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Pressure Level Transmitter

FineTek

Innovation · Quality · Sharing

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.

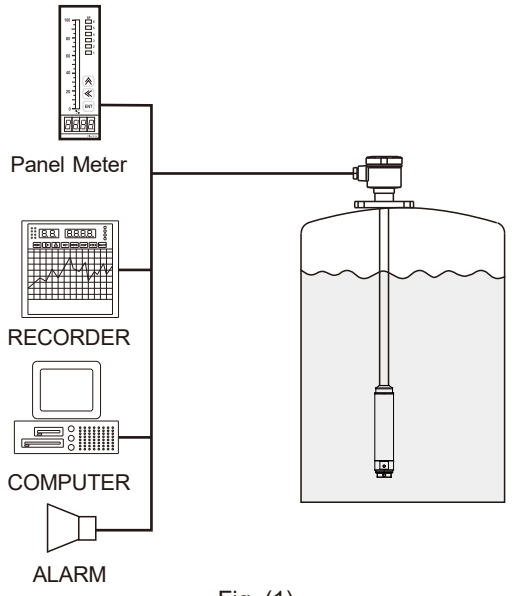


Fig. (1)

THEORY

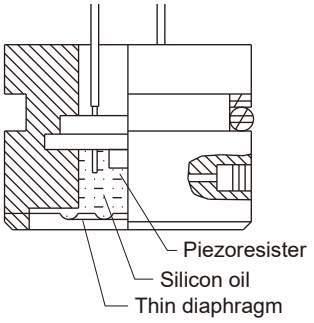
A pressure sensor is made up of a piezoresistor Wheatstone bridge.

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 creates 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= θ x H

Where P is pressure, q is pressure constant and H is the level of liquid in a container.



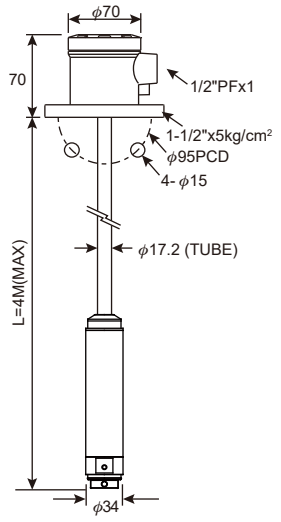
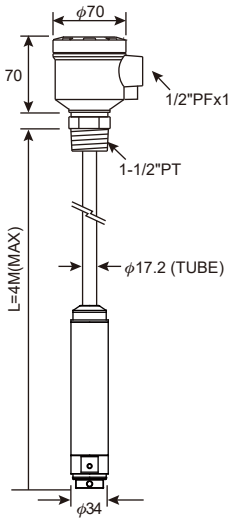
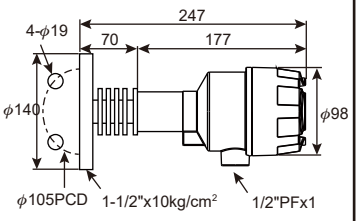
P = θ×H
P : Pressure
H : The level of liquid
q : Pressure constant

Fig. (2)

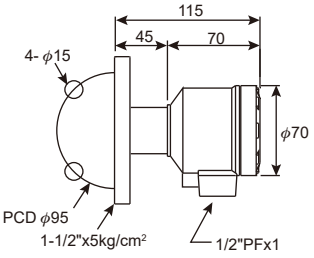
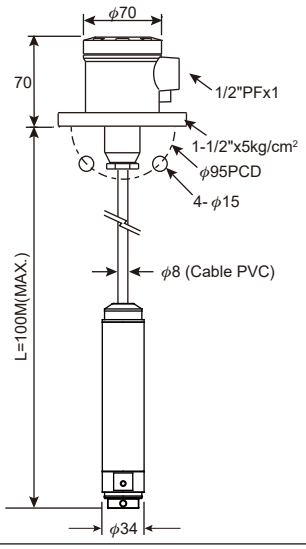
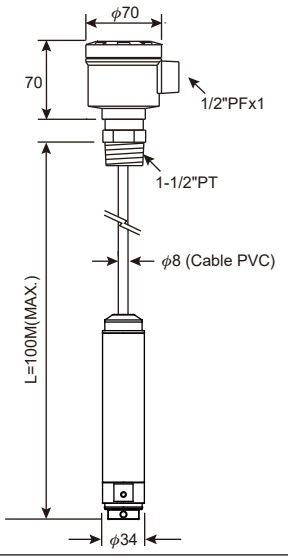
APPLICATIONS

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.

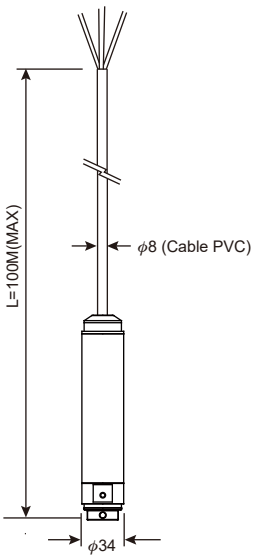
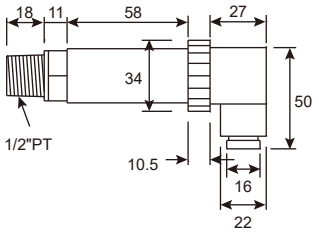
SPECIFICATIONS

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
Wet part IP rating	IP68	IP68	N/A
Pressure range	0.1, 0.2, 0.4 bar	0.1, 0.2, 0.4 bar	0.1, 0.2, 0.5, 1, 2, 5, 10 bar
Measuring range	0~1M,0~2M,0~4M (assumed with the water S.G:1)	0~1M,0~2M,0~4M (assumed with the water S.G:1)	0~1M,0~2M,0~5M,0~10M, 0~20M,0~50M,0~100M (assumed with the water S.G:1)
Linearity	0.3%FS	0.3%FS	0.3%FS
Long term stability	<0.1%	<0.1%	<0.1%
Operating temp	-10~80°C	-10~80°C	-10~150°C
Ambient temp	60°C	60°C	60°C
Supply voltage	13~36 Vdc	13~36 Vdc	13~36 Vdc
Output	4~20mA,Loop resistance should be less than 500 Ω	4~20mA,Loop resistance should be less than 500 Ω	4~20mA,Loop resistance should be less than 500 Ω
Connection	1-1/2" x 5kg/cm²	1-1/2" PT	1-1/2" x 10kg/cm²
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.
※OEM/ODM is welcome.

Dimensions (unit:mm)			
Model No.	**EC1210** **Flange Standard Model**	**EC1300** **Extension Cable Flange Model**	**EC1310** **Extension Cable Screw Model**
Housing material	Aluminum, IP65	Aluminum, IP65	Aluminum, IP65
Wet part IP rating	N/A	IP68	IP68
Pressure range	0.1, 0.2, 0.4 bar	0.1, 0.2, 0.5, 1, 2, 5, 10 Bar	0.1, 0.2, 0.4, 1, 2, 5, 10 Bar
Measuring range	0~1M,0~2M,0~4M (assumed with the water S.G:1)	0~1M,0~2M,0~5M,0~10M, 0~20M,0~50M,0~100M (assumed with the water S.G:1)	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	0.3%FS	0.3%FS
Long term stability	<0.1%	<0.1%	<0.1%
Operating temp	-10~80°C	-10~80°C	-10~80°C
Ambient temp	60°C	60°C	60°C
Supply voltage	13~36 Vdc	13~36 Vdc	13~36 Vdc
Output	4~20mA,Loop resistance should be less than 500 Ω	4~20mA,Loop resistance should be less than 500 Ω	4~20mA,Loop resistance should be less than 500 Ω
Connection	1-1/2" x 5kg/cm²	1-1/2"x5kg/cm²	1-1/2"PT
Wetted material	SUS 304/316	SUS 304/316	SUS 304/316
Weight	approx. 1.5kg	approx. 2.8kg (L=1M)	approx. 2.9kg (L=1M)

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

Dimensions (unit:mm)		
Model No.	**EC1320 Extension Cable Model**	**EC1500 Pressure Transducer**
Pressure range	0.1,0.2,0.5,1,2,5,10 bar	0.1,0.2,0.5,1,2,5,10,20,50,100 bar
Wet part IP rating	IP68	N/A
Measuring range	0~1M,0~2M,0~5M,0~10M, 0~20M,0~50M,0~100M (assumed with the water S.G:1)	———
Linearity	0.3%FS	0.3%FS
Long term stability	<0.1%	<0.1%
Operating temp	-10~80°C	-10~80°C
Ambient temp	N. A.	60°C
Supply voltage	13~36 Vdc	13~36 Vdc
Output	4~20mA,Loop resistance should be less than 500 Ω	4~20mA,Loop resistance should be less than 500 Ω
Protection	———	1/2" PT
Wetted material	SUS 304/316	SUS 304/316
Weight	approx. 0.8kg (L=1M)	approx. 250g

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

INTERNAL WIRING

1. Ensure power is turned off before connecting. See fig.3 (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.

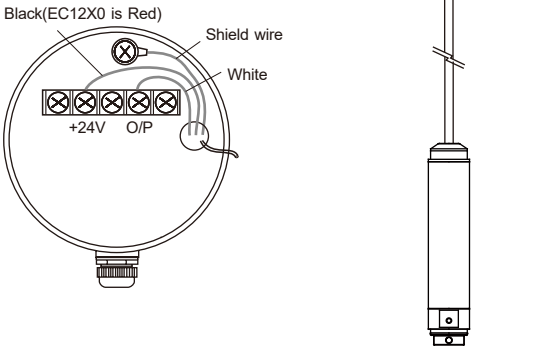


Fig. (3)

EC1500 TYPE

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

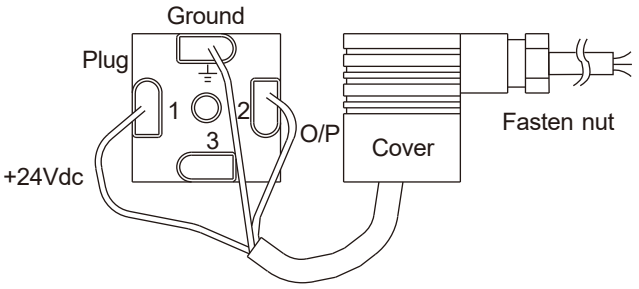
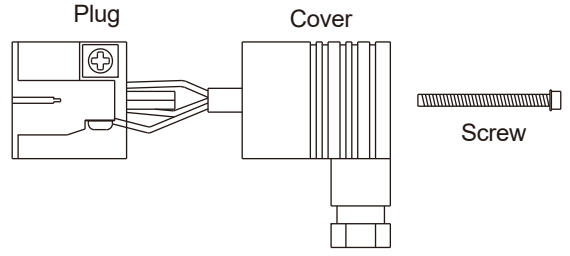


Fig. (4)

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



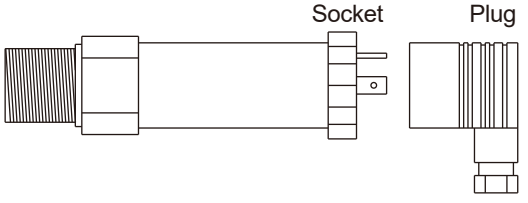


Fig. (5)

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 13Vdc.

4. Wiring should be used in shielded insulated cable.

5. Provide additional power supply if required (Diagram 7). If installing 2 panel meters at different location, please refer to diagram 8.

EC1100~1110,1200~1210,
1300~1310 Inside view

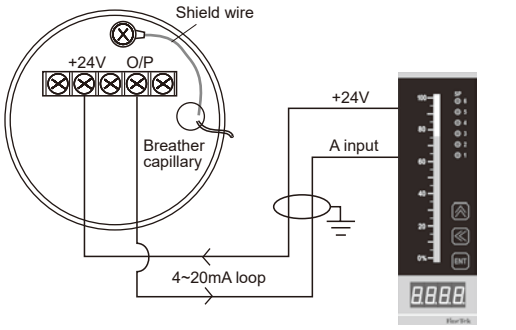


Fig. (6)

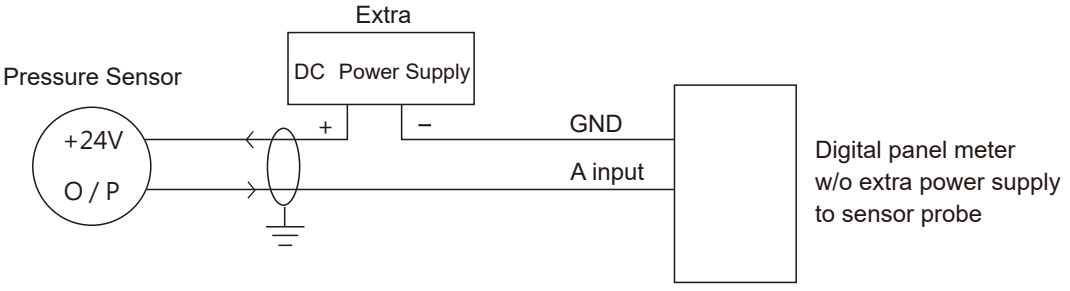


Fig. (7)

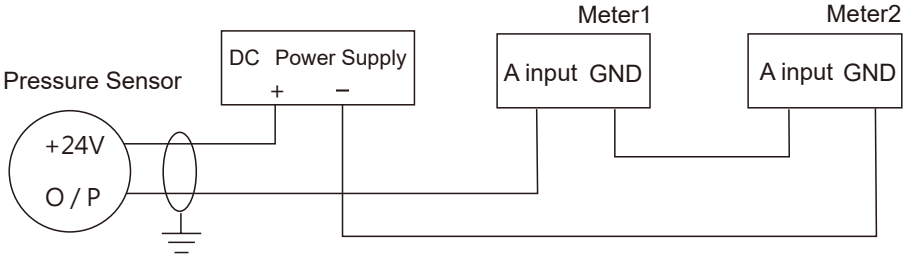
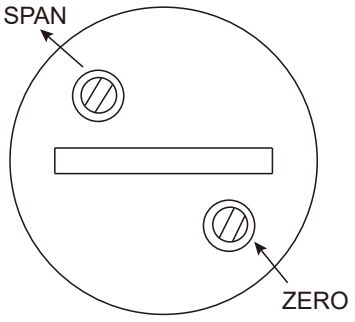


Fig. (8)

ADJUSTMENT (FOR ZERO-SPAN)

- Since Zero & Span adjustment have been made in the factory. Don't change the setting unless neces sary. Zero represents the 4mA for an empty tank and Span represents the 20mA for a full tank.
- Adjustment range: (SPAN) 18~24mA, (ZERO) 3~5mA.
- In the case where sensor output requires more than the 4~20mA signal, a panel meter with programmable input (0~25.5mA) can be used.



The electrical housing for pressure transducer.

Pressure Unit Conversion Constants

	PSI	KPa	mbar	cmH_2O	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_2O	$14.22x10^{-3}$	$98.07x10^{-3}$	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/cm^2=145 PSI 1 kgf/cm^2=0.098MPa=14.22 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.

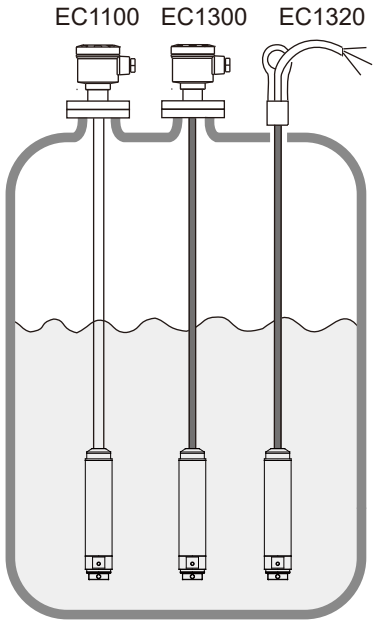
3. The models EC1100 to EC1310 series have 3 multi-thread copper wires and a breather capillary. Avoid bending cables to ensure maximum accuracy.

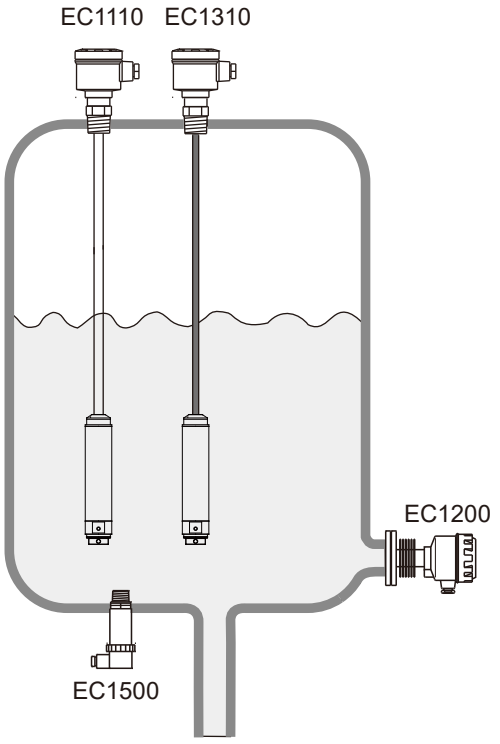
4. Do not use liquid that can crystallize or solidify in the pressure transducers and sensors.

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.

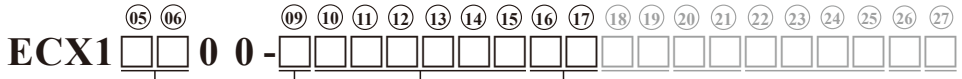




MODEL NUMBER/ORDER CODE COMPARISON TABLE

Model Number	Order Code
EC1100EM	ECX1E0000-AAKB140
EC1110EQ	ECX1E0000-AAKB101
EC1200EN	ECX1E200-FAKB142
EC1210EM	ECX1E000-BAKB140
EC1300EM	ECX1E000-CAKB140
EC1310EQ	ECX1E000-CAAB101
EC1320--	ECX1E100-C000000
EC1500BU	ECX1E000-DACA507
EC1500BQ	ECX1E000-EAAA501

ORDER INFORMATION



⑤⑥ Model

E0: Standard
E1: Economy(Without housing)
E2: Hi-temperature

(Next page)

⑨ Construction

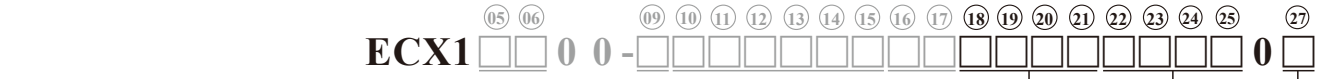
A: Extension tube type
B: Flange type
C: Extension cable type
D: Transducer(Customization)
E: Transducer(Standard)
F: Flange diaphragm type

Connection

⑩⑪	⑫⑬	⑭⑮
00: None	00: None	00: None
Flange	A5: 1/2"	01: PT male
AK: JIS-FF	A7: 3/4"	03: PF male
AN: ANSI-RF	B1: 1-1/2"	07: NPT male
AS: DIN-FF	B2: 2"	40: 5 kg/cm²
	D6: DN15	42: 10 kg/cm²
Thread	D7: DN20	48: 150 Lbs
AC: ANSI	E1: DN40	49: 300 Lbs
AA: JIS	E2: DN50	57: PN10
		58: PN16

⑯⑰ Material

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



⑱⑲⑳㉑ 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

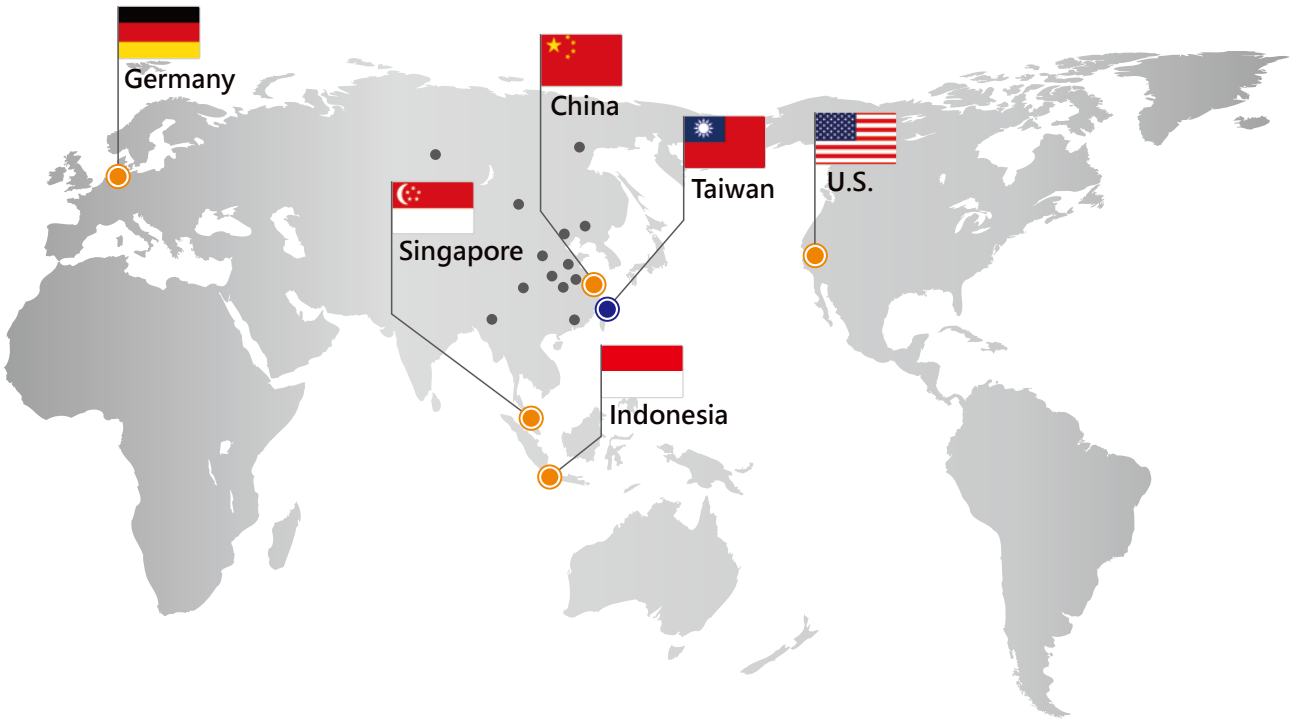
㉒㉓㉔㉕ Pressure

X000: 0 Bar
0X05: 0.05 Bar
0X10: 0.10 Bar
0X15: 0.15 Bar
0X20: 0.20 Bar
⋮
400X: 400 Bar

㉗ Housing

Code	Description
0	None
H	H type housing (AL)
J	J type housing (AL)
K	K type housing (AL)
L	L type housing (AL)
M	M type housing (SUS)
N	N type housing (SUS)
X	X type housing (AL)

Global Network



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