

PRODUCT INTRODUCTION

FEATURES

1. There are various types at user's option, such as: transducer with extension cable/tube, Anti-corrosive type, flange type & pressure transducer.
2. Can be equipped with digital panel meter, recorder, PLC, signal controller.
3. There are metal diaphragm can be used in various environments such as weak acid and alkaline liquid or sewage water treatment.
4. Our internal temperature compensation ensures long lasting reliability.
5. Multiple flange/screw sizes are available. Customized flanges/screw can be ordered.

THEORY

A pressure sensor is made out a piezoresister 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 creates a differential voltage. This voltage difference can then be amplified to obtain a current signal of 4-20mA. When connect this current output to a 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, θ is pressure constant and H is the level of liquid in a container.

If P and θ are know, then the value of $H = P \div \theta$.

APPLICATIONS

1. The EC1100, is a liquid measurement device which can be used in a variety of environments, including water-agitation environments.
2. EC1200 can withstand high temp. liquid environment.
3. The Standard Flange Type EC1210 can be used in liquid & gas pressure measurement environments (i.e., mildly corrosive environments).
4. The EC1300~1320 type is suitable for measurement of very deep water, such as measurement of reservoirs.
5. The EC1500 is suitable for pressure measurement or control devices such as those found in hydraulic and pneumatic machines.

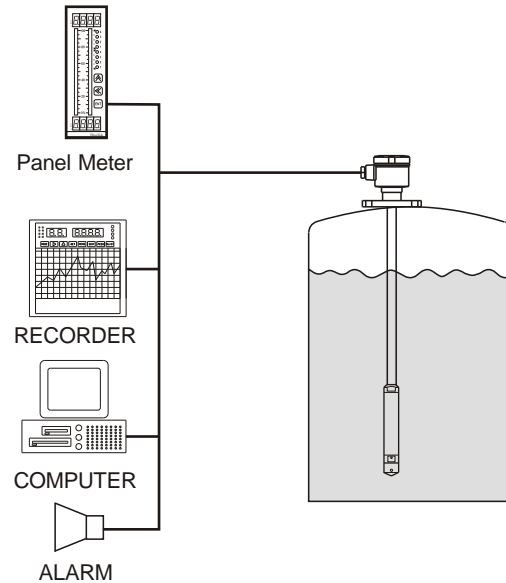
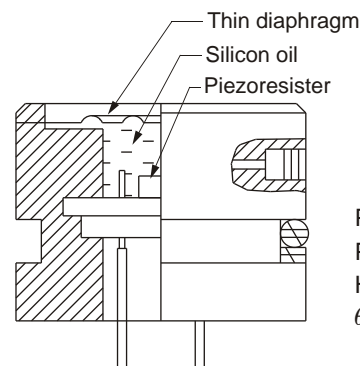


Fig. (1)



$$P = \theta \times H$$

P : Pressure
 H: The level of liquid
 θ : Pressure constant

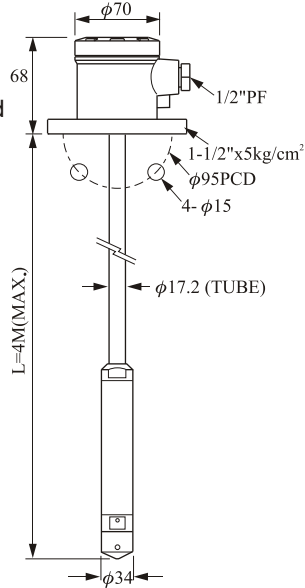
Fig. (2)

SPECIFICATION

EC1100 Extension Tube Flange Type

Housing material: Aluminum, IP65
 Measuring range: 0.1, 0.2, 0.4 Bar
 (0~1M, 0~2M, 0~4M)
 assumed with the water S.G:1

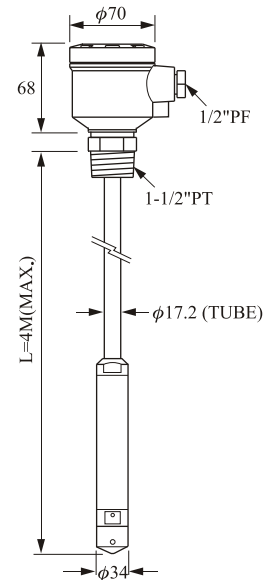
Linearity: 0.3% FS
 Long term stability: <0.1%
 Operating temp: -10~80°C
 Ambient temp: 60°C
 Supply voltage: 13~36Vdc
 Output: 4~20mA
 Loop resistance should be less than 500 W
 Connection: 1-1/2"x5kg/cm²
 Wetted material: SUS 304/316
 Weight: approx. 4.2kg (L=1M)



EC1110 Extension Tube Flange Type

Housing material: Aluminum, IP65
 Measuring range: 0.1, 0.2, 0.4 Bar
 (0~1M, 0~2M, 0~4M)
 assumed with the water S.G:1

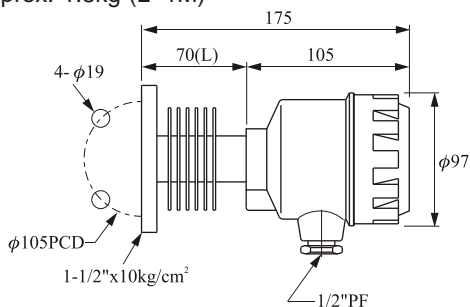
Linearity: 0.3% FS
 Long term stability: <0.1%
 Operating temp: -10~80°C
 Ambient temp: 60°C
 Supply voltage: 13~36Vdc
 Output: 4~20mA
 Loop resistance should be less than 500 W
 Connection: 1-1/2"x5kg/cm²
 Wetted material: SUS 304/316
 Weight: approx. 4kg (L=1M)



EC1200 Hi-Temp.Flange Type

Housing material: Aluminum, IP65
 Measuring range: 0.1, 0.2, 0.5, 1, 2, 5, 10 Bar
 (0~1M, 0~2M, 0~4M, 0~10M,
 0~20M, 0~50M, 0~100M)
 assumed with the water S.G:1

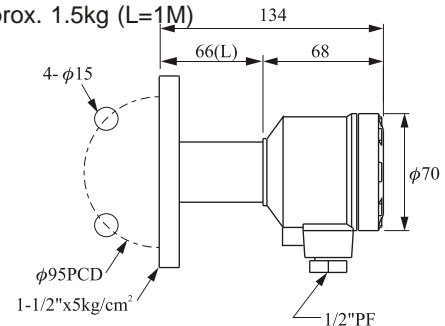
Linearity: 0.3% FS
 Long term stability: <0.1%
 Operating temp: -10~150°C
 Ambient temp: 60°C
 Supply voltage: 13~36Vdc
 Output: 4~20mA
 Loop resistance should be less than 500 W
 Connection: 1-1/2"x5kg/cm²
 Wetted material: SUS 304/316
 Weight: approx. 1.8kg (L=1M)



EC1210 Flange Standard Type

Housing material: Aluminum, IP65
 Measuring range: 0.1, 0.2, 0.4 Bar
 (0~1M, 0~2M, 0~4M, 0~10M,
 0~20M, 0~50M, 0~100M)
 assumed with the water S.G:1

Linearity: 0.3% FS
 Long term stability: <0.1%
 Operating temp: -10~80°C
 Ambient temp: 60°C
 Supply voltage: 13~36Vdc
 Output: 4~20mA
 Loop resistance should be less than 500 W
 Connection: 1-1/2"x5kg/cm²
 Wetted material: SUS 304/316
 Weight: approx. 1.5kg (L=1M)



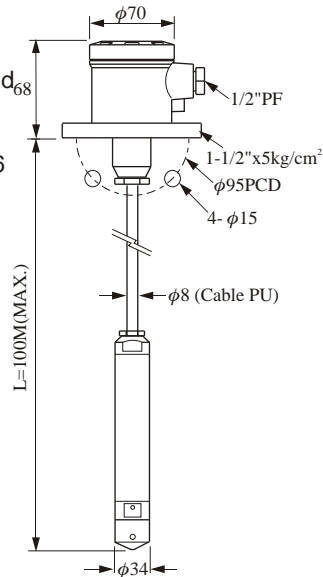
※Special size flange and screws are available.
 ※OEM/ODM is welcome.

EC1300 Extension Cable Flange Type

Housing material: Aluminum, IP65
 Measuring range: 0.1, 0.2, 0.5, 1, 2, 5, 10 Bar
 (0~1M, 0~2M, 0~4M, 0~10M,
 0~20M, 0~50M, 0~100M)
 assumed with the water S.G:1

Linearity: 0.3% FS
 Long term stability: <0.1%
 Operating temp: -10~80°C
 Ambient temp: 60°C
 Supply voltage: 13~36Vdc
 Output: 4~20mA

Loop resistance should be less than 500 W
 Connection: 1-1/2"x5kg/cm²
 Wetted material: SUS 304/316
 Weight: approx. 2.8kg (L=1M)

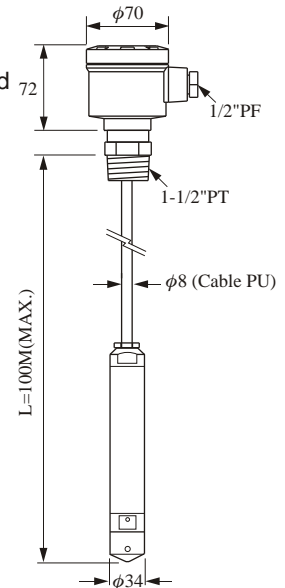


EC1310 Extension Cable Screw Type

Housing material: Aluminum, IP65
 Measuring range: 0.1, 0.2, 0.4 Bar
 (0~1M, 0~2M, 0~4M, 0~10M,
 0~20M, 0~50M, 0~100M)
 assumed with the water S.G:1

Linearity: 0.3% FS
 Long term stability: <0.1%
 Operating temp: -10~80°C
 Ambient temp: 60°C
 Supply voltage: 13~36Vdc
 Output: 4~20 mA

Loop resistance should be less than 500 W
 Connection: 1-1/2"PT
 Wetted material: SUS 304/316
 Weight: approx. 2.9kg (L=1M)

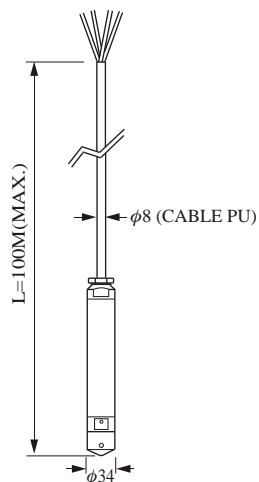


EC1320 Extension Cable Type

Measuring range: 0.1, 0.2, 0.5, 1, 2, 5, 10 Bar
 (0~1M, 0~2M, 0~4M, 0~10M,
 0~20M, 0~50M, 0~100M)
 assumed with the water S.G:1

Linearity: 0.3% FS
 Long term stability: <0.1%
 Operating temp: -10~80°C
 Ambient temp: 60°C
 Supply voltage: 13~36Vdc
 Output: 4~20 mA

Loop resistance should be less than 500 W
 Protection: IP68
 Wetted material: SUS 304/316
 Weight: approx. 0.8kg (L=1M)

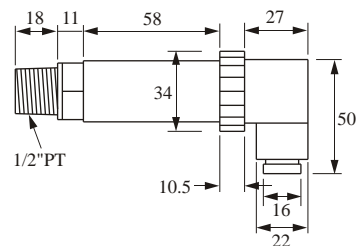


EC1500 PRESSURE TRANSDUCER

Measuring range: 0.1, 0.2, 0.5, 1, 2, 5, 10,
 20, 50, 100 Bar

Linearity: 0.3% FS
 Long term stability: <0.1%
 Operating temp: -10~80°C
 Ambient temp: 60°C
 Supply voltage: 13~36Vdc
 Output: 4~20 mA

Loop resistance should be less than 500 W
 Connection: 1/2"PT
 Protection: IP65
 Wetted material: SUS 304/316
 Weight: approx. 250g



※Special size flange and screws are available.
 ※OEM/ODM is welcome.

INTERNAL WIRING

1. Make sure the power is turned off. Remove the shield wires. Solder the exposed copper wire with tin and connect them as show in fig. 3 or fig. 4,5 (depending on which product you purchased).
2. Make sure the outlet breather capillary is open for air to flow freely.
3. Please tighten cover and cable gland after wiring finished.
4. The cable should be at least 18 AWG or 16AWG.

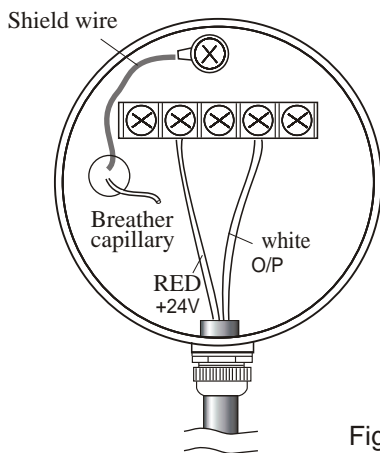


Fig. (3)

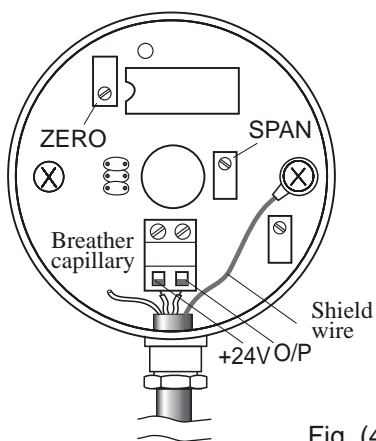


Fig. (4)

EC1500 TYPE

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

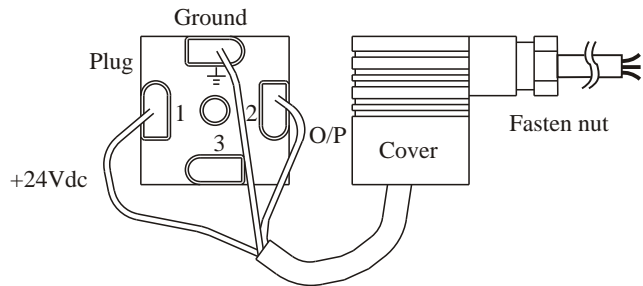


Fig. (5)

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

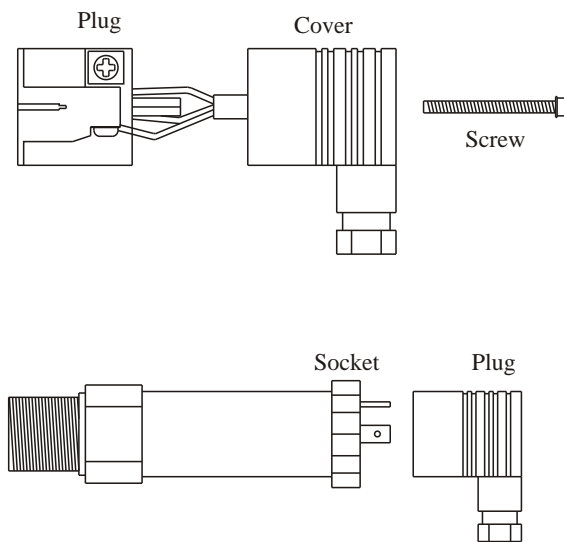


Fig. (6)

EXTERNAL WIRING

1. For FineTek Panel Meter, please refer to the wiring diagram attached. As for other brands of panel meter, please refer to its respective operation manual for their wiring diagram.
2. Wiring connection should be kept away from high voltage cable, (e.g. Power cable.)so as to prevent interference from high voltage.
3. Resistance in the circuit should be avoid for wiring connection in order to keep operating voltage higher than 13Vdc
4. Wiring should be used in shielded insulated cable.
5. If the panel meter does not supply 24Vdc power supply to the sensor, additional power supply is needed as according to Diagram 8.
If installing 2 panel meter at different location, please refer to diagram 9 for wire connection.

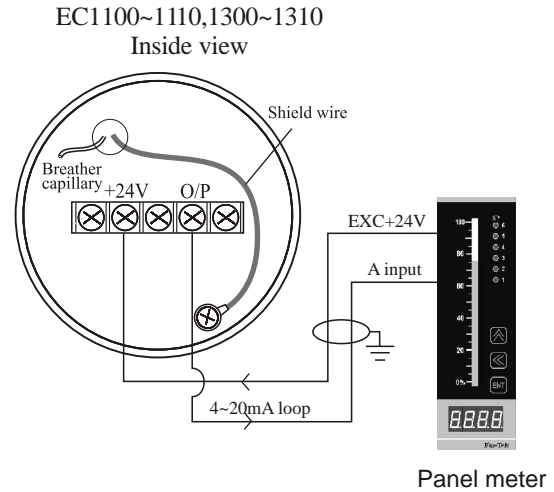


Fig. (7)

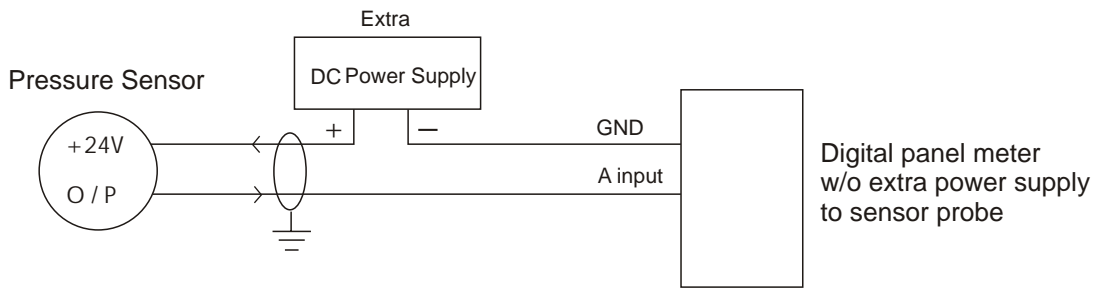


Fig. (8)

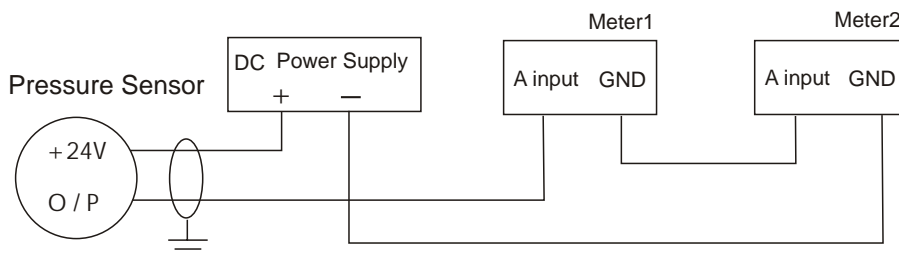
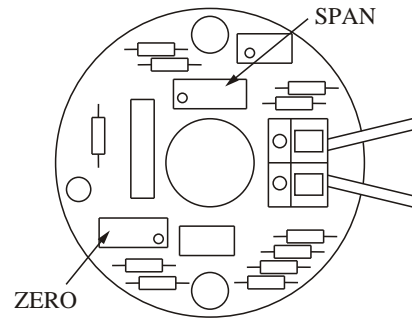


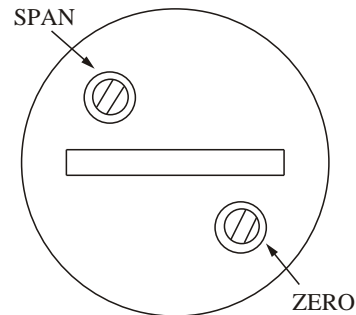
Fig. (9)

ADJUSTMENT (FOR ZERO-SPAN)

- Adjust the trimmer "ZERO" while the tank is empty to make sure the current output was expected to reach 4mA.
- Adjust the trimmer "SPAN" while the tank is full to make sure the current output was expected to reach 20mA.
- Since Zero & Span adjustment were all done in the factory before shipment, do not perform the above adjustments unless it is really necessary.
- Adjust range: (SPAN) 18~24mA, (ZERO) 3~5mA.
- If the sensor output is not a standard 4~20mA signal while liquid level changes between empty and full, we recommend you to use with the PM series digital meter, because which equipped with a built-in programmable input (0~25.5mA) to allows the user to set his configuration. This special function will keep the reading of meter correspond to the any different input signal. More information please refers to Panel Meter series catalog.



The electrical housing for transducer with flange.



The electrical housing for pressure transducer.

Pressure Unit Conversion Constants

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

1 MPa=10.2kgf/cm²=145 PSI

1 kgf/cm²=0.098MPa=14.22 PSI

HOW TO MAKE YOUR ORDER

EC 1 1 0 0 EM 1 0 0 0

MODEL

- 1000: Extension Tube Flange Type
- 1110: Extension Tube Screw Type
- 1200: Hi-Temp. Flange Type
- 1210: Flange Standard Type
- 1300: Extension Cable Flange Type
- 1310: Extension Cable Screw Type
- 1320: Extension Cable Type
- 1500: Pressure Transducer

CONNECTING TYPE

- | | |
|-----------------|--------------------------|
| B: 1/2" (15A) | M: 5 kg/cm ² |
| C: 3/4" (20A) | N: 10 kg/cm ² |
| D: 1" (25A) | O: 150 Lbs |
| E: 1-1/2" (40A) | P: 300 Lbs |
| F: 2" (50A) | Q: PT |
| G: 2-1/2" (65A) | R: PF |
| H: 3" (80A) | T: BSP |
| I: 4" (100A) | U: NPT |
| J: 5" (125A) | V: GAS |
| K: 6" (150A) | W: PN10 (10Bar) |
| S: Others | X: PN16 (16Bar) |
| | Y: PN25 (25Bar) |
| | Z: PN40 (40Bar) |
| | S: Others |

LENGTH (UNIT: mm)

- * 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.