

Série
SC

Détecteur de niveau capacitif

Capacitance Level Switch



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PRODUCT INTRODUCTION

WORKING PRINCIPLE

The FineTek tuning fork level switch is suitable level control switch for liquids, sludges, petroleum as well as solid level detection of almost any granular, sandy, chip like, powdery, low bulk density materials.

The working principle is based on the changes of vibration frequency of the tuning fork when it comes into contact with a liquid or solid material. The Tuning fork contains piezoelectric crystals built into the vibration tube that produces vibrations/resonations at specific frequencies. One element acts as a transmitter of the signal and the other receives the signal and converts it to electrical output.

When the fork comes in contact with material the vibration is weakened/dampened and results in frequency change which triggers the switch. It's ideal for applications where: the dielectric constant is low (where capacitance level switches can't be used) ; when material moisture content changes easily; low viscosity liquids; there is a combination of differing materials in the container/tank.

The tuning fork level switch provides a reliable & maintenance-free means of process control for bulk solids. Easy mounting at almost any angle and calibration procedures will provide reliable functioning and less required monitoring. This device can withstand tough lateral loads and static electricity. Also, it is equipped with a Fail-safe that prevents malfunctioning caused by power shortage.

FEATURE

- 1 Glass window, to review power supply and output directly without having to take off enclosure cover (SC 3 series).
- 1 Dual insulation can reduce damage on PCB board caused by temperature, humidity, and condensation effects.
- 1 Wide voltage supply range 20~250, 50~60Hz Vac/ Vdc.
- 1 SPDT Relay output, SSR MOSFET output.
- 1 No calibration required, easy use, sturdy and durable design.
- 1 High / Low failure safe modes.
- 1 Sensitivity adjustment is available for different density of media. Fine power can be detected.
- 1 Suitable for liquid, power, solid applications.

APPLICATION

1 Most materials in powder can be measurable, includes the grounded coffee, milk powder, chocolate, coal ash, bulk, sugar, salt, wheat, grains, glass debris, plastic pellet, cement

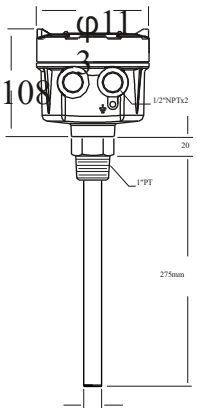
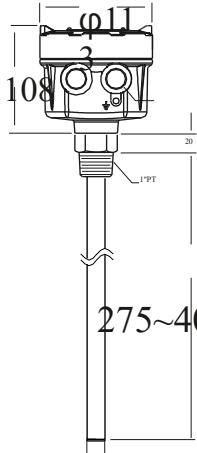
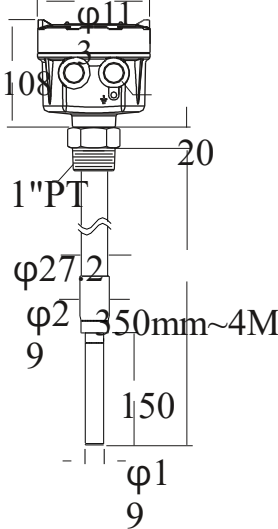
1 Sludge level detection in waste water

The SC series detects the min. and max of level in bins, silos and hoppers, filled with powdered materials. The following list shows its applications.

SOLID LEVEL DETECTION

- * Powdered milk
- * Frozen potato chips
- * Beans
- * Sugar
- * Sweets
- * Coffee beans
- * Coffee powder
- * Tea
- * Salt
- * Flour (in a flour mill)
- * Foundry sand
- * Spices
- * Animal food
- * Pellets
- * Peanuts
- * Tobacco
- * Wood shavings
- * Chalk
- * Stearin chips
- * Powdered cellulose
- * Glass fine power
- * Granular plastics
- * Gravel
- * Powdered clay
- * Polystyrene powder
- * Styrofoam
- * Soda
- * Soot dry
- * Ink
- * Corrosive liquid
- * Cream
- * Drink & Beverage
- * Water & Solutions
- * General Purpose Solvent
- * Petroleum
- * Oil
- * Heavy oil

SPECIFICATIONS

Dimensions (Unit:mm)			
Order No.	SC2100 【 Standard Model 】	SC2110 【 Probe Extension Model 】	SC2120 【 Ultra Extension Model 】
Level sensor housing	Aluminum / IP65		
Probe construction	SUS 304 / 316		
Mounting	1"PT		
Conduit	1/2"NPTx2		
Max. vertical load on rod.	177in.Lbs(20Nm)		
Operating pressure.	-1~150PSI (10BAR)		
Power supply	20~250, 50/60Hz Vac/ Vdc		
Power consumption	15VA (Max.)		
Operating temp. in ambient air	-40ΛC~60ΛX		
Operating temp. in bin	-40ΛC~80ΛX		
Signal output	Relay, SPDT, 5A/250Vac, PNP/NPN(MOSFET)400mA/60 Vac/ Vdc		
Min. material density sensed			
Time delay	0.6~1 Second / Operate; 2~5 Seconds / Reset		
Remote-test	Yes		
Vibrating frequency.	395~405HZ		
Selectable Fail-safe	Hi./ Lo.		
Selectable sensitivity	Hi./ Lo.		

SPECIFICATIONS

Dimensions (Unit:mm)			
Order No.	SC2300 【 Cable Extension Model 】	SC2500 【 Corrosion-Proof 】	SC2510 【 Corrosion-Proof & Extension Typ 】
Level sensor housing	Aluminum / IP65		
Probe construction	SUS 304 / 316	SUS 304/316 Coating TEFLON	SUS 304/316 Coating TEFLON
Mounting	1"PT	Flange 1"(min.)	Flange 1"(min.)
Conduit	1/2"NPTξ2		
Max. vertical load on rod.	177in.Lbs(20Nm)		
Operating pressure.	-1~150PSI (10BAR)	-1~150PSI (10BAR)	-1~150PSI (10BAR)
Power supply	20~250, 50/60Hz Vac/ Vdc		
Power consumption	15VA (Max.)		
Operating temp. in ambient air	-40ΛC~60ΛX		
Operating temp. in bin	-40ΛC~80ΛX		
Signal output	Relay, SPDT, 5A/250Vac, PNP/NPN(MOSFET)400mA/60 Vac/ Vdc		
Min. material density sensed	Solid: ≥0.32g/cm3		
Time delay	0.6~1 Second / Operate; 2~5 Seconds / Reset		
Remote-test	Yes		
Vibrating frequency.	395~405HZ		
Selectable Fail-safe	Hi./ Lo.		
Selectable sensitivity	Hi./ Lo.		

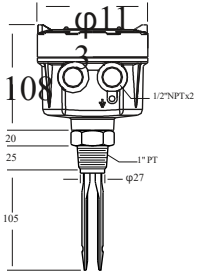
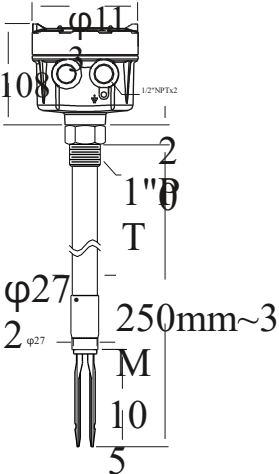
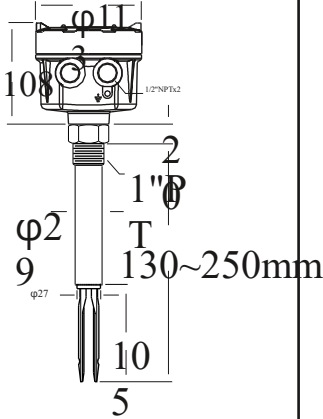
SPECIFICATION

Dimensions (Unit:mm)						
	Standard Type	Extension Type	Standard Type	Extension Type	Standard Type	Extension Type
Model no.	SC2400/2410 [DIN Connector]		SC2400/2410 [M12 Connector]		SC2400/2410 [Cable Wire Type]	
Supply Voltage & output	SC240 99:20~250Vac / Vdc 2 wire Contactless electronic switch. SC24199:12~55 Vdc 3 wire PNP/ NPN Output.					
Fork length	100mm					
Operating temp. in ambient air	-40~80AX					
Storage temp.	-40~85AX					
Operating temp. in bin	SC24999: -40~+100AX SC24999T: -40~+150AX					
Operation humidity	80% RH non-condensed					
Operation pressure	Maximum 40 Bar					
Min. material density sensed	Solid:density: $\geq 0.07\text{g/cm}^3$ Liquid:density: $\geq 0.7\text{g/cm}^3$ Viscosity:1~10000 cSt					
Magnetic testing	Output function test performed by putting magnets near the indicated spot					
Vibrating frequency	350~370Hz					
Status indication	Green light:indicate power supply Red light:indicate operating mode					
Housing material	SUS304					
Fork material	SUS304, SUS316, SUS316L					
IP protection	IP65		IP67		IP67	
Mounting	1" more					
Conduit	Valve plug DIN 43650		M12x1 Connector(180A / 90A)		Cable connector	

MINI TUNING FORK LEVEL SWITCH

Dimensions (Unit:mm)						
Model no.	SC2800/2810 [DIN Connector]		SC2800/2810 [M12 Connector]		SC2800/2810 [Cable Wire Type]	
Supply Voltage & output	SC240 99:20~250Vac / Vdc 2 wire Contactless electronic switch. SC24199:12~55 Vdc 3 wire PNP/ NPN Output.					
Fork length	40mm					
Operating temp. in ambient air	-40~80AX					
Storage temp.	-40~80AX					
Operating temp. in bin	SC28999: -40BC~100BC SC28999T: -40BC~150BX					
Operation humidity	80% RH non-condensed					
Operation pressure	-1~600PSI (40BAR)					
Min. material density sensed	Solid:density: ≥0.07g/cm3 Liquid:density: ≥0.7g/cm3 Viscosity:1~10000 cSt					
Magnetic testing	Output function test performed by putting magnets near the indicated spot					
Vibrating frequency	1 KHzK10%					
Status indication	Green light:indicate power supply Red light:indicate operating mode					
Housing material	SUS304					
Fork material	SUS304, SUS316, SUS316L					
IP protection	IP65		IP67		IP67	
Mounting	3/4"more					
Conduit	Valve plug DIN 43650		M12x1 Connector(180Λ / 90Λ)		Cable connector	

SPECIFICATION

Dimensions (Unit:mm)			
Model No.	SC1400 [Standard Type]	SC1410 [Tuning Fork Ultra Extension Type]	SC1420 [Tuning Fork Extension Type]
Level sensor housing	Aluminum / IP65		
Probe construction	SUS 304 / 316 / 316L		
Mounting	1"PT		
Conduit	1/2"NPTξ2		
Max. vertical load on rod.	177in.Lbs(20Nm)		
Operating pressure.	-1~600PSI (40BAR)		
Power supply	20~250,50/60Hz Vac/Vdc		
Power consumption	10VA		
Operating temp. in ambient air	-40ΛC~60ΛX		
Operating temp. in bin	-40ΛC~130ΛX		
Signal output	Relay, SPDT, 5A/250Vac/ 28Vdc, 1 set or 2 set SSR(MOSFET) 400mA/60 Vac/ Vdc, 1 set or 2 set		
Min. material density sensed	Solid:density: ≥0.07g/cm ³ Liquid:density: ≥0.7g/cm ³		
Time delay	0.6 Second / Operate; 1~3 Seconds / Reset		
Vibrating frequency.	350~370Hz		
Selectable Fail-safe	Hi./ Lo.		
Selectable sensitivity	Hi./ Lo.		

SPECIFICATION

Dimensions (Unit:mm)		
Model No.	SC1540 [Corrosion Proof Type]	SC1600 [Sanitary Type]
Level sensor housing	Aluminum / IP65	
Probe construction	316L Coating TEFLON	316L
Mounting	Flange 1"(min.)	2" Sanitary
Conduit	1/2"NPTξ2	
Max. vertical load on rod.	177in.Lbs(20Nm)	
Operating pressure.	-1~600PSI (40BAR)	
Power supply	20~250Vac/dc	
Power Consumption	10VA	
Operating temp. in ambient air	-40ΛC~60ΛX	
Operating temp. in bin	-40ΛC~130ΛX	
Signal output	Relay, SPDT, 5A/250Vac/ 28Vdc, 1 set or 2 set SSR(MOSFET) 400mA/60 Vac/ Vdc, 1 set or 2 set	
Min. material density sensed	Solid:density: ≥0.07g/cm ³ Liquid:density: ≥0.7g/cm ³	
Time delay	0.6 Second / Operate; 1~3 Seconds / Reset	
Vibrating frequency.	350~370Hz	
Selectable Fail-safe	Hi./ Lo.	
Selectable sensitivity	Hi./ Lo.	

Série SC Détecteur capacitif

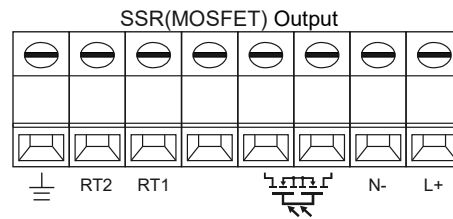
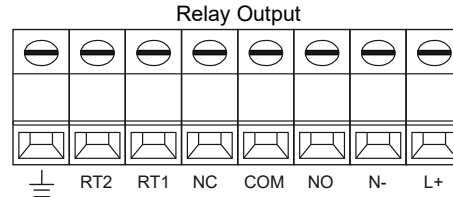
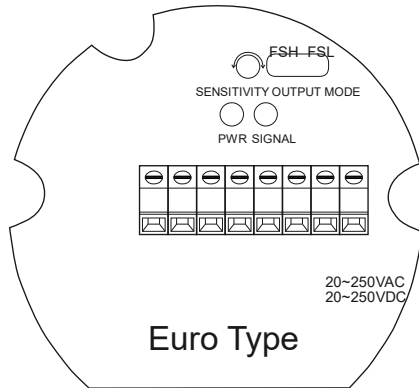
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SPECIFICATION

Dimensions (Unit:mm)		
Model No.	SC1740 [Standard Type]	SC1741 [Tuning Fork Ultra Extension Type]
Level sensor housing	Aluminium	
Probe construction	SUS 304 / 316 / 316L	
Mounting	1"PT	1"PT
Conduit	1/2"NPTξ2	
Max. vertical load on rod.	177in.Lbs(20Nm)	
Operating pressure.	-1~600PSI (40BAR)	
Power supply	20~250,50/60Hz Vac/Vdc	
Power consumption	10VA	
Operating temp. in ambient air	-20ΛC~70ΛX	
Operating temp. in bin	-40ΛC~130ΛX	
Signal output	Relay, SPDT, 3A/250Vac/ 28Vdc, 1 set or 2 set SSR(MOSFET) 400mA/60 Vac/ Vdc, 1 set or 2 set	
Min. material density sensed	Solid:density: ≥0.07g/cm ³ Liquid:density: ≥0.7g/cm ³	
Time delay	0.6 Second / Operate; 1~3 Seconds / Reset	
Vibrating frequency.	350~370Hz	
Selectable Fail-safe	Hi./ Lo.	
Selectable sensitivity	Hi./ Lo.	

OPERATING INSTRUCTIONS (EURO MODEL)

SC2100X, SC2110X, SC2200X, SC2210X, SC2300X, SC2500X, SC1700X, SC1701X, SC1710X



Terminal Function

- L+, N-: Power Supply
- NC, COM, NO: Relay Output
- RT1, RT2: Remote-Test
- : Ground Connection
- : SSR(MOSFET) Output
-

Panel Function

- PWR: Power Supply (Green Light)
- SIGNAL: Output Indication (Red Light)
- FSH: Power On. The signal lamp is on and the relay is conductive. While the vibrating probe senses the material, the signal lamp is off and relay is not conductive.
- FSL: Power On. The signal lamp is off and the relay is not conductive. While the probe senses the material, the signal lamp is on and relay is conductive.
- SENSITIVITY L: Low Sensitivity
- SENSITIVITY H: High Sensitivity

Sensitivity Adjustment

Fail-Safe High / Low Protection

FSH (Fail-Safe High) Protection:

Switch to FSH mode.

Normal Status: The signal lamp is on. It means that the vibrating probe does not sense the material and the relay is conductive.

Failure: When the power shuts down, the signal lamp is off. It means that the vibrating probe is voided and the relay is not conductive.

FSL (Fail-Safe Low) Protection:

Switch to FSL mode.

Normal Status: The signal lamp is on. The vibrating probe senses the material and the relay is conductive.

Failure: When the power shuts down, the signal lamp is off. The vibrating probe is voided and the relay is not conductive.

Level	FSL		FSH	
Contact Form	NO COM NC	NO COM NC	NO COM NC	NO COM NC
Indication				
Status	Fail	Normal	Normal	Fail

INSTALLATION

Vertical Installation (Figure 1):

1. Install the vibrating probe away from the inlet to avoid material impact or false readings.
2. Note the material flow pattern and place the vibrating probe in the appropriate position to avoid overflow.

Horizontal Installation (Figure 2)

1. Install the vibrating probe away from the inlet to avoid material impact. If this is unavoidable make use of a shield or barrier for protection.
2. Installing the vibrating probe at a 20 degree incline will optimize the results and increase sensitivity.
3. Keep the conduit facing downward to avoid moisture getting inside the housing.

Notice:

1. Users are advised to tighten the connection by using a spanner.
2. Do not bend the probe, put force on it or attempt to modify the probe length.
3. The maximum vertical pressure of the vibrating probe is 177in.Lbs (20Nm)

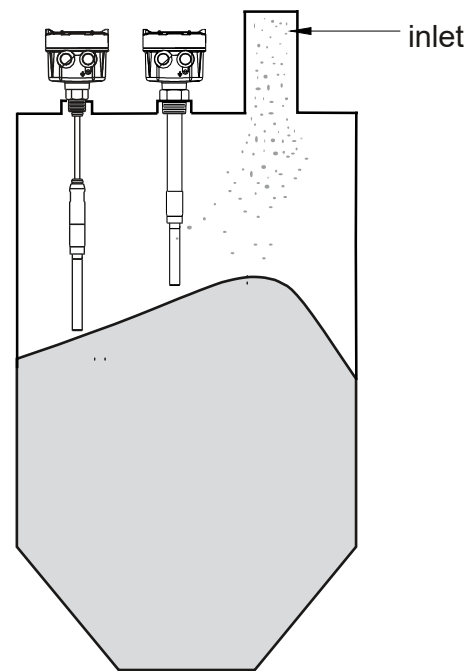


Figure 1

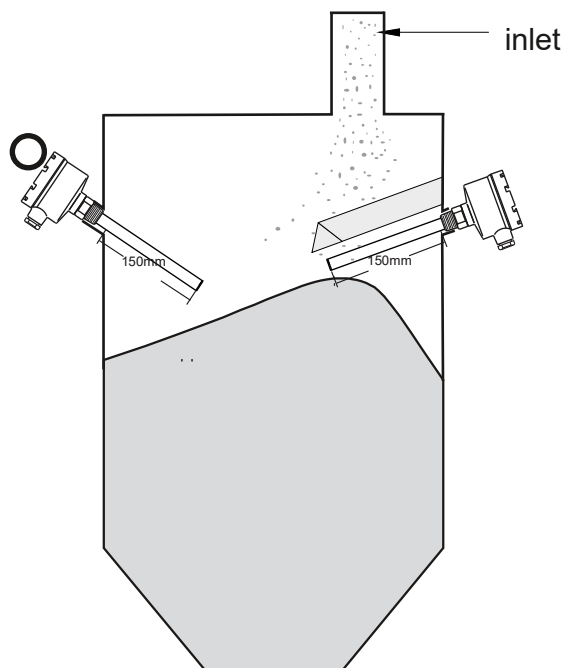


Figure 2

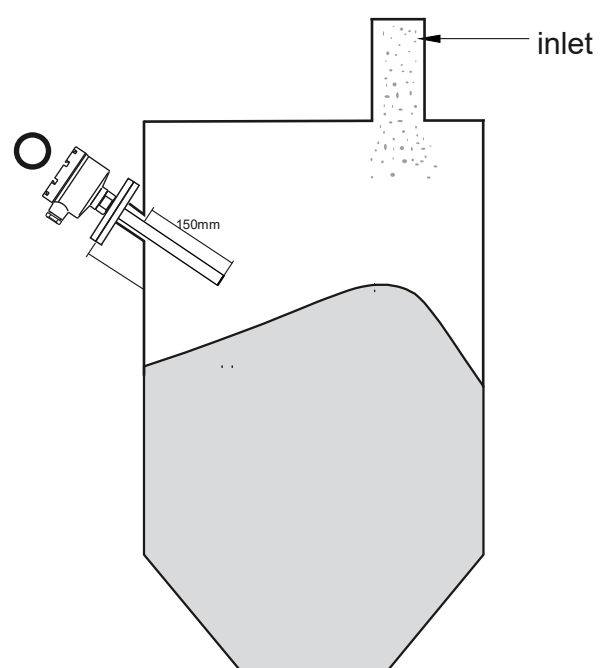


Figure 3

HOW TO ORDER

SC () ()

ORDER NO. _____

POWER & OUTPUT MODULE

20~250Vac/ Vdc, 50/60Hz

A: Relay O/P (Barrier terminal block-limited to the 17's and 21's series)

B: Transistor PNP/NPN (Barrier terminal block-limited to the 17's and 21's series)

R: Relay O/P (Green terminal)-EuroType

N: Transistor PNP/NPN-EuroType

MATERIAL

0: SUS304

6: SUS316

P: PTFE

CONNECTION

Dimension	Specification	
D---1"(25A)	M---5kg/cm2	Y---PN 25
3---1-1/4"(32A)	N---10kg/cm2	Z---PN 40
E---1-1/2"(40A)	O---150 Lbs	S---others
F---2"(50A)	P---300 Lbs	9---Sanitary
G---2-1/2"(65A)	Q---PT	
H---3"(80A)	R---PF(G)	
I---4"(100A)	T---BSP	
J---5"(125A)	U---NPT	
K---6"(150A)	W---PN 10	
S---others	X---PN 16	

LENGTH (L) (UNIT: cm)

0500: below 500mm

1000: 501~1000mm

1500: 1001~1500mm

⋮

※ 500mm per Unit

※ The letter A depicts lengths longer than 10m: A150 =15m, A200 = 20m

CHECK – before placing order

1. Check the voltage.
2. Check the mounting positions.
3. Check the material specific gravity (S.G.) value.
4. Check whether any bridge block or vibrating motors are attached to the silo wall.

Length tolerance/margin of error : 65mm

Characteristics, specifications and dimensions are subject to change

Please contact your nearest distributor for further information.

ORDER INFORMATION

SC () ()

ORDER NO. _____

- 1400 : Tuning Fork Standard Type
- 1410 : Tuning Fork Ultra Extension Type
- 1420 : Tuning Fork Extension Type
- 1540 : Tuning Fork Corrosion Proof Type
- 1600 : Tuning Fork Sanitary Type
- 1740 : Explosion Proof Tuning Fork Standard Type
- 1741 : Explosion Proof Tuning Fork Ultra Extension Type

POWER & OUTPUT MODULE

20~250Vac/ Vdc, 50/60Hz

- R: Relay O/P-EuroType
- N: SSR(MOSFET) EuroType
- Q: Relay O/P x 2 -EuroType
- M: SSR(MOSFET) x 2 -EuroType

MATERIAL (Wetted Part)

0: SUS304 6: SUS316 L: SUS316L

CONNECTION

Dimension	Specification
D---1"(25A)	M---5kg/cm2
3---1-1/4"(32A)	N---10kg/cm2
E---1-1/2"(40A)	O---150 Lbs
F---2"(50A)	P---300 Lbs
G---2-1/2"(65A)	Q---PT
H---3"(80A)	R---PF(G)
I---4"(100A)	T---BSP
J---5"(125A)	U---NPT
K---6"(150A)	W---PN 10
S---others	X---PN 16

LENGTH (L) (UNIT: mm)

- 0500: below 500mm
- 1000: 501~1000mm
- 1500: 1001~1500mm

※ 500mm per Unit

⋮

※

BEFORE YOU ORDER

1. Please affirm the voltage.
 2. Please affirm the mounting positions.
 3. Please affirm the material specific gravity (S.G.) value.
 4. Please affirm whether any bridge block or vibrating motor are attached onto the silo wall.
- Please contact your nearest distributing office for further information.

Tolerance of the total product length is ±5mm

Characteristics, specifications and dimensions are subject to change without notice.

ORDER INFORMATION

(T) - ()

ORDER NO. _____

24: 100mm 28: 40mm

POWER & OUTPUT MODULE

0: 20~250Vac / Vdc 2 wire Contactless electronic switch.
 1: 12~55 Vdc 3 wire PNP/ NPN Output.

MATERIAL (Wetted Part)

0: SUS304 6: SUS316 L: SUS316L

MODEL

0: Standard 1: Extended

(High temp. 150BC)

ELECTRICAL CONNECTION

A: M12x1(180B) B: M12x1(90B)
 C: CABLE D: Valve plug DIN43650
 (M12X1/ CABLE Wire length are 2M, PVC 24AWG)

CONNECTION

Dimension	Specification
	M---5kg/cm2 N---10kg/cm2 O---150 Lbs P ---300 Lbs Q---PT R---PF(G) T ---BSP U---NPT W---PN10

PROBE LENGTH (UNIT: mm) _____

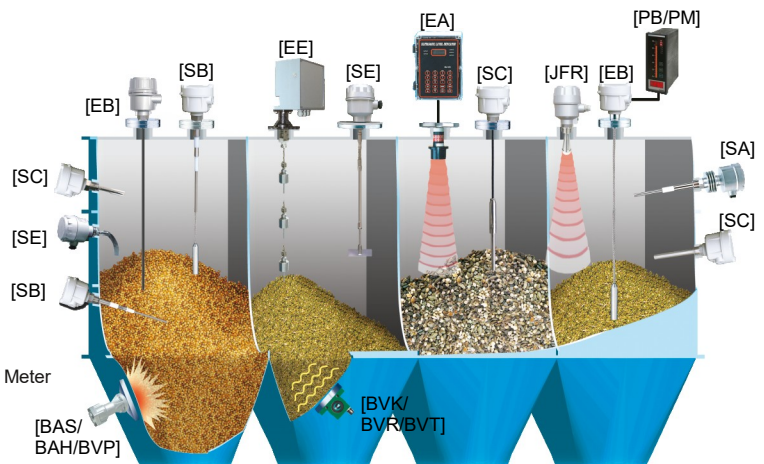
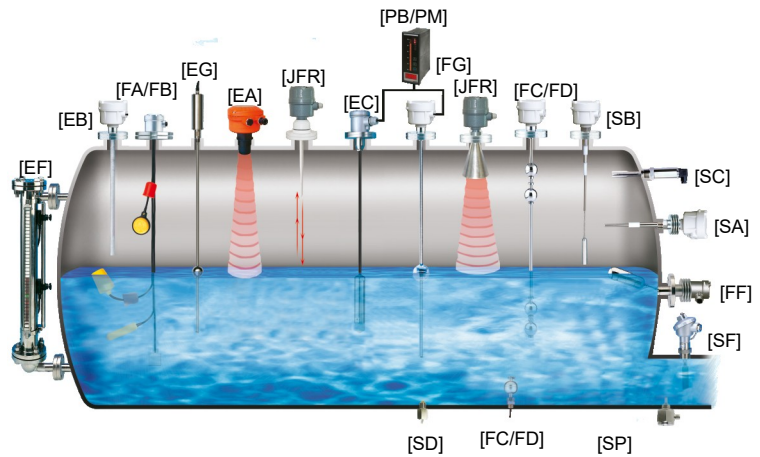
Max Length:250mm
 EX: 0250 :250mm

BEFORE YOU ORDER

1. Please affirm the voltage.
 2. Please affirm the mounting positions.
 3. Please affirm the material specific gravity (S.G.) value.
 4. Please affirm whether any bridge block or vibrating motor are attached onto the silo wall.
- Please contact your nearest distributing office for further information.
- Tolerance of the total product length is ± 5 mm
- Characteristics, specifications and dimensions are subject to change without notice.

EXAMPLES-OF-TANK-MOUNTING

- [FC/FD] Mini Float/Magnetic Float Level Switch
- [FG] Magnetic Float Level Transmitter
- [FF] Side Mounting Float Switch
- [FA/FB] Cable Float Level Switch
- [SP] Thermal Dispersion Flow Switch
- [SF] Paddle Flow Switch
- [SD] Optical Level Switch
- [SE] Rotary Paddle Level Switch
- [SA] Capacitance Level Switch
- [EC] Pressure Level Transmitter
- [SC] Vibrating Probe Level Switch
- [SC] Tuning Fork Level Switch
- [EB] RF-Capacitance Level Transmitter
- [SB] RF-Capacitance / Admittance Level Switch
- [EG] Magnetostrictive Level Transmitter
- [EF] By-Pass Level Transmitter
- [MEF] Mini By-Pass Level Transmitter
- [EA] Ultrasonic Level Transmitter
- [JFR] FMCW Radar Level Transmitter
- [EE] Electromechanical Level Measuring System
- [ED] Speed Monitor
- [SRT/SRS] Conveyor Belt Misalignment Switch & Safety Cable Pull Switch
- [PB/PM] Microprocessor Based Bargraphic Display Scaling Meter
- [BRD/AE] Valve and Controller for Dust Collector System
- [BAS/BAH/BVP] Air Hammer
- [BVK/BVR/BVT] Pneumatic Vibrator



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