



www.fine-tek.com

RF Admittance Level Transmitter

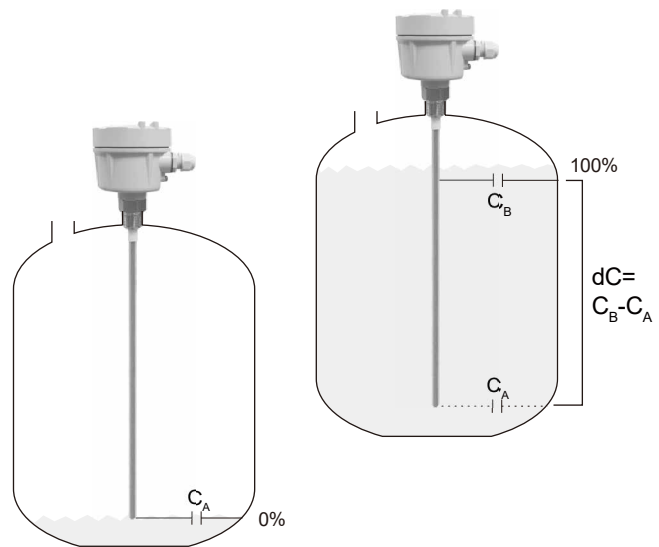


PRODUCT INTRODUCTION

PRINCIPLE

RF Admittance 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 medium inside the vessel according to the capacitance theory that the capacitance and vessel are proportional increased.

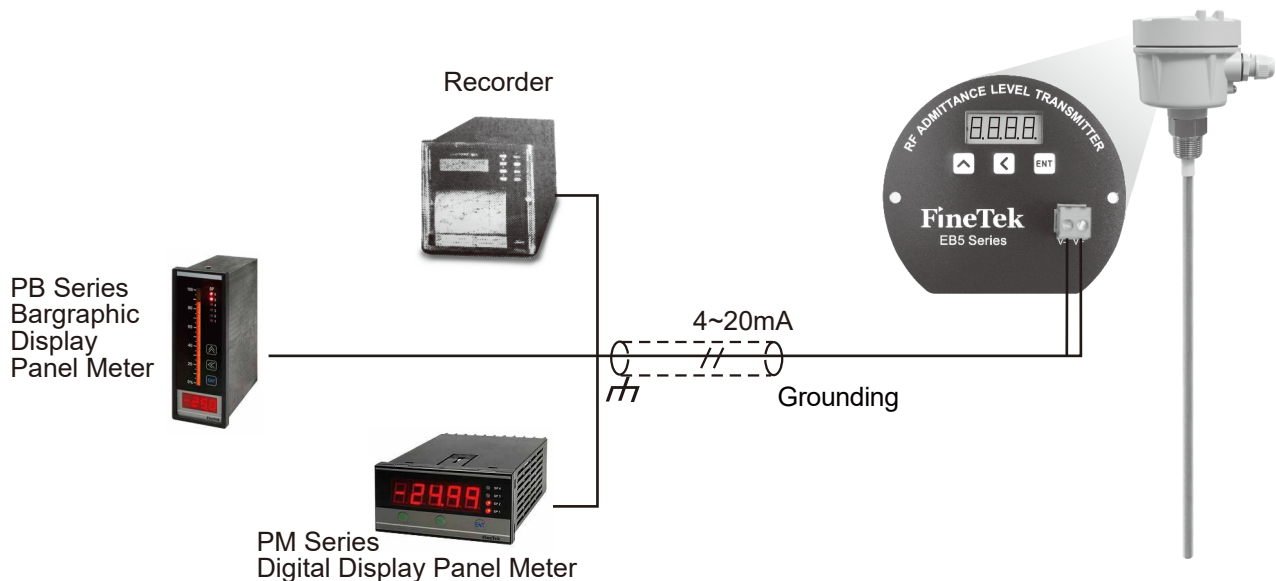
When the probe is surrounding by the air, little capacitance (C_A) is measured by the equivalent capacitor, the capacitance increase gradually as computing media, the max. capacitance (C_B) will be measured while the tank is full, the difference (dC) between C_A and C_B is proportional to the level.
(Recommend range $dC = 25 \sim 2000 \text{ pF}$)



FEATURES

- 4~20mA 2 wire Loop power
- Low consumption of power (20mA Max)
- High accuracy of linearity ($<1\% \text{ FS}$ or 0.5pF)
- Temperature compensation, low temperature effect ($0.2\% \text{ FS/BC}$ or $0.1\text{pF}/^\circ\text{C}$)
- Easy calibration (Any 2 points for calibration)
- No blind distance, ideal for different tanks
- Suitable for high temperature, high pressure and corrosive environment
- LCD local display

APPLICATION EXAMPLE



APPLICATION EXAMPLE

	EB5200	EB5201	EB52A0	EB52A1	EB5300	EB5301	EB53A0	EB53A1	EB5400	EB54A0
Conductive Tank	★	★	★	★	★	★	★	★	✗	✗
Non-Conductive Tank	▲	▲	▲	▲	✗	✗	✗	✗	★	★
Height of Vessel > 4m	✗	✗	✗	✗	★	★	★	★	✗	✗
Height of Vessel < 4m	★	★	★	★	—	—	—	—	★	★
Operation Temperature > 80°C (Not more than 200°C)	✗	★	✗	★	✗	★	✗	★	✗	✗
Dielectric Constant of Media>4	✗	✗	★	★	✗	✗	★	★	✗	★
Dielectric Constant of Media<4	★	★	—	—	★	★	—	—	★	—
Agitator inside the vessel	▲	▲	▲	▲	✗	✗	✗	✗	—	—
★ Good ▲ Pipe shield is suggested ✗ Unsuitable — Fair										

	EB5200	EB5201	EB52A0	EB52A1	EB5300	EB5301	EB53A0	EB53A1	EB5400	EB54A0
Aqueous Solution	✗	✗	★	★	✗	✗	★	★	✗	★
Oil Solution	▲	▲	✗	✗	✗	✗	✗	✗	✗	✗
Acid or Alkali Solution	✗	✗	★	★	✗	✗	★	★	✗	★
Feed & Grain	★	★	✗	✗	★	★	✗	✗	✗	✗
Mining & Cement	★	★	✗	✗	★	★	✗	✗	✗	✗
★ Good ▲ Pipe shield is suggested ✗ Unsuitable										

DIELECTRIC CONSTANTS CHART

Material	Dielectric Constant	Material	Dielectric Constant	Material	Dielectric Constant	Material	Dielectric Constant
Air	1	Heavy Oil	2.6~3.0	Cement	4~6	Acetone	20~30
Gasoline	1.9	Grain	2.5~4.5	Butanol	11	Carbide Powder	25~30
Diesel	2.1	Corn	2.3~2.6	Ethanol	16~31	Sulfuric Acid	84
Edible Oil	2~4	Rice	3~8	Ammonia	21	Water	81

WIRING AND CAUTION

- After installation of the Admittance Level Transmitter on the top of tank, please make sure the cover of the transmitter is contacted with tank perfectly. Please avoid the grounding of panel meter to touch the tank wall.
- While the panel meter is not supplied with a power supply, please prepare a 24V power supply for use.
- The max cable length is depends on the max resistance .Maximum resistance is not to exceed (Vs-22)X 50W to ensure the accuracy of measurement.
- Make sure to separate the signal cable with other big power cables (such as pump, conveyor and solenoid valve)while wiring. Before turning on power, make sure all wirings are correct.
- Connect isolation cable with GND of power.
- If there is heater or other electric device in the application, contacting the cover of the transmitter and tank can decrease EMI.

STANDARD TYPE

Dimensions (unit:mm)				
Dimensions (unit:mm)				
Model No.	EB5200 Rod Probe			
Probe material	SUS304			
Ambient temperature	-40~85°C LCD monitor: -20~85°C			
Operating temperature	-40~85°C			
Operation voltage	18~30Vdc			
Analog output	4~20mA(two wire)			
Digital output	Compatible with HART, Read Only			
Measuring range	20~2000pF			
Accuracy	± 1% FS or ± 0.5pF			
Effect temp.	< ± 0.2% FS/°C or 0.1pF/°C			
Protection	IP65			
Connection	1"PT or 1"x5kg/cm² flange			
Weight	Approx. 2.3kg(1m)			
Operating pressure	40kg/cm²			

STANDARD TYPE

Dimensions (unit:mm)	Suitable for middle/small tank Media : non-conductive material low moisture material	Suitable for middle/big tank Media: Dielectric Constant >4 Conductive Material	Suitable for middle/ small tank Media : non-conductive material low moisture material	Suitable for middle/big tank Media: Dielectric Constant >4 Conductive Material	
	Model No.	EB5300 Cable Type	EB53A0 Cable Coating Type	EB5301 Hi-Temp Cable Type	EB53A1 Hi-Temp Cable Coating
	Probe material	SUS304	SUS304 with PFA Coating	SUS304	SUS304 with PFA Coating
	Weight material	SUS304	PTFE	SUS304	PTFE
	Ambient temperature	-40~85°C LCD monitor: -20~85°C			
Operating temperature	-40~85°C		-40~200°C		
Tensile strength	2000Kgf				
Operation voltage	18~30Vdc				
Analog output	4 ~20mA(two wire)				
Digital output	Compatible with HART, Read Only				
Measuring range	20~2000pF				
Accuracy	± 1% FS or ± 0.5pF				
Effect temp.	< ± 0.2% FS/°C or 0.1pF/°C				
Protection	IP65				
Connection	1"PT or 1"x5kg/cm² flange				
Weight	Approx. 2.3kg(1m)	Approx. 2.3kg(1m)	Approx. 2.8kg(1m)		
Operating pressure	40kg/cm²	32kg/cm²	40kg/cm²	32kg/cm²	

STANDARD TYPE

Dimensions (unit:mm)	Suitable for middle/ small non-conductive tank Media : non-conductive material low moisture material	Suitable for middle/ small non-conductive tank Media: Conductive Material
	Model No. EB5400 Two Rode Probe	Model No. EB54A0 Two Coating Rode Probe
Probe material	SUS304	SUS304 with PP / PFA Coating
Ambient temperature	-40~85°C	-40~85°C
	LCD monitor: -20~85°C	LCD monitor: -20~85°C
Operating temperature	-40~85°C	-40~85°C
Operation voltage	18~30Vdc	18~30Vdc
Analog Output	4 ~20mA(two wire)	4 ~20mA(two wire)
Digital output	Compatible with HART, Read Only	Compatible with HART, Read Only
Measuring range	20~2000pF	20~2000pF
Accuracy	± 1% FS or A0.5pF	± 1% FS or A0.5pF
Effect temp.	< ± 0.2% FS/°C or 0.1pF/°C	< ± 0.2% FS/°C or 0.1pF/°C
Protection	IP65	IP65
Connection	2"x5kg/cm ² flange	2"x5kg/cm ² flange
Weight	Approx. 2.3kg(1m)	Approx. 2.3kg(1m)
Operating pressure	5kg/cm ²	5kg/cm ²

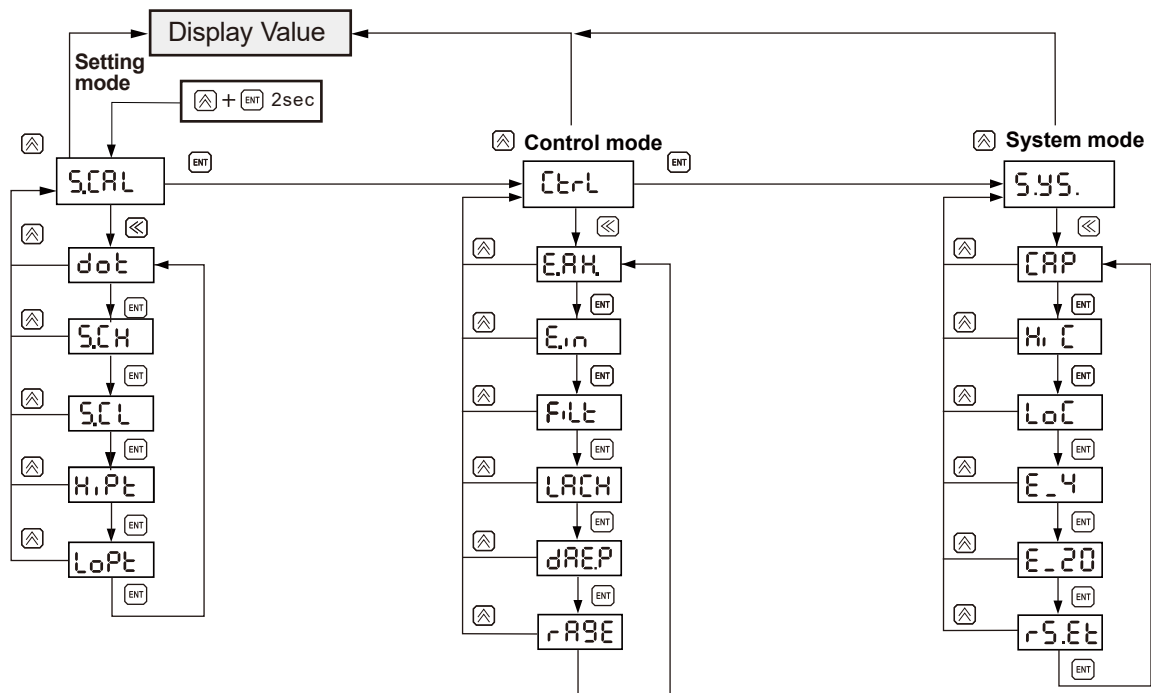
Note:Min. Connection is 2" flange

STANDARD TYPE

Dimensions (unit:mm)	Suitable for middle/ small tank Media : non-conductive material low moisture material	Suitable for middle/big tank Media: Dielectric Constant >4 Conductive Material	Suitable for middle/ small tank Media : non-conductive material low moisture material
Model No.	EB5500 Anti-wave tube Type	EB55A0 Anti-wave tube Type	EB5501 Hi-Temp Anti-wave tubeType
Probe material	SUS304	SUS304 with PFA Coating	SUS304
Ambient temperature	-40~85℃ LCD monitor: -20~85℃	-40~85℃ LCD monitor: -20~85℃	-40~85℃ LCD monitor: -20~85℃
Operating temperature	-40~85℃	-40~85℃	-40~200℃
Operation voltage	18~30Vdc	18~30Vdc	18~30Vdc
Analog output	4~20mA(two wire)	4~20mA(two wire)	4~20mA(two wire)
Digital output	Compatible with HART, Read Only	Compatible with HART, Read Only	Compatible with HART, Read Only
Measuring range	20~2000pF	20~2000pF	20~2000pF
Accuracy	± 1% FS or ± 0.5pF	± 1% FS or ± 0.5pF	± 1% FS or ± 0.5pF
Effect temp.	< ± 0.2% FS/℃ or 0.1pF/℃	< ± 0.2% FS/℃ or 0.1pF/℃	< ± 0.2% FS/℃ or 0.1pF/℃
Protection	IP65	IP65	IP65
Connection	1"PT or 1"x5kg/cm² flange	1"PT or 1"x5kg/cm² flange	1"PT or 1"x5kg/cm² flange
Weight	Approx. 2.3kg(1m)	Approx. 2.3kg(1m)	Approx. 2.8kg(1m)
Operating pressure	40kg/cm²	32kg/cm²	40kg/cm²

Note :Hi-Temp Wire Coating Type is available, the model is EB55A1 with PFA Coating

CALIBRATION & SETUP



A:R B:b C:C D:d E:E F:F G:9 H:H I:~ J:J
 K:~ L:L M:E N:n O:∞ P:P Q:9 R:r S:S T:t
 U:U V:U W:3 X:H Y:9 Z:2

Main Menu	Sub-Menu	Range	Default	Description
SCAL	dot	0~3	1	Decimal point setting
	SCX	-1999~9999	100.0	20mA corresponding display value
	SCL	-1999~9999	0	4mA corresponding display value
	H.Pt	-1999~9999	100.0	Value for high point (Hipt).
	LoPt	-1999~9999	0	Value for low point (Lopt).
Ctrl	ERH	SAVE,RSET BACK	SAVE	Memory for max & mini value during operation. SAVE: Save value into Eeprom RSET: Clean present value and memory BACK: Go back to sub-menu
	E.n	SAVE,RSET BACK	SAVE	
	FilT	Lo,MID,HI	LO	Software Filter
	LACH	ON, OFF	OFF	Output latch
	dREP	1~60sec	1	Reflash time
	rAGE	HI,Lo	HI	Measuring range
SYS.	CAP	0~9999		Capacity Value
	Hi.C	0~9999	2200	High point Capacity Value
	LoC	0~9999	200	Low point Capacity Value
	E_4	-1999~9999	0	4mA fine turn
	E_20	-1999~9999	0	20mA fine turn
	rS.Et			Load default

Note 1:The setting of Hipt, Lopt please refer to calibration procedures on the manual

Note 2:The output will latch when display is 110% or -10%

Note 3:Re-Calibration is necessary if measuring range is changed

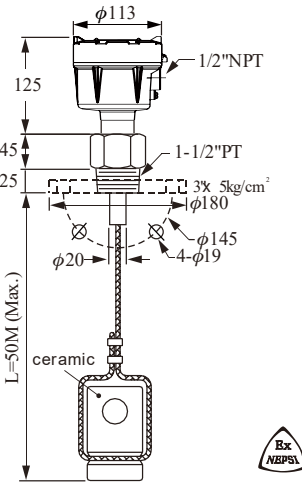
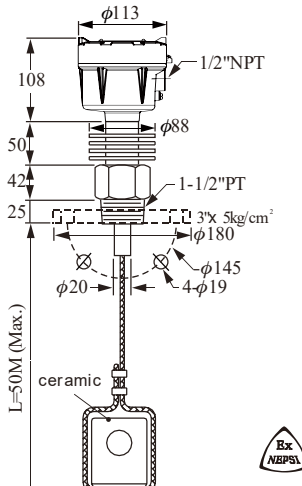
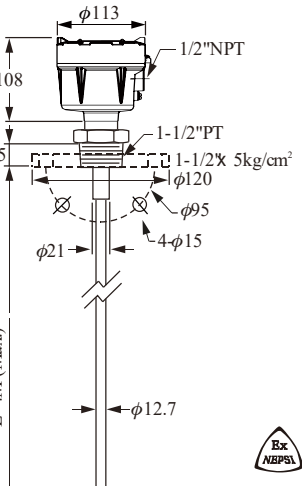
NEPSI Ex d IIB T3~T6 Gb

Ex tD A21 IP65 T190°C/T130°C/T95°C/T80°C

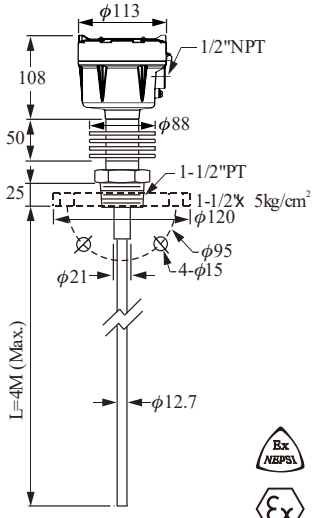
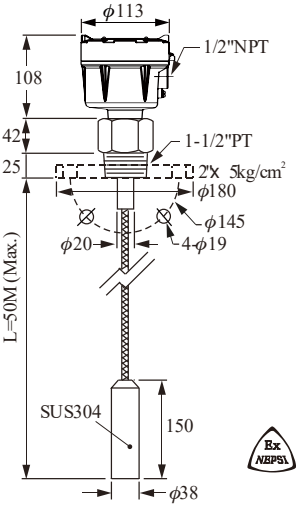
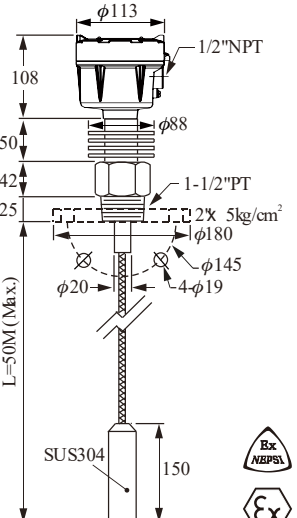
ATEX Ex II 2G Ex d IIB T3~T6

Ex II 2D Ex tD A21 IP65 T80°C ~T190°C

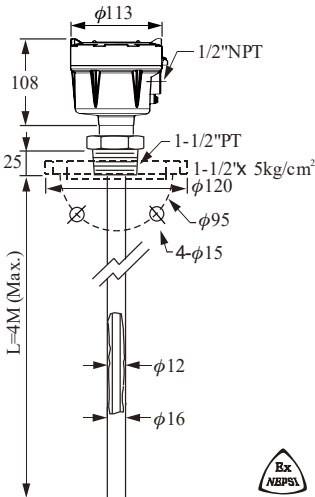
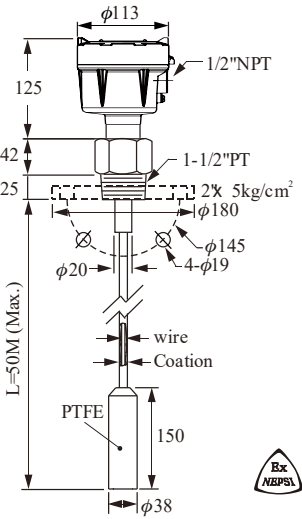
EXPLOSION PROOF TYPE

Dimensions (unit:mm)	 Suitable for non-conductive material and big tank.	 Suitable for non-conductive material and big tank.	 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	-40~190°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)
Protection	IP65	IP65	IP65
Connection	3"x5kg/cm ² flange or 1-1/2"PT screw	3"x5kg/cm ² flange or 1-1/2"PT screw	1-1/2"x5kg/cm ² 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)	 Suitable for non-conductive material and middle-size tank.	 Suitable for non-conductive material and big tank.	 Suitable for non-conductive material and big tank.
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	-40~190°C	-40~80°C	-40~190°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)
Protection	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)	 EB1740---PVDF Coating EB1742---PP Coating EB1743---FEP Coating Suitable for conductive/ corrosive material and middle-size tank.	 EB1752---PP Coating EB1753---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)
Protection	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

Model Number	Order Code
EB5200	EBX10000-A1
EB52A0	EBX10000-B1
EB52A1	EBX10200-B1
EB5201	EBX10200-A1
EB5300	EBX10000-A2
EB53A0	EBX10000-B2
EB53A1	EBX10200-B2
EB5301	EBX10200-A2
EB5400	EBX10000-A3
EB54A0	EBX10000-B3
EB5500	EBX10000-A4
EB55A0	EBX10000-B4
EB5501	EBX10200-A4

Model Number	Order Code
EB1710	EBX1001C-A8
EB1711	EBX1021C-A8
EB1720	EBX1001C-A1
EB1721	EBX1021C-A1
EB1730	EBX1001C-A2
EB1731	EBX1021C-A2
EB1740	EBX1001C-B1□□□□□24
EB1742	EBX1001C-B1□□□□□18
EB1743	EBX1001C-B1□□□□□14
EB1752	EBX1001C-B2□□□□□18
EB1753	EBX1001C-B2□□□□□03

ACCESSORIES

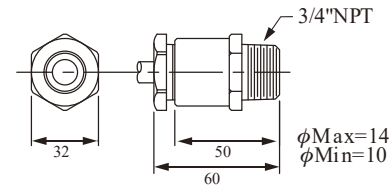
Cable Conduit - Ex d IIC

Material: Washer — NBR

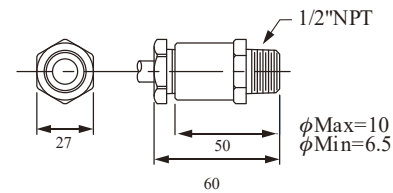
Body— Copper alloy(3/4"NPT)

Nickel plated(1/2"NPT)

HP415-A23100MH01(29-1104)



HP415-A23000MG01(29-1108)



ORDER INFORMATION

	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
EBX1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
05 06 Type																				
00: Standard Type																				
02: Hi-Temp. Type																				
03: Sanitary Type																				
32: Sanitary+Hi-Temp. Type																				
07 08 Certificate																				
00: None																				
1C: ATEX-Sealed Explosion-proof																				
1D: ATEX-Dust Explosion-proof																				
7C: NEPSI-Sealed Explosion-proof																				
7D: NEPSI-Dust Explosion-proof																				
09 10 Probe Typ																				
A1: Rod Probe Type																				
A2: Cable Type																				
A3: Two Rod Probe Type																				
A4: Anti-wave tube Type																				
A5: Anti-wave tube Coating Type																				
A8: Insulator Type																				
B1: Rod Coating Type																				
B2: Cable Coating Type																				
B3: Two Coating Rod Probe																				
B4: Anti-wave tube Two Coating Type																				
Connection																				
11 12					13 14					15 16										
Flange item				A8: 1"				01: PT male												
AK: JIS-FF				B1: 1-1/2"				03: PF male												
AN: ANSI-RF				B2: 2"				05: BSP male												
AS: DIN-FF				B4: 2-1/2"				07: NPT male												
				B5: 3"				13: GAS male												
Thread item				D8: DN25				40: 5 kg/cm2												
AA: JIS				E1: DN40				42: 10 kg/cm2												
AB: ISO				E2: DN50				48: 150 Lbs												
AC: ANSI				E3: DN65				49: 300 Lbs												
AD: DIN				E4: DN80				57: PN10												
								58: PN16												

(Next page)

⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯
EBX1
⑰ ⑱ ⑲ ⑳ ㉑ ㉒ ㉓

⑰⑱ **Probe Material** _____

- MA: SUS 304
- MB: SUS 316
- 03: FEP
- 14: PFA
- 18: PP
- 24: PVDF

⑲ **Communication** _____

- A: None
- B: HART

⑳㉑㉒㉓ **Length** _____

Code	Probe Range
0500~4000	500mm~4000mm, Rod Probe Type
0500~1500	500mm~1500mm, Two Rod Probe Type
0500~A500	500mm~50000mm, Cable Type("A" means multiplied by 100 times)

- * Tolerance of the total product length is $\pm 5\text{mm}$
- * Characteristics, specifications and dimensions are subject to change without notice.
- * Please contact your nearest distributing office for further informations.

INSTALLATION

1. Please choose Two Rod Probe type for non conductive tank (Fig.1), or install a concentric circles metal pipe shield with vent hole at the top outside the probe (Fig. 2)
2. The rod or wire probe should be parallel to the tank wall. To prevent material from sticking between the probe and tank wall, the probe shouldn't be too close to the tank wall.
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 concentric circles metal pipe shield with vent hole at the top.(Fig. 2)
4. Coating Probe type is necessary for conductive media (eg. Water...) , as the bare electrode can't operation normally in conductive media.
5. During the installation, the process connection should be grounded. An installation without proper grounding will not guarantee normal operation of the device later on.
6. For non-conductive medium of powder or granules in big tank, the wire probe should be fixed to the bottom of tank.
7. When all electrical connections inside of Admittance Level Transmitter housing are finished, the housing cover and the conduit opening should be sealed and tightened to prevent moisture from soaking in.
8. If an agitator is in place (see fig. 4), a pipe shield outside the probe is recommended.

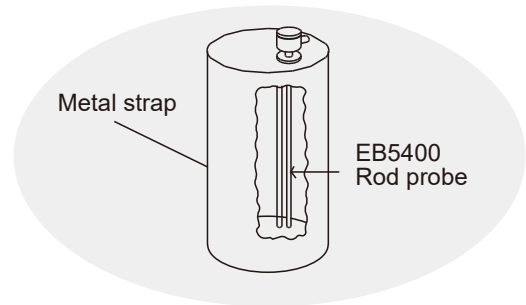


Fig. 1

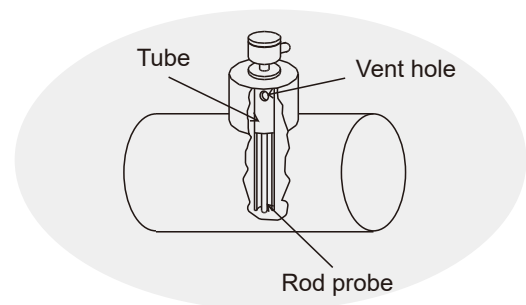


Fig. 2

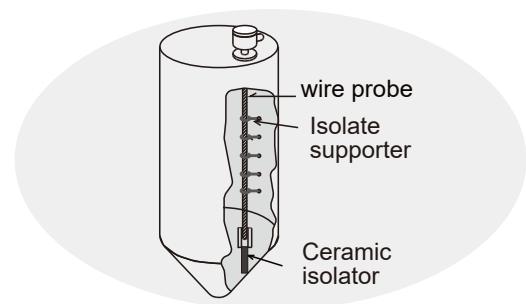


Fig. 3

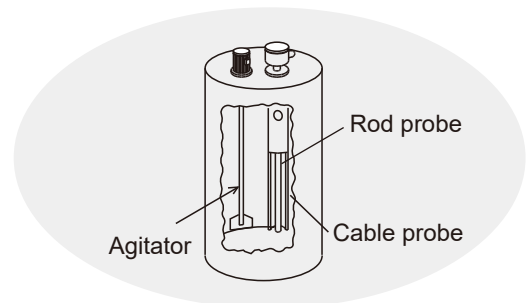


Fig. 4

Global Network



■ Head Quarter

- Taiwan
FineTek Co., Ltd. - Taipei Head Quarter
No.16, Tzuchiang St., Tucheng Industrial Park
New Taipei City 236, Taiwan
TEL: 886-2-2269-6789
FAX: 886-2-2268-6682
EMAIL: info@fine-tek.com

■ North America

- California, U.S.
Aplus Finetek Sensor Inc. - US Office
355 S. Lemon Ave, Suite D
Walnut, CA 91789
TEL: 1 909 598 2488
FAX: 1 909 598 3188
EMAIL: info@aplusfine.com

■ Europe

- Germany
FineTek GmbH - Germany Office
Bei den Kämpen 26
21220 Seevetal-Ramelsloh, Germany
TEL: +49-(0)4185-8083-12
FAX: +49-(0)4185-8083-80
EMAIL: info@fine-tek.de

■ Asia

- China
Fine automation Co., Ltd. - Shanghai Factory
No.451 DuHui Rd, MinHang District, Shanghai,
China 201109
TEL: 86-21-6490-7260
EMAIL: info.sh@fine-tek.com

- Singapore
FineTek Pte Ltd. - Singapore Office
37 Kaki Bukit Place, Level 4 Singapore 416215
TEL: 65-6452-6340
EMAIL: info.sg@fine-tek.com

- Indonesia
PT. FineTek Automation Indonesia - Indonesia Office
PERGUDANGAN TUNAS BITUNG
JL. Raya Serang KM. 13,8, Blok C3 No. 12&15,
Bitung Cikupa, Tangerang 15710
TEL: 62 (021)-2958-1688
EMAIL: info.id@fine-tek.com

- Mütec Instruments GmbH - Germany Office
Bei den Kämpen 26
21220 Seevetal-Ramelsloh, Germany
TEL: +49-(0)4185-8083-0
FAX: +49-(0)4185-8083-80
EMAIL: muetec@muetec.de



Distributor: