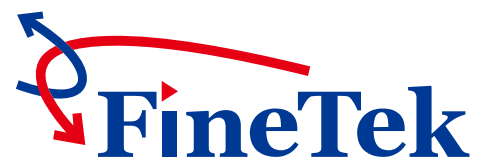




www.fine-tek.com

By-Pass Level Transmitter



Innovation · Quality · Sharing

INTRODUCTION

INTRODUCTION

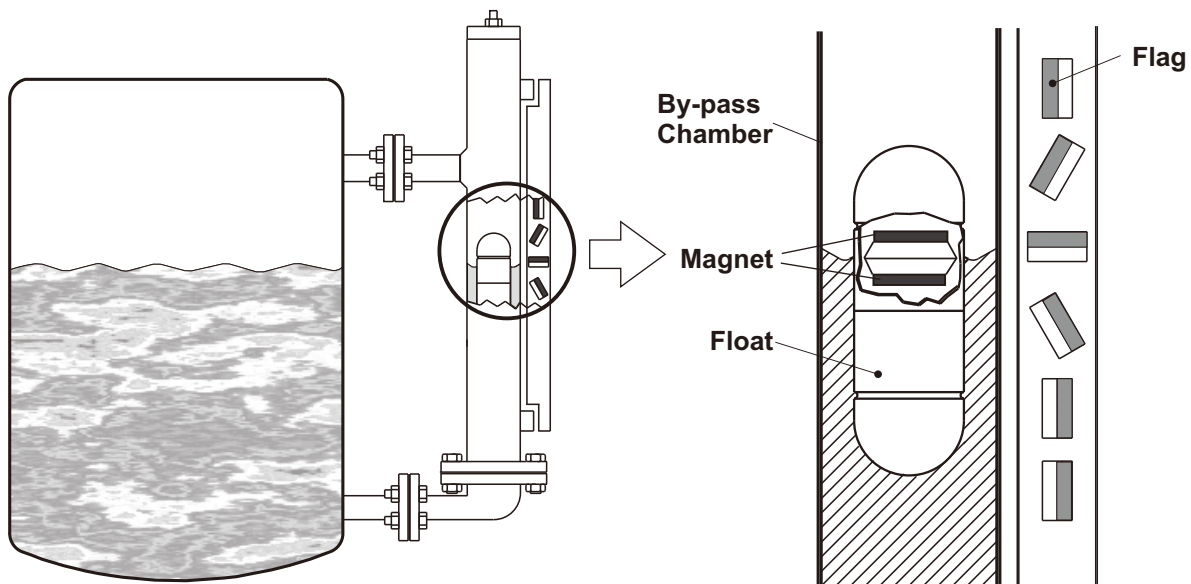
The By-Pass Level Indicator is installed outside of a vessel or tank. The liquid level in the tank can easily be observed from the change of the flag color. Optional devices of magnetic switch and level transducer can be added for electrical signal output and level transmitting.

PRINCIPLE

Fine-Tek's By-Pass indicator utilizes hydrostatic principle to show the liquid level in the tank. A float with a magnet inside rises and drops according to the liquid level change. Magnetic flags will flip as float passes through to indicate liquid level based on magnetic attraction method.

APPLICATIONS AND FEATURES

- Applicable in environment with high temp., high pressure, strong acid, strong alkaline and hazardous locations. The structure is simple but durable and reliable. It is also available with various options for upgrade.
- A level transducer or magnetic switch can be installed and adjusted during operation.
- It is not operated by electricity thus it will not be affected by power failure.
- Add different color of flag per 10cm that can be recognized easily.
- Multiple applications for textile dyeing, sewage water processing, power generating, boiler and petrochemical industries.



PRODUCT WITH PATENT RECOMMENDATION

1.) Magnetic Switch (Fig.1)

- * The plastic miniature magnetic switch is anti-corrosive and with IP67 rating. It is the smallest magnetic switch in the current market.
- * The magnetic switch is easy to set up and has real time adjustment.

2.) Innovative Design For Bottom End Flange and the Connecting Flange (Fig.2)

- * The lower center duct is at the bottom end of the chamber.
When the liquid drains in the tank, there will be no residue in the chamber unit.
- * This is suitable for production that requires frequent liquid change and mixture is not allowed during the process.

3.) Removable Duct and Connecting Flange (Fig.3)

- * The flange setting is close to the two ends of the chamber, therefore the "C-C" distance is maximized.
- * It is strengthened in the structure by a large phase weld.
- * During the installation, adjust the flange to the fitting mounting holes.

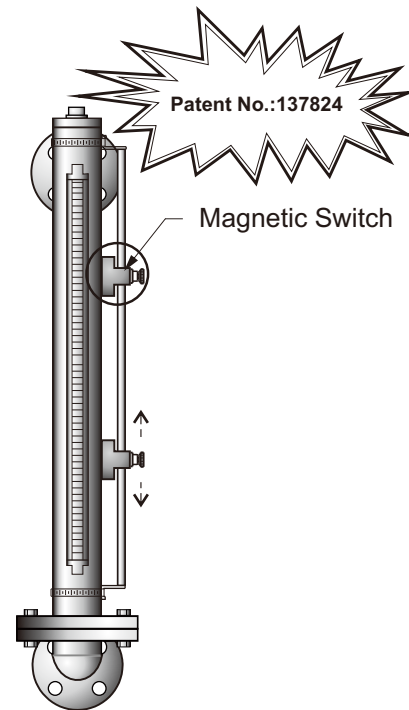


Fig.1

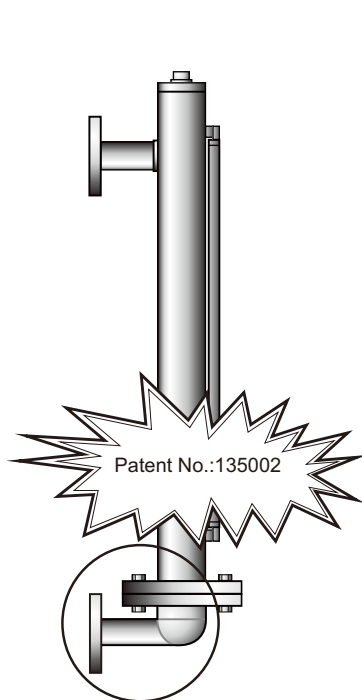


Fig.2

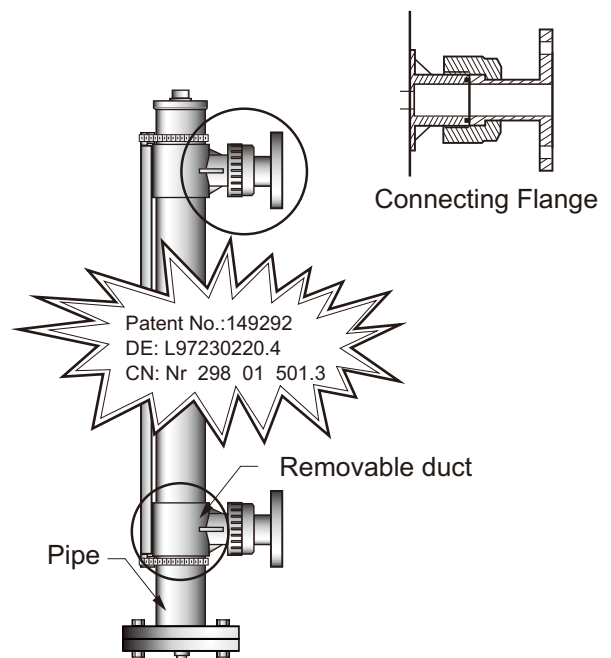
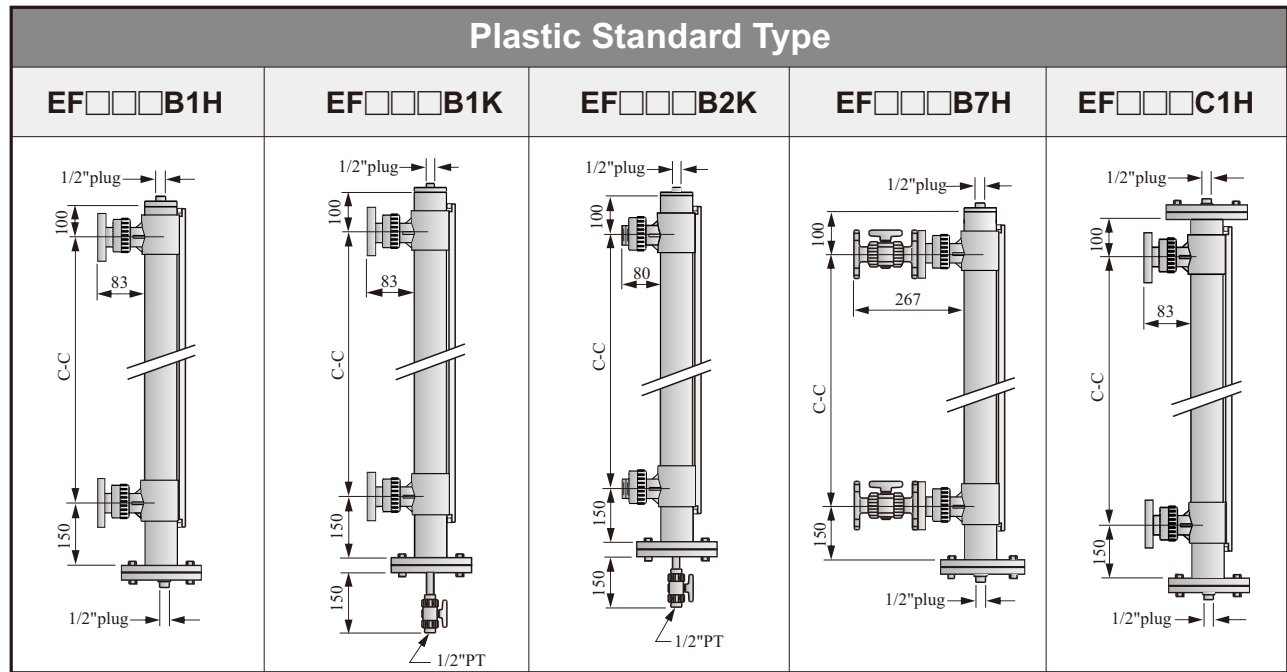


Fig.3

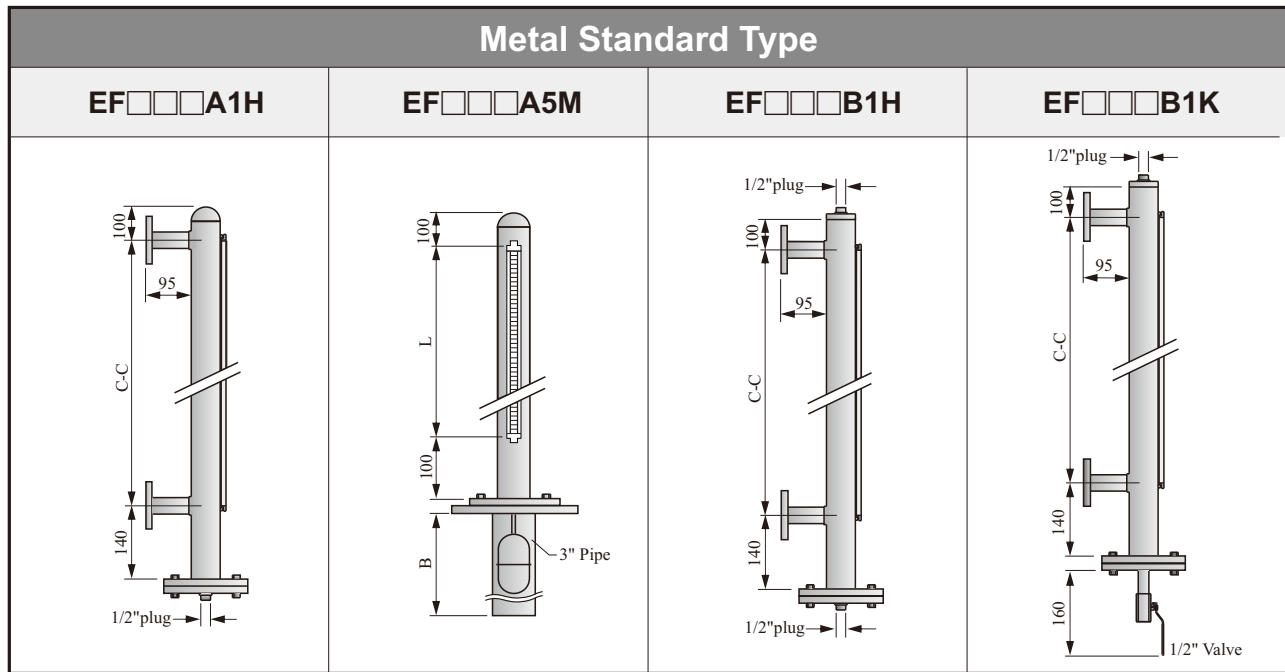
SPECIFICATIONS



SPECIFICATIONS:

Model No.	EF□□□B1H	EF□□□B1K	EF□□□B2K	EF□□□B7H	EF□□□C1H
Description					
Top end	Flat top with 1/2"PT plug				Dual flange with 1/2"PT plug
Bottom end	Dual flange with 1/2"PT plug	Dual flange with 1/2"PT drain valve		Dual flange with 1/2"PT plug	
Connecting	3/4" x10kg/cm ² (Flange)		3/4" or 1"PT (Screw)	3/4" x10kg/cm ² (Ball Valve)	3/4" x10kg/cm ² (Flange)
C-C Distance	Min. 150mm; Max. 3800mm				
Operation pressure	5kg/cm ²				
Operation temp.	PP: 80°C, PVDF: 120°C				
Chamber	PP: φ60.5 x 3.8t, PVDF: φ63 x 3.2t				
Float type	EFB-2500 (PVDF) / 2510 (PP) (Refer float specifications)				
Material	PP / PVDF				
Flag indicator	EFB-0750 (140°C) (Refer flag display data)				
Ruler	Option(Refer ruler data)				

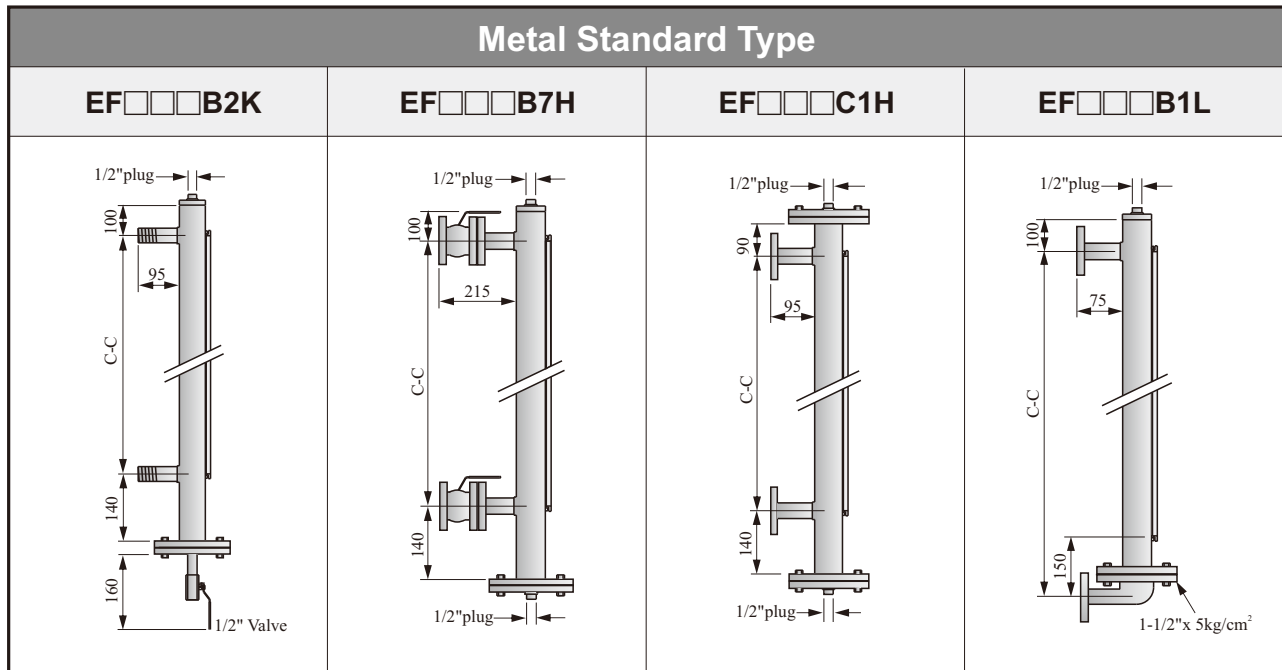
Metal Standard Type



SPECIFICATIONS

Model No.	EF□□□A1H	EF□□□A5M	EF□□□B1H	EF□□□B1K
Description				
Top end	Cap		Flat top with 1/2"PT plug	
Bottom end	Dual flange with 1/2"PT plug	Dual flange with 3" shield pipe	Dual flange with 1/2"PT plug	Dual flange with 1/2" drain valve
Bottom flange	1-1/2" x 5kg/cm ²	3-1/2" x 5kg/cm ²	1-1/2" x 5kg/cm ²	
Connecting	3/4" x 10kg/cm ² (Flange)		3/4" x 10kg/cm ² (Flange)	
C-C Distance Flag isplay length(L)	Min. 150mm; Max. 5,800mm	Min. 150mm; Max. 2,000mm	Min. 150mm; Max. 5.800mm	
Operation pressure	25kg/cm ² (Max. 50kg/cm ²)			20kg/cm ²
Operation temp.	SUS304: 140°C, 200°C, 400°C SUS316: 140°C, 200°C, 400°C			SUS304: 140°C,200°C,350°C SUS316: 140°C,200°C,350°C
Chamber	φ60.5 x 2.8t			
Float type	EFB-2580 (Refer float specifications)			
Material	SUS304 / SUS316			
Flag indicator	EFB-0700 (200°C), EFB-0740 (400°C), EFB-0750 (140°C)(Refer flag display data)			
Ruler	Option (Refer ruler data)			

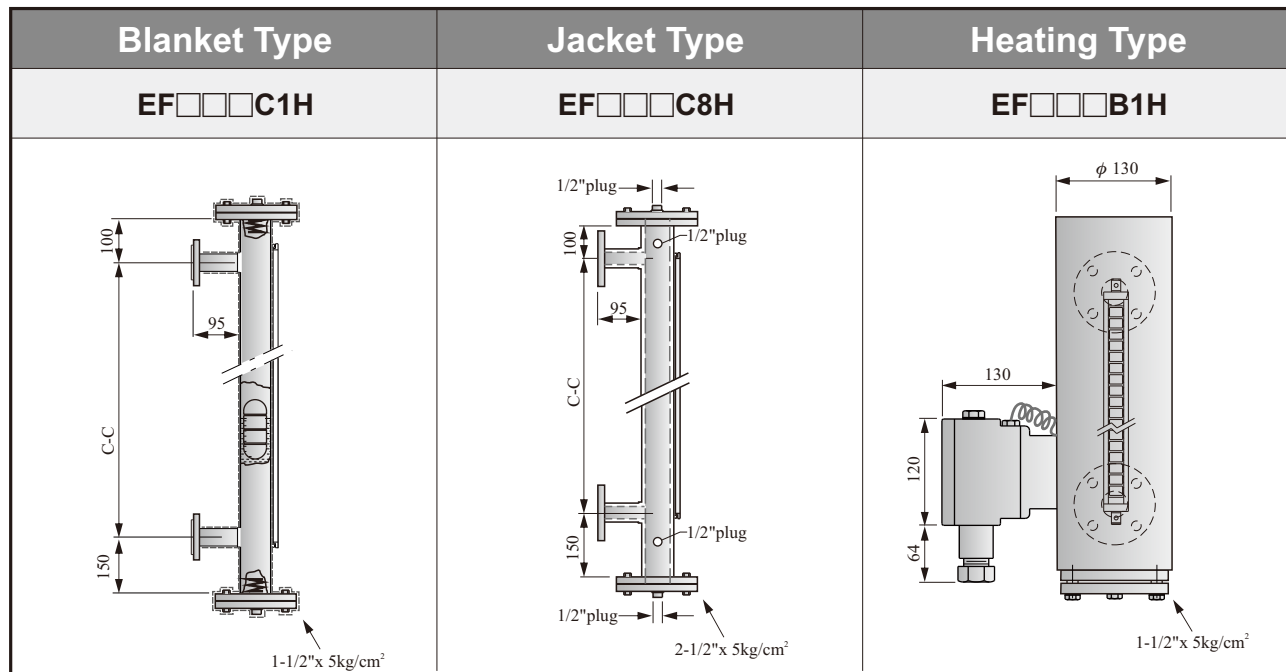
Metal Standard Type



* The pipe is so long that support rack is needed to prevent pipe from bending.

SPECIFICATIONS

Model No. Description	EF□□□B2K	EF□□□B7H	EF□□□C1H	EF□□□B1L
Top end	Flat top with 1/2"PT plug		Dual flange with 1/2"PT plug	Flat top with 1/2"PT plug
Bottom end	Dual flange with 1/2" drain valve	Dual flange with 1/2"PT plug		Dual flange+angle pipe
Bottom flange	1-1/2" x 5kg/cm ²			—
Connecting	3/4"PT or 1"PT (Screw)	3/4" x10kg/cm ² (Ball Valve)	3/4" x10kg/cm ² (Flange)	
C-C Distance	Min. 150mm; Max. 5,800mm			
Operation pressure	20kg/cm ²	10kg/cm ²	25kg/cm ² (Max. 50kg/cm ²)	
Operation temp.	SUS304:140°C, 200°C, 350°C SUS316:140°C, 200°C, 350°C		SUS304:140°C, 200°C,400°C SUS316:140°C, 200°C,400°C	SUS304:140°C, 200°C SUS316:140°C, 200°C
Chamber	φ60.5 x 2.8t			
Float type	EFB-2580 (Refer float specifications)			
Material	SUS304 / SUS316			
Flag indicator	EFB-0700 (200°C), EFB-0740 (400°C), EFB-0750 (140°C) (Refer flag display data)			
Ruler	Option (Refer ruler data)			



SPECIFICATIONS

Model No.	EF□□□C1H	EF□A/B□C1H	EF□□□B1H
Description			
Top end	Dual flange with 1/2"PT plug		Dual flange with 1/2"PT plug
Bottom end	Dual flange with 1/2"PT plug		Dual flange with 1/2"PT plug
Connecting	3/4" x10kg/cm ² (Flange)	1-1/4" x 10kg/cm ²	3/4" x10kg/cm ² (Flange)
C-C Distance	Min. 150mm; Max. 5800mm		
Operation pressure	25kg/cm ² (Max. 50kg/cm ²)		20kg/cm ²
Operation temp.	SUS304: 140°C, 200°C, 400°C SUS316: 140°C, 200°C, 400°C		SUS304: 100°C SUS316: 100°C
Chamber	φ60.5 x 2.8t	Jacket φ76 x 3.0t 1/2"PT plug	φ 65 x 3.5t φ130 Heating type
Float type	EFB-2580 (Refer float specifications)		
Material	SUS304 / SUS316		
Flag indicator	EFB-0700 (200°C), EFB-0740 (400°C), EFB-0750 (140°C) (Refer flag display data)		
Ruler	Option (Refer ruler data)		

Antiseptic Type	High Pressure Type
EF□□□C1H	EF□□□C1H

SPECIFICATIONS

Model No. Description	EF□A/B□C1H	EF□□□C1H
Top end	Dual flange	Dual flange with 1/2"PT plug
Bottom end	Dual flange	Dual flange with 1/2"PT plug
Connecting	3/4" x10kg/cm ² (Flange)	600Lb or 300Lb
C-C Distance	Min. 150mm; Max. 5800mm	
Operation pressure	25kg/cm ² (Max. 50kg/cm ²)	100kg/cm ² (300°C down)600Lb 60kg/cm ² (300°C up)300Lb
Operation temp.	PP: 80°C PTFE:120°C	SUS304: 140°C SUS316: 140°C
Chamber	φ65 x 2t Coating PP or PTFE	φ 76.3 x 5.5t
Float type	EFB-2580 (Refer float specifications) +Coating	EFB-2654 (Refer float specifications)
Material	SUS304 / SUS316	
Flag indicator	EFB-0700 (200°C), EFB-0740 (400°C), EFB-0750 (140°C) (Refer flag display data)	
Ruler	Option (Refer ruler data)	

MODEL NUMBER / ORDER CODE COMPARISON TABLE

Plastic Standard Type

Model Number	Order Code
EF□□□B1H	EFX1□□□□-B1C
EF□□□B1K	EFX1□□□□-B1G
EF□□□B2K	EFX1□□□□-B2G
EF□□□B7H	EFX1□□□□-B7C
EF□□□C1H	EFX1□□□□-C1C

Metal Standard Type

Model Number	Order Code
EF□□□A1H	EFX1□□□□-A1C
EF□□□A1L	EFX1□□□□-A1N
EF□□□A5M	EFX1□□□□-A5R
EF□□□B1H	EFX1□□□□-B1C
EF□□□B1K	EFX1□□□□-B1G
EF□□□B2K	EFX1□□□□-B2G
EF□□□B7H	EFX1□□□□-B7C
EF□□□B1H	EFX1□□□□-B1C
EF□□□B1L	EFX1□□□□-B1N

Blanket Typ

Model Number	Order Code
EF□□□C1H	EFX1A2□□-C1C

Jacket Type

Model Number	Order Code
EF□□□C8H	EFX1A3□□-C1C

Heating Type

Model Number	Order Code
EF□□□B1H	EFX1A4□□-B1C

Antiseptic Type

Model Number	Order Code
EF□□□C1H	EFX1A1□□-C1C

High Pressure Type

Model Number	Order Code
EF□□□C1H	EFX1□□□□-C1C

Plastic Float

Model Number	Order Code
EFB-2500	FLTAM1F-1245116801
EFB-2510	FLTAM1F-1184915001

Metal Float

Model Number	Order Code
EFB-2540	FLTAM1F-1MB5020001
EFB-2560	FLTAM1F-1MB5017503
EFB-2580	FLTAM1F-1MB5015002
EFB-2592	FLTAM1F-1MB5023001
EFB-2654	FLTAM1F-1MF6139401
EFB-2600	FLTAM1F-1MB5029503
EFB-2620	FLTAM1F-1MF5014001
EFB-2630	FLTAM1F-1MF5024502

Flag Display

Model Number	Order Code
EFB-0700	EFXAM1D
EFB-0740	
EFB-0750	

Ruler

Model Number	Order Code
EFA-2111	EFXAM1P-MAR
EFA-2120	
EFA-2130	EFXAM1P-15R
EFA-2140	

Level Transducer

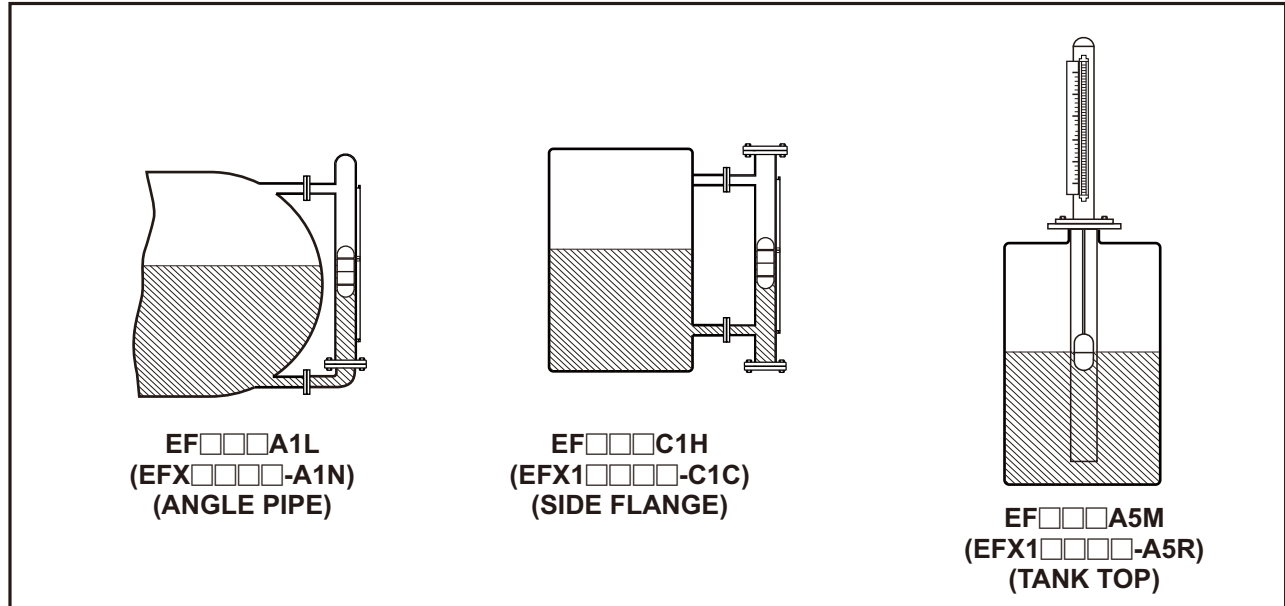
Model Number	Order Code
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EG371BQ00-00A0	EGX1001B-A1AAA5012CMA0000A0AA
EG371BQ00-00B0	EGX1001B-A1AAA5012CMA0000B0AA
EG311BQ00-00AB	EGX10000-A1AAA5012CMA0000ABAA
EG311BQ00-00A0	EGX10000-A1AAA5012CMA0000A0AA
EG311BQ00-00B0	EGX10000-A1AAA5012CMA0000B0AA
TAB-2110	TAXAA1X-0004
EGB-0500	EGXAM1P-MA05

Magnetic Switch

Model Number	Order Code
EFB-1220	EFXAM1P-MHS11
EFB-1230	EFXAM1P-MHS12
EFB-1250	EFXAM1P-MHS21
	EFXAMIP-32S21
EFB-1260	EFXAM1P-MHS22
EFB-1300	EFXAM1P-MHS31
EFB-1310	EFXAM1P-MHS32
EFB-1400	EFXAM1P-18S44
EFB-1410	EFXAM1P-18S45
EFB-1420	EFXAM1P-18S41
EFB-1430	EFXAM1P-18S42
EFB-1440	EFXAM1P-18S44
EFB-1450	

INSTALLATION

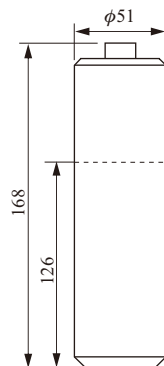
INSTALLATION EXAMPLE



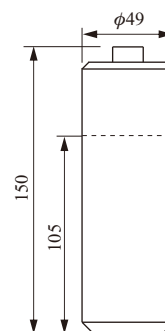
Plastic Float

Code	Order Code	Operation Temp.	Max. Pressure	Dimension	S.G.	Water Immersion Line	Material	Weight
F1	FLTAM1F-1245116801	-10~120 °C	5 kg/cm ²	φ51x168	0.75	126 mm	PVDF	256 g
P1	FLTAM1F-1184915001	-10~80 °C	5 kg/cm ²	φ49x150	0.7	105 mm	PP	188 g

*Specified S.G. is available made to order.



Code: F1



Code: P1

FLOAT SPECIFICATIONS

METAL FLOAT

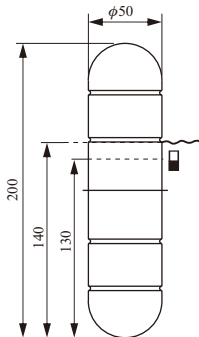
Code	Order Code	Operation Temp.	Max. Pressure	Dimension	S.G.	Water Immersion Line	Material	Weight
M1	FLTAM1F-1MB5020001	400	30	OD50*200	0.7	140	SUS316	234
M2	FLTAM1F-1MB5017503	400	30	OD50*175	0.75	131		220
M3	FLTAM1F-1MB5015002	400	40	OD50*150	0.87	130		207
M4	FLTAM1F-1MB5029503	400	40	OD50*295	0.68	204		330
M6	FLTAM1F-1MB5023001	200	60	OD50*230	0.72	166		284
		201~400	45					
L1	FLTAM1F-1MC5020001	400	30	OD50*200	0.7	140	SUS316L	234
L2	FLTAM1F-1MC5017501	400	30	OD50*175	0.75	131		220
L3	FLTAM1F-1MC5015001	400	40	OD50*150	0.87	130		207
L4	FLTAM1F-1MC5029501	400	40	OD50*295	0.68	204		330
L6	FLTAM1F-1MC5023001	200	60	OD50*230	0.72	166		284
		201~400	45					
T1	FLTAM1F-1MF5014001	400	15	OD50*140	0.6	84	Titanium	148
T2	FLTAM1F-1MF5024502	400	20	OD50*210	0.51	107		183
U1	FLTAM1F-1MF6139401	300	110	OD61.3*394	0.8	315		830
		301~400	90					

* Length of float: EFB-2600 is extendable at unit of 50 mm (S.G drops 0.05 when length increases 50 mm).

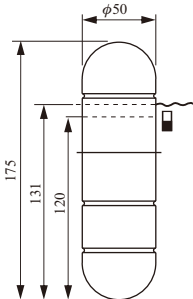
* Float can be coated with PTFE.

~ Water Immersion location.

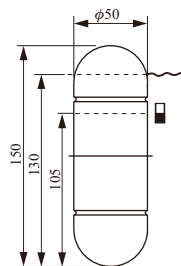
■ The Magnet location.



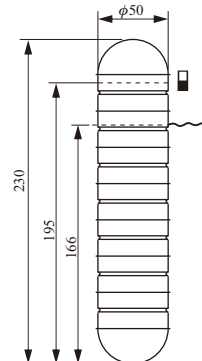
Code: M1/L1



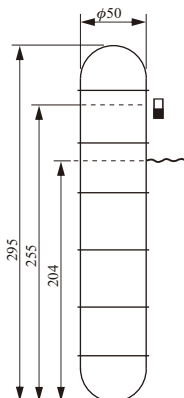
Code: M2/L2



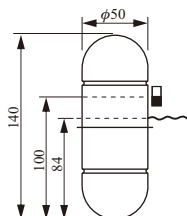
Code: M3/L3



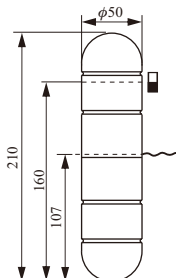
Code: M6/L6



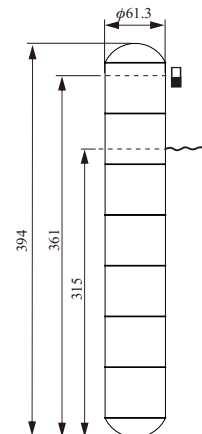
Code: M4/L4



Code: T1



Code: T2

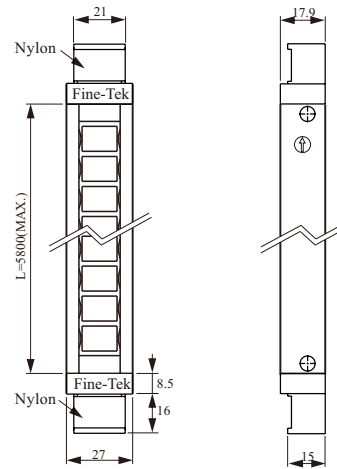


Code: U1

FLAG DISPLAY

Model No. EFB-0750

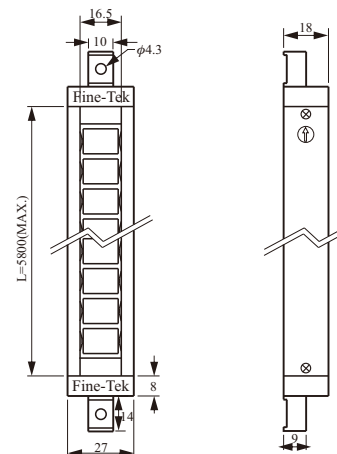
1. Housing material : SUS 304
2. Flag Material : Engineering plastic
3. Flag Color : Red / White; Green / White
4. Cover Material : Engineering plastics
5. Operation Temp. : -20~140°C
6. Standard Unit : 50mm



EFB-0750

Model No. EFB-0700

1. Housing material : SUS 304
2. Flag Material : Engineering plastic
3. Flag Color : Red / White; Green / White
4. Cover Material : Engineering plastics
5. Operation Temp. : -20~200°C
6. Standard Unit : 50mm



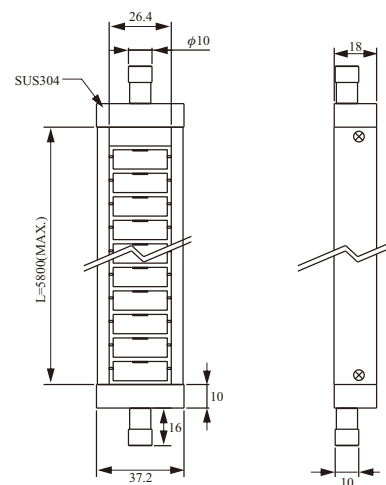
**EFB-0700
EFB-0740**

Model No. EFB-0740

1. Housing material : SUS 304
2. Flag Material : Ceramic
3. Flag Color : Red / White; Green / White
4. Cover Material : Glass
5. Operation Temp. : -20~400°C
6. Standard Unit : 50mm

Model No. EFB-0770

1. Housing material : SUS 304
2. Flag Material : SUS 304
3. Flag Color : Red / White; Green / White
4. Cover Material : Glass
5. Operation Temp. : -20~400°C
6. Standard Unit : 50mm



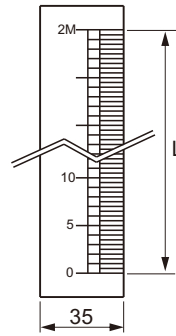
EFB-0770

RULER

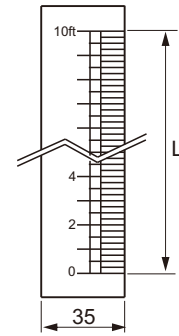
Model No. EFA-2111 (unit: cm L Type)

Model No. EFA-2120 (unit: inch)

1. Dimension : 35(W)x1.5(T)xL
2. Material : SUS 304
3. Color : Black word
4. Operation Temp. : -20~400°C
5. Length : 5.8M (228")



EFA-2111



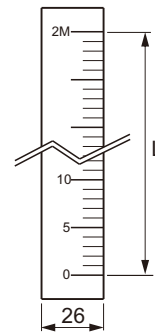
EFA-2120

Model No. EFA-2130-cm(unit: cm)

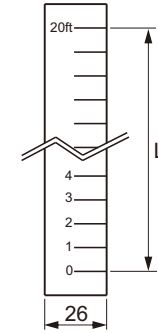
Model No. EFA-2130-in(unit: inch)

1. Dimension : 26(W)x3(T)xL
2. Material : Plastic
3. Color : Red word
4. Operation Temp. : -20~80°C
5. Length : 5.8M (228")

* Custom-made scale is available.



EFA-2130-cm



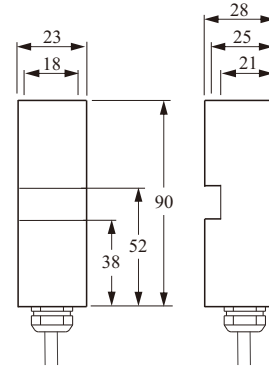
EFA-2140-in

MAGNETIC SWITCH

[ECONOMY TYPE]

Model No. EFB-1220/1230

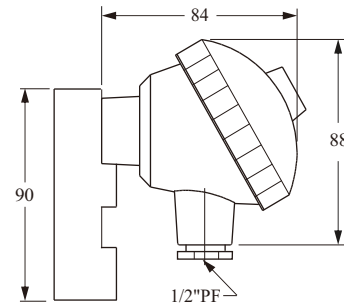
1. Contact Element : Reed Switch
2. Switch Form : EFB-1220, SPDT Hold type
EFB-1230, SPDT Normal type
3. Contact Capacity : 1A /30W / 200Vdc /240Vac
4. Housing Material : Aluminum
5. Operation Temp. : -20~200°C
6. Protection : IP67
7. Cable Length : 1M (Silicon Cable)
8. Color code of wires: Black- COM; brown-NC; blue-NO
Yellow /green-GND



[STANDARD TYPE]

Model No. EFB-1250/1260

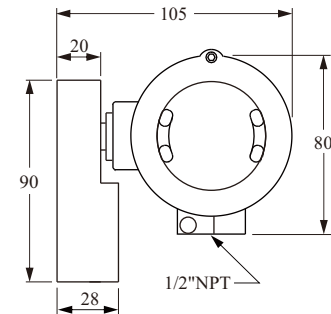
1. Contact Element : Reed switch
2. Switch Form : EFB-1250, SPDT Hold type
EFB-1260, SPDT Normal type
3. Contact Capacity : 1A /30W / 200Vdc /240Vac
4. Housing Material : Aluminum
5. Operation Temp. : -20~150°C(max. 250°C)
6. Protection : IP65



[ENCLOSURE EXPLOSION-PROOF TYPE]

Model No. EFB-1300/1310

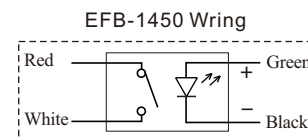
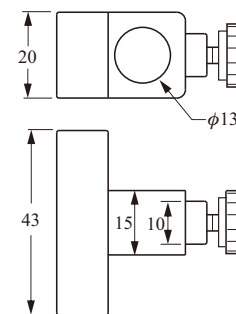
1. Contact Element : Reed switch
2. Switch Form : EFB-1300, SPDT Hold type
EFB-1310, SPDT Normal type
3. Contact Rating : 1A /30W / 200Vdc /240Vac
4. Housing Material : Aluminum
5. Operation Temp. : -20~85°C (max. 250°C)
6. Protection : Ex d IIC T6
7. Explosion-proof cable conduit is optional.



[ADJUSTABLE TYPE]

Model No. EFB-14□□

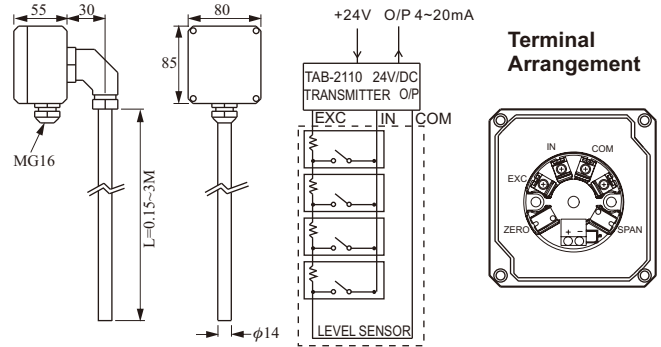
1. Contact Element : Reed Switch
2. Switch Form : EFB-1400, SPST NO Hold type
EFB-1410, SPST NO Normal type
EFB-1420, SPDT Hold type
EFB-1430, SPDT Normal type
EFB-1440, SPST NO Hold type (side lead wire)
EFB-1450, SPST NO Hold type (LED display)
3. Contact Rating : 1A /30W / 200Vdc /240Vac
4. LED Power : 24 Vdc ± 20%(for EFB-1450)
5. Housing Material : PP
6. Operation Temp. : -20~140°C
7. Protection : IP67
8. Cable Length : 2M (PVC Cable)
9. Contact wiring :
Red: COM, White: NO (EFB-1400/ 1410/ 1440 / 1450)
Black: COM, Red: NC, White: NO (EFB-1420 / 1430)



LEVEL TRANSDUCER

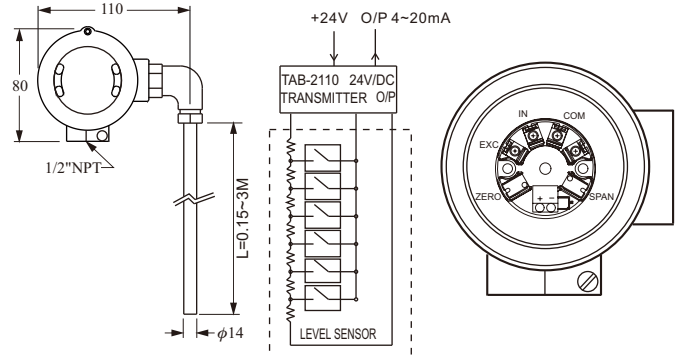
TYPE: FGX100□□-A1G000000□□□□□0000□00□□□□□

1. Housing material : PC(IP65) 85(W)x80(H)x55(D)
2. Tube : $\phi 14\text{mm}$ / $\phi 17.2$ (length over 3M)
SUS 304 or SUS 316
3. Accuracy : 6.35mm
4. Output : 4~20mA two-wire
5. Power : 12~36Vdc
6. Measuring Range : 0.15~3M / 3~5.8M ($\phi 17.2$)
7. Ambient Temp. : -10~80°C
8. Accuracy : $\pm 0.1\%$



TYPE: FGX100□□-A1L000000□□□□□0000□00□□□□□

1. Housing material : Aluminum EEx d IIC T6
2. Tube : $\phi 14\text{mm}$ / $\phi 17.2$ (length over 3M)
SUS 304 or SUS 316
3. Accuracy : 6.35mm
4. Output : 4~20mA two-wire
5. Power : 12~36Vdc
6. Measuring Range : 0.15~3M / 3~5.8M ($\phi 17.2$)
7. Ambient Temp. : -10~80°C
8. Accuracy : $\pm 0.1\%$
9. Explosion-proof cable conduit is optional.



ORDER INFORMATION

FGX1 00 ⁰⁷ ⁰⁸ - ⁰⁹ ¹⁰ ¹¹ 00 00 00 00 C ¹⁹ ²⁰ ²¹ ²² 00 00 ²⁷ 00 ³⁰ ³¹ ³² ³³

07 08 Certification

- 00: None
- 1C: ATEX-Exd
- 7C: NEPSI-Exd

09 10 Sensor Type

- A1: Probe type
- A6: L Probe type

11 Terminal Housing

- G: PC (IP65)
- K: Aluminum (EEx d IIC T6)
- L: Aluminum (EEx d IIC T6)
- N: SUS304 or 316
- X: Aluminum (IP65)

19 20 Probe material

- MA: SUS 304
- MB: SUS 316

21 22 Probe diameter

- 2B: $\phi 14.0\text{mm}$
- 2D: $\phi 17.2\text{mm}$ (More than 3 meters long)

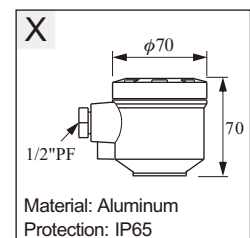
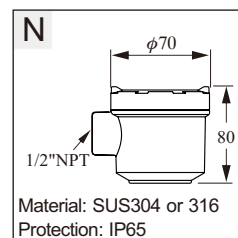
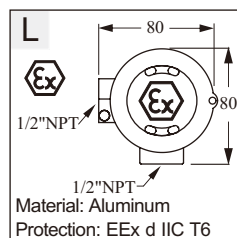
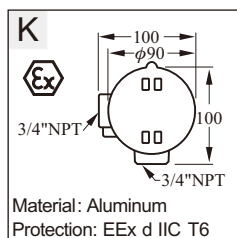
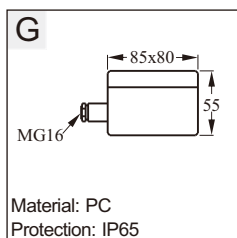
27 Analog output

- B: 4~20 mA
- C: 20~4 mA

30 31 32 33 Length(C-C)

Code	Probe Length
0150~5800	150mm~5800mm

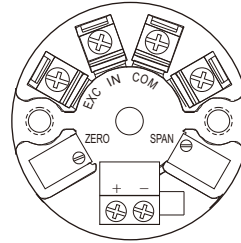
※ Stem length can be customized (Also as accessory for EFX By-pass level transmitter)



TRANSDUCER & TRANSDUCER WIRING DIAGRAMS

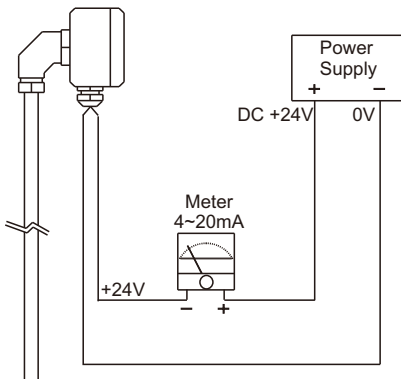
Model No.: TAB-2110 Transducer

- Power Supply : 12~36Vdc
- Output Current : Loop power 4~20mA
- Load Resistance : $R_L(\text{Max})=50(V_s-8)$
- Operation Temperature : -40~80 °C
- Ambient Humidity : 0~80 RH
- Accuracy : $\pm 0.1\%(25^\circ\text{C})$
- Temperature Effect : 0.01%F.S./°C
- Adjustment Range : Span Ajustment 20% FS
Zero Ajustment 5% FS

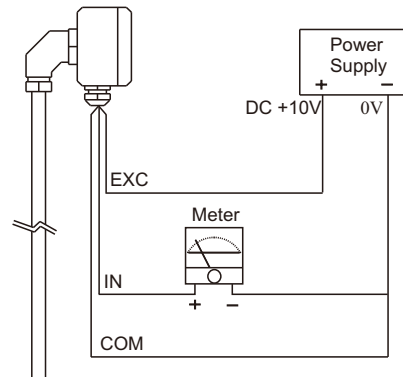


TRANSDUCER WIRING DIAGRAMS

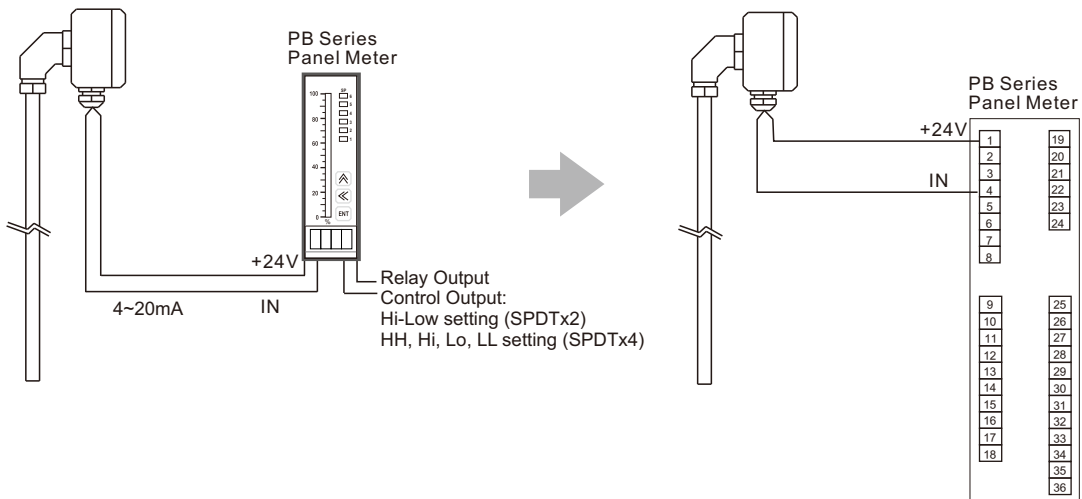
► 2-wire level transducer (resistance output) connected with analog meter for level monitoring.



► 3-wire level transducer (4~20mA output) connected with 4~20mA analog meter for level monitoring.



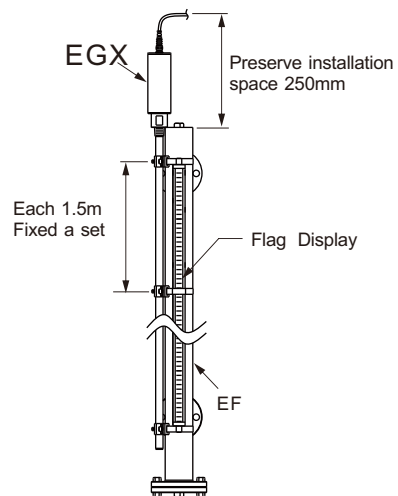
► 2-wire level transducer (4~20mA output) connected with digital meter (PB-Series) for level control.



MAGNETOSTRICTIVE LEVEL TRANSMITTER / MODEL NUMBER / ORDER CODE COMPARISON TABLE

TYPE: EFX+EGX

1. Material : SUA304
2. Non-Linearity : $\pm 0.05\%$ F.S or $\pm 1.0\text{mm}$ (whichever is greater)
3. Repeatability : $\pm 0.01\%$ F.S或 $\pm 0.5\text{mm}$ (whichever is greater)
4. Operation Temp. : $-30^{\circ}\text{C}\sim 200^{\circ}\text{C}$
5. Output : $4\sim 20\text{mA}$
6. Communication : RS-485
7. Loop power : $+24\text{Vdc} \pm 10\%$
8. Protection : IP67



Model Number	Order Code
EG31 Standard Model	EGX10000-A1
EG31 High Temperature Model	EGX10200-A1
EG32 High Accuracy Model	EGX20000-A1
EG32 High Accuracy High Temperature Model	EGX20200-A1
EG371 Ex-proof Standard Model	EGX1001B-A1
EG37A Ex-proof High Temp. Model	EGX1021B-A1
EG36 Display Model	EGX3001B-A1
EG36 Display High Temperature Model	EGX3021B-A1

※If the model number wasn't showed on above list, kindly refer to the catalogue of EG Magnetostrictive Level Transmitter.

ORDER INFORMATION

EGX1 ⁰⁵ ⁰⁶ ⁰⁷ ⁰⁸ - A 1 0 0 0 0 0 0 ¹⁷ ¹⁸ ¹⁹ ²⁰ 0 0 0 0 ²⁵ ²⁶ ²⁷ 0 0 ³⁰ ³¹ ³² ³³

05 06 Model
 00: Standard
 02: Hi-temperation

07 08 Certification
 00: None
 1B: ATEX-Exia
 7B: NEPSI-Exia

17 18 Probe diameter
 2A: ϕ 12.7mm
 2C: ϕ 16.0mm

19 20 Probe material
 MA: SUS 304
 MB: SUS 316

25 Analog output
 0: None
 A: 4~20mA
 B: 20~4mA

26 Digital output
 0: None
 B: RS-485
 ※When RS-485 (ModBus) is applied, loop power only as power supply. Order code 25 has to be "0".

27 Housing
 A: Top conduit
 B: Side conduit

30 31 32 33 Length

Code	Probe Length
0150~2500	150mm~2500mm

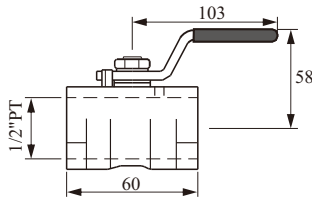
※Stem length can be customized (Also as accessory for EFX By-pass level transmitter)

※EFX By-pass level transmitter, Dual-flange, Blanket and Jacket type are not available for EG Magnetostrictive Level Transmitter.

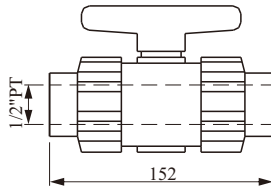
※EG transmitter fastener code number: EGB-0500(EGXAMIP-MA05000003)

BALL VALVE

Metal Thread Type

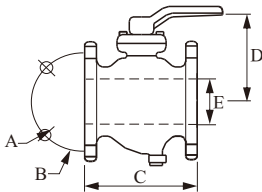


Plastic Thread Type



1	Body Material	SUS316	PP	PVDF
2	Working Temp.	150°C	80°C	120°C
3	Connection	1/2"PT	1/2"PT	
4	Working Pres.	20kg/cm ²	5kg/cm ²	

Metal Flange Type

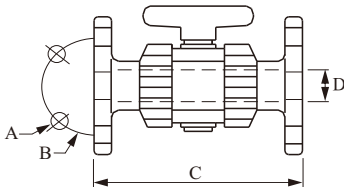


DIMENSIONS

SIZE	3/4"	1"
CODE	ACCORDING TO JIS 10K	
A, B	ACCORDING TO JIS 10K	
C	120	130
D	90	90
E	21.8	25

1	Body Material	SUS304
2	Working Temp.	150°C
3	Connection	3/4" JIS 10K 1" JIS 10K
4	Working Pres.	10kg/cm ²

Plastic Flange Type



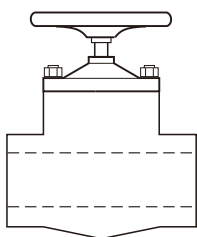
DIMENSIONS

SIZE	3/4"	1"
CODE	ACCORDING TO JIS 10K	
A, B	ACCORDING TO JIS 10K	
C	172	187
D	18	23

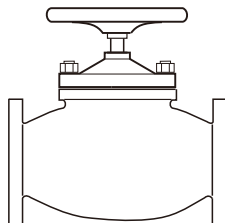
1	Body Material	PP	PVDF
2	Working Temp.	80°C	120°C
3	Connection	3/4" JIS 10K 1" JIS 10K	
4	Working Pres.	5kg/cm ²	

Bellows Sealed Valve

Thread Type



Flange Type



Project	Thread	Flang	
1	Body Material	SUS316	SUS316
2	Working Temp.	350°C	350°C
3	Connection	3/4"PT 1"PT	DN15 PN16 DN20 PN16
4	Working Pres.	25kg/cm ²	25kg/cm ²

ORDER INFORMATION



MT1 1 1-

06 Model

- B: Ball Valve
- 4: Bellows Sealed Valve

07 Connection type

- 1: Thread Type
- 4: Flange Type

Connection

08 09

- A5: 1/2"
- A7: 3/4"
- A8: 1"
- A9: 1-1/4"
- B1: 1-1/2"
- D6: DN15
- D7: DN20
- D8: DN25
- D9: DN32
- E1: DN40

10 11

- Flange
- 40: 5kg/cm²
- 42: 10kg/cm²
- 48: 150Lbs
- 49: 300Lbs
- 57: PN 10
- 58: PN 16

- Thread
- 01: PT male
- 02: PT Female
- 03: PF male
- 04: PF Female
- 05: BSP Female
- 06: BSP male
- 07: NPT male
- 08: NPT Female

12 13 Connection material

- 18: PP
- 24: PVDF
- MA: SUS304
- MB: SUS316
- MC: SUS316L
- ME: Carbon steel

OPTIONS

As shown below the optional accessories can be installed on to a By-Pass Level Indicator to monitor and control the level of the liquid.

A. Flag Indicator

- 1) Economy Type : EFB-0750 series
- 2) Standard Type : EFB-0700 series
- 3) High Temp. Type : EFB-0740 series

C. Magnetic Switch (see page 15)

- 1) Economy Type : EFB-1220 series
- 2) Standard Type : EFB-1250 series
- 3) Explosion-proof Type : EFB-1300 series
- 4) Adjustable Type : EFB-1400 series

B. Ruler

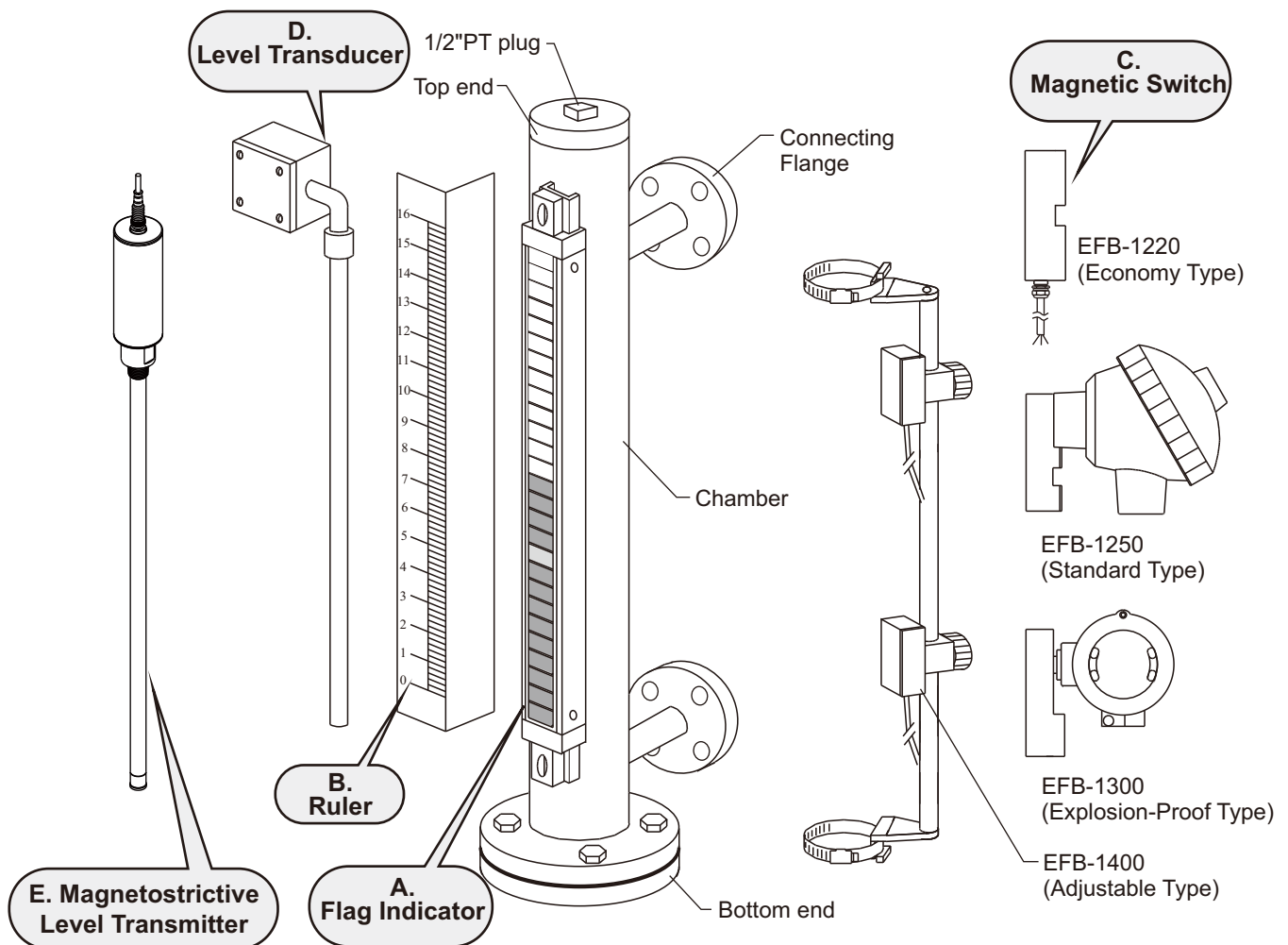
- 1) Stainless ruler (metric) : EFA-2110/2111(L Type)
- 2) Stainless ruler (imperial): EFA-2120
- 3) Plastic ruler (metric) : EFA-2130
- 4) Plastic ruler (imperial) : EFA-2140

D. Level Transducer

- 1) 3-wire standard
- 2) 2-wire standard
- 3) 3-wire explosion proof
- 4) 2-wire explosion proof
- 5) 2-wire reversible

E. Magnetostrictive Level Sensor

- 1) 2-Wire



TYPICAL ASSEMBLY

1. (Fig.1) By-pass Level indicator with the standard magnetic switches (Aluminum Alloy) and liquid level transmitter. With the housing protection IP65, it is suitable for outdoor or moist environment.

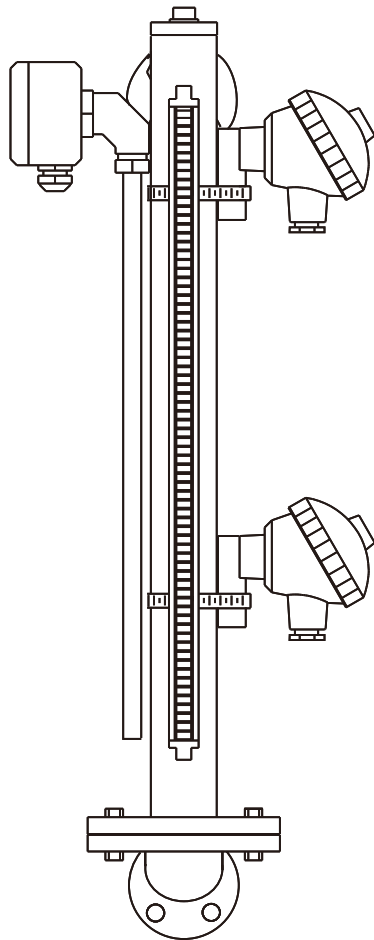


fig. 1

2. (Fig.2) By-pass Level Indicator with explosion-proof magnetic switches. With its housing protection Ex d IIC T6, it is applicable for hazardous environments .

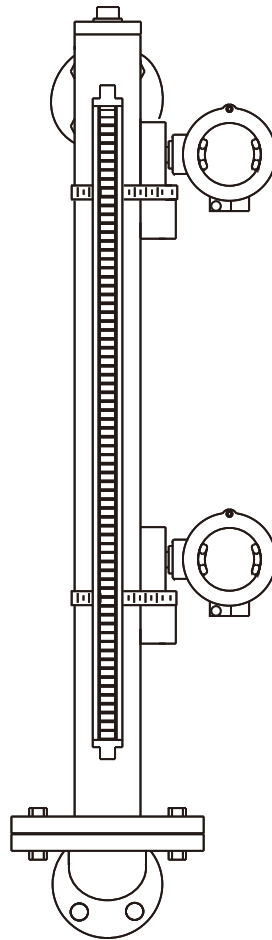


fig. 2

3. (Fig.3) By-pass Level Indicator with adjustable magnetic switches and SUS304 ruler. It can be assembled with upward /downward movable multiple magnetic switches on a riding rod.

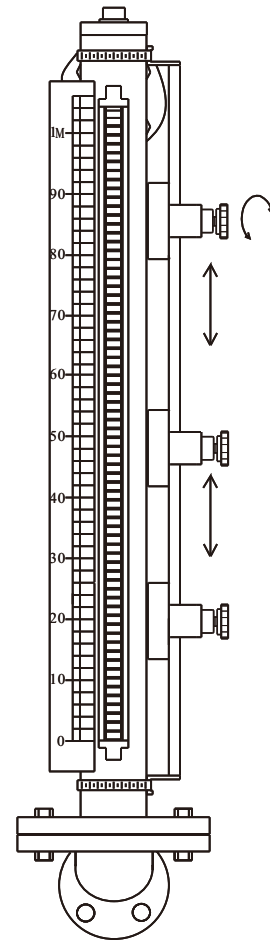


fig. 3

CAUTIONS FOR INSTALLATION

1. The magnetic switch (EFB-14□□ series) is to be placed on a riding rod, then fasten the riding rod to the chamber with two hose clamps. (see page 18 - fig.3)
2. The magnetic switch (EFB-12□□ & EFB-13□□) is to be fastened on the chamber with a hose clamp. (see fig.4 and page 18 - fig.1, fig.2) Positioning orientation of magnetic switches as fig.2.
3. Because the magnetic switch is a sensitive component, thus any extreme shock to the switch will cause malfunction.
4. Make sure there is no external magnetic field or source within 10 centimeters of the switch to avoid magnetic interference.
5. Make sure the wire of the magnetic switch is pointing downward.
6. Do not contact any high temperature material with unit's cables while wiring.
7. When using magnetic switch to control inductive or capacitive load, a RC protective circuit should be used to ensure long life of the switch contact.
8. The magnetic switch must be located near the flag display and the surface of it is as close to the outer chamber wall as possible.
9. Before actuating, be sure all wirings are done correctly.
10. See fig.3 for the installation direction of mounting holes
11. A fixed holder is recommended to be used in between center to center flanges when distance is beyond 1.5 meters. Maximum distance between two fixed holders or center flange to fixed holder can not exceed 1 meter for best stability. Fixed holders will be a custom-made accessory for different applications. To order, please fill out the request in order form as shown in fig 7.

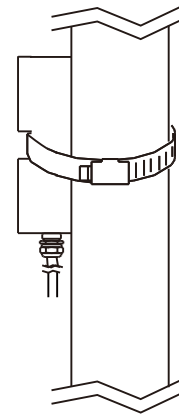


fig. 4

Position Orientation Of Magnetic Switches

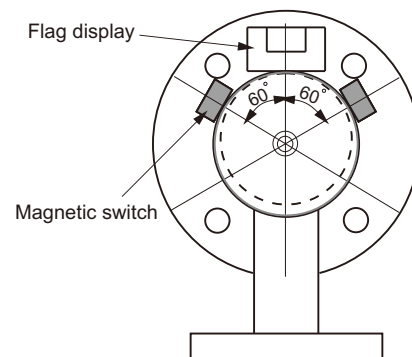


fig. 5

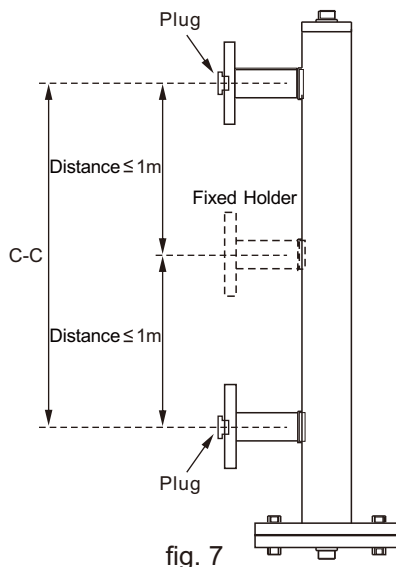


fig. 7

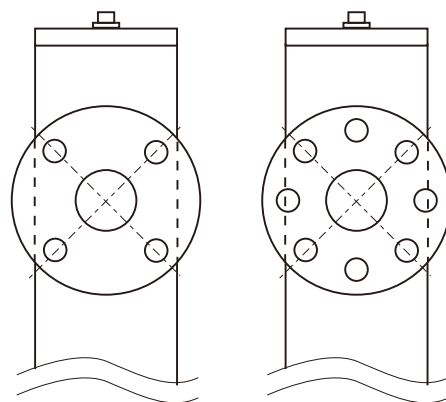





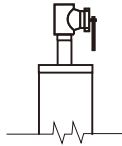
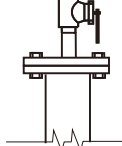
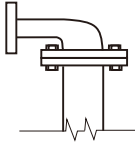


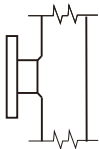

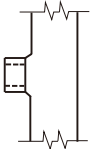
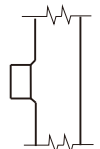
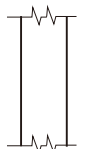
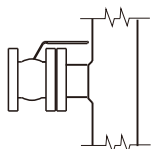
fig. 6

ORDER INFORMATION

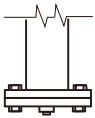
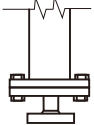
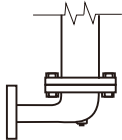
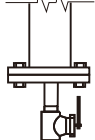
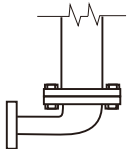
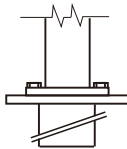
Top End Type

A Cap	B Flat top +Plug	C Dual flange +Plug	D Flat top +Top mounting flange
			
E Dual flange +Top mounting flange	F Flat top +Control valve	G Dual flange +Control valve	N Dual flange +Angle pipe
			

Connection

1 Flange	2 Screw (bolt type)	3 Screw (nut type)	4 Slip pipe	5 N/A	7 Control valve
					

Bottom End Type

C Dual flange+Plug	E Dual flange +Bottom mounting flange	M Dual flange +Angle pipe+Plug	G Dual flange +Control valve
			
N Dual flange +Angle pipe	R Dual flange +Bottom mounting pipe		
			

ORDER INFORMATION

EFX1 05 06 07 08 - 09 10 11 12 13 32 33 34

05 06 Model

- 00: Standard type (< 140C)
- 01: Plastic standard type
- 02: High temperature type (200°C)
- 05: High Pressure Type (31~60kg/cm²)
- 06: High Pressure Type-1 (61~100kg/cm²)
- 08: High temperature type-1 (350°C)
- A1: Antiseptic Type
- A2: Blanket Type
- A3: Jacket Type
- A4: Heating Type
- 25: High temperature & Pressure(350°C, 31~60kg/cm²)

07 08 Certificate

- | | |
|----------|--------|
| 00: None | E0: BV |
| B0: DNV | F0: LR |
| C0: ABS | G0: CR |
| D0: GL | |

09 Top end model

- | | |
|---------------------------------|------------------------------------|
| A: Cap | E: Dual flange+Top mounting flange |
| B: Flat top+plug | F: Flat top+Control valve |
| C: Dual flange+plug | G: Dual flange+Control valve |
| D: Flat top+Top mounting flange | N: Dual flange+Angle pipe |

10 Connection(C-C)

- 1: Flange
- 2: Screw (bolt type)
- 3: Screw (nut type)
- 4: Slip pipe
- 5: N/A
- 6: Flange flexible
- 7: Control valve

11 Bottom end model

- C: Dual flange+plug
- E: Dual flange+Bottom mounting flange
- G: Dual flange+Control valve
- M: Dual flange+Angle pipe+Plug
- N: Dual flange+Angle pipe
- R: Dual flange+Bottom mounting pipe

(Next page)

EFX1 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34

⑫⑬ Connection standard(C-C)

00: None

Flange	Thread
AK: JIS-FF	AA: JIS
AN: ANSI-RF	AB: ISO
AS: DIN-FF	AC: ANSI
AL: JIS-WNRF	
AP: ANSI-WNRF	
AT: DIN-WNRF	

(Next page)

⑭⑮ Connection size (C-C)

00: None

A5: 1/2"	D6: DN15
A7: 3/4"	D7: DN20
A8: 1"	D8: DN25
A9: 1-1/4"	D9: DN32
B1: 1-1/2"	E1: DN40

⑯⑰ Connection type(C-C)

00: None

Flange	Thread
40: 5kg/cm ²	01: PT male
42: 10kg/cm ²	02: PT Female
48: 150Lbs	03: PF male
49: 300Lbs	04: PF Female
51: 600Lbs	05: BSP Female
57: PN 10	06: BSP male
58: PN 16	07: NPT male
59: PN 25	08: NPT Female
60: PN 40	
61: PN 64	

⑱⑲ Connection size(Top)

00: None

A5: 1/2"	D6: DN15
A7: 3/4"	D7: DN20
A8: 1"	D8: DN25
A9: 1-1/4"	D9: DN32
B1: 1-1/2"	E1: DN40

05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34

EFX1 -

20 21 **Connection type(Top)**

00: None

Flange

40: 5kg/cm²

42: 10kg/cm²

48: 150Lbs

49: 300Lbs

57: PN 10

58: PN 16

Thread

01: PT male

02: PT Female

03: PF male

04: PF Female

05: BSP Female

06: BSP male

07: NPT male

08: NPT Female

(Next page)

22 23 **Connection size(bottom)**

00: None

A5: 1/2"

A7: 3/4"

A8: 1"

A9: 1-1/4"

B1: 1-1/2"

D6: DN15

D7: DN20

D8: DN25

D9: DN32

E1: DN40

24 25 **Connection type(bottom)**

00: None

Flange

40: 5kg/c

40: 5kg/cm²

42: 10kg/cm²

48: 150Lbs

49: 300Lbs

57: PN 10

58: PN 16

Thread

01: PT male

02: PT Female

03: PF male

04: PF Female

05: BSP Female

06: BSP male

07: NPT male

08: NPT Female

26 27 **Wetted part material**

MA: SUS304

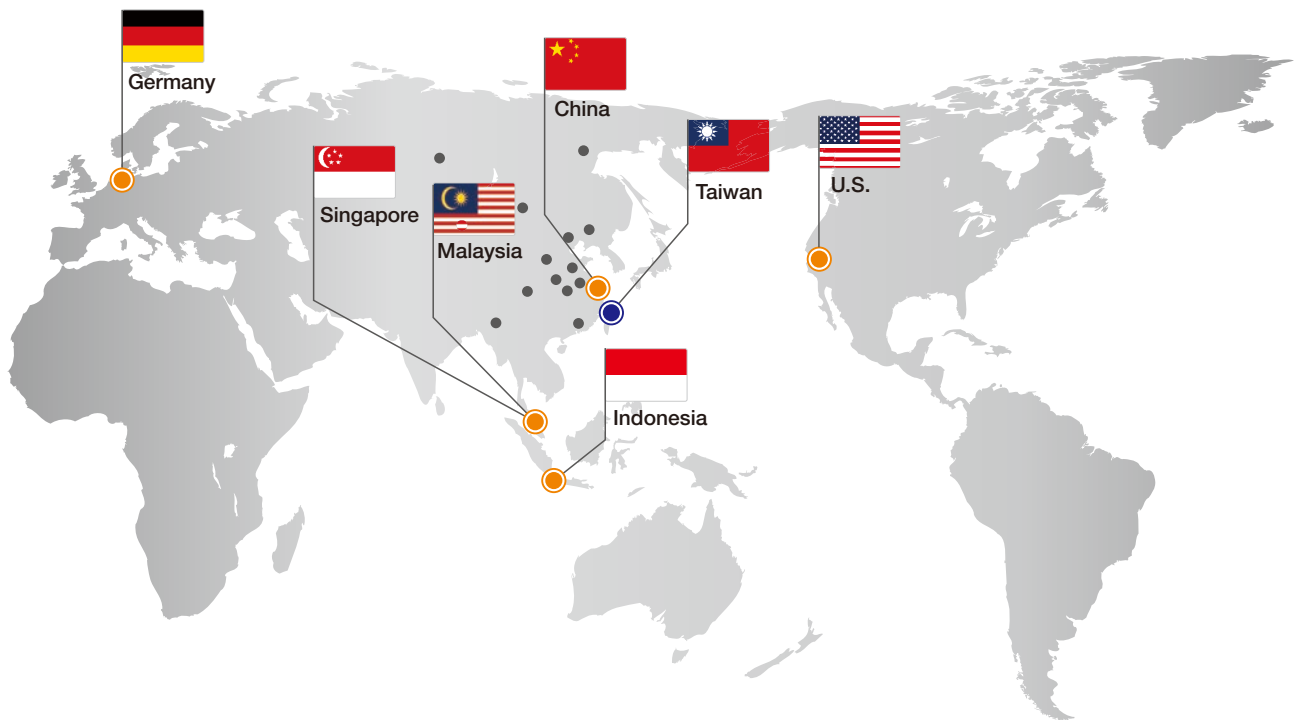
MB: SUS316

MC: SUS316L

18: PP

24: PVDF

Global Network



■ Asia

● Taiwan

FineTek Co., Ltd. - Taipei Head Quarter

No.16, Tzuchiang St., Tucheng Industrial Park
New Taipei City 236, Taiwan
TEL: 886-2-2269-6789
FAX: 886-2-2268-6682
EMAIL: info@fine-tek.com

● China

Fine automation Co., Ltd. - Shanghai Factory

No.451 DuHui Rd, MinHang District, Shanghai,
China 201109
TEL: 86-21-6490-7260
EMAIL: info.sh@fine-tek.com

● Singapore

FineTek Pte Ltd. - Singapore Office

No. 60 Kaki Bukit Place, #07-06 Eunos
Techpark 2 Lobby B, Singapore 415979
TEL: 65-6452-6340
EMAIL: info.sg@fine-tek.com

● Indonesia

FineTek Co., Ltd. - Indonesia Office

Ruko Golden 8 Blok H No.38
Gading Serpong, Tangerang, Indonesia
TEL: 62 (021)-2923-1688
EMAIL: info.id@fine-tek.com

● Malaysia

FineTek Co., Ltd. - Malaysia Office

8-05, Plaza Azalea, Persiaran Bandaraya,
Seksyen 14, 40000 Shah Alam, Selangor, Malaysia
TEL: 603-5524-7168
EMAIL: info.my@fine-tek.com

■ North America

● California, U.S.

Aplus Finetek Sensor Inc. - US Office

355 S. Lemon Ave, Suite D, Walnut,
CA 91789
TEL: 1 909 598 2488
FAX: 1 909 598 3188
EMAIL: info@aplusfine.com

■ Europe

● Germany

FineTek GmbH - Germany Office

Bei den Kämpen 26
21220 Seevetal-Ramelsloh, Germany
TEL: +49-(0)4185-8083-12
FAX: +49-(0)4185-8083-80
EMAIL: info@fine-tek.de

● Mütec Instruments GmbH - Germany Office

Bei den Kämpen 26
21220 Seevetal-Ramelsloh, Germany
TEL: +49-(0)4185-8083-0
FAX: +49-(0)4185-8083-80
EMAIL: muetec@muetec.de



Distributor: