



## Pressure Level Transmitter



# 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.

## 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 create 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,  $\theta$  is pressure constant and H is the level of liquid in a container.

## 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.

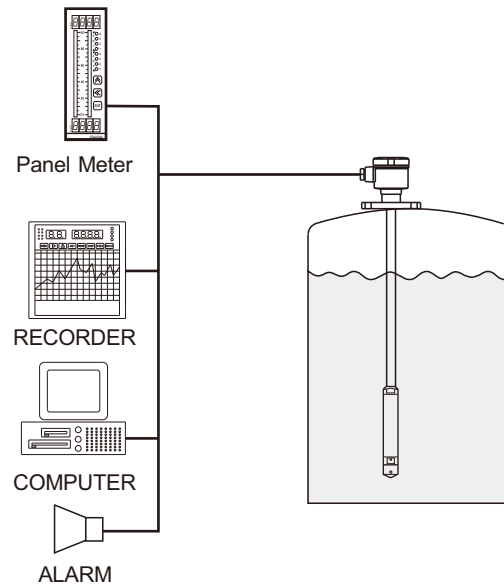
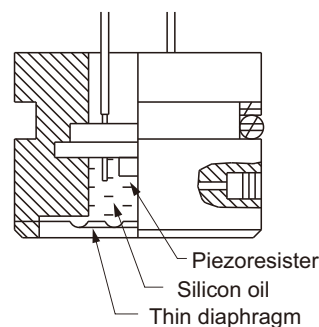


Fig. (1)

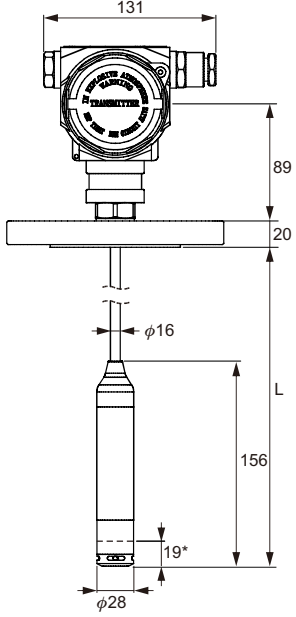
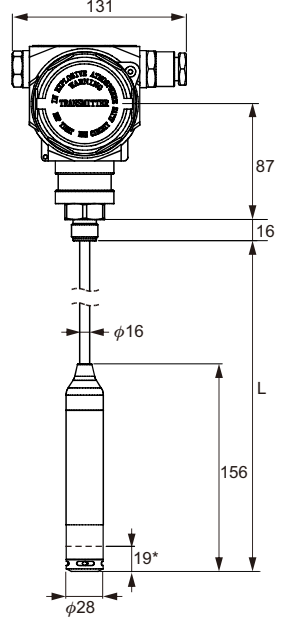
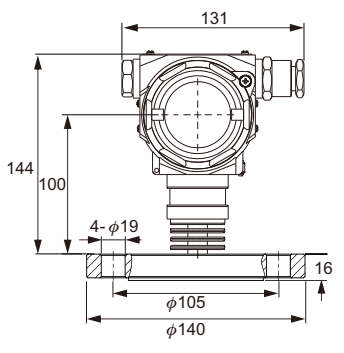


$$P = \theta \times H$$

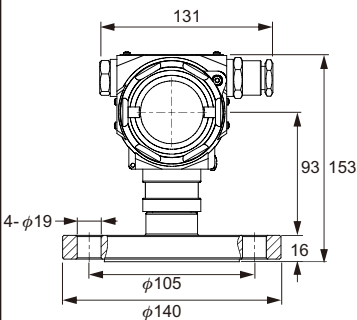
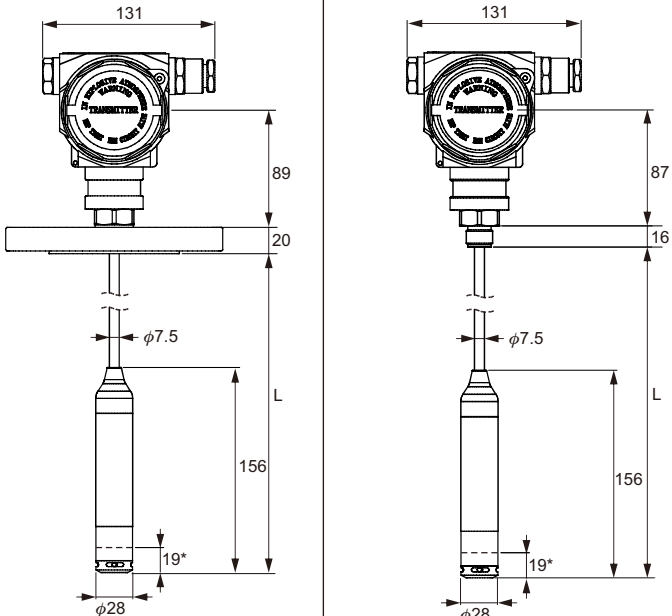
P : Pressure  
H: The level of liquid  
 $\theta$  : Pressure constant

Fig. (2)

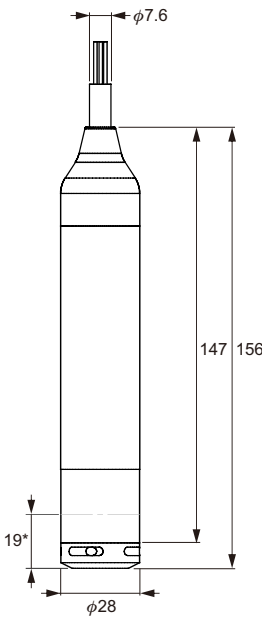
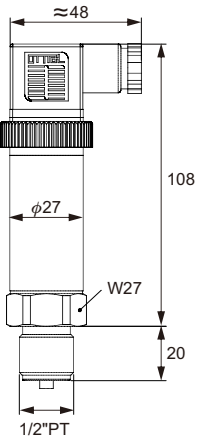
# SPECIFICATIONS

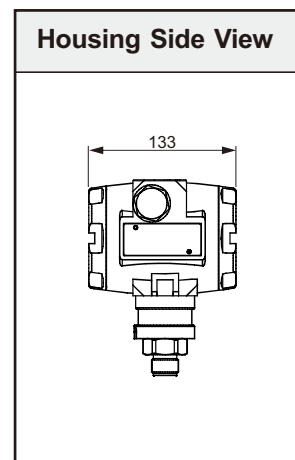
Dimensions (unit:mm)			
			
			
Model No.	EC1100 Extension Tube Flange Model	EC1110 Extension Tube Screw Model	EC1200 Hi-Temp.Flange Model
Housing material	Aluminum, IP65	Aluminum, IP65	Aluminum, IP65
Pressure range	0.1~0.4 bar	0.1~0.4 bar	0.1~30 bar
Measuring range	1~4M (assumed with the water S.G:1)	1~4M (assumed with the water S.G:1)	1~300M (assumed with the water S.G:1)
Linearity	0.5%FS	0.5%FS	0.5%FS
Long term stability	<0.1%	<0.1%	<0.1%
Operating temp	-10~70°C	-10~70°C	-10~150°C
Ambient temp	-10~70°C	-10~70°C	-20~80°C
Supply voltage	10.5~55 Vdc	10.5~55 Vdc	10.5~55 Vdc
Output	4~20mA, Loop resistance should be less than 500 W	4~20mA, Loop resistance should be less than 500 W	4~20mA, Loop resistance should be less than 500 W
Connection	1-1/2" x 5kg/cm <sup>2</sup>	1-1/2" PT	1-1/2" x 10kg/cm <sup>2</sup>
Wetted material	SUS 304/316	SUS 304/316	SUS 304/316
Weight	approx. 4.2kg (L=1M)	approx. 4kg (L=1M)	approx. 1.8kg

※Special size flange and screws are available.

Dimensions (unit:mm)			
	 <p>*Show the distance from sensing diaphragm to the bottom of product</p>		
Model No.	<b>EC1210</b> Flange Standard Model	<b>EC1300</b> Extension Cable Flange Model	<b>EC1310</b> Extension Cable Screw Model
Housing material	Aluminum, IP65	Aluminum, IP65	Aluminum, IP65
Pressure range	0.1~30 Bar	0.05~20 Bar	0.05~20 Bar
Measuring range	1~300M (assumed with the water S.G:1)	0.5~200M (assumed with the water S.G:1)	0.5~200M (assumed with the water S.G:1)
Linearity	0.5%FS	0.5%FS	0.5%FS
Long term stability	<0.1%	<0.1%	<0.1%
Operating temp	-20~85°C	-10~70°C	-10~70°C
Ambient temp	-20~80°C	-10~70°C	-10~70°C
Supply voltage	10.5~55 Vdc	10.5~55 Vdc	10.5~55 Vdc
Output	4~20mA, Loop resistance should be less than 500 W	4~20mA, Loop resistance should be less than 500 W	4~20mA, Loop resistance should be less than 500 W
Connection	1-1/2" x 10kg/cm <sup>2</sup>	1-1/2"x5kg/cm <sup>2</sup>	1-1/2"PT
Wetted material	SUS 304/316	SUS 304/316+PU/ PTFE cable	SUS 304/316+PU/ PTFE cable
Weight	approx. 1.5kg	approx. 2.8kg (L=1M)	approx. 2.9kg (L=1M)

※Special size flange and screws are available.

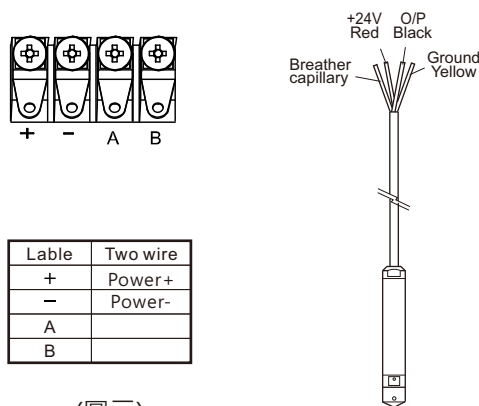
<b>Dimensions (unit:mm)</b>	 <p>*Show the distance from sensing diaphragm to the bottom of product</p>	
		
<b>Model No.</b>	<b>EC1320 Extension Cable Model</b>	<b>EC1500 Pressure Transducer</b>
<b>Pressure range</b>	0.05~10 bar	0.02~100 bar
<b>Measuring range</b>	0.5~100M (assumed with the water S.G:1)	—
<b>Linearity</b>	0.5%FS	0.3%FS
<b>Long term stability</b>	<0.1%	<0.1%
<b>Operating temp</b>	-10~70°C	-10~80°C
<b>Ambient temp</b>	-10~70°C	-40~80°C
<b>Supply voltage</b>	12~30 Vdc	12~30 Vdc
<b>Output</b>	4~20mA, Loop resistance should be less than 500 W	4~20mA, Loop resistance should be less than 500 W
<b>Protection</b>	—	1/2" PT
<b>Wetted material</b>	SUS 304/316+PU/ PTFE cable	SUS 304/316
<b>Weight</b>	0.34kg(Sensing) 032kg/Per meter(PU) 0.41kg/Per meter(PTFE)	approx. 210g



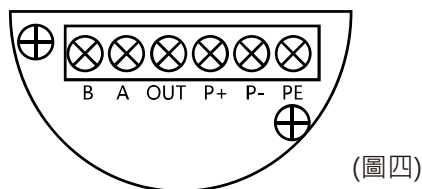
※Special size flange and screws are available.

# 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.



(圖三)



(圖四)

Lable	P+	P-	A	B	OUT	**PE
Modbus-RTU/RS485	Power+	Power-	A+	B-		Housing
Five wires	Power+	Power-	A+	B-	*Signal+	Housing

\*Signal: 4~20mA

\*\*PE: Housing ground terminals, please operate according to users' demands.

## EC1500 TYPE

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

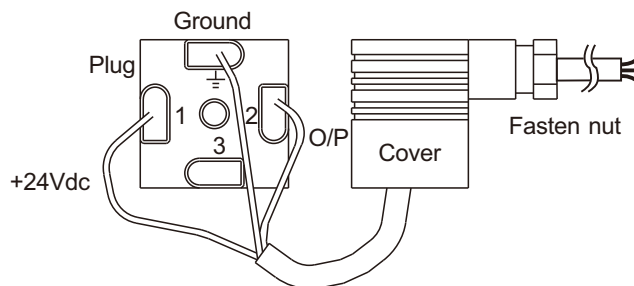


Fig. (5)

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

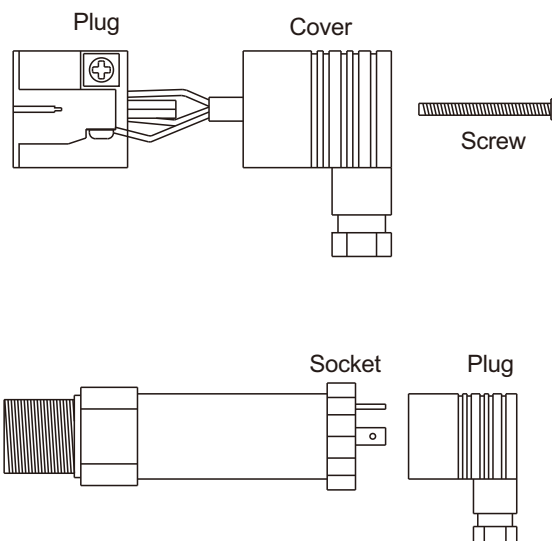


Fig. (6)



## 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 10.5Vdc.
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.

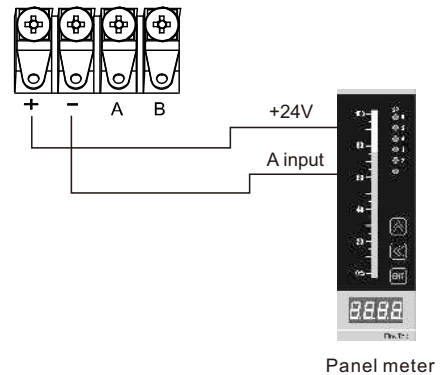


Fig. (7)

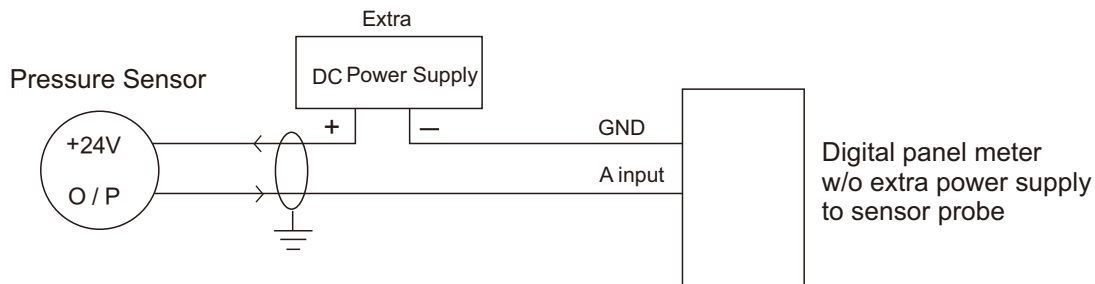


Fig. (8)

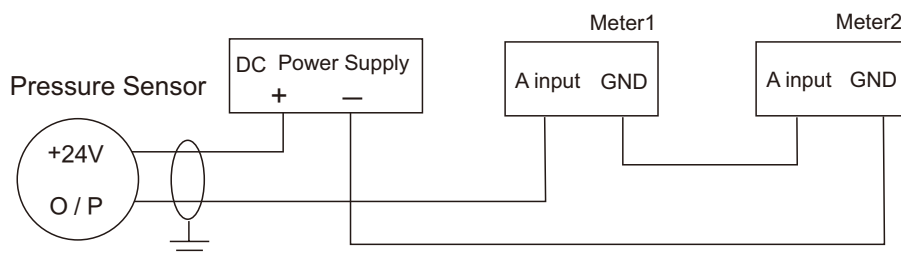


Fig. (9)

## PRESSURE UNIT CONVERSION CONSTANTS

	PSI	KPa	mbar	cmH <sub>2</sub> O	mmHg	kgf/cm <sup>2</sup>
PSI	1	6.89	68.95	70.31	51.71	70.31x10 <sup>-3</sup>
KPa	0.15	1	10	10.2	7.5	1.02x10 <sup>-2</sup>
mbar	1.45x10 <sup>-2</sup>	0.1	1	1.02	0.75	1.02x10 <sup>-3</sup>
cmH <sub>2</sub> O	14.22x10 <sup>-3</sup>	98.07x10 <sup>-3</sup>	0.98	1	0.74	10 <sup>-3</sup>
mmHg	19.34x10 <sup>-3</sup>	13.33x10 <sup>-2</sup>	1.33	1.36	1	1.36x10 <sup>-3</sup>
kgf/cm <sup>2</sup>	14.22	98.07	980.67	1000	735.56	1

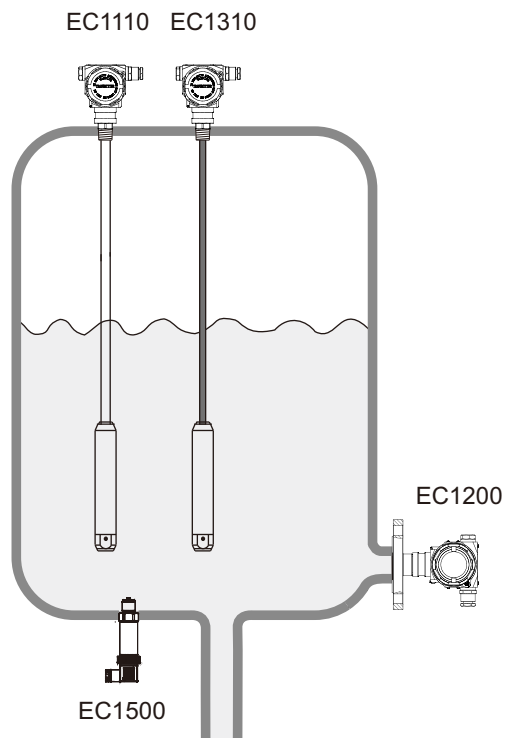
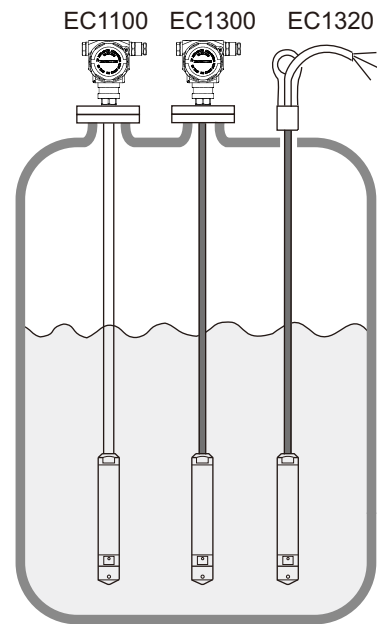
$$1 \text{ MPa} = 10.2 \text{ kgf/cm}^2 = 145 \text{ PSI}$$

$$1 \text{ kgf/cm}^2 = 0.098 \text{ MPa} = 14.22 \text{ PSI}$$



## 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. 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.
6. Handle the sensor probes with care. The sensor probe is delicate and vibration or shock can damage it.
7. Do not use high pressure water jets to wash or contact the sensing diaphragms.



# ORDER INFORMATION

ECX 2 <sup>05</sup> <sup>06</sup> 0 0 - <sup>09</sup> <sup>10</sup> <sup>11</sup> <sup>12</sup> <sup>13</sup> <sup>14</sup> <sup>15</sup> <sup>16</sup> <sup>17</sup> <sup>18</sup> <sup>19</sup> <sup>20</sup> <sup>21</sup> <sup>22</sup> <sup>23</sup> <sup>24</sup> <sup>25</sup>

## <sup>05</sup> <sup>06</sup> Model

00: Standard  
01: Economy(Without housing)  
02: Hi-temperature

## <sup>09</sup> Construction

A: Extension tube type  
B: Flange type  
C: Extension cable type  
D: Transducer

## Connection

### <sup>10</sup> <sup>11</sup>

00: None  
Flange  
AK: JIS-FF  
AN: ANSI-RF  
AS: DIN-FF

### Thread

AC: ANSI  
AA: JIS

### <sup>12</sup> <sup>13</sup>

00: None  
A5: 1/2"  
A7: 3/4"  
B1: 1-1/2"  
B2: 2"  
D6: DN15  
D7: DN20  
E1: DN40  
E2: DN50

### <sup>14</sup> <sup>15</sup>

00: None  
01: PT male  
03: PF male  
07: NPT male  
40: 5 kg/cm<sup>2</sup>  
42: 10 kg/cm<sup>2</sup>  
48: 150 Lbs  
49: 300 Lbs  
57: PN10  
58: PN16

## <sup>16</sup> <sup>17</sup> Material

MA: SUS 304  
MB: SUS 316  
MC: SUS 316L  
21: PTFE coating

## <sup>18</sup> <sup>19</sup> <sup>20</sup> <sup>21</sup> Length

Code	Probe Length
0000	None
0001~9999	0001~9999mm
A100~A999	10000~99900mm
B100~B500	100000~500000mm

※Please select code 0000 for EC1200、EC1210、EC1500

## <sup>22</sup> <sup>23</sup> <sup>24</sup> <sup>25</sup> Pressure

X000: 0Bar  
OX05: 0.05Bar  
OX10: 0.10Bar  
OX15: 0.15Bar  
OX20: 0.20Bar  
:  
:  
:  
400X: 400Bar

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