ZNC-YW510 Tuning Fork Level Switch

Mainly applicable media: water, dyes, beer, small particles of fluid solids.
Mainly applicable occasions: Application: sewage with caking layer, impurities and hydrochloric acid, sodium hydroxide and other industrial liquids

I. Overview

The high/low alarm state of the measured medium is detected by contacting the fork body with the medium, which changes the vibration frequency of the fork body. Tuning fork switches are suitable for almost all liquid media, tuning fork switches are not affected by bubbles, eddy currents, gases. Also suitable for the measurement of free-flowing solid powders or particles of medium density.

II. Principle of operation

A pair of piezoelectric crystals mounted on the tuning fork base causes the tuning fork to vibrate at a certain resonant frequency. When the tuning fork of the tuning fork level switch is in contact with the measured medium, the frequency and amplitude of the tuning fork will change, and these changes of the tuning fork level switch are detected, processed and converted into a switching signal by the intelligent circuit.

III. Product characteristics

- Compact size, no space constraints,
- Multiple output forms: relay output, PNP output
- Liquid material, suitable for a variety of acid and alkali media,
- Alkali media, solid powder particles, etc.

IV. Technical parameters

Type	Parameters
Medium temperature range	-20~200℃

Environmental temperature	-20~60℃
Environmental humidity	≤95%RH
Measured medium	Liquid, powder or granular solids
Density of the measured medium	Solid ≥0.1g/cm3; liquid ≥0.6g/cm3
Size of solid particles to be measured	≤ 10mm
Maximum liquid viscosity	＜1000mm²/s
Angle of repose of the measured medium	≤50°
Pressure range	≤6.4Mpa, sanitary type pressure resistance ≤3MPa
Catch material	304，316L，PTFE
Shell protection grade	IP66
Connection method	3/4NPT, G1″, DN50 flange, DN80 flange
Supply Voltage	DC24V;AC220V 50Hz
Output signal	2-wire 5A 220V AC; 3A 24V DC; 3-wire relay outputs
Tuning fork vibration frequency	300±50Hz

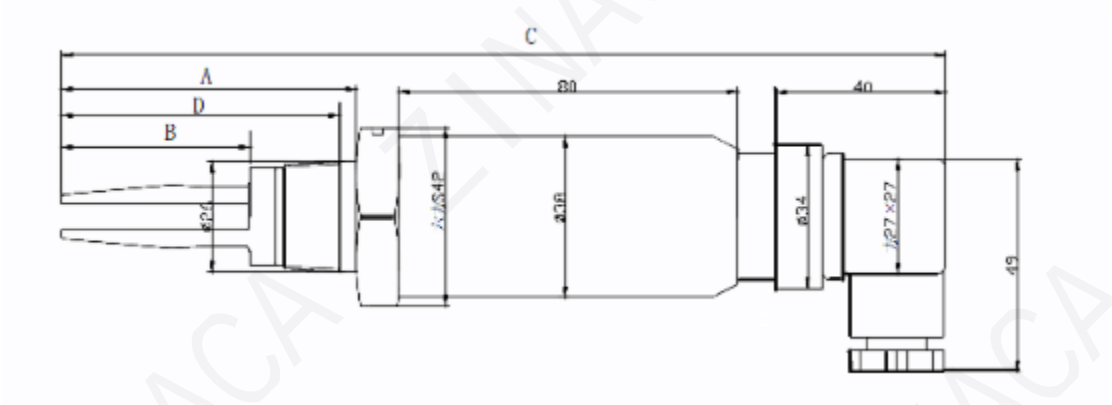
V. Instrument Selection

Type						Explanation
ZNCYW510	—□	/□	/□	/□	/□	
Fork form	X					Compact type (24VD power supply, fork body 50mm)
	N					Standard type (fork body 100mm)
	L					Extended (100-2000mm)
Operating power supply and output signal		A				24VDC (PNP open collector output)
		B				DC24V/220VAC (relay output)
Working environment			O			Normal temperature type (-20~60 degrees)
			H			High temperature type (-20~200 degrees)
Connection method				G		Threaded connection (3/4NPT,G1″)
				W		Sanitary chuck connection
				F		Flange connection (DN50, DN80)
				T		Customer Choice
防爆等级					N	non-explosive-proof
					E	Explosion-proof

Selection example: ZNCYW510-NBOF50E (normal temperature, fork body 100, DN50 flange, explosion-proof)

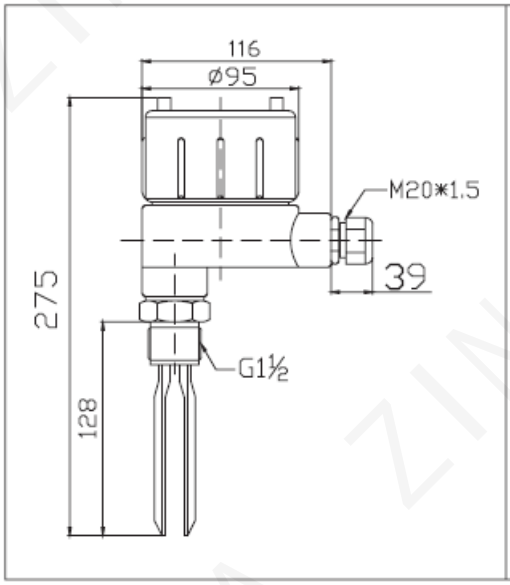
VI. External Dimensions

1. Compact

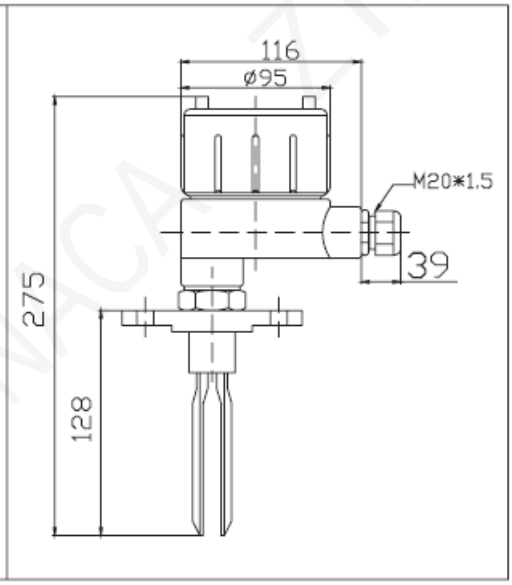


2. Standard

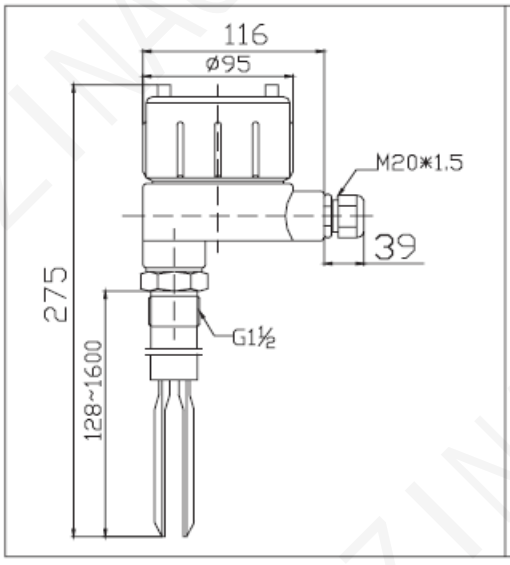
Threaded Connection

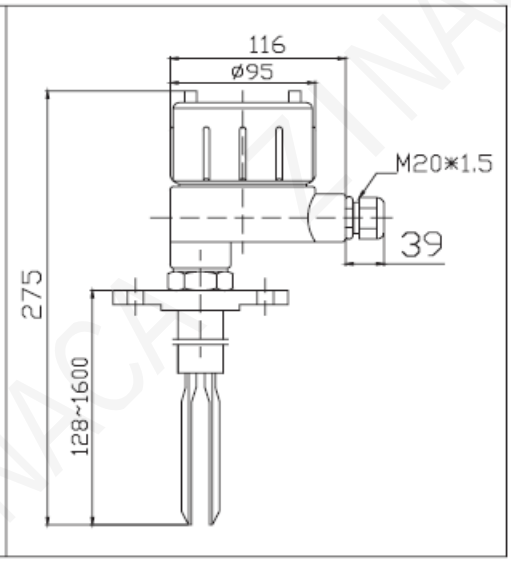


Flange connection



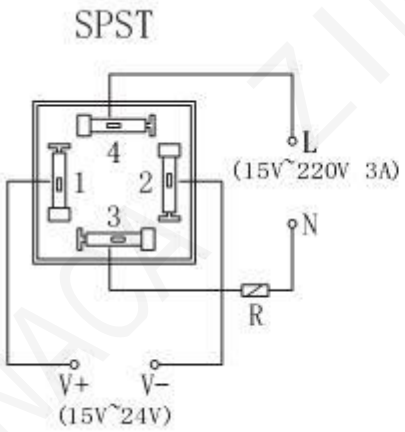
2.Extended

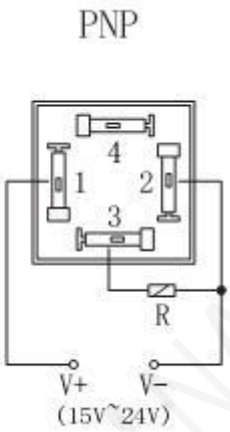




VII. Instrument Wiring

1、 Compact type wiring method





When set to relay output

1 is power positive

2 for power negative

3 for relay contact

4 is a relay contact

When set to PNP transistor output

1 is power positive

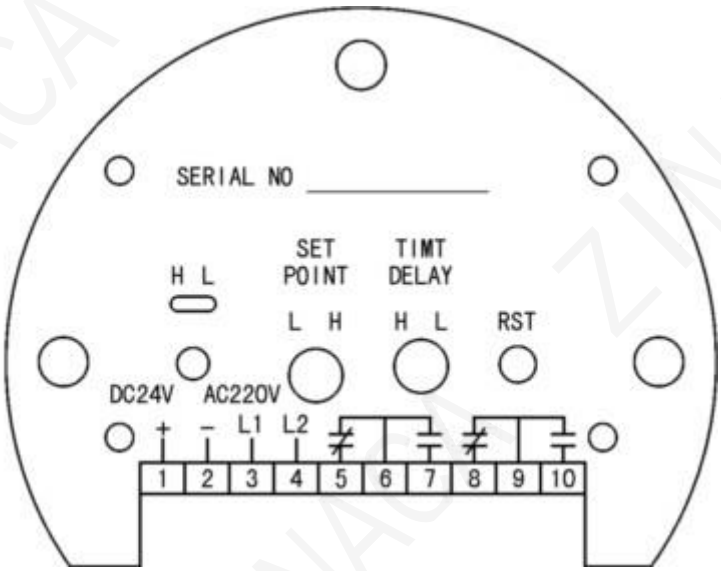
2 for power negative

3 for output

4 is not used

2. Standard

Instrument wiring terminal, No. 1, No. 2, No. 3, No. 4 for the power supply terminal, No. 1 and No. 2 for 24V DC power supply, No. 3 and No. 4 for 220V AC power supply, No. 5, No. 6, No. 7, No. 8, No. 9, No. 10 for the relay outputs, the relay has a double-pole, double-throw (DPDT) output.



Green light - tuning fork operating status

Red - Relay output status indication

When the high position of the selector switch is in H state, the green light is on, the relay 5, 6, and 8, and 9 contacts are normally closed, and the 6, 7, and 9, and 10 contacts are normally open, indicating that the tuning fork is in vibration; the red light is on, the relay is flipped, the normally closed contacts 5, 6, and 8, and 9 are disconnected, and the normally open contacts 6, 7, and 9, and 10 are closed, indicating that the tuning fork is in the de-vibration state.

When the low position of the selector switch is in the L state, the red light is on, the relay 5, 6, and 8, 9 contacts are normally open, and 6, 7, and 9, 10 contacts are normally closed, indicating that the tuning fork is in the vibration state; the green light is on, the relay is flipped, the normally closed contacts 6, 7, and 9, 10 are disconnected, and the normally open contacts 5, 6, and 8, 9 are closed, indicating that the tuning fork is in the de-vibratory state.

When the state indicator is selected, wired according to the instructions, after confirming that there is no error, turn on the power supply, lightly touch the tuning fork end face simulation of material, the state indicator should be changed state, the hand away from the state indicator should be restored. Repeat this several times to make sure the work is normal before it is ready to be installed on site.

VIII. Installation and Precautions

1. Precautions for installation

A. Strictly check the Ex wording and the contents of the nameplate during installation. Ensure that the level switch enclosure is well grounded during installation.

B. After installation, the level switch cover must be strictly inspected and tightly fitted with anti-tampering device. It is forbidden to open the cover with electricity for maintenance.

C. Use flexible pipe to connect the level switch to the wiring duct.

D. The instrument is generally installed vertically with the fork end down, horizontally or tilted with the fork end down (when the material is strongly adherent, it is easy to install vertically with the fork end down), and it is not permitted to be installed in the way of tilting up, i.e., with the fork end up.

E. Sensors are placed in the hazardous area and secondary instruments must be placed in the safe area!

F. It is recommended to test the calibration sensitivity with a small sample of the medium before mounting on the equipment. For example, the reliability of the switch is tested by immersing the instrument in a vessel fitted with a medium.

G. The actual installation is generally subdivided into top mounting (high level monitoring of the medium), sidewall mounting (high or low level monitoring of the medium), and pipe mounting (air flow monitoring of the material pump).

2. Installation method