USER GUIDE FOR CDL-10B SUBMERSIBLE LIQUID LEVEL SENSOR

CDL-10B-01-MN-10	SEP-2024

This document is applied for the following products

SKU	CDL	HW Ver.	1.0	FW Ver.	1.0
Item Code	CDL-10B	Level Sensor, RS485 0-5V 0-10V 4-20mA Output, SUS316, 0 ~ 0.5m…200mH2O			

1. Introductions

CDL-10B Submersible Liquid Level Transmitter is with stainless steel isolation diaphragm diffusion silicon pressure core body, the pressure core body adopts the process of laser trimming resistor for a wide temperature range of zero and sensitivity temperature compensation. Special cable for air-venting conduit and waterproof technology ensures water tightness, and ventilation between inside and outside , so as to acquire accurate and stable measuring data.

.

2. Specification

Item	Technical specifications
Range	0 ~ 0.5m…200mH2O or 0 ~ 5KPa…2MPa
Output	4-20mA,0-5V,0-10V,RS485
Supply Voltage	10-30VDC,24V typ.
Over Pressure	2×FS
Measuring Medium	The liquid(not sticky) compatible with 316 stainless steel
Total Accuracy	0.1%FS,0.3%FS(0.25%FS),0.5%FS
Long-term Stability	0.1%FS/year typ.,0.2%FS/year max.
Ingress Protection	IP68
Operating Temperature	-40℃~ +80℃
Compensating Temperature	-10℃~ 70℃
Temperature Drifting	0.03%FS/℃ typ.,0.05%FS/℃
Cycle Life	1*10^8 @25℃
Main Material	Sensor:316L,housing:304SS(316L is optional)
Cable	Outer material：PUR,Atmospheric pressure compensation cable, Polymer waterproof plug at cable end
Power Consumption	Current output:(U*0.02)W, Voltage output:(U*0.008)W, Digital output:(U*0.015)W
Load Capacity	Current output:≤(U-7)/0.02Ω, Voltage output:≥100kΩ
Weight(probe unpacked)	Approx. 230g
Storage Condition	10℃-50℃@20%-90%RH

3.Working Process

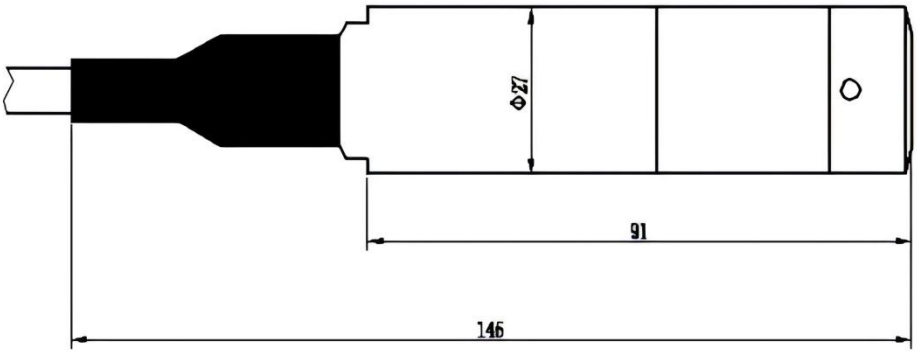
The core component of the piezoresistive pressure level sensor is a varistor. When subjected to pressure, the resistance value of the varistor will change.When a varistor is connected to a bridge circuit, a change in the resistance value of the varistor causes the bridge to lose balance when a liquid acts on the sensor, producing an electrical signal that is proportional to the pressure.
By amplifying, filtering and digitizing the electrical signal, the digital signal proportional to the height of the liquid level can be obtained, so as to realize the liquid level measurement.

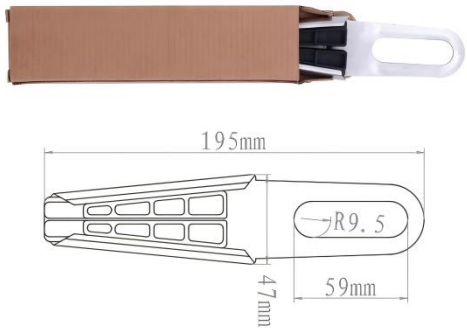
.

4. Electrical Connections

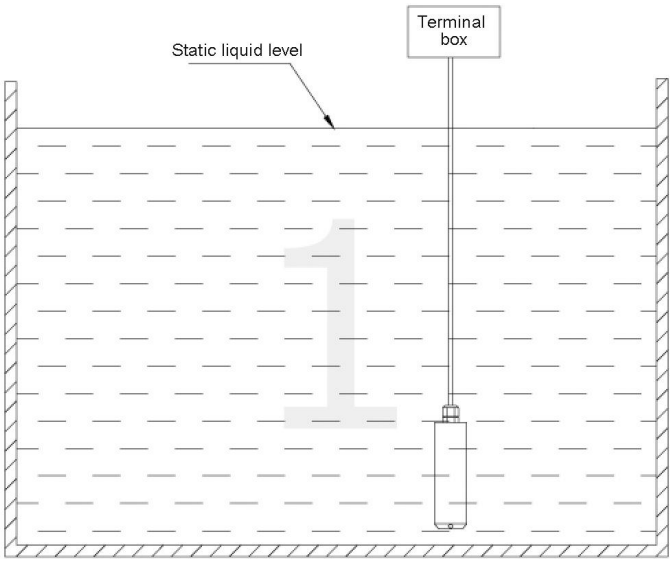
Connector（cable）	RS485
Red	V+
Black	V-
Blue	RS485A
Yellow	RS485B

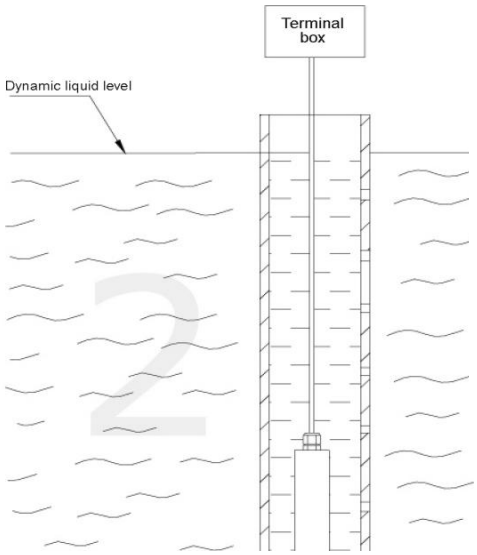
5. Dimensions





6. Installation





As shown in picture 1,when the sensor is installed in static water such as in poos,water towers,probe is immersed into the bottom and should be as far as possible away from the pump or valves.The terminal box should keep above water surface and prevent water penetrating into cables.Please make sure the airway not be blocked.

As shown in picture 2,when the sensor is installed in dynamic water such as dams or rivers,probe should be inserted into a steel pipe(inner dia is around 45mm),burrowing several holes at different height on the pipe side wall which is opposite to the water flow direction.The terminal box should keep above water surface and prevent water penetrating into cables.Please make sure the airway not be blocked.

7. Communication Protocol（MODBUS）

Transmission mode: MODBUS-RTU,**Baud rate:** 9600bps,**Data bits:**8,**Stop bit:**1,**Check bit:**no

Slave address:the factory default is 01H (set according to the need,00H to FFH)

7.1 The 03H Function Code Example: Read Level

Host Scan Order(slave address:0x01)
01 03 00 04 00 01 C5CB

Slave Response
01 03 02 01 B4 B9A3

Level(m):(01B4)H=(436)D, 436/1000=0.436m

7.2 The 06H Function Code Example: Modify the slave address

Host Scan Order (Changed the 01H to 02H):(ensure that no other devices on the bus at this time)

Step 1:

01 06 00 00 00 02 080B

Slave Response:
01 06 00 00 00 02 080B

Step 2:

Host Scan Order (Save the new address):
02 06 00 0F 00 00 B9FA

Slave Response:
02 06 00 0F 00 00 B9FA

Note:
1. All underlined is fixed bit;

2. The last two bytes is CRC check command.

Note: This product has been tested and complies with European CE requirements for EMC directive.

8. Troubleshooting

If some error occurs, such as no output or unreliable. Please disconnect the sensor first, then check if the sensor installation and connection is correct with the instruction manual.

If still not successful, please contact our company.

9. Support contacts:

Complies with applicable CE directives.

Manual subject to change without notice. Version 1.0

Hunan Coda Electronic Tech Co.,Ltd

T:+86-0731-85117089

W:www.codasensor.com

E:Molly@codasensor.com