

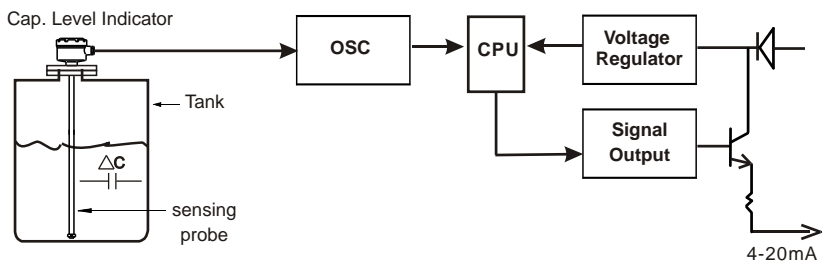
# Capacitance Level Indicator Operation Manual

## PRODUCT INTRODUCTION

The newly designed RF Capacitance Level Indicator is finished in simple structure. It offers easy maintenance for the users. The application of this product is suitable in continuous level detection in solids and liquid with 4-20mA analog output transmission. It can be utilized with PLC and IPC for production process control to implement the best and most efficient production flow. We offer different sensing probes/cable wires for various applications. Loop power design also gives easy wiring installation and is suitable for remote controlling in long distance.

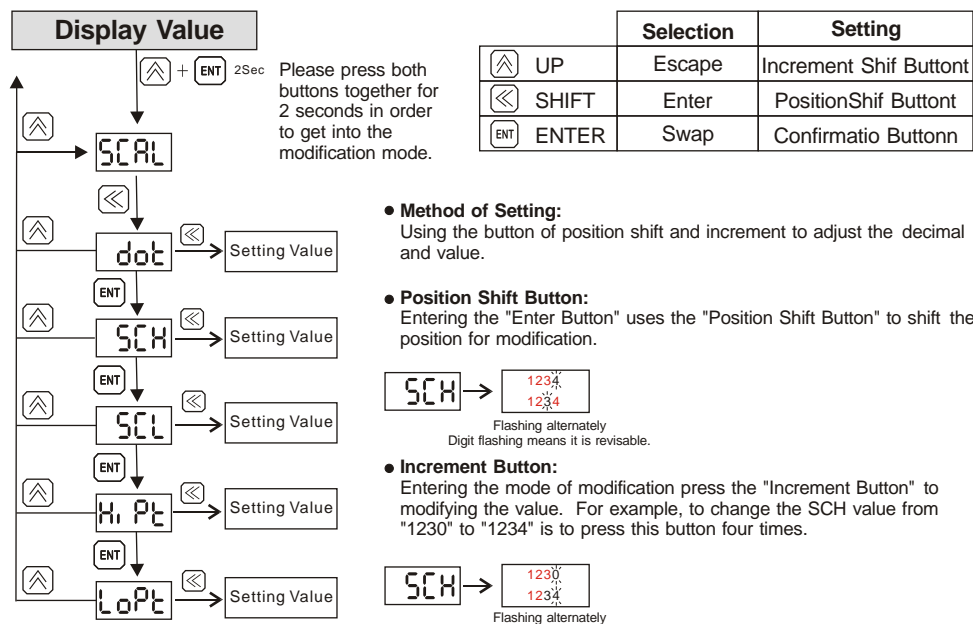
## WORKING PRINCIPLE

The level measurement of a medium in a tank is accomplished by taking advantage of the capacitance theory. The tank wall, the sensing probe and the medium are all capacitors. A high frequency sine wave is applied between the probe and the tank wall. The level change of the medium will consequently change the current of the applied sine wave, thus forming a proportionate relationship between medium level and output contact.



## SETTING FLOWCHART FOR EACH FUNCTION

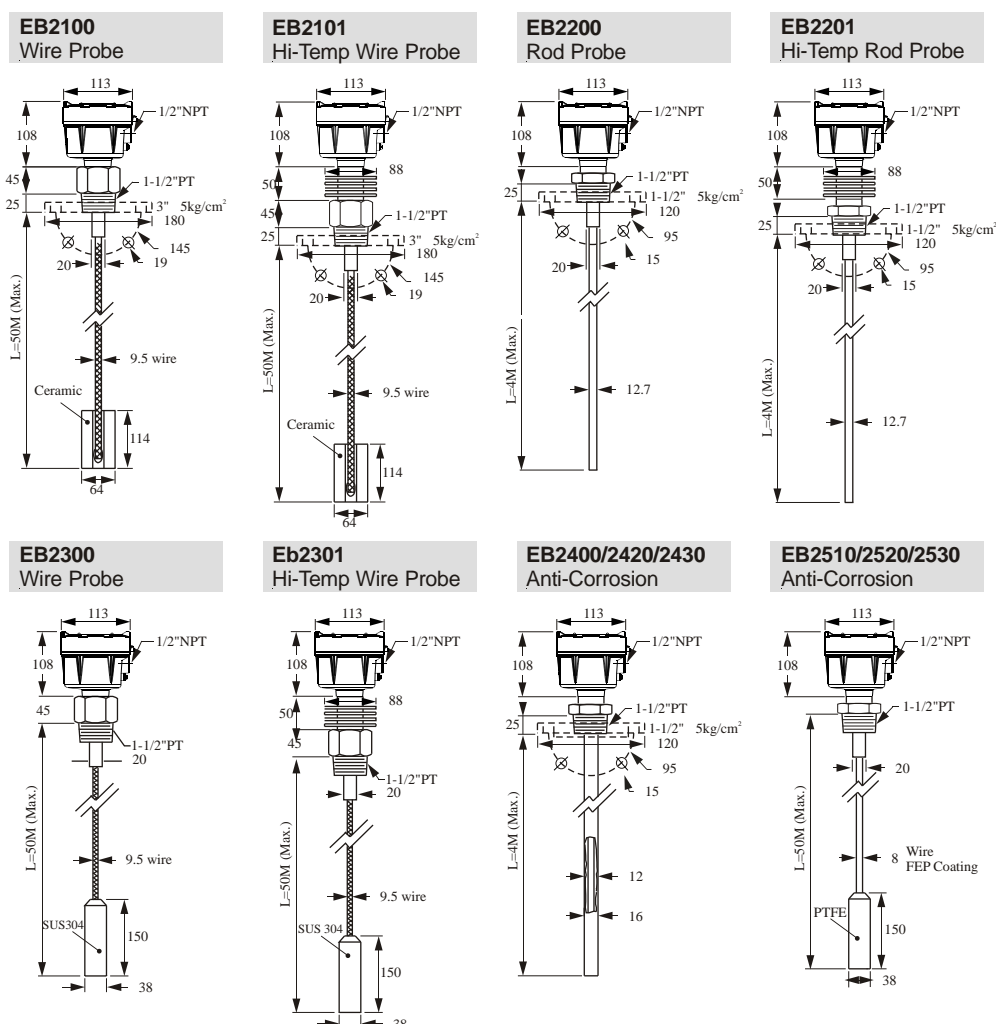
The setting for capacitance level indicator is to press the three buttons (UP, SHIFT, ENTER) on display panel. Firstly, selecting the setting menu then input value by using three buttons showing below:



When LCD shows "OL" screen flashing.

It means the capacitance is too big in which the deviation of measurement is higher than the standard value for remote controlling in long distance.

## DIMENSIONS

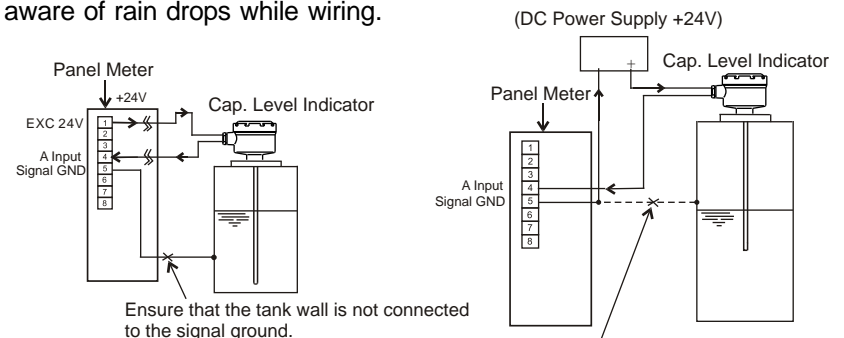


## SPECIFICATIONS

CATEGORY	SPECIFICATION	REMARK
Power Supply	12~36 Vdc	
Measuring Range	0~5000pF	While the capacitance is too big, the LCD shows OL where the deviation is also too high.
Output	4~20mA (loop power)	
Resolution	1%FS	
Resistance	(Vs-12)/0.02 Vs: power voltage	
Ambient Temp.	-10~55 C	
Operation Temp.	-10~100 C / -10~200 C (high temp.)	
Humidity	20~85%	
Temperature Effect	1%FS per30	
Display	LCD	
Protection	IP 65	
Malfunction	Loop current < 3.8mA or > 22mA	

## WIRING AND CAUTION

- Make sure capacitance transmitter is perfectly installed in the tank. Do not connect grounding to the tank.
- 24V power supply can be used for panel indicator when power is not supplied.
- Maximum resistance is not to exceed  $(Vs-12)/0.02\Omega$  to maintain the accuracy of measurement.
- Do not wire signal leads with other high power cables.
- Be aware of rain drops while wiring.



## INSTALLATION AND CAUTION

Please read thoroughly before installing and operating.

- Please make sure product specification is suitable for the application.
- Make sure the electrical current is correct.
- Cap and cable are to be fixed and tightened after wiring to avoid moist.

## CALIBRATION

- DOT: Select decimal points required
- SCH: Set the display value corresponding to 20mA
- SCL: Set the display value corresponding to 4mA
- HIPT: Calibrate the display value corresponding to HiPt, while the medium is in high level.
- LOPT: Calibrate the display value corresponding to LoPt, while the medium is in low level.

### Attention:

While calibration, please separate the position of HIPT and LOPT to reduce the deviation. The best suggestion is to calibrate at empty tank and full tank.

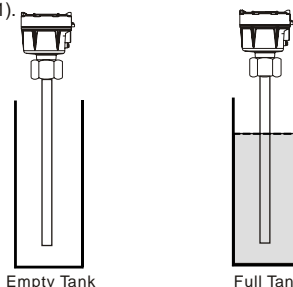
### Example 1:

The lowest value sets at 0 and the output sets at 4mA.  
The highest value sets at 100.0 and the output sets at 20mA  
Calibration is done in empty and full tank.

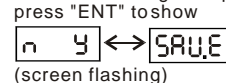
### Procedures of calibration for example 1

1. Input :  
DOT=1, SCH=100.0,  
SCL=0.0 (It can be adjusted anytime; Nothing is related with the status of tank.)

- When the tank is empty, go to the LOPT setting and input 0.0, then press "ENT" "SAVE" (remark 1).
- While the tank is full, go to HIPT setting and input 100.0, then press "ENT" "SAVE" (Remark 2).



Remark 1: Under the setting for HiPt & LoPt, press "ENT" to show



(screen flashing)  
Press "ENT" button to save the value and then press "UP" button to escape the setting.  
Remark 2:  $(200.0-100.0) \times 10\% + 100.0 = 110.0$   
Remark 3:  $(200.0-100.0) \times 90\% + 100.0 = 190.0$

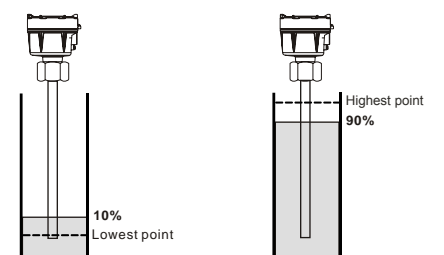
### Example 2:

The lowest value sets at 100.0 and the output sets at 4mA.  
The highest value sets at 200.0 and the output sets at 20mA  
The two values of the 10% and the 90% of the height of the tank are applied for calibration. The 0% of the total height of the tank is corresponded to 4mA, while the 100% of the total height of the tank is corresponded to 20mA.

### Procedures of calibration for example 2

1. Input:  
DOT=1, SCH=200.0,  
SCL=100.0 (It can be adjusted anytime; Nothing is related with the status of tank.)

- To fill the medium till reaching to the 10% of the height of the tank, go to the LOPT setting and input the value of 110.0 and then press "ENT" "SAVE" (Remark 1).
- To fill the medium till reaching to the 90% of the height of the tank, go to HIPT setting and input the value of 190.0 and then press "ENT" "SAVE". (Remark 2).



## TROUBLE SHOOTING

- LoPt and HiPt are to be re-calibrated when display value is incorrect.
- Re-do SCL and SCH for empty and full tank.
- Make sure the circuit board is screwed correctly.
- Make sure thread/flange is tightened to the tank.
- Be sure the power supply is 12~36Vdc.
- Be sure the overload resistance meets  $(Vs-12)/0.02\Omega$ .



**FineTek Co., Ltd.**

No.16, Tzuchiang St., Tucheng Industrial Park, Taipei Hsien, Taiwan  
Tel: 886-2-22696789 Fax: 886-2-22686682  
e-mail: info@fine-tek.com http://www.fine-tek.com

