

Magnetostrictive Level Transmitter



www.fine-tek.com



INTRODUCTION

The FineTek magnetostrictive level transmitter identifies the level of liquids and solutions with high precision and reliability.

This versatile sensor is ideal for continuous level measurement of a wide range of liquids. Application ranges from petrochemical industries, marine and shipping to food and beverage production.

The sensor has a loop power supply and provides direct analog or digital output to the user interface.

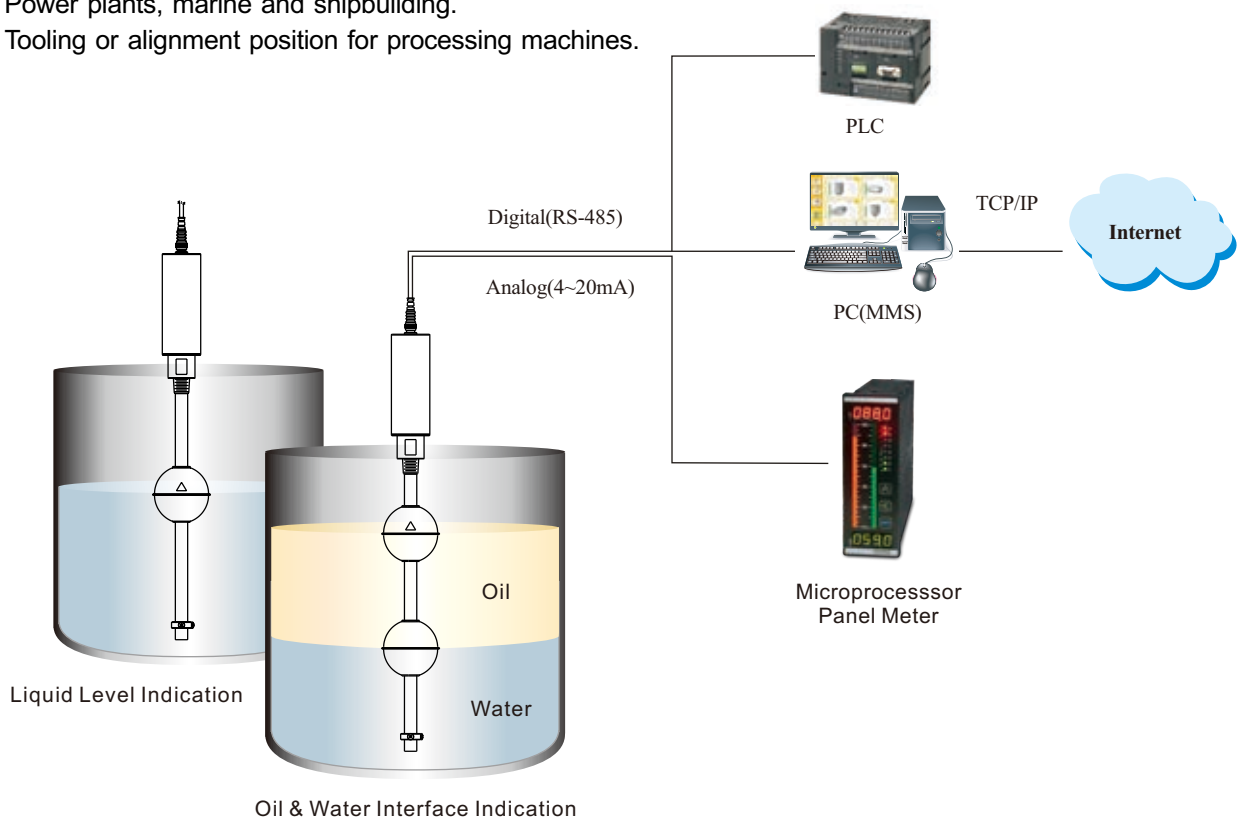
The FineTek magnetostrictive level sensor has proven itself due to its durability in a wide range of temperatures, pressures and operating conditions as well as its low maintenance nature.

FEATURES

- Absolute positioning output and no calibration required after power failure.
- Stability and reliability.
- Ease installation without calibration & maintenance.
- Prompt response time, high resolution & high accuracy.
- Durable structure, dust-proof, withstands high pressure.
- Oil/water dual level indication.
- The Max. operation temp. is 200°C.
- EG31, 32, 36, 37 adopted loop power structure for wire saving.
- Explosion-proof model available for hazardous environments.
- Housing of EG3 is IP67(Enclosure)/IP69K(Probe).
- Support HART / RS485 and 4~20mA / voltage output.

APPLICATION

- Liquefied natural gas.
- Crude oil, petroleum's and diesels.
- Chemical processing.
- Pharmaceuticals and medication.
- Food and beverages, breweries.
- Dams, water barriers, wastewater treatment.
- Power plants, marine and shipbuilding.
- Tooling or alignment position for processing machines.



OPERATING PRINCIPLE

The sensor mainly consists of magnetorestrictive wires sealed in a stem/rod and a permanent magnet sealed into a float that can move up and down the stem. Electrical current travels along the wires in the stem creating an axial magnetic field. When the float's and stem's magnetic field intersect, a torsional force is created with different height levels (see right).

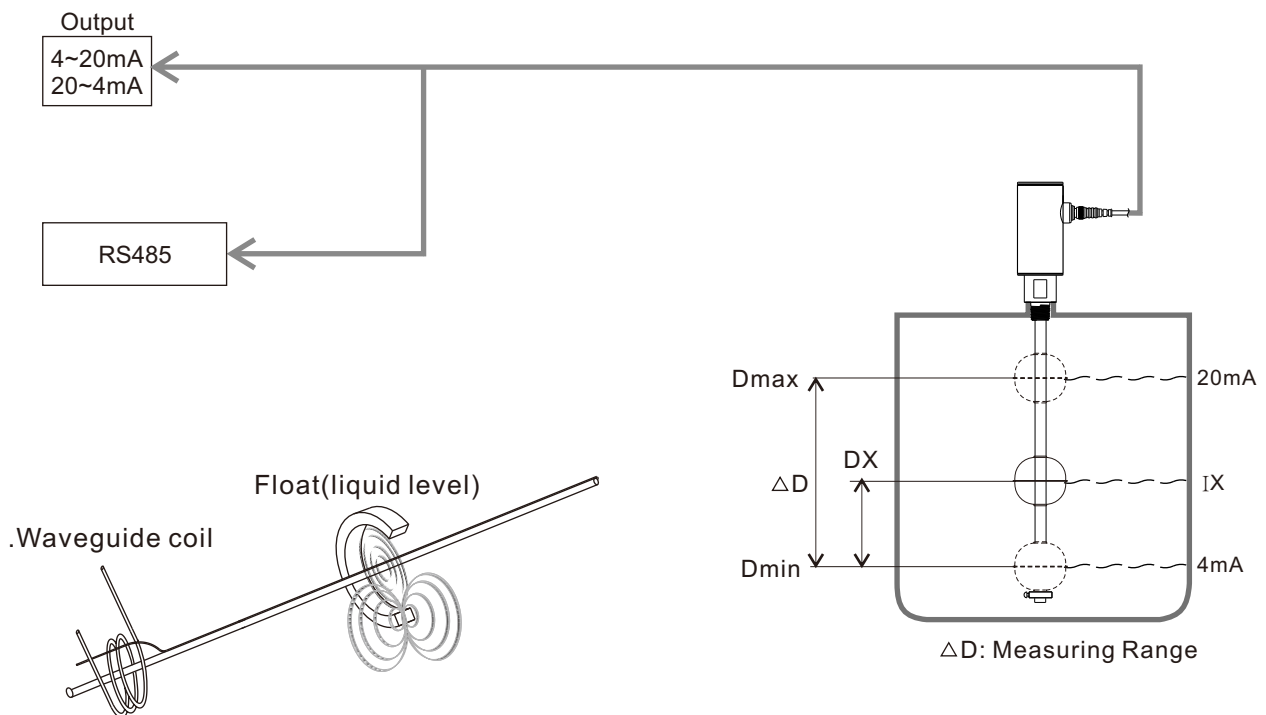
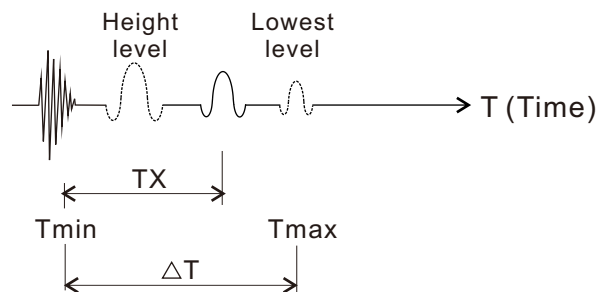
The sensor measures the liquid level (D) by calculating the elapsed time between torsional forces. Using velocity and time, distance can be calculated. This action is timely and continuous. A change in float position will be detected promptly via signal output.

CONVERSION FORMULA

The relation of D & 4~20mA output

$$\frac{IX-4}{(20-4)mA} = \frac{DT-TX}{\Delta T} = \frac{DX}{\Delta D}$$

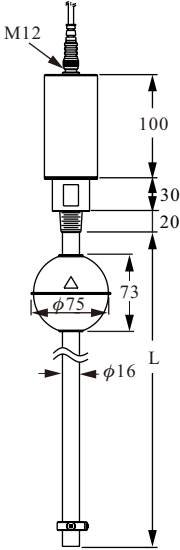
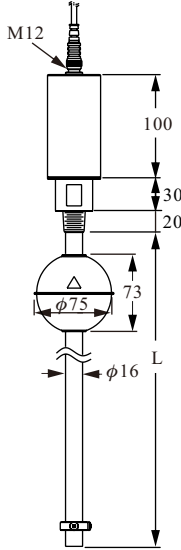
$$\Rightarrow IX = \frac{16DX}{\Delta D} + 4mA \text{ (The relative current)}$$



STANDARD MODEL (2 Wire)

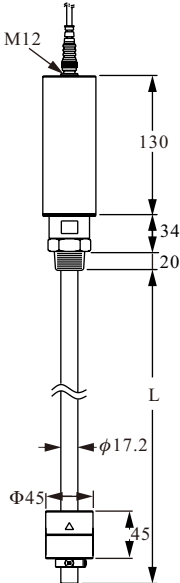
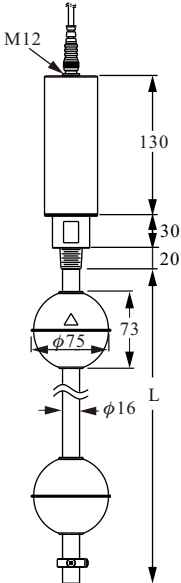
<p>Dimensions (Unit: mm)</p>		
<p>Model No.</p>	<p>EG31 (Standard Model)</p>	<p>EG31 (High Temperature Model)</p>
<p>Application</p>	<p>Two-wire loop power output, for Oil/Water interface, pharmaceutical and food grade level control.</p>	<p>Two-wire loop power output, high process environment application.</p>
<p>Measuring range</p>	<p>50~5500mm</p>	<p>50~5500mm</p>
<p>Non-Linearity</p>	<p>± 0.05% F.S. or ± 1.0mm (whichever is greater)</p>	<p>± 0.05% F.S. or ± 1.0mm (whichever is greater)</p>
<p>Repeatability</p>	<p>± 0.004% F.S.</p>	<p>± 0.004% F.S.</p>
<p>Temp. coefficient</p>	<p>± 100 ppm/°C</p>	<p>± 150 ppm/°C</p>
<p>Operation pressure</p>	<p>30 BAR(Max.)</p>	<p>30 BAR(Max.)</p>
<p>Ambient temp.</p>	<p>-40°C ~ 85°C</p>	<p>-40°C ~ 85°C</p>
<p>Operation temp.</p>	<p>-40°C ~ 125°C</p>	<p>-40°C ~ 200°C</p>
<p>Temp. accuracy</p>	<p>± 1°C</p>	<p>± 1°C</p>
<p>Output</p>	<p>4~20mA / 2 Wire</p>	<p>4~20mA / 2 Wire</p>
<p>Maximum load (Ω)</p>	<p>$(VS-18) \div 0.02$ VS=Supply voltage</p>	<p>$(VS-18) \div 0.02$ VS=Supply voltage</p>
<p>Digital output</p>	<p>RS485 / HART 7.3(option)</p>	<p>RS485 / HART 7.3(option)</p>
<p>Power supply</p>	<p>18~30V</p>	<p>18~30V</p>
<p>Housing material</p>	<p>SUS304 (SUS316 option)</p>	<p>SUS304 (SUS316 option)</p>
<p>Connection</p>	<p>1/2"PT</p>	<p>1/2"PT</p>
<p>Wetted material</p>	<p>SUS304</p>	<p>SUS304</p>
<p>Enclosure</p>	<p>IP67 (enclosure)/IP69K(probe)</p>	<p>IP67 (enclosure)/IP69K(probe)</p>

HIGH ACCURACY MODEL (2 Wire/4 Wire)

<p>Dimensions (Unit: mm)</p>		
Model No.	EG32 (High Accuracy Model)	EG34 (High Accuracy Model)
Application	Two-wire loop power output, comply with high accuracy & HART demands.	Four wire output,high speed active in low voltage 5V.
Measuring range	50~5500mm	50~5500mm
Non-Linearity	50~500mm@± 100µm 501~2500mm@± 0.02%F.S. 2501~5500mm@± 0.04%F.S.	50~500mm@± 100µm 501~2500mm@± 0.02%F.S. 2501~5500mm@± 0.04%F.S.
Repeatability	± 0.002% F.S.	± 0.002% F.S.
Temp. coefficient	± 100 ppm/°C	± 100 ppm/°C
Operation pressure	30 BAR(Max.)	30 BAR(Max.)
Ambient temp.	-40°C ~ 85°C	-40°C ~ 85°C
Operation temp.	-40°C ~ 125°C	-40°C ~ 125°C
Temp. accuracy	± 1°C	± 1°C
Output	4~20mA / 2 Wire	0~10V,10~0V,± 10V,0~5V,5~0V,± 5V 4~20mA,20~4mA,0~20mA,20~0mA
Maximum load (Ω)	$(VS-18) \div 0.02$ VS=Supply voltage	$(VS-5) \div 0.02$ VS=Supply voltage
Digital output	RS485,HART 7.3 (option)	RS485
Power supply	18~30V	5~30V
Housing material	SUS304 (SUS316 option)	SUS304 (SUS316 option)
Connection	1/2"PT	1/2"PT
Wetted material	SUS304	SUS304
Enclosure	IP67 (enclosure)/IP69K(probe)	IP67 (enclosure)/IP69K(probe)

EXPLOSION PROOF MODEL (2 Wire)

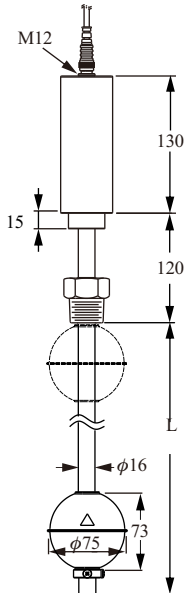
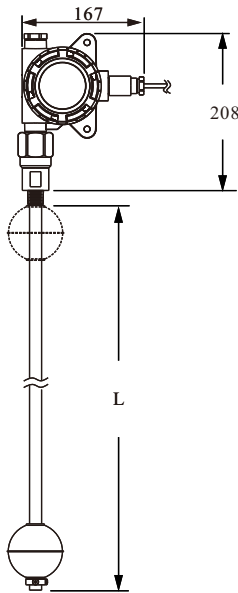


Dimensions (Unit: mm)	 <p style="text-align: center;">NEPSI PROOF No.GYB101836X Ex ia IIB T2~T6 PTB PROOF NO.13 ATEX 2016X Ⓢ II 1G Ex ia IIB T3~T6</p>	 <p style="text-align: center;">NEPSI PROOF No.GYB101836X Ex ia IIB T2~T6 PTB PROOF NO.13 ATEX 2016X Ⓢ II 1G Ex ia IIB T3~T6</p>
Model No.	EG374 (Anti-Corrosion Model)	EG371 (Single/dual Float Model)
Application	Two-wire loop power output, for acid/alkali corrosion liquids.	Two-wire loop power output, for single/dual level and interface measurement.
Measuring range	50~2000mm	50~5500mm
Non-Linearity	± 0.05% F.S. or ± 1.0mm (whichever is greater)	± 0.05% F.S. or ± 1.0mm (whichever is greater)
Repeatability	± 0.004% F.S.	± 0.004% F.S.
Temp. coefficient	± 100 ppm/°C	± 100 ppm/°C
Operation pressure	5 BAR(Max.)	30 BAR(Max.)
Ambient temp.	-40°C ~ 85°C	-40°C ~ 85°C
Operation temp.	-20°C ~ 80°C	-40°C ~ 125°C
Temp. accuracy	± 1°C	± 1°C
Output	4~20mA / 2 Wire	4~20mA / 2 Wire
Max load (Ω)	$(VS-18) \div 0.02$ VS=Supply voltage	$(VS-18) \div 0.02$ VS=Supply voltage
Digital output	RS485 / HART 7.3(option)	RS485 / HART 7.3(option)
Power supply	12~30V(4-wire), 18~30V(2-wire), 18~28V(Exp Lotion proof)	12~30V(4-wire), 16~30V(2-wire), 16~28V(Exp Lotion proof)
Housing material	SUS304 (SUS316 option)	SUS304 (SUS316 option)
Connection	3/4"PT	1/2"PT
Wetted material	PP	SUS304
Enclosure	IP67 (enclosure) / IP69K(probe)	IP67 (enclosure) / IP69K(probe)

※ Comply with safety barrier of Ex ia rating is essential for using in hazardous areas.(Refer to P.17)

EXPLOSION PROOF MODEL (2 Wire)

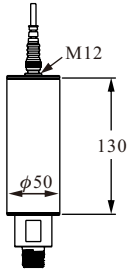
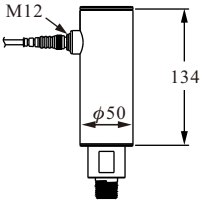
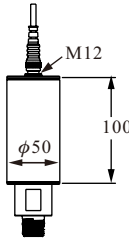
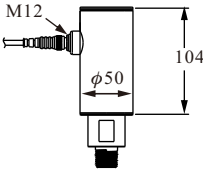


<p>Dimensions (Unit: mm)</p>	 <p>NEPSI PROOF No.GYB101836X Ex ia IIB T2~T6 PTB PROOF13 ATEX 2016X © II 1G Ex ia IIB T3~T6</p>	 <p>NEPSI PROOF No.GYB14.1530X Ex ia IIB T3~T6Ga</p>
<p>Model No.</p>	<p>EG37A (Ex-proof High Temp. Model)</p>	<p>EG36 (Diaplay Model)</p>
<p>Application</p>	<p>Two-wire loop power output, explosion-proof model for hazardous environment.</p>	<p>Two-wire loop power output, explosion-proof model with diaplay for hazardous environment.</p>
<p>Measuring range</p>	<p>50~5500mm</p>	<p>50~5500mm</p>
<p>Non-Linearity</p>	<p>±0.05% F.S. or ±1.0mm (whichever is greater)</p>	<p>50mm~4000mm ±1mm 4000mm~5500mm ±0.025% F.S.</p>
<p>Repeatability</p>	<p>±0.004% F.S.</p>	<p>±0.004% F.S.</p>
<p>Temp. coefficient</p>	<p>±150 ppm/°C</p>	<p>±100 ppm/°C</p>
<p>Operation pressure</p>	<p>30 BAR(Max.)</p>	<p>30 BAR(Max.)</p>
<p>Ambient temp.</p>	<p>-40°C ~ 85°C</p>	<p>-40°C ~ 85°C</p>
<p>Operation temp.</p>	<p>-40°C ~ 195°C</p>	<p>-40°C ~ 125°C</p>
<p>Temp. accuracy</p>	<p>±1°C</p>	<p>±1°C</p>
<p>Output</p>	<p>4~20mA / 2 Wire</p>	<p>4~20mA / 2 Wire</p>
<p>Max load (Ω)</p>	<p>$(VS-18) \div 0.02$ VS=Supply voltage</p>	<p>$(VS-16) \div 0.02$ VS=Supply voltage</p>
<p>Digital output</p>	<p>RS485/HART 7.3(option)</p>	<p>RS485/HART 7.3(option)</p>
<p>Power supply</p>	<p>12~30V(4-wire), 18~30V(2-wire), 18~28V(Exp Losion proof)</p>	<p>12~30V(4-wire), 16~30V(2-wire), 16~28V(Exp Losion proof)</p>
<p>Housing material</p>	<p>SUS304 (SUS316 option)</p>	<p>Aluminum</p>
<p>Connection</p>	<p>1/2"PT</p>	<p>1/2"PT</p>
<p>Wetted material</p>	<p>SUS304</p>	<p>SUS304</p>
<p>Enclosure</p>	<p>IP67 (enclosure) / IP69K(probe)</p>	<p>IP67 (enclosure) / IP69K(probe)</p>

※ Comply with safety barrier of Ex ia rating is essential for using in hazardous areas.(Refer to P.17)

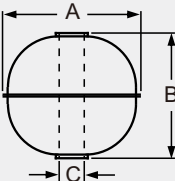
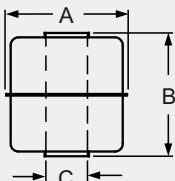
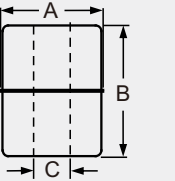
HOUSING OPTIONS

Mapping table of enclosure

EG31&EG37 explosion-proof (2 wire)	1 Top conduit	2 Side conduit
		
EG32&EG34 high accuracy series	1 Top conduit	2 Side conduit
		

※ Standard model cable length is 2m.

FLOAT SPECIFICATIONS

Model	Model Number	Dimensions ($\phi A \times B \times \phi C$ mm)	S.G.	Max. Pressure (kg/cm ²)	Material	Stem Size
	S5	75x73x20.5	E>0.7	30	SUS 304 / 316	$\phi 16$
	S4	52x52x15	E>0.75	30	SUS 316	$\phi 12.7$
	SD	52x52x15	E>0.9	30	SUS 316	$\phi 12.7$
	SE	75x73x20.5	E>0.9	20	SUS 304 / 316	$\phi 16$
	S3	45x55x15	E>0.7	12	SUS 316	$\phi 12.7$
	SC	45x55x15	E>0.9	12	SUS 316	$\phi 12.7$
	F3	45x45x20	E>0.65	5	PP in Grey	$\phi 18$ (coating)
	FC	45x45x20	E>0.9	5	PP in Grey	$\phi 18$ (coating)
	P3	48x45x18.5	E>0.6	5	PP in Black	$\phi 17.2$ (coating)
	PC	48x45x18.5	E>0.9	5	PP in Black	$\phi 17.2$ (coating)
	NB	48x46x15.6	E>0.5	30	NBR in Black	$\phi 12.7$
	ND	48x45x15.6	E>0.9	30	NBR in Black	$\phi 12.7$
	NC	48x46x20	E>0.5	30	NBR in Black	$\phi 16$
	NE	48x46x20	E>0.9	30	NBR in Black	$\phi 16$

※ S.G(E):specific gravity

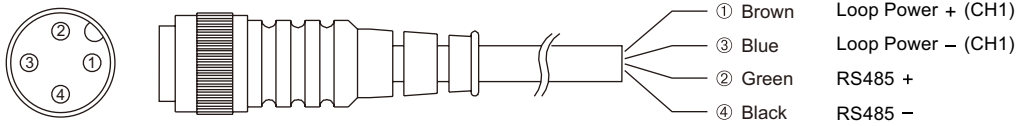
WIRING

When RS485(ModBus)is applied,Loop power only as power.

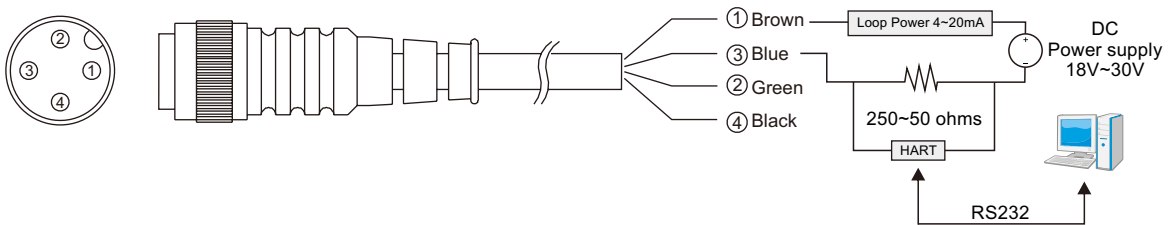
EG31/EG32/EG37:

1. Single / Double float +RS485

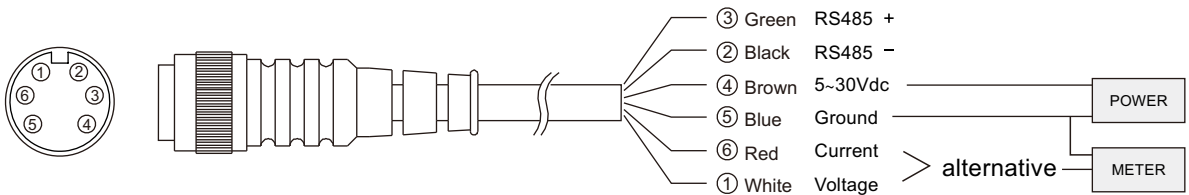
Loop Power 24Vdc ± 10%



2. Single / Double float +HART

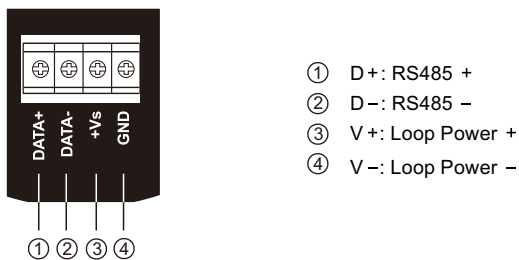


EG34:



※The voltage or current is only alternative.

EG36:



CUSTOMIZED STEM LENGTHS ARE AVAILABLE

Note the difference between ordered length and actual measurable stem length below.

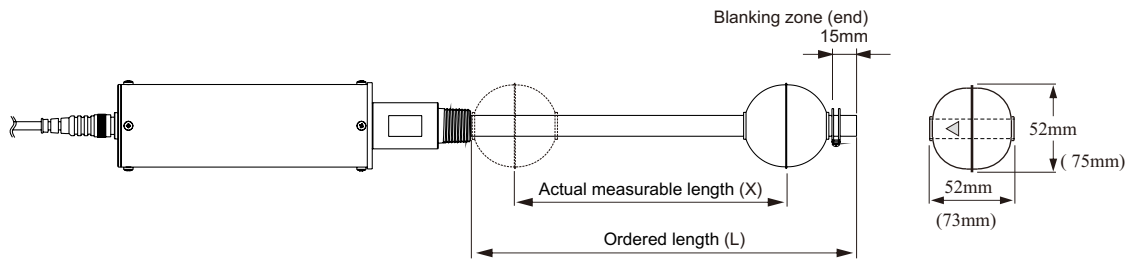
(2M below) = Actual measurable length (X) = Ordered length (L) - 52mm - 15mm, adopted stem $\phi 12.7$

(2M above) = Actual measurable length (X) = Ordered length (L) - 73mm - 15mm, adopted stem $\phi 16$

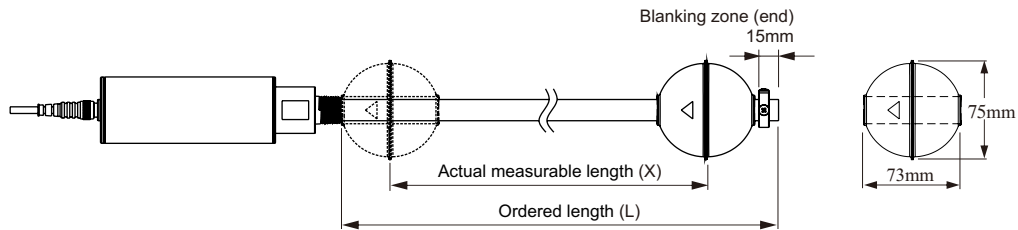
(2M below) = Ordered length (L) = Actual measurable length (X) + 52mm - 15mm, adopted stem $\phi 12.7$

(2M above) = Ordered length (L) = Actual measurable length (X) + 73mm - 15mm, adopted stem $\phi 16$

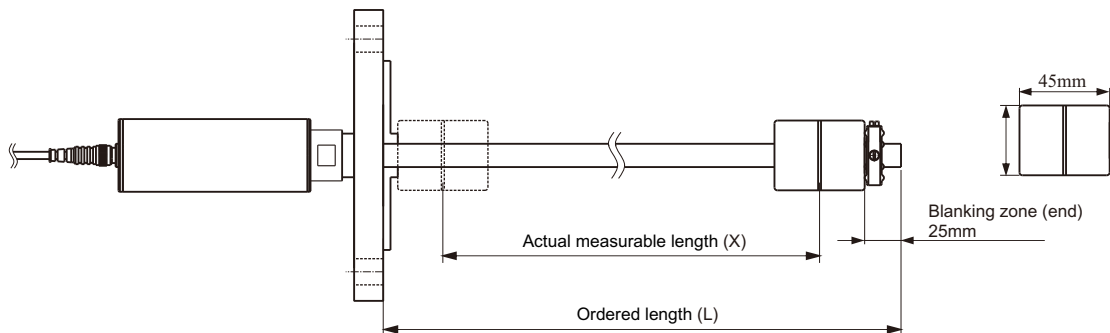
Below 2M, stem $\phi 12.7$



Above 2M, stem $\phi 16$



Below 2M, stem $\phi 12.7$, with PP coating to $\phi 17.2$

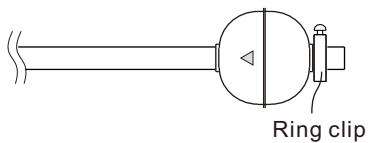


INSTALLATION

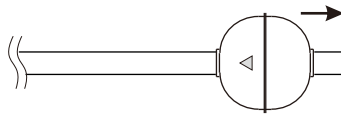
1. Loop power 24Vdc \pm 10%
2. The product is calibrated before shipment and should be sufficient to meet user needs.
3. Do not bend the stem, put pressure on it or force it in any manner.
4. For best results, use the included float only.
5. When the mounting hole is large enough, guide the stem and float through the hole to install.
6. If the hole is NOT large enough, remove float, install the stem and assemble float from inside the container.
7. When assembling the float onto the stem, the float's direction mark should face the housing.
8. Ensure the float stopper is fixed firmly.
9. If the stem is bent and can not work, it needs to be returned to the factory for calibration.
11. Bubble wrap/foam packaging is necessary to ensure safety during transportation.
12. Unnecessary opening of housing may affect accuracy.

Removing the float

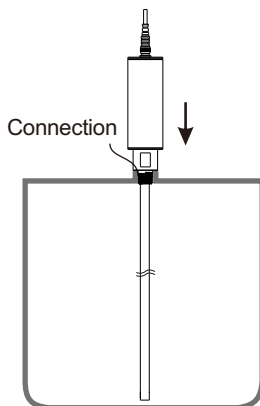
Step 1:
Loosen the stopper at stem end



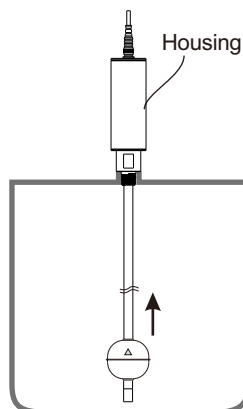
Step 2:
Take off the float



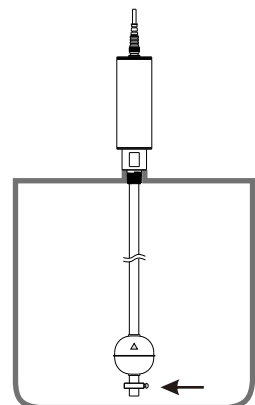
Step 3:
Install the sensor onto the tank,
and tighten the connection



Step 4:
Assemble the float onto the stem
and tighten the connection the
housing. Note the direction of float



Step 5:
Firmly fasten the stopper



HOW TO ORDER

EG 31 - -

Housing

Standard (-40~125°C) High Temp. (-40~200°C)
 1: Top conduit A: Top conduit
 2: Side conduit B: Side conduit
 Anti-corrosion (-40~85°C)
 4: Top conduit with coated
 5: Side conduit with coated

Connection

B---1-1/4"(32A)	H---3"(80A)	M---5kg/cm ²	Q---PT
B---1/2"(15A)	I---4"(100A)	N---10kg/cm ²	R---PF
C---3/4"(20A)	J---5"(125A)	O---150 Lbs	T---BSP
D---1"(25A)	K---6"(150A)	P---300 Lbs	U---NPT
E---1-1/2"(40A)	S---Others	W---PN 10	V---GAS
F---2"(50A)		X---PN 16	S---Others
G---2-1/2"(65A)		Y---PN 25	
		Z---PN 40	

※ If installing directly(without removing float), the dimension of connection must be bigger than the float diameter.

Float 1 Please see chart below

Float 2 Please see chart below

Code	Dimension	Material	S.G.	Code	Dimension	Material	S.G.	Code	Dimension	Material	S.G.
S5	φ75x73xD20.5	SUS304/316	0.7	F3	φ45x45xD20	PP/Gray	0.65	NB	φ48x46xD15.6	NBR/Black	0.5
SE	φ75x73xD20.5	SUS304/316	0.9	FC	φ45x45xD20	PP/Gray	0.9	ND	φ48x46xD15.6	NBR/Black	0.9
S4	φ52x52xD15	SUS316	0.75	P3	φ48x45xD18.5	PP/Black	0.6	NC	φ48x46xD20	NBR/Black	0.5
SD	φ52x52xD15	SUS316	0.9	PC	φ48x45xD18.5	PP/Black	0.9	NE	φ48x46xD20	NBR/Black	0.9
S3	φ45x55xD15	SUS316	0.7	SS	Special Specification						
SC	φ45x55xD15	SUS316	0.9	00	No Float						

※ Probe diameter must be smaller than float's hole diameter.

Analog output(Bottom~Top)

A: 4~20mA B: 20~4mA 0: None

Digital output

0: None B: RS485 C: RS485+Thermal sensor
 H: HART 7.3 T: HART 7.3 +Thermal sensor

Probe material

S:SUS304: φ12.7 C:SUS316: φ12.7 E:SUS316L: φ12.7
 L:SUS304: φ16 D:SUS316: φ16 F:SUS316L: φ16

※ For PP coating, stem S, C, E is recommended(after PP coating, stem is up to φ17.2), max. length is 2000mm.

※ If the measuring range is over 2000mm, a stem φ16 is recommended to reduce risk of damage during installation and transportation.

Stem length

05: 50~500mm 10: 501~1000mm 15: 1001~1500mm
 20: 1501~2000mm 25: 2001~2500mm 30: 2501~3000mm
 35: 3001~3500mm 40: 3501~4000mm 45: 4001~4500mm
 50: 4501~5000mm 55: 5001~5500mm

※ Probe length = Measuring range + (single float height+15mm)

Ex: 500mm (measurement) + (73mm (S5 float height) +15mm) = 588mm (probe length)

HOW TO ORDER

EG 3 2 - -

Housing

Standard

- 1: Top conduit
- 2: Side conduit

High Temp.

- A: Top conduit
- B: Side conduit

Anti-corrosion

- 4: Top conduit with coated
- 5: Side conduit with coated

Connection

3---1-1/4"(32A)	I---4"(100A)	M---5kg/cm ²	W---PN 10	Q---PT
B---1/2"(15A)	J---5"(125A)	N---10kg/cm ²	X---PN 16	R---PF
C---3/4"(20A)	K---6"(150A)	O---150 Lbs	Y---PN 25	T---BSP
D---1"(25A)	S---Others	P---300 Lbs	Z---PN 40	U---NPT
E---1-1/2"(40A)				V---GAS
F---2"(50A)				S---Others
G---2-1/2"(65A)		※ If installing directly(without removing float) ,the dimension of connection must be bigger than the float diameter.		
H---3"(80A)				

Float 1 Please see chart below

Float 2 Please see chart below

Code	Dimension	Material	S.G.	Code	Dimension	Material	S.G.	Code	Dimension	Material	S.G.
S5	φ75x73xD20.5	SUS304/316	0.7	F3	φ45x45xD20	PP/Gray	0.65	NB	φ48x46xD15.6	NBR//Black	0.5
SE	φ75x73xD20.5	SUS304/316	0.9	FC	φ45x45xD20	PP/Gray	0.9	ND	φ48x46xD15.6	NBR//Black	0.9
S4	φ52x52xD15	SUS316	0.75	P3	φ48x45xD18.5	PP//Black	0.6	NC	φ48x46xD20	NBR//Black	0.5
SD	φ52x52xD15	SUS316	0.9	PC	φ48x45xD18.5	PP//Black	0.9	NE	φ48x46xD20	NBR//Black	0.9
S3	φ45x55xD15	SUS316	0.7	SS	Special Specification						
SC	φ45x55xD15	SUS316	0.9	00	No Float						

※ Probe diameter must be smaller than float's hole diameter.

Analog output(Bottom~Top)

A: 4~20mA B: 20~4mA 0: None

Digital output

0: None B: RS485 C:RS485+Thermal sensor
H: HART 7.3 T: HART 7.3+Thermal sensor

Probe material

S: SUS304: φ12.7 C: SUS316: φ12.7 E: SUS316L: φ12.7
L: SUS304: φ16 D: SUS316: φ16 F: SUS316L: φ16

※ If the measuring range is over 2000mm, a stem φ16 is recommended to reduce risk of damage during installation and transportation.

※ For PP coating,stem S.C.E is recommended (after PP coating,stem is up to φ17.2), max. length is 2000mm.

Measuring range

05: 50~500mm	10: 501~1000mm	15: 1001~1500mm
20: 1501~2000mm	25: 2001~2500mm	30: 2501~3000mm
35: 3001~3500mm	40: 3501~4000mm	45: 4001~4500mm
50: 4501~5000mm	55: 5001~5500mm	

※ Probe length = Measuring range + (single float height+15mm)

Ex: 500mm (measurement) + (73mm (S5 float height) + 15mm) = 588mm (Probe length)

HOW TO ORDER

EG 3 4 - 0 0 -

Housing

Standard

- 1: Top conduit
- 2: Side conduit

High Temp.

- A: Top conduit
- B: Side conduit

Anti-corrosion

- 4: Top conduit with coated
- 5: Side conduit with coated

Connection

3---1-1/4"(32A)	I---4"(100A)	M---5kg/cm ²	W---PN 10	Q---PT
B---1/2"(15A)	J---5"(125A)	N---10kg/cm ²	X---PN 16	R---PF
C---3/4"(20A)	K---6"(150A)	O---150 Lbs	Y---PN 25	T---BSP
D---1"(25A)	S---Others	P---300 Lbs	Z---PN 40	U---NPT
E---1-1/2"(40A)				V---GAS
F---2"(50A)				S---Others
G---2-1/2"(65A)				
H---3"(80A)				

※ If installing directly(without removing float)
the dimension of connection must be
bigger than the float diameter.

Float

Code	Dimension	Material	S.G.	Code	Dimension	Material	S.G.	Code	Dimension	Material	S.G.
S5	φ75x73xD20.5	SUS304/316	0.7	F3	φ45x45xD20	PP/Gray	0.65	NB	φ48x46xD15.6	NBR/Black	0.5
SE	φ75x73xD20.5	SUS304/316	0.9	FC	φ45x45xD20	PP/Gray	0.9	ND	φ48x46xD15.6	NBR/Black	0.9
S4	φ52x52xD15	SUS316	0.75	P3	φ48x45xD18.5	PP/Black	0.6	NC	φ48x46xD20	NBR/Black	0.5
SD	φ52x52xD15	SUS316	0.9	PC	φ48x45xD18.5	PP/Black	0.9	NE	φ48x46xD20	NBR/Black	0.9
S3	φ45x55xD15	SUS316	0.7	SS	Special Specification						
SC	φ45x55xD15	SUS316	0.9	00	No Float						

※ Probe diameter must be smaller than float's hole diameter.

Analog output(Bottom~Top)

- A: 4~20mA
- B: 20~4mA
- C: 0~20mA
- D: 20~0mA
- E: 0~5V
- F: 5~0V
- G: 0~10V
- H: 10~0V
- I: ±5V
- J: ±10V
- O: None

Digital output

- O: None
- B:RS485
- C:RS485+Thermal sensor

Probe material

- S: SUS304: φ12.7
- C: SUS316: φ12.7
- E: SUS316L: φ12.7
- L: SUS304: φ16
- D: SUS316: φ16
- F: SUS316L: φ16

※ If the measuring range is over 2000mm, a stem φ16 is recommended to reduce risk of damage during installation and transportation.

※ For PP coating,stem S.C.E is recommended (after PP coating,stem is up to φ17.2), max. length is 2000mm.

Measuring range

- 05: 50~500mm
- 10: 501~1000mm
- 15: 1001~1500mm
- 20: 1501~2000mm
- 25: 2001~2500mm
- 30: 2501~3000mm
- 35: 3001~3500mm
- 40: 3501~4000mm
- 45: 4001~4500mm
- 50: 4501~5000mm
- 55: 5001~5500mm

※ Probe length = Measuring range + (single float height+15mm)

Ex: 500mm (measurement) + (73mm (S5 float height) +15mm) = 588mm (Probe length)

HOW TO ORDER

EG 3 6 - -

Housing

Standard
2: Side conduit

High Temp.
B: Side conduit

Anti-corrosion
5: Side conduit with coated

Connection

3--1-1/4"(32A)	H--3"(80A)	M--5kg/cm ²	X --PN16	T--BSP
B--1/2"(15A)	I--4"(100A)	N--10kg/cm ²	Y --PN25	U--NPT
C--3/4"(20A)	J--5"(125A)	O --150Lbs	Z--PN40	V--GAS
D--1"(25A)	K--6"(150A)	P --300Lbs	Q--PT	S--Others
E--1-1/2"(40A)	S--Others	W --PN10	R--PF	
F--2"(50A)				
G--2-1/2(65A)				

※ To be installed directly without removal of float.
The connection must be greater than the outer diameter of the float.

Float1 Please see chart below

Float2 Please see chart below

Code	Dimension	Material	S.G.	Code	Dimension	Material	S.G.	Code	Dimension	Material	S.G.
S5	φ75x73xD20.5	SUS304/316	0.7	F3	φ45x45xD20	PP/Gray	0.65	NB	φ48x46xD15.6	NBR/Black	0.5
SE	φ75x73xD20.5	SUS304/316	0.9	FC	φ45x45xD20	PP/Gray	0.9	ND	φ48x46xD15.6	NBR/Black	0.9
S4	φ52x52xD15	SUS316	0.75	P3	φ48x45xD18.5	PP/Black	0.6	NC	φ48x46xD20	NBR/Black	0.5
SD	φ52x52xD15	SUS316	0.9	PC	φ48x45xD18.5	PP/Black	0.9	NE	φ48x46xD20	NBR/Black	0.9
S3	φ45x55xD15	SUS316	0.7	SS	Special Specification						
SC	φ45x55xD15	SUS316	0.9	00	No Float						

Analog output(Bottom~Top)

A: 4~20mA B: 20~4mA 0: None

Digital output

0: None B: RS485 C: RS485+Thermal sensor
H: HART 7.3 T: HART 7.3+Thermal sensor

Probe material

S: SUS304: φ12.7 C: SUS316: φ12.7 E: SUS316L: φ12.7
L: SUS304: φ16 D: SUS316: φ16 F: SUS316L: φ16

※ For PP coating, stem S, C, E is recommended(after PP coating, stem is up to φ17.2), max. length is 2000mm.
※ If the measuring range is over 2000mm, a stem f16 is recommended to reduce risk of damage during installation and transportation.

Stem length

05: 50~500mm 10: 501~1000mm 15: 1001~1500mm
20: 1501~2000mm 25: 2001~2500mm 30: 2501~3000mm
35: 3001~3500mm 40: 3501~4000mm 45: 4001~4500mm
50: 4501~5000mm 55: 5001~5500mm

※ Probe length = Measuring range + (single float height+15mm)
Ex: 500mm (measurement) + (73mm (S5 float height) +15mm) = 588mm (probe length)

HOW TO ORDER

EG 37 -

Housing

Standard (-40~125°C)

- 1: Top conduit
- 2: Side conduit

Anti-corrosion (-40~85°C)

- 4: Top conduit with coated
- 5: Side conduit with coated

High Temp. (-40~200°C)

- A: Top conduit
- B: Side conduit

Connection BQ: 1/2"PT (std.)

3---1-1/4"(32A)	H---3"(80A)	M---5kg/cm ²	Q---PT
B---1/2"(15A)	I---4"(100A)	N---10kg/cm ²	R---PF
C---3/4"(20A)	J---5"(125A)	O---150 Lbs	T---BSP
D---1"(25A)	K---6"(150A)	P---300 Lbs	U---NPT
E---1-1/2"(40A)	S---Others	W---PN 10	V---GAS
F---2"(50A)		X---PN 16	S---Others
G---2-1/2"(65A)		Y---PN 25	
		Z---PN 40	

※ If installing directly(without removing float),the dimension of connection must be bigger than the float diameter.

Float 1

Please see chart below

Float 2

Please see chart below

Code	Dimension	Material	S.G.	Code	Dimension	Material	S.G.	Code	Dimension	Material	S.G.
S5	φ75x73xD20.5	SUS304/316	0.7	F3	φ45x45xD20	PP/Gray	0.65	NB	φ48x46xD15.6	NBR/Black	0.5
SE	φ75x73xD20.5	SUS304/316	0.9	FC	φ45x45xD20	PP/Gray	0.9	ND	φ48x46xD15.6	NBR/Black	0.9
S4	φ52x52xD15	SUS316	0.75	P3	φ48x45xD18.5	PP/Black	0.6	NC	φ48x46xD20	NBR/Black	0.5
SD	φ52x52xD15	SUS316	0.9	PC	φ48x45xD18.5	PP/Black	0.9	NE	φ48x46xD20	NBR/Black	0.9
S3	φ45x55xD15	SUS316	0.7	SS	Special Specification						
SC	φ45x55xD15	SUS316	0.9	00	No Float						

※ Probe diameter must be smaller than float's hole diameter.

Analog output(Bottom~Top)

A: 4~20mA B: 20~4mA 0: None

Digital output

0: None B: RS485 C: RS485+Thermal sensor
H: HART 7.3 T: HART 7.3+Thermal sensor

Explosion

0: NEPSI(Ex ia IIB T2....T6) 2: ATEX(Ex ia IIB T3....T6)

Probe material

S:SUS304: φ12.7 C:SUS316: φ12.7 E:SUS316L: φ12.7
L:SUS304: φ16 D:SUS316: φ16 F:SUS316L: φ16

※ For PP coating, stem S, C, E is recommended(after PP coating, stem is up to φ17.2), max. length is 2000mm.

※ If the measuring range is over 2000mm, a stem φ16 is recommended to reduce risk of damage during installation and transportation.

Stem length

05: 50~500mm 10: 501~1000mm 15: 1001~1500mm
20: 1501~2000mm 25: 2001~2500mm 30: 2501~3000mm
35: 3001~3500mm 40: 3501~4000mm 45: 4001~4500mm
50: 4501~5000mm 55: 5001~5500mm

※ Probe length = Measuring range + (single float height+15mm)

Ex: 500mm (measurement) + (73mm (S5 float height) +15mm) = 588mm (probe length)

TX10 ISOLATED SAFETY BARRIER

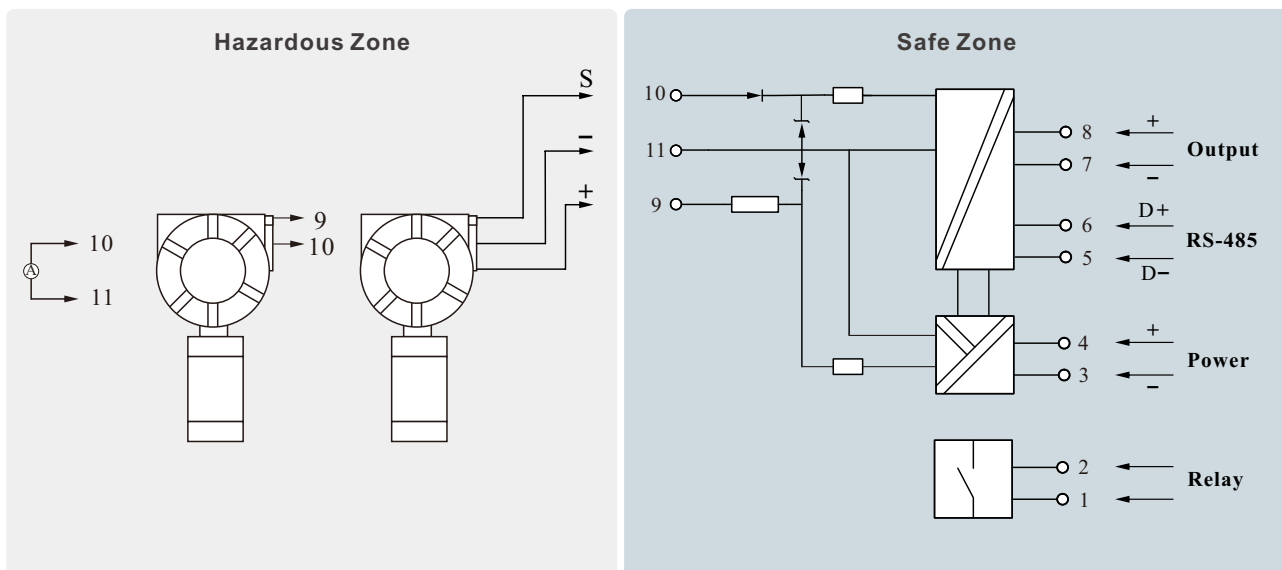
OPERATING PRINCIPLE

Isolated safety barrier provides power supply to transmitters located in hazardous zone and transmit isolated supply current signal to safe zone. Max. input 0~20mA which can be transformed to different analog outputs, such as 0~20mA / 4~20mA / 0~5V / 0~10V.

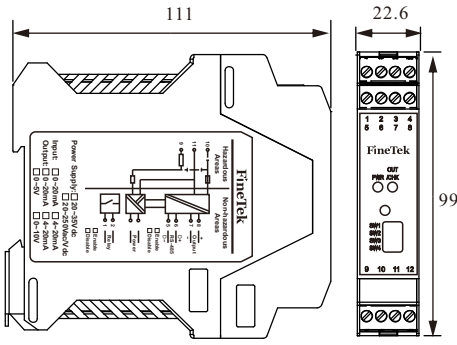
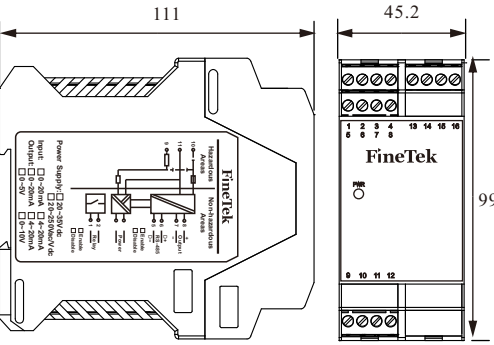
FEATURES

- 1 current input port to connect with continuous current or current output products. Applicable for use in hazardous zone.
- 3 output ports - relay output, current output, and RS-485.
- LED indicator, user friendly.
- DIP switch for function selection.
- In house programming per customers' criteria.
- Self-test function for system function monitoring.
- Setting relay output as alarm for optional external sensing unit connection.
- Optional RS-485 interface enables easy system configuration & supply current data retrieve.
- Product design complies with explosion proof standard.
- 2 dual-color LEDs
 - ▶ PWR LED: Green - Normal
Red - Abnormal
 - ▶ OUT/CHK LED: Yellow - Relay activated
Red (Flash) - Input current abnormal

WIRING



SPECIFICATION

<p>Dimensions (Unit: mm)</p>		
Model No.	TX100R	TX101F
Supply voltage	20~35 Vdc	20~250 Vdc/Vac, 50/60 Hz
Power supply protection	Power supply reverse protection	Non-directionality input
Current consumption	< 100 mA @24 V, Load 20mA	< 200 mA @24 V, Load 20mA
Hazardous Zone		
Input	0~20/4~20	
Open loop supply voltage	< 28 Vdc	
Distribution supply voltage	> 15 Vdc (Load 20 mA)	
Safe Zone		
Output	Current: 0~20/4~20 mA Load resistance: <550 ohm or Voltage: 0~5/0~10V Load resistance: <20k ohm	
Response time	< 5 ms	
Accuracy	0.1 % F.S., 0.5% @<0.3V (20°C)	
Temp. coefficient	< 100 ppm/°C	
Isolation	2500Vac : Current leakage < 1mA : 1min. 1. Intrinsic end & Non-Intrinsic end 2. Non-Intrinsic end power supply & output	
Ambient temp.	-20~60 °C	
Applicable zone	Zone 0, Zone 1, Zone 2, IIA, IIB, IIC T4~T6	
External equipments	2-Wire transmitter 3-Wire transmitter Current output transmitter	

HOW TO ORDER

TX10

Housing & Supply voltage

0R : 22.5mm (W) ; 20~35 Vdc
1F : 45mm (W) ; 20~250 Vdc/Vac, 50/60Hz

Input

2: 4~20mA
3: 0~20mA

Output

CR-0 : Current output 0~20mA.
CR-1: Current output 4~20mA.
CV-0: Voltage output 0~5V.
CV-1: Voltage output 0~10V.
CRG0 : Current output 0~20mA + Relay.
CRG1: Current output 4~20mA + Relay.
CVG0: Voltage output 0~5V + Relay.
CVG1: Voltage output 0~10V + Relay.

Digital output

0: None
3: RS-485

Explosion proof

EX1:NEPSI