCTION)

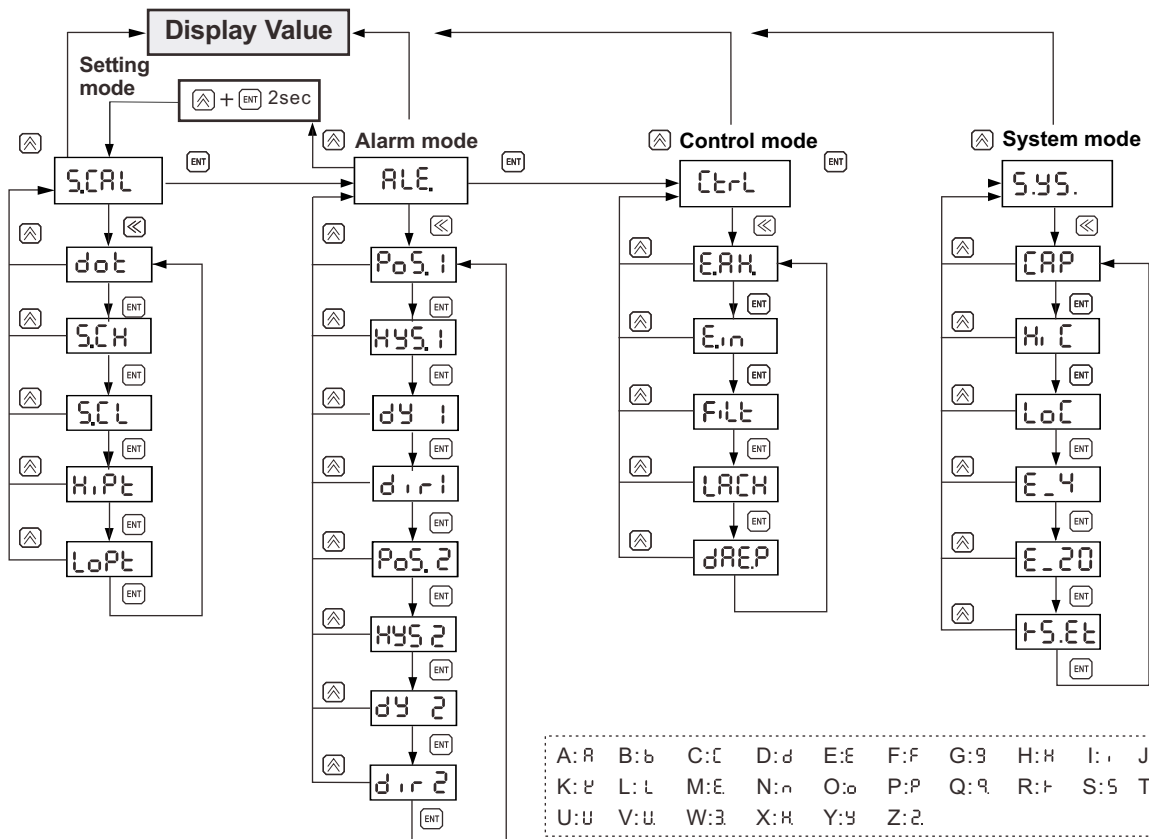
Dimensions (unit:mm)	 <p>Suitable for non-conductive material and middle-size tank.</p>	 <p>Suitable for non-conductive material and big tank.</p>	 <p>EB3400 --- PVDF Coating EB3420 --- PP Coating EB3430 --- FEP Coating</p> <p>Suitable for conductive/ corrosive material and middle-size tank.</p>
Model No.	EB3200 Rod Probe	EB3300 Wire Probe	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/cm ² flange or 1"PT screw	1"x5kg/cm ² flange or 1"PT screw	1"x5kg/cm ² 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)	<p>EB3520 --- PP Coating EB3530 --- FEP Coating Suitable for conductive/ corrosive material and middle-size tank.</p>
Model No.	EB3520/30 Anti-Corrosion Wire Probe
Probe material	SUS304+Coating
Weight material	SUS304+PTFE
Ambient Temperature	-40~80°C
Operating Temperature	-40~100°C
Tensile strength	2000Kgf
Operation voltage	12~36Vdc
Output current	4 ~20mA(two wire)
Output Linear Range	3.8~21.5mA
Upper Limit	22mA
Lower Limit	3.5mA
Output Latch	3.5、22mA
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	15kg/cm²

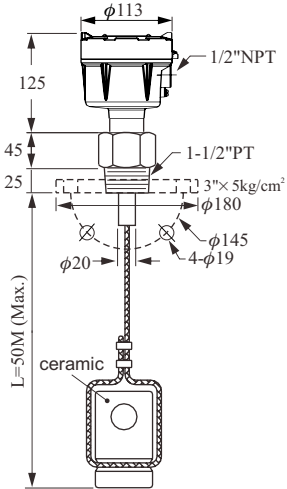
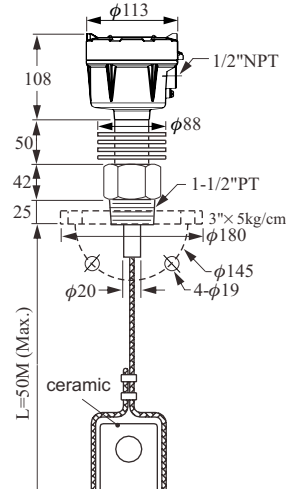
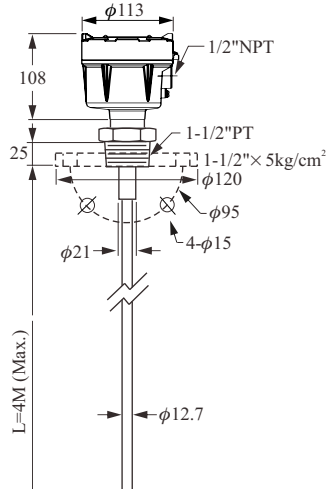
Dimensions (unit:mm)	<p>Suitable for conductive/ corrosive material and small tank.</p>
Model No.	EB2600 Compact Ramp
Power supply	12~36Vdc
Measuring range	0~1000pF
Output current	4~20mA(two wire)
Output Linear Range	3.8~21.5mA
Upper Limit	22mA
Lower Limit	3.5mA
Output Latch	3.5、22mA
Accuracy	± 1%FS (25°C)
Load Resistance	(Vs- 12) x 50 Vs:Power 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

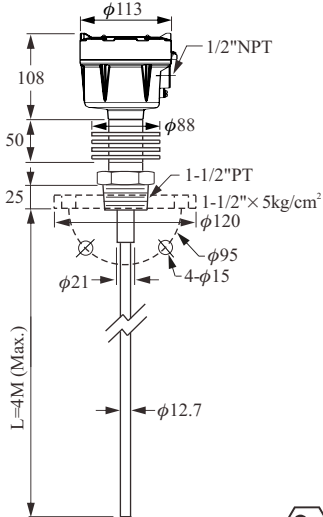
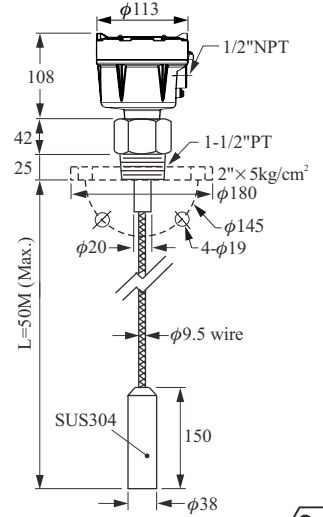
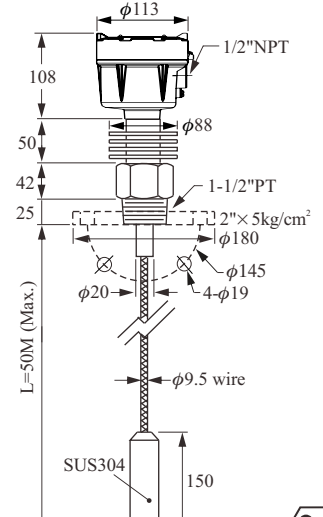


Main Menu	Sub-Menu	Range	Default	Description	EB3 Series	EB2 Series	EB2600 Series
S.CAL	dot	0~3	1	Decimal point setting	●	●	●
	S.C.H	-1999~9999	100.0	20mA corresponding display value	●	●	●
	S.C.L	-1999~9999	0	4mA corresponding display value	●	●	●
	H.i.P.t	-1999~9999	100.0	Corresponding calibration value for high point (Hipt).	●	●	●
	Lo.P.t	-1999~9999	0	Corresponding Calibration Value for low point (Lopt).	●	●	●
A.L.E.	PoS.1	-1999~9999	50.00	Process High Alarm Alarm position	●	—	—
	HYS.1	-1999~9999		Hysteresis Alarm	●	—	—
	dy.1	0~99	0	Alarm delay time(sec)	●	—	—
	dir.1	nOP/nCL	nOP	Alarm direction nOP:normal open nCL:normal close	●	—	—
	PoS.2	-1999~9999	50.00	Process Low Alarm Alarm position	●	—	—
	HYS.2	-1999~9999	0	Hysteresis Alarm	●	—	—
	dy.2	0~99	0	Alarm delay time(sec)	●	—	—
Ctrl	E.R.H	SAVE,RSET BACK	SAVE	Memory for max & mini value during operation SAVE:Save value into Eeprom REST:Clean present value and memory BACK:Go back to sub-menu	●	●	●
	E.in	SAVE,RSET BACK	SAVE		●	●	●
	FilT	Lo,MID,HI	LO	Software Filter	●	●	●
	L.A.C.H	ON, OFF	OFF	Output latch	●	●	●
	d.R.E.P	1~60sec	1	Reflash time	—	●	—
S.Y.S.	C.A.P	0~9999		Capacity Value	●	●	●
	H.i.C	0~9999	5056	High point Capacity Value	●	●	●
	Lo.C	0~9999	54	Low point Capacity Value	●	●	●
	E_4	-1999~9999	0	4mA fine turn	—	●	—
	E_20	-1999~9999	0	20mA fine turn	—	●	—
	F5.E.t			Load default	—	●	—

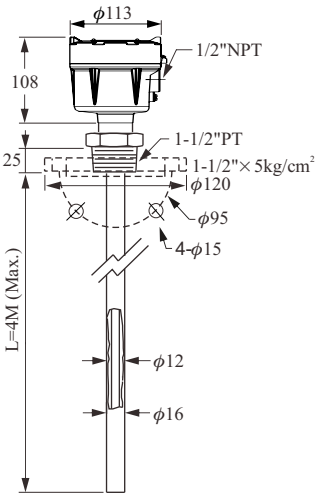
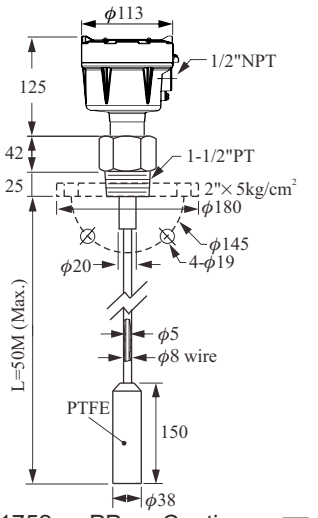
EXPLOSION PROOF TYPE

Dimensions (unit:mm)	 <p>Suitable for non-conductive material and big tank.</p>	 <p>Suitable for non-conductive material and big tank.</p>	 <p>Suitable for non-conductive material and middle-size tank.</p>
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/cm²	40kg/cm²	40kg/cm²

EXPLOSION PROOF TYPE

Dimensions (unit:mm)	 <p>Suitable for non-conductive material and middle-size tank.</p>	 <p>Suitable for non-conductive material and big tank.</p>	 <p>Suitable for non-conductive material and big tank.</p>
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/cm ² flange or 1-1/2"PT screw	2"x5kg/cm ² flange or 1-1/2"PT screw	2"x5kg/cm ² 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)	 <p>EB1740 --- PVDF Coating Ex EB1742 --- PP Coating Ex EB1743 --- FEP Coating Ex Suitable for conductive/ corrosive material and middle-size tank.</p>	 <p>EB1752 --- PP Coating Ex EB1753 --- FEP Coating Ex Suitable for conductive/ corrosive material and big tank.(weight can not be fixed at the bottom of tank)</p>
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/cm ² flange or 1-1/2"PT screw	2"x5kg/cm ² flange or 1-1/2"PT screw
Weight	Approx. 2.3kg(1M)	Approx. 2.3kg(1M)
Operating pressure	40kg/cm ²	40kg/cm ²

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

Probe Length (unit: mm) _____

0500: below 500mm

1000: 501~1000mm

1500: 1001~1500mm

⋮

※ 500mm per Unit

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

* Tolerance of the total product length is ±5mm

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

* Please contact your nearest distributing office for further informations.

INSTALLATION

1. 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.
3. 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 granules 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.

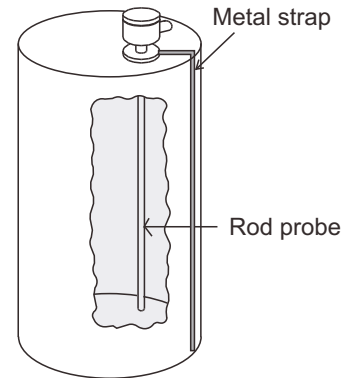


Fig. 1

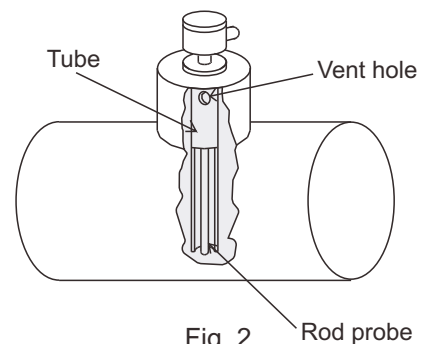


Fig. 2

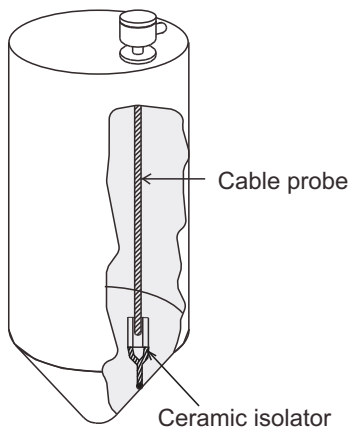


Fig. 3

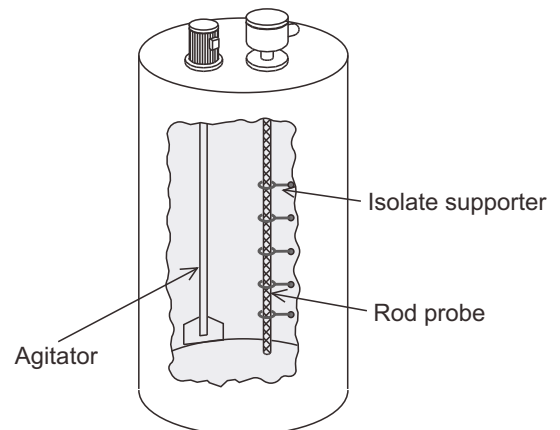
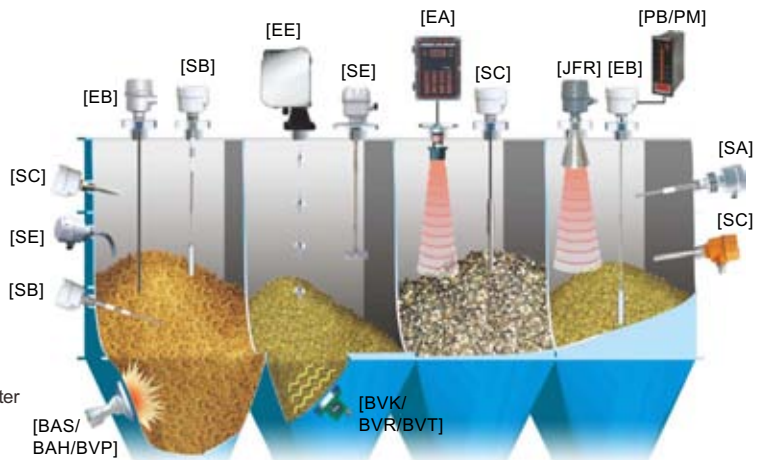
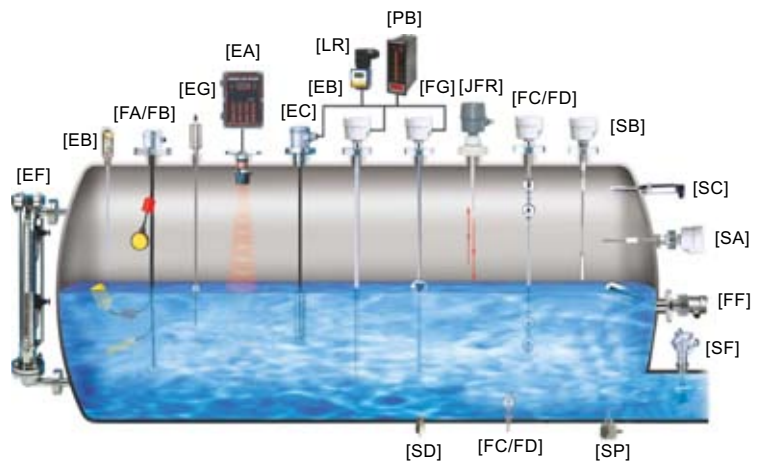


Fig. 4

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
- [LR] Loop Power Indicator
- [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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