The Installation and Configuration Guide of Liquid Level Sensor

1 Installation

1.1 Working Principle

When the fuel consumption sensor is installed, a hole is cut in the middle of the upper part of the oil tank, then insert the sensor vertically into the oil tank. The oil volume is calculated by detecting the liquid level height in the oil tank. By calculating the volume change of the fuel, the fuel consumption of the vehicle is calculated.

The sensor adopts the principle of capacitance measurement to measure the height: the height will have an effect on the dielectric constant of the capacitor, thus affecting the capacitor value. The sensor can obtain the liquid level change by measuring the capacitance change, so as to achieve the measurement of fuel consumption.

The sensor has a length clipping function that can be clipped according to the actual height of the tank. This feature allows the sensor to be adapted to a variety of tank sizes.

Note: The rest length of the sensor needs to be longer than half the length of the sensor after you cut off. That is, for a 70cm sensor, the maximum cropping length is 35cm; The 70cm length sensor can only be adapted to the height of 36cm~71cm of the tank (the length of the sensor needs to be 1cm less than the height of the tank, to prevent the sensor bottom and the tank bottom from interfering, damaging the tank and the sensor).

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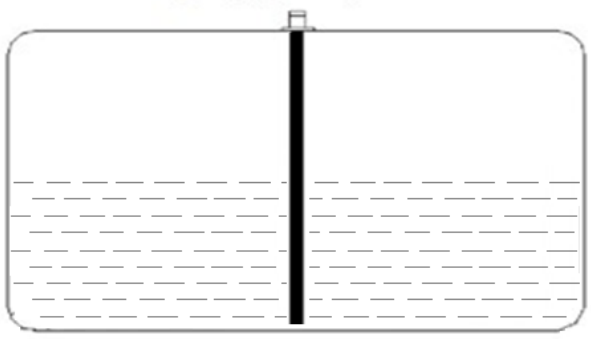


1.2 Basic parameters of the sensor

Product model	**AE-MW6600-CR(Liquid Level Sensor)**		
Operating voltage	DC5V~DC24V	Operating temperature	-35℃ ~ +755℃
Operating current	5~10mA	Pressure range	0.1 MPa to 0.4 MPa
Range	Sensor length can be customized	Storage temperature	-40℃ ~ +85℃
Output signal	RS232	Measuring medium	Diesel oil
Measurement accuracy	±5% F.S	Probe material	Aluminum alloy
Length range	200mm~1400mm	Lead length	1000mm

Probe diameter	φ16 mm	Flange parameters	M20 x 1.5
Tank openings	φ22 mm	Mounting method	Thread/flange mounting
screws	Flange with screws	Explosion-proof rating	Flameproof Exd IIC T5

1.3 Installation of sensors

1.3.1 Tool Preparation

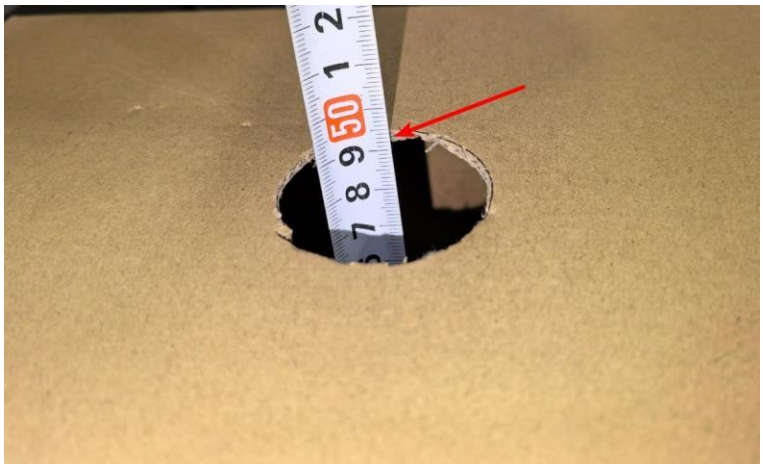
The following table describes the installation tools

Name	Specifications	ICONS	Name	Specifications	ICONS
Drill	Unlimited		Screwdriver	Unlimited	
Measuring tape	⩾2m		Allen wrench	3mm	
Hacksaw	Unlimited		Oil-proof sealant	Unlimited	

Hole opener	φ45 mm		Wire strippers		
File			Cable ties	5mm	
Needle nose pliers			Fire extinguisher	Dry powder fire extinguisher	

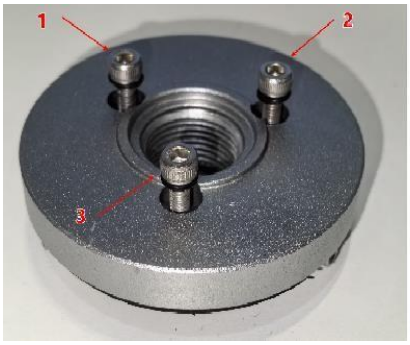
1.3.2 Install flanges

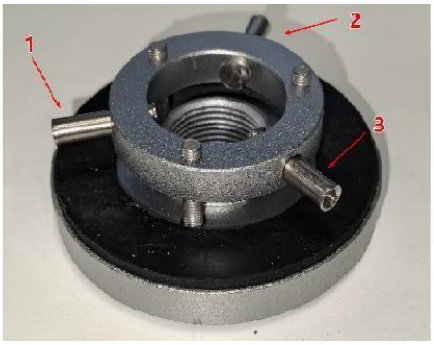
Step 1: Select the installation position in the appropriate center of the oil tank (to avoid obstacles such as welds, internal partitions, pipelines or sensors), clean the oil on the surface of the oil tank first, use a hole opener to punch a round hole for installation, and tilt the electric drill slightly when it is about to be punched through. After one side is punched through, remove the debris and the remaining metal sheet with a sharp taper pliers. To avoid metal pieces and debris falling inside the oil tank;

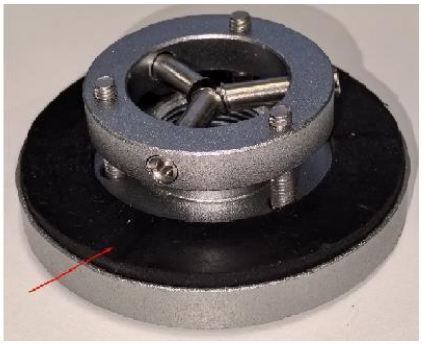


A.1 Make a hole and measure the tank height

Step 2: Loosen the 3 screws and peel the clasp from the flange screw hole. Apply an appropriate amount of oil-proof sealant to the gasket.

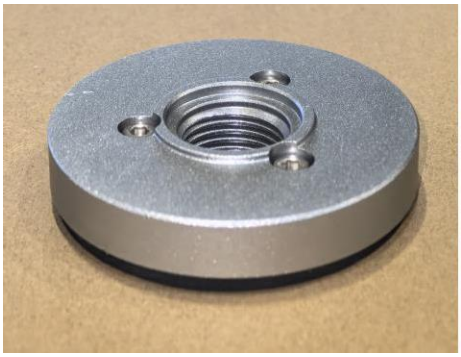


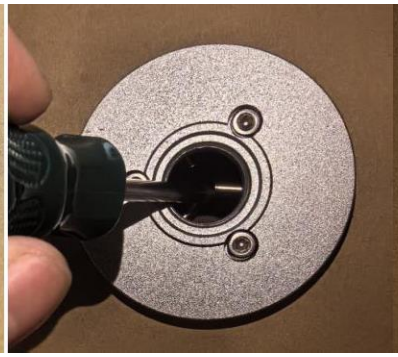


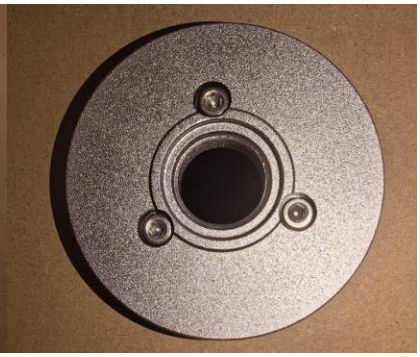


B.1 Loosen the three screws B.2 remove the clasp from the flange B.3 apply glue to the gasket

Step 3: Place the clasp into the inside of the tank through the hole of the tank, and use a screwdriver to unroll the clamp nails of clasp.







C.1 Insert the clasp part into the tank C.2 Peel the clasp away with a screwdriver

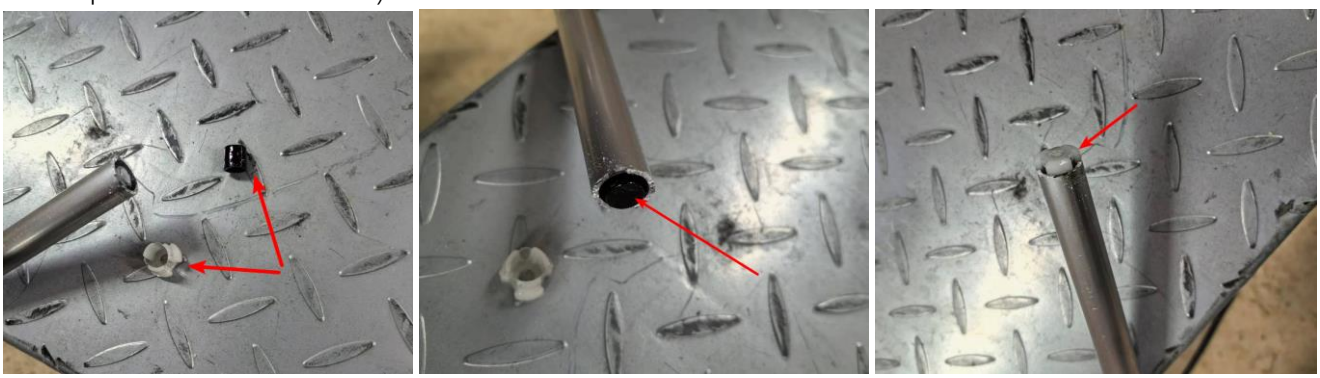
Step 4: Put the sensor into the screw hole (to help fix the 3 clamp nails to prevent the clamp from moving during fastening), tighten the 3 fixing screws, and secure the flange.

D.1 Lock the 3 screws D.2 Flanges are installed

1.3.3 Sensor cutting

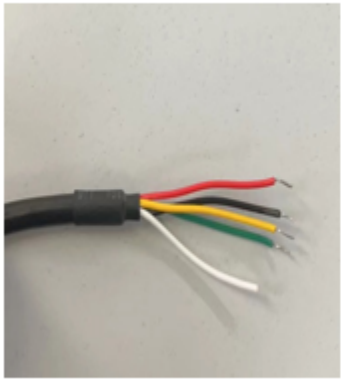
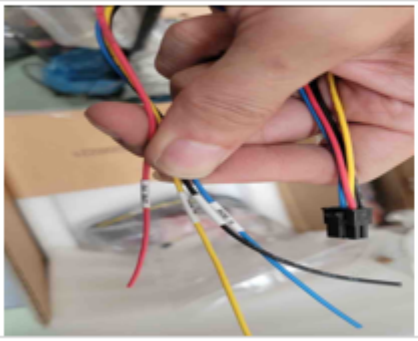
Step 5: Crop the sensor according to the tank height confirmed in step 1. If the tank height measured in step1 is 49cm, cut the sensor length to 48cm (this length = tank height -1), mark it and cut off the excess with a hacksaw. Use a file to correct and smooth the bottom of the sensor.

Step 6: Using needle-nose pliers, remove the plug from the sawn off part (the plug comes in two parts, white plastic and black rubber). Then attach to the bottom of the sensor.

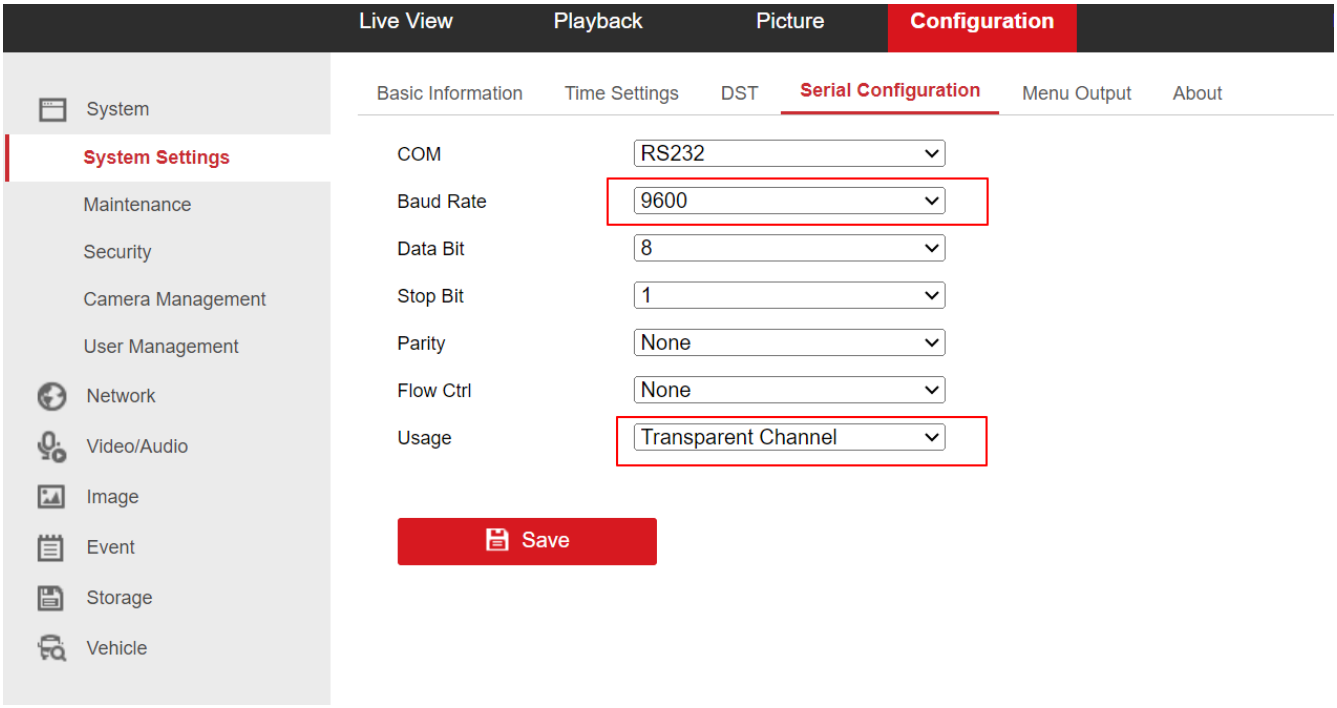


1.3.4 Wiring

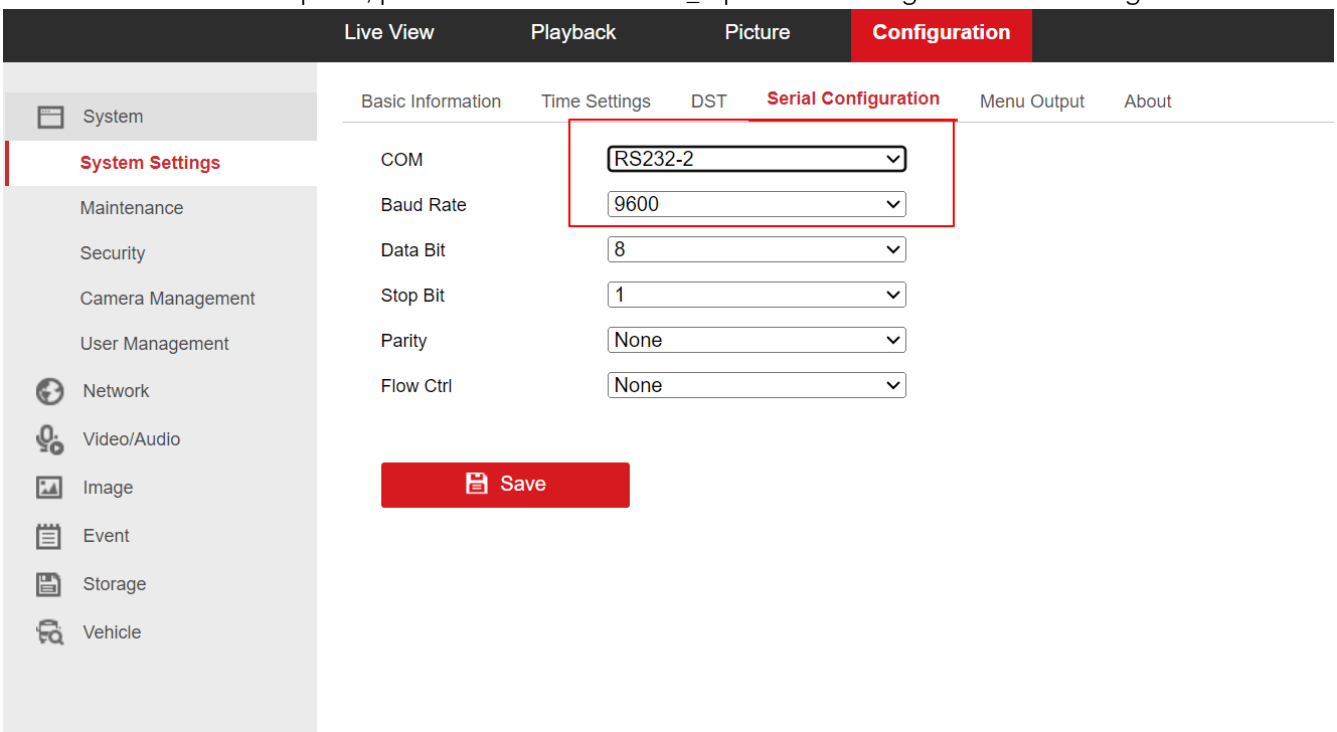
Connect the sensor to the MVR according to the sensor and 232 cable's label.

Liquid Level Sensor			
	Pin1	Red	5V
	Pin2	Black	GND
	Pin3	Yellow	RS232_RX
	Pin4	Green	RS232_TX
	Pin5	White	manual calibration (don't connect)
RS232 cable			
	Pin1	Black	GND
	Pin2	Red	5V
	Pin3	Yellow	RS232_RX
	Pin4	Blue	RS232_TX
	Pin5	/	Reserved
	Pin6	/	Reserved

Note: Connect the 232 cable to NVR's 232 port. If the NVR has only one 232 port, please choose the port as transparent channel

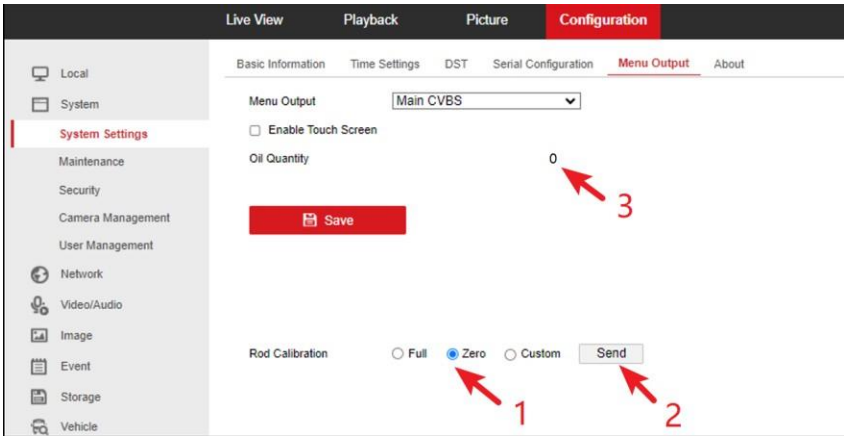


If the NVR has two 232 ports, please connect to RS232_2 port and configure it as following:

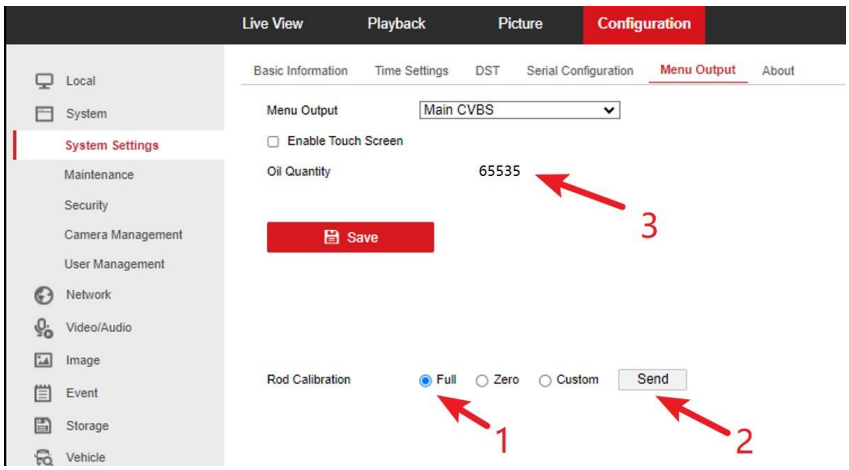


1.3.5 Sensor calibration

Step 1: empty the sensor or fuel tank, click "Zero" and click "Send" to complete the zero marking. Refresh the page about 20 seconds later. If the oil quantity shows 0 (the oil quantity ranges from 0 to 65535), the zero marking is successful.



Step 2: Put the sensor into the oil tank, and fill up the tank (Note: It must be filled up). Click "Full" and click "Send" to complete the full marking. After about 20 seconds, refresh the page. If the oil quantity shows 65535 (the oil quantity ranges from 0 to 65535), the full marking is successful.



Note: Calibration must complete a zero marking and full marking operation, only zero marking or full marking cannot complete the calibration.

1.3.6 Seal

Make sure the sensor is fully secured to the flange. Use a waterproof sealant to completely seal the gap between the flange and the tank and the gap between the flange and the sensor.


Pour waterproof sealant into the crevices
AE-MM/6600
560mm
RS232 5V
2310195E025006