

Liquid level Switch / Liquid level Gauge

ISEN-YC300

Tuning Fork Level Switch

The tuning fork level switch is a new type of level switch. The tuning fork is excited by a crystal to produce vibrations. When the tuning fork is submerged in material, the vibration frequency changes. This frequency change is detected by electronic circuits and outputs a switch signal.

The sensor's tuning fork vibrates at its natural frequency. When the tuning fork comes into contact with liquid or other material, its natural vibration frequency decreases. Energy is dissipated through friction between the material particles, causing the amplitude to decay sharply and cease vibration. The change in frequency activates the level switch, generating a switch signal.

Tuning fork level switch can be used in liquid level switches and places where float level switch cannot be used due to structure, turbulence, agitation, bubbles, vibration, etc. Since tuning fork level switch has no moving parts, it does not require maintenance and adjustment, and is an upgraded product of float level switch.



Product Features

- ① High adaptability: The measurement is unaffected by the electrical parameters and density of the measured liquid level. Adverse conditions such as structural interference, agitation, turbulence, bubbles, vibration, moderate viscosity, high temperature, and high pressure also have no impact on the detection.
- ② Maintenance-free: Since the detection process of the tuning fork limit switch is performed by electronic circuits with no moving parts, no maintenance is required once it is installed and put into operation;
- ③ No calibration required: Since the detection of the fork-type limit switch is not affected by the electrical parameters or density of the measured medium, no on-site calibration is required regardless of the type of liquid level/material level being measured.

Working Principle

Based on whether the material exerts resistance on the vibrating tuning fork, the level of the material is detected to determine if it has reached or exceeded a certain height, and an on/off signal is emitted. This principle does not require significant mechanical movement, has low drive power, does not require calibration, and can be started quickly and at low cost. The structure is simple, with no mechanical moving parts, no maintenance, no wear, a long service life, and is sensitive and reliable.

Application Areas



Application Areas (Reference)



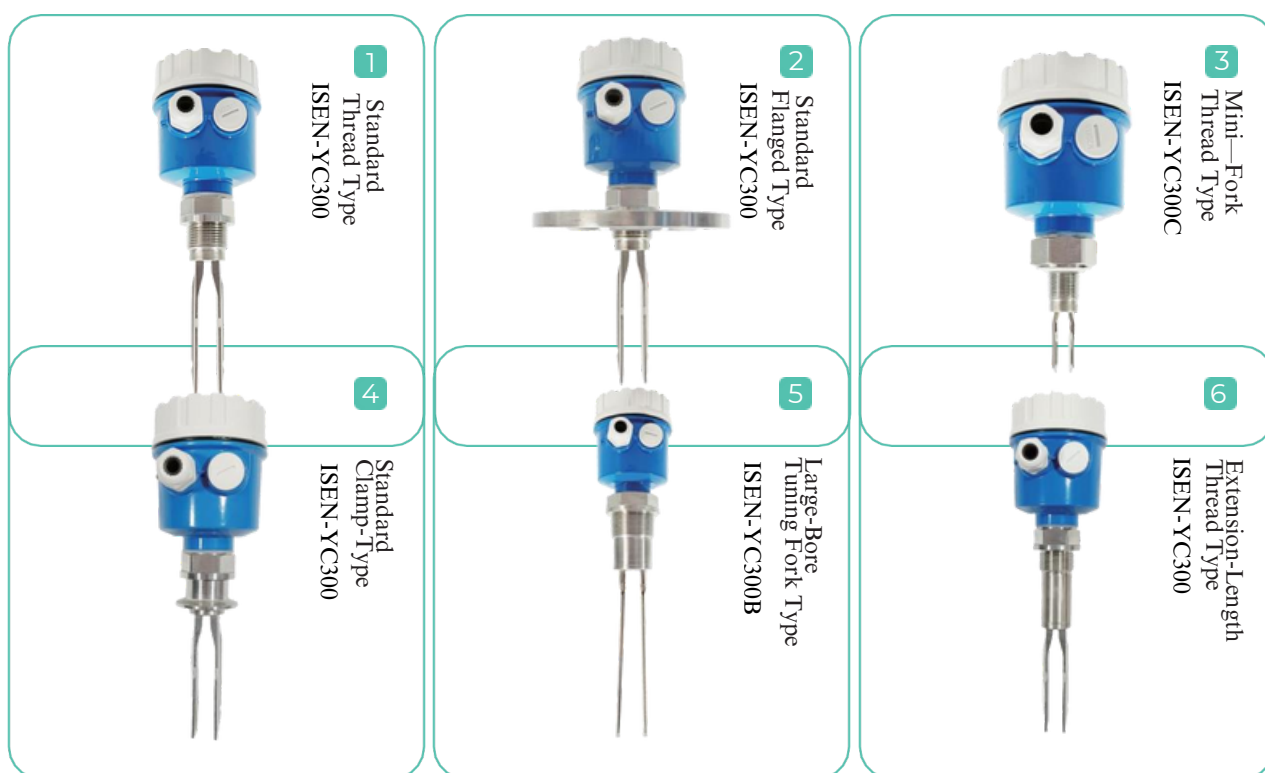
Food and Beverage



Paper Industry

Tuning fork level switches are widely used in industries such as petrochemicals, light industry, food processing, and water treatment for upper/lower limit level alarms and control. Specific application scenarios include: Petrochemical industry: Used to measure changes in the height of media inside storage tanks for petroleum, natural gas, etc., and can also be used to detect flow in pipelines; Food industry: Used for liquid level monitoring in containers such as tanks, vats, and drums in the food industry, such as beverage manufacturing, juice production, and milk processing; Paper industry: Primarily used for measuring liquid levels and pulp levels, etc. Wastewater treatment industry: Fork-type level switches are used to monitor the liquid level in wastewater tanks or sedimentation tanks. When the liquid level reaches a certain height, the switch sends a signal to trigger drainage and other control systems.

Product Series



Product Series(Continued)



7
High-Temp
Thread Type
ISEN-YC300



8
High-Temp
Flange Type
ISEN-YC300



9
PTFE Lined Anti-
Corrosion Type
ISEN-YC300



10
Split-Type
Tuning Fork
ISEN-YC300



11
All Stainless
Steel Type
ISEN-YC300



12
Standard Pilot
Tube Type
ISEN-YC301



13
Aviation High-
Temp Type
ISEN-YC301



14
Standard
Hirschmann Type
ISEN-YC301B



15
High-Temp
Hirschmann Type
ISEN-YC301B

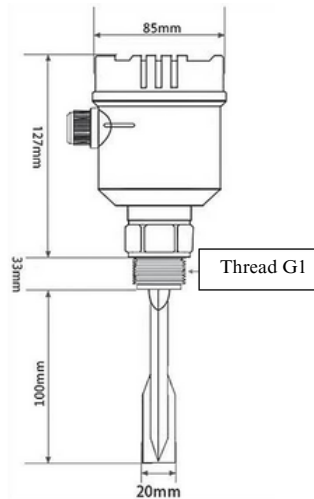


16
Hirschmann 45m
Mini Fork Type
ISEN-YC301BS

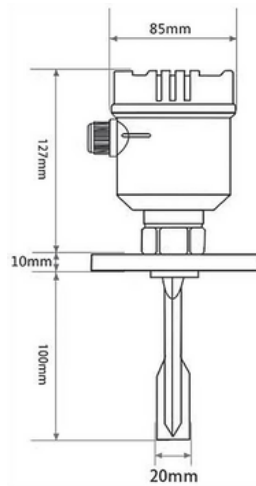


17
Aviation 45m
Small Fork
ISEN-YC301S

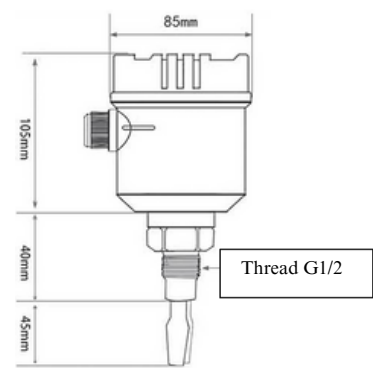
Dimensions (reference)



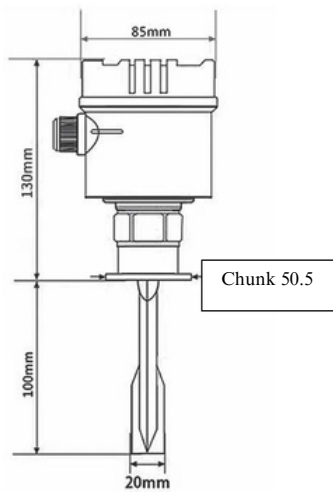
1 ISEN-YC300 Standard Thread Type



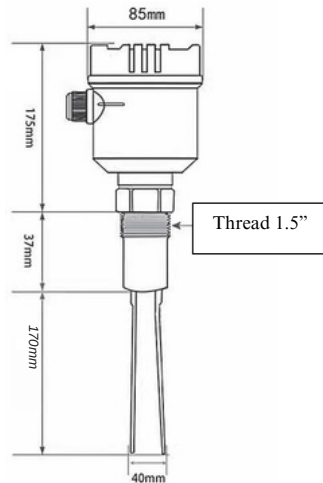
2 ISEN-YC300 Standard Flange Type



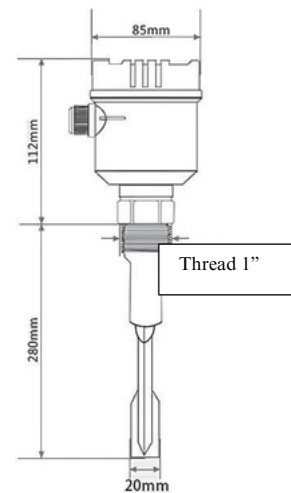
3 ISEN-YC300C Mini-Fork Thread Type



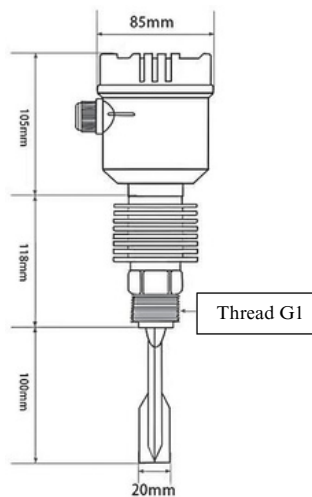
4 ISEN-YC300 Standard Clamp-Type



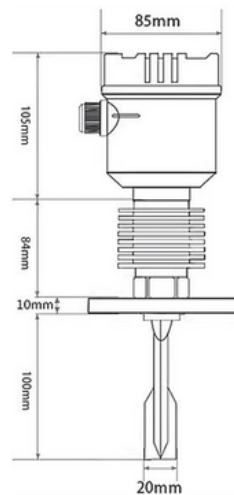
5 ISEN-YC300B Large-Bore Tuning Fork Type



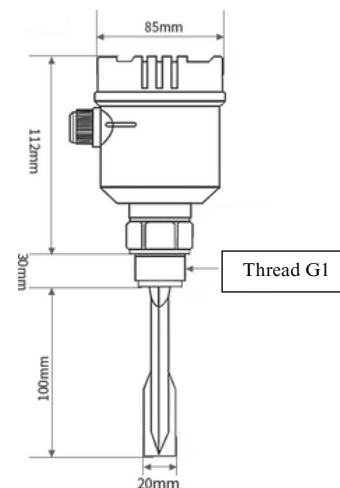
6 ISEN-YC300 Extended-Length Thread Type



7 ISEN-YC300 High-Temp Thread Type

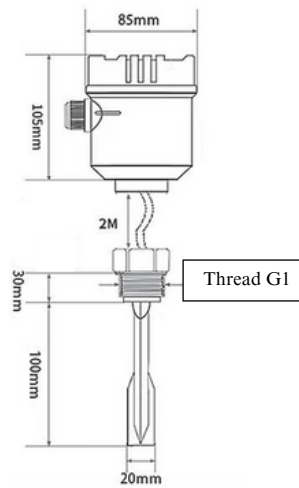


8 ISEN-YC300 High-Temp Flange Type

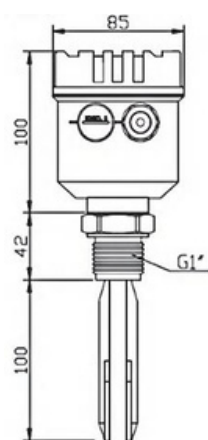


9 ISEN-YC300 PTFE Lined Anti-Corrosion Type

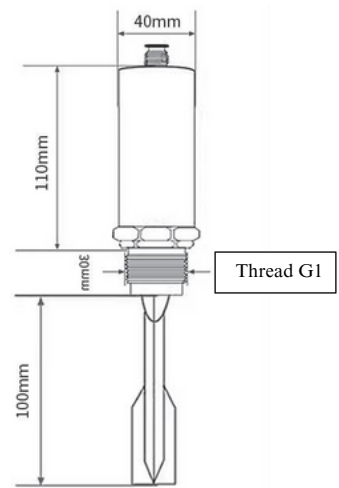
Overall Dimension Drawing (Reference) (Continued)



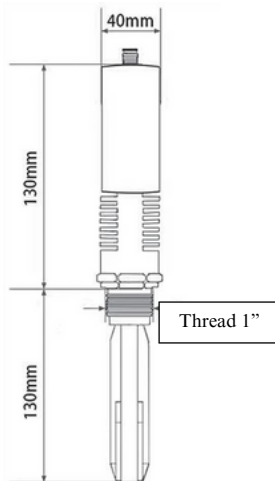
10 ISEN-YC300 Split-Type
Pipe Fork



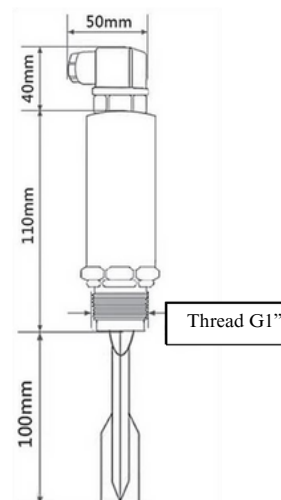
11 ISEN-YC300 All Stainless-
Steel Type



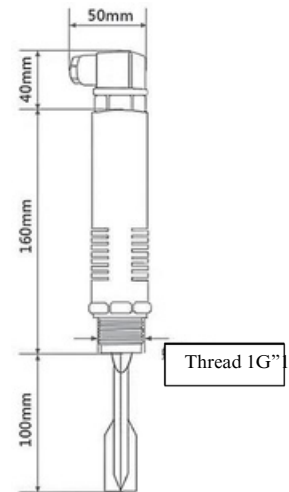
12 ISEN-YC301 All Standard Pitot
Tube Type



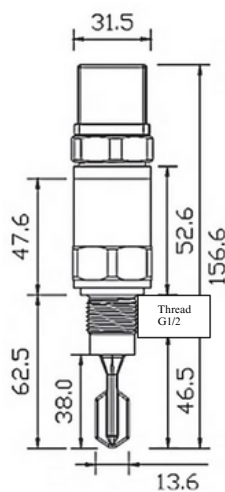
13 ISEN-YC301 High-Temp Pitot
Tube Type



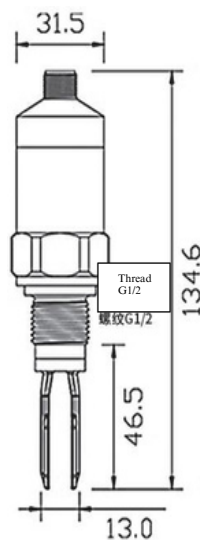
14 ISEN-YC301B Standard
Hirschmann Type



15 ISEN-YC301B High-Temp
Hirschmann Type



16 ISEN-YC301BS Hirschmann 45mm
Mini Fork Type



17 ISEN-YC301S Aviation 45mm Small
Fork

Technical Specification

Supply Voltage	20-60VDC; 20-250VDC 50/60Hz
Switching Time	Approximately 2 seconds when covered with medium, and approximately 3 seconds when uncovered.
Ambient Temperature	-40 - +70°C
Storage Temperature	-40 - +85°C
Medium Temperature	-40 - +150°C
Operating Pressure	-1 - +40bar
Detectable Media	Powder and granules = 10 mm, density > 0.1 g/cm ³ ; liquid, viscosity = 10,000 mm ² /s, density > 0.7 g/cm ³
Connection Type	G1-1/2"G1"
Electronic Connection	M12×P1.0 Connector
Housing Materials	ABS Aluminum Alloy
Fork Materials	Stainless SteelS304/Stainless SteelS316
Output Type	Relay output, negative AC 250V/4A, DC 60V/4A Collector open circuit (NPN) output, negative 400mA Collector open circuit (PNP) output, negative 400mA
Power Consumption	3W Max when DC power supply 15W Max when AC power supply

Installation Method and Installation Schematic Diagram (Reference)

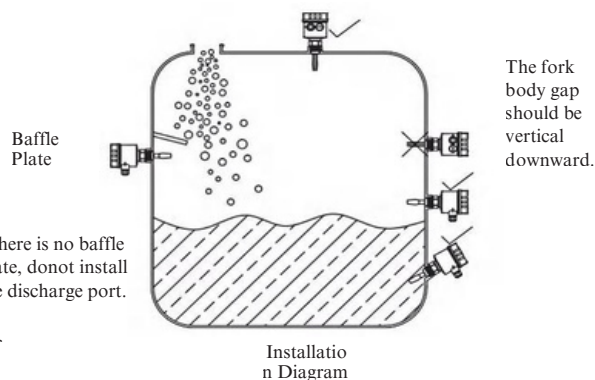
1、Correct Installation Method

A. Top installation: The probe is installed vertically downward and can be mounted at any position on the top (away from the feed opening);

B. Horizontal installation: The probe is tilted downward at an angle of 15–20 degrees to reduce material impact and minimize material buildup.

C. Horizontal installation, with the probe tilted downward at an angle of 15-20 degrees. A guard plate (approximately 10" (250mm) in length and 8" (200mm) in width) is installed above the level switch to prevent improper material buildup around the switch and reduce material impact on the switch.

D. Installed inside the discharge hopper, the maximum distance between the bottom of the level switch's threaded end and the hopper wall should not exceed 2.4 inches (60 mm) to prevent false alarms caused by improper material buildup.



2, Incorrect Installation Method:

A. Horizontal installation below the filling wall or feed inlet.

B. Incorrect installation angle (the surface of the probe is prone to failure due to high load pressure from feeding and unloading); C. The distance between the bottom of the level switch thread and the barrel wall exceeds 2.4" (60 mm), and the level switch will not function properly

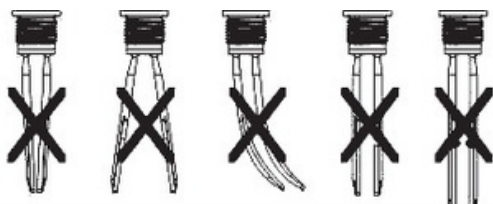
Installation Method and Installation Schematic Diagram (Reference)

3. Notes:

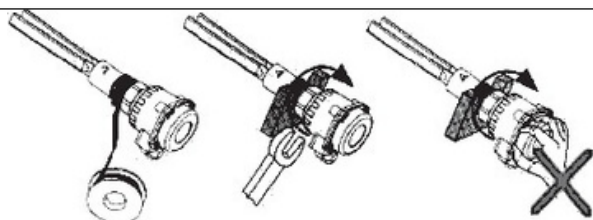
When installing the tuning fork, avoid locations with significant vibration to prevent false readings. If this cannot be avoided, perform a self-check at the installation location or restore the factory settings. Permitted: Hold the insulation tube, extension tube, flange, or thread.

Prohibited: Damaging the vibrating rod, bending the vibrating rod, stretching the vibrating rod, shortening the vibrating rod, lengthening the vibrating rod, or allowing the vibrating rod to come into contact with hard objects.

Seal with raw material tape and tighten the hex bolts with a wrench. Do not tighten by rotating the housing.



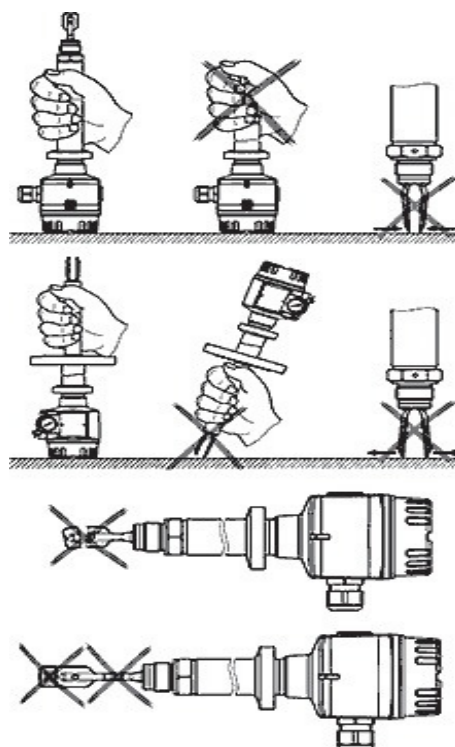
Prohibited: damaging the vibrator; bending the vibrator; shortening the vibrator; lengthening the vibrator.



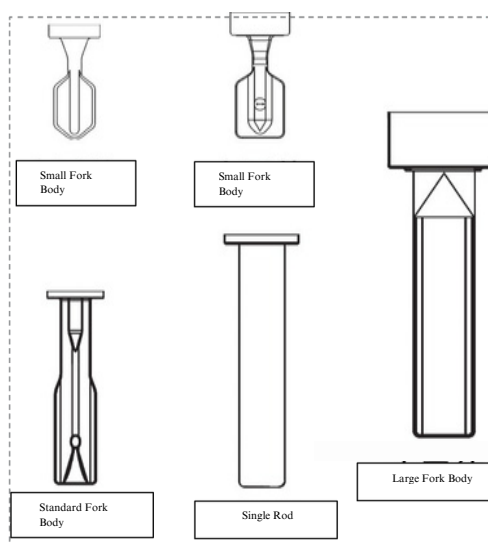
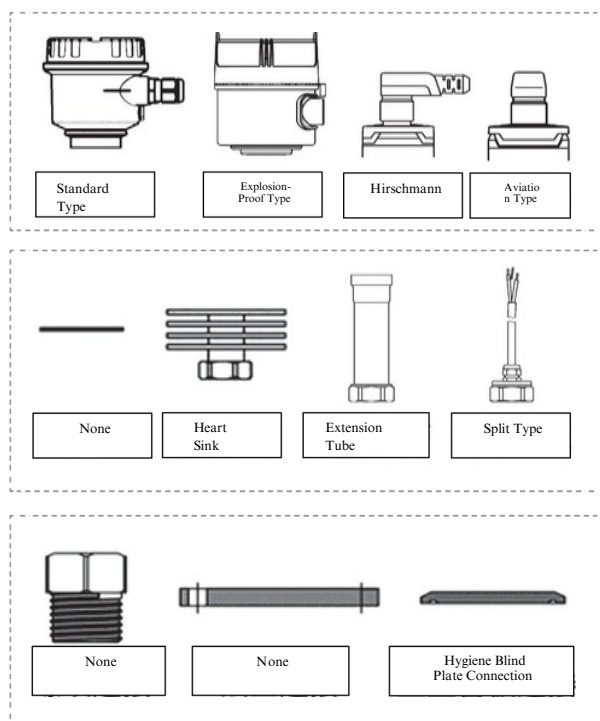
Seal with raw material tape

Tighten with a wrench

Tighten evenly by hand

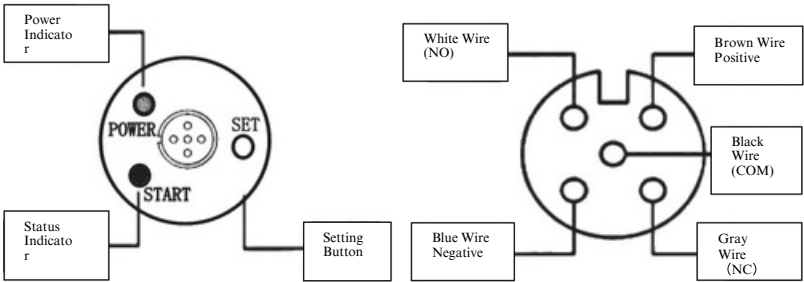


Structure Types



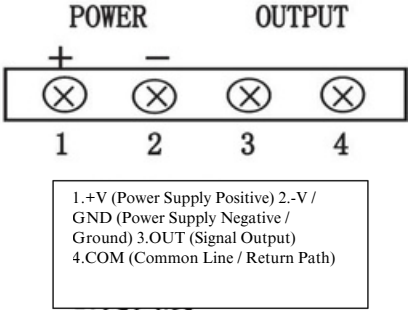
Output Model

● Aviation Connector



● Hirschman Connector

Electrical Wiring Diagram

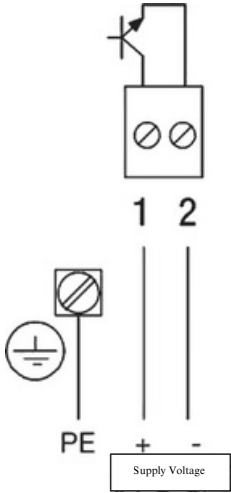
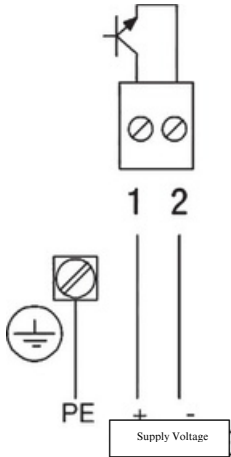


● NAMUR

Supply Voltage: approx. 7-9 VDC Intrinsically Safe Type
(spec. IEC 60947-5-6)
< 1 mA or > 2.2 mA
(spec. IEC 60947-5-6)

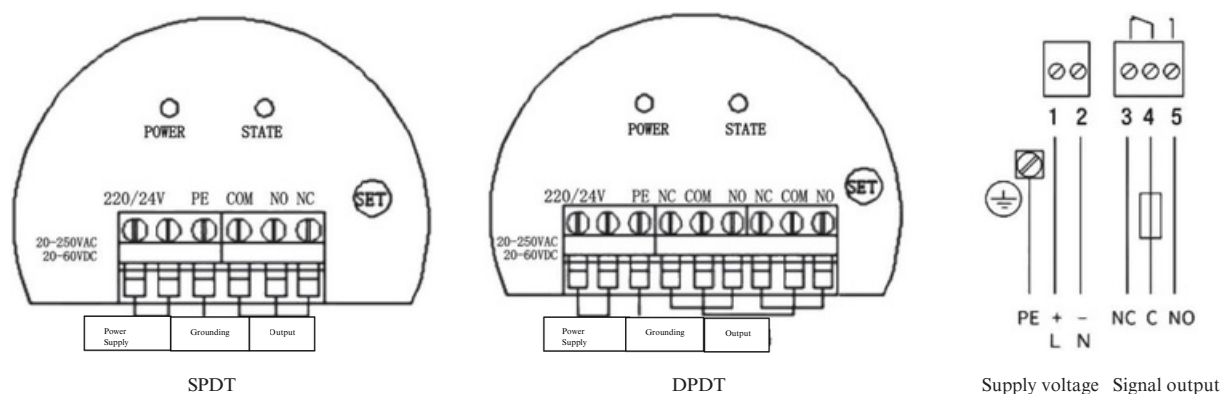
● 8/16mA

Supply Voltage: 12.5..36VDC+0%
Signal Output: 8mA or 16mA



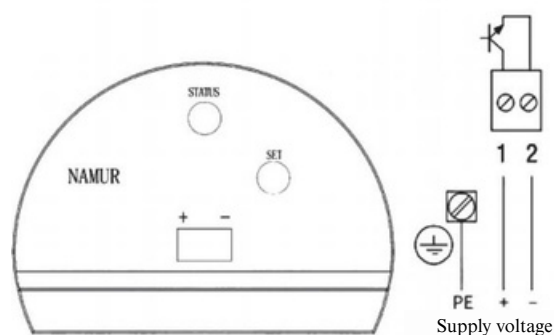
Wiring and Function Descriptions

● A Electronic Module



Supply voltage: 20-250 VAC, 19-72 V DC Signal output: Relay DPDT POWER: Power indicator light is green; turns red when outputting. Dip switches: The left dip switch is used to switch the relay's normal operating mode, and the right dip switch is used to adjust sensitivity. SET: Self-test function to overcome vibration absorption after installation on the tank wall, prevent noise interference, and avoid false alarms. Perform a functional test when the instrument is powered on. When the fork is not in contact with the material, press and hold the SET button. Release the button when the red and green indicator lights alternate flashing. The self-test is successful when the instrument lights stop flashing. The sensitivity is factory-set to the highest level, suitable for environments where the material being measured is relatively stable. If the surface of the material being measured fluctuates significantly, the sensitivity should be reduced to prevent false alarms. When installing the fork, avoid locations with noticeable vibrations to prevent false actions. If this cannot be avoided, perform a self-test again at the installation location.

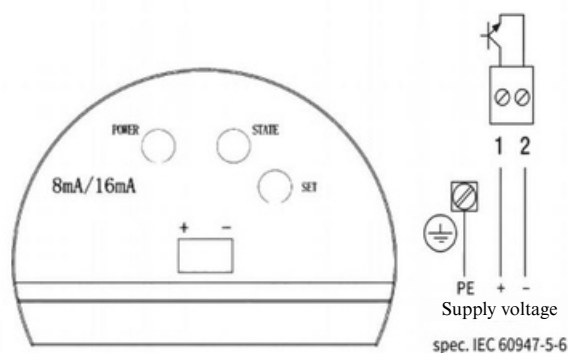
● C Electronic Module



Supply voltage: 12.5-30V DC Signal output: 8mA or 16mA

POWER: Power indicator green light, STATE: Changes to red light when outputting. SET: Self-check function, overcomes vibration absorption phenomena that occur after installation on the barrel wall, prevents noise interference, and avoids false actions.

● B Electronic Module



Supply voltage: spec. IEC 60947-5-6 <1 mA or >2.2 mA

POWER: Power indicator green light,

STATUS: Changes to red light when outputting.

SET: Self-test function to overcome vibration absorption

phenomena after

installation on the tank wall, prevent noise interference, and avoid false

actions. Perform functional testing when the instrument is

powered on.

Wiring and Functional Description

Perform a functional test when the instrument is powered on. When the tuning fork is not in contact with the material, press and hold the SET key. Release the key when the red and green indicator lights alternate flashing. The self-test is successful once the instrument lights stop flashing.

The sensitivity is factory-set to the highest level, suitable for environments where the material being tested is relatively stable. If the surface of the material being tested exhibits significant fluctuations, the sensitivity should be reduced to prevent false alarms. When installing the tuning fork, avoid locations with noticeable vibrations to prevent unintended activation. If such locations cannot be avoided, perform a self-test again at the installation site.

When the tuning fork is not in contact with the material, press and hold the SET key. Release the key when the red and green indicator lights alternate flashing. The self-test is successful when the instrument lights stop flashing. Sensitivity is factory-set to the highest level, suitable for environments where the material being measured is relatively stable. If the surface of the material being measured fluctuates significantly, the sensitivity should be reduced to prevent false alarms. When installing the fork, avoid locations with obvious vibrations to prevent false actions. If unavoidable, perform a self-test at the installation location.

● A Panel

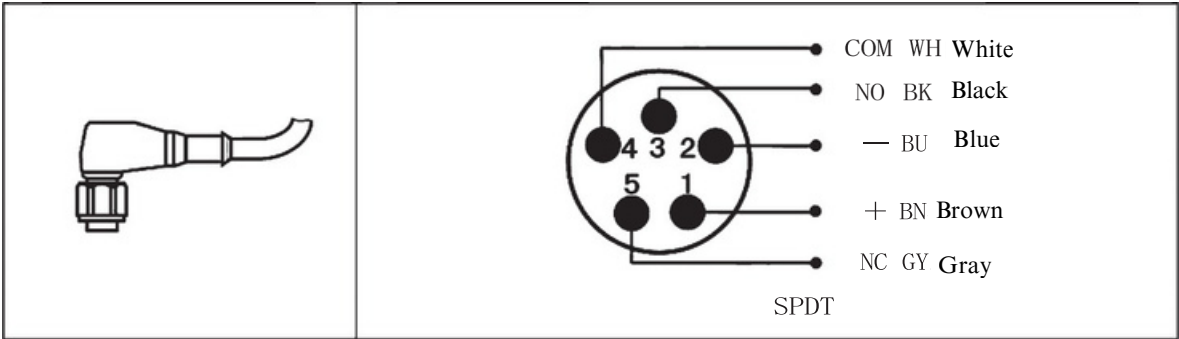
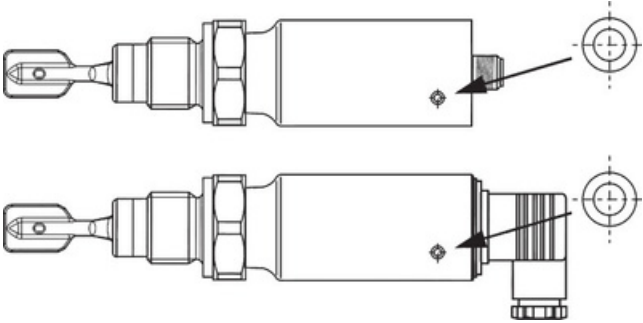
Power Supply : 10-55VDC

Signal Output : relay DPDT/NPN/PNP

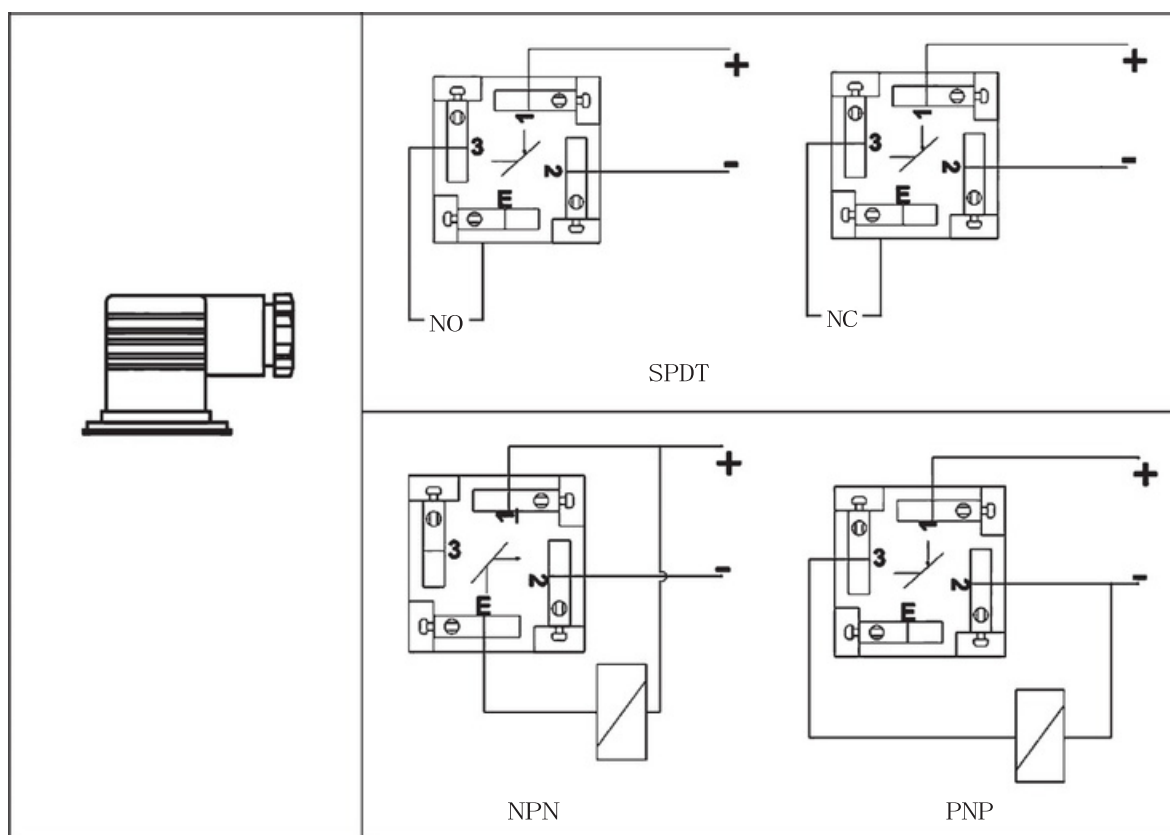
Green: Power On

Red: Output Active

Self-Check Function: Compensates for post-installation vibration absorption and prevents noise interference, avoiding false triggering. Avoid false alarms. The sensitivity is factory-set to the highest level, suitable for environments where the material being tested is relatively stable. If the surface of the material being tested fluctuates significantly, the sensitivity should be reduced to prevent false alarms. When installing the tuning fork, avoid locations with noticeable vibrations to prevent false alarms. If this cannot be avoided, perform a self-check at the installation location. Perform a functional test during instrument operation. Place the test magnet on the marked position on the housing and maintain it for at least 3 seconds. When the test magnet is placed on the marked position on the housing for more than 3 seconds, remove the magnet when the red and green indicator lights alternate flashing. The self-check is successful when the instrument lights stop flashing. The test magnet is a standard accessory.



Wiring and function introduction (continued)



Fault

Fault Phenomenon	Root Cause Analysis	Corrective Actions
No Response	No Power Supply	Check power connection
	Signal Line Failure	Inspect Signal Wiring
	Electronic module failure L1 and N short-circuited	Replace electronic Modules Always connect an external load
	Liquid Density too Low	Adjust density setting to >0.5 on the module
	Fork Body Fouling	Clean The Fork. Body
	Excessive internal impedance of connected relay	Use a compatible relay
	Insufficient pickup current of relay	Add a parallel resistor to the relay circuit
	Welded contacts	Install an interposing relay in the contact circuit
Incorrect Switching	Misconfigured low/high alarm circuit	Set the correct mode on the electronic module
Intermittent Faults	Heavy foam/turbulent liquid surface	Install a bypass pipe
	Extreme RF interference	Use shielded cables

Fault Detection (Continued)

Occasion Switch Failure	Severe Vibration	Reduce Vibration , Increase Damping, Rotate the fork body 90 degrees
	Water Ingress Housing	Tighten the Housing Cover and Cable Plug
	Output Overload	Reduce Load, (Caple) Capacitive Resistance
Switch malfunction after power failure	Abnormal performance during startup testing (functional testing)	Control circuit lockout duration: ≤45 seconds after power restoration

※Safety Notice

- ☑ Installation, commissioning, operation and maintenance must be performed by qualified technicians.
- ☑ The product must be used strictly in accordance with the specifications in this operating manual.

Selection Chart

Model		Product Name	
ISEN-YC ()		Tuning Fork Level Switch	
Code	Tuning Fork Structure Type		
300	Standard Threaded Tuning Fork		
300B	Standard Large Tuning Fork		
300C	Standard Small Tuning Fork		
301	Standard Aviation Tuning Fork		
301B	Standard Herschel Tuning Fork		
301BS	Mini Herschel Tuning Fork		
301S	Mini Aviation Fork		
	Code	Process Connection	
	S0	G1/2" Threaded Installation	
	S1	G1" Threaded Installation (Standard)	
	S2	1"NPT Threaded Installation	
	S3	G1-1/2" Threaded Installation	
	F5	DN25 Flange Connection	
	F6	DN50 Flange Connection	
	T	Clamp Connection	
	Y	Customizable	
		Code	Temperature Range
		N	-20~80 °C
		T	-20~170 °C
		H	Up to 250 °C
		Code	Power Supply
		A	220VAC
		D	24VDC
		X	Dual Power Supply
		Y	Customizable

Selection Chart (Reference)

	Code	Junction Box	
	L	Aluminum Alloy	
	H	Heseman Connector	
	A	Aviation Connector	
	4	Stainless Steel SUS304	
	6	Stainless Steel SUS316	
	Code	Fork Body Material	
	4	Stainless Steel SUS304	
	6	Stainless Steel SUS316L	
	F	Stainless Steel Coated With PTFE	
	Code	External Structure	
	Y	Integrated	
	F	Split	
	Code	Fork Body Structure	
	1	Standard Fork Type (100mm)	
	2	Large Fork Type (170mm)	
	3	Mini Fork Type (45mm)	
	Code	Switch Type	
	1	Single Pole Double Throw (SPDT)	
	2	Double Pole Double Throw (DPDT)	
	Code	Wiring Method	
	2	Two-wire System 8V/ NAMUR Two-wire System 24V Intrinsically Safe	
	3	Signal(8/16mA)	
	4	Four-Wire System	
	5	PNP Output	
	6	NPN Output	
	Code	Measuring Range	
	xxxx	() mm (Select Range According to Your Needs)	

Selection Examples

Example: ISEN-YC300-S1NXL4Y114300, Standard threaded tuning fork, G1" threaded mounting (standard), temperature range -20°C to 80°C, dual power supplyaluminum alloy junction box, stainless steel SUS304 fork body material, one-piece design, standard fork type (100mm), single-pole double-throw (SPDT), four-wire system, measurement range 300mm. ,



All your process control needs

Valvelink Co., Ltd. (VIETNAM)

Address: 399 Nguyen Thi Kieu Street, Tan Thoi Hiep Ward, Ho Chi Minh City, Vietnam

Hotline: +84 933 603 406

WhatsApp: +84 979128773

Email: contact@valvelink.vn / tech@valvelink.vn

Website: valvelink.vn

Valvelink Europe Ent (EUROPE)

Address: Via Roma 108, Cassina de Pecchi, 20060, Milan, Italy

Hotline: +90-2123818702

WhatsApp: +84 979128773 / +84 933 603 406

Email: sales@valvelink.eu

Website: valvelink.eu

Website



WhatsApp



Valvelink Sdn Bhd (ASEAN)

Address: 1-20-02, M-City Ampang, Jalan Ampang, 57450 Kuala Lumpur, Malaysia

Hotline: +60-173700361

WhatsApp: +84 979128773 / +84 933 603 406

Email: sales@valvelink.asia

Website: valvelink.asia

Boon (tianjin) Environment Technology Industry Co.,Ltd. (CHINA)

Address: Unit B, 1F, Building A, No. 5 Ziyang Road, Nankai District, Tianjin, China

Hotline: +84 979128773

WhatsApp: +84 933 603 406

Email: sales@valvelink.asia

Website: valvelink.com.cn