

# **ZNC-3051-J Submersible Level Meter**



**Mainly applicable medium:** applicable to all medium and low temperature liquid medium, applicable to all kinds of conductive container in the liquid height measurement.

**Mainly applicable occasions:** sewage treatment plants, volume without the requirements of the tank, cisterns, water towers, etc.

**Applications:** sewage treatment plant sewage pool level measurement, high-rise water tank level detection, etc.

#### I. Overview

ZNC-3051-J Submersible level meter adopts imported isolated pressure sensitive components, after precision temperature compensation, and increased transmission circuit, so that the transmitter has DC 4-20mA, 0-5V standard signal or RS485, Hart digital signal output, which can be directly connected with the A/D acquisition system; the conversion and amplification circuit adopts high-quality imported components with reverse polarity protection, and the bypass capacitor filtering and shielding measures, so that the level meter has the function of anti-electromagnetic/radiofrequency interference; the addition of optional on-site display makes the observation of on-site liquid level more direct and convenient. Bypass capacitor filtering and shielding measures are adopted to make the level meter with anti-electromagnetic/radiofrequency interference function; the increased optional on-site display mode makes the observation of on-site liquid level height more direct and convenient.

#### II. Principle of operation

The sensor part of the Submersible level gauge consists of a special air-conducting cable with a built-in capillary hose, a pressure-resistant connector and a probe. The probe of the hydrostatic level gauge is made of a stainless steel cylinder core with a diaphragm at the bottom, and is covered by a perforated stainless steel housing. The level measurement is actually detecting the difference between the hydrostatic pressure of the liquid on the probe and the actual atmospheric pressure, and then the pressure-sensitive components (attached to the stainless steel membrane) and electronics will be converted into a standard or digital output signal.



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# **III. Product characteristics**

Wide range of applicable media, from water to sewage, from oil to viscosity of the liquid can be high-precision measurement, not affected by the media foaming, deposition, etc.;

solid-state structure, no moving parts, high reliability, long service life; Can be fixed with flange or multi-purpose mounting bracket, extremely easy to install and use;

Good anti-interference, lightning protection;

Power reverse polarity protection and overload current limiting protection;

New materials are not easy to fatigue wear and tear, anti-vibration, shock, overload capacity.

## **IV. Technical parameters**

Туре	Parameter
Range	Cable type: 0-0.2m to 0-500m (theoretical full range, actual
	range is customized according to customer requirements);
	Rod type: 0-0.2 to 0-3m (other lengths can be customized);
	Armored cylinder type: 0-0.2m to 0-500m (theoretical full range,
	actual range is customized according to customer requirements);
	Corrosion-resistant: 0-0.5m to 0-20m ((other lengths can be
	customized))
Accuracy	0.5%, 0.2%
Pressure overload	150%
Protection class	IP65, IP68
Power supply	24VDC (15-36VDC)
Output	4-20mA, 0-5V,0-10V, hart, RS485
Temperature drift	$-10^{\circ}\text{C}-50^{\circ}\text{C}$ <0.2%; $-20^{\circ}\text{C}-85^{\circ}\text{C}$ <0.5%
Electrical insulation	>100M <b>Ω</b> at 500VDC
resistance	
Resistant to	30V/m, 10KHz to 500MHz
electromagnetic/radiofrequency	
interference	
long term stability	Annual drift <±0.1%
Compensation temperature	0°C−50°C
Operating temperature	0°C-80°C
Storage temperature	-40-100°C
Shock/vibration resistance	200 HZG is 0.01% with annual stability better than 0.1%.
Pressure transfer diaphragm	316L Stainless Steel, 96% Alumina Ceramic, Diffused
material	Silicon
Probe housing material	1Cr18Ni9Ti, PTFE
Cable Sheath Materials	Polyethylene or polyamide
Sealing material	Nitrile Rubber, Fluorocarbon Rubber
Measuring medium	Liquid media compatible with the above materials
Junction box housing materials	Die-cast aluminum alloy with epoxy painted surface



# V. Instrument Selection

Туре								Instructions
ZNC-3051-J	-	$/\Box$	$/\Box$	$/\Box$		$\square$	/□	
Instrument Type	В							standard type
	C							Pole type (standard meter head +
	G							stainless steel pole)
	т							Armored cylinder type (standard meter
	1							head + armored bendable rod))
	7							Direct wire dump (current output or
	L							RS485 protocol)
			1					4-20mA
output signal		2					4-20mA+ on-site display	
		2					Switching output (1-2 channels) +	
		3					4-20mA	
		4					Switching output (1-4 channels) +	
		4					4-20mA	
			5					1~5V
			6					0~10V
			7					RS485 协议
			8					HART 协议
				M1				M20*1.5
Installation M2				M33*2				
F					Flange connection			
Table baster ture				Y			Display	
N					Non-dispaly			
Explosion proof type					F		flameproof	
Expression-proof type						N		Non-explosive

**Note: 1. IP68** protection level can be made into a circuit board sealing or direct dumping line, there are several output signals with a meter display (order can be noted)

**2.** On the selection of the length of the guide cable: generally longer than the actual height of the liquid level 10CM, not too long, if the distance to the control cabinet is very far, please choose a high-quality cable instead of the need to guide the cable, the guide cable to do the lead, the use of the cable will be problematic, (due to environmental factors, worker factors) chaotic step (poor performance of the conductor), chaotic pressure (resulting in the gas does not work), chaotic folding easy to witness the air outlet up. It is recommended to use high-quality cable instead.







Standard (Cable, Armored)

lever



# VII. Instrument Wiring

In order to connect the needs of various specific instruments, the level meter output signals and electrical connections are shown in the following diagram:

2-wire output wiring method



Three-wire output wiring



Direct dump wiring method





## VIII. Calibration Zero

Press key set, enter the menu LOCK, press key set, enter the password 0066, press key set, press key  $\uparrow$  to page up to AdC1 item, press key set, press key  $\uparrow$  to clear, then press key set, press key  $\uparrow$  to page up to end, press key set, the operation is completed.

## IX. Instrumentation installation

## 9.1 Installation Considerations

The transmitter probe has  $M20 \times 1.5$  interface, which can be screwed directly on the vessel or pipe wall, or the transmitter can be put into the pool or other liquids, and the cable leads to the display instrument, secondary instrument or control room. Note that the cable portion on the ground needs to be protected or elevated; if there are sediments at the bottom of the measured liquid, the transmitter should be raised or protected by filtration.

- ① The cover must be hand tightened without damaging the threads.
- ② Sensitive parts should be tightened. Wiring holes must be sealed with suitable seals.
- ③ If there are wiring holes on the electronic housing that are not used, they must be plugged and tightened with metal with threads.
- (4) The isolation layer of the circuit side and wiring side of the housing must not be damaged ring, and the terminals must be intact.
- <sup>⑤</sup> Protect the zero point and range adjustment potentiometer (except for the intelligent type).



#### A. Installation Notes for Submersible Level Meter:

1. Because the tank bottom is easy to deposit sludge, oil residue and other things, it is recommended to leave the measuring probe at a certain height from the bottom of the tank (cabin), so as to avoid clogging the probe with debris.

 $2_{\text{S}}$  Since the medium in the tank fluctuates greatly, and the gas-conducting cable is very long, the probe should be fixed with a sleeve to prevent the probe from swinging and affecting the measurement accuracy.

3, transmitter installation, the gas cable bending radius should be greater than 10 cm, to avoid excessive bending and damage to the gas cable.

4, hydrostatic level meter grounding terminal should be reliably grounded, the power supply shielding wire should be connected to it.

5. The installation direction of the transmitter is vertical, and the installation position of the input type (probe) should be far away from the liquid outlet and agitator.

6, such as the tank medium has a large vibration, need to be in the transmitter (probe) on the winding steel wire, the use of steel wire shock absorption, so as not to pull off the cable line!

B. How to Install Pressure Level Meter (Probes) to Prevent Damage to Diaphragms

1, the level meter is installed in the static deep well, pool, usually the inner diameter of  $\Phi$ 45mm or so of the steel pipe (in the liquid flow direction of different heights of a number of small holes, so that the medium into the pipe) fixed in the water, and then put the input level transmitter can be used in the steel pipe. (See the following figure)



Red: Level Meter Probes



9.2 Installation Schematic

9.2.1



Installation in moving water

Installation in static water

9.2.2

