

# MPM489WZ1

## Operation Manual

V1.0



MICROSENSOR





**Thank you very much for selecting Micro Sensor's product, please carefully read this operation manual before using the product.**

## **1 Introduction**

MPM489WZ1 is a  $\Phi$ 19mm diameter fully sealed submersible level transmitter based on diffused-silicone principle. It consists of a high stable and reliable piezoresistive pressure sensing element and the special PCB component as well as the stainless steel housing. Its integrated construction and standardized signal output greatly facilitate the operation and automation control at work sites. The special vented cable being hermetically connected with the transmitter housing allows the transmitter for long term use in the liquids that are compatible with the transmitter construction material.

The protection class of MPM489WZ1 Level Transmitter is IP68.

For easier local installation and observation at work site, the connection box and indicator are available according to customers' option.

Product measurement tools type approval No. 15F139-61.

## **2 Features**

MPM489WZ1 Level Transmitter has advantages featuring compact size, light weight and good long-term stability without need of adjustment. It

can be widely used for liquid level measurement and control in fields of petroleum, chemi-industry, medicine, metallurgy, power station, mining, urban water supply, drainage and hydrology survey, etc.

### 3 Specification

Pressure Range: 10m, 20m, 50m, 100m,200mH<sub>2</sub>O

Overpressure: 1.5 times FS

Accuracy:  $\pm 0.5\%$ FS

Stability: Range >20mH<sub>2</sub>O,  $\pm 0.2\%$ FS/year

Range  $\leq 20$ mH<sub>2</sub>O, 20mmH<sub>2</sub>O

Operation temp.: -10°C~70°C

Storage Temp.: -20°C~85°C

Power Supply: 11V~28V DC

Output Signal: 4mA~20mA DC (two wire)

Load ( $\Omega$ ):  $\leq (U-11)/0.02$  ( $\Omega$ )

Insulated Resistance: 500VDC, 20M $\Omega$

### 4 Construction Material

Housing: 1Cr18Ni9Ti

Cap: Black Nylon

O- ring: Viton

Rubber casing: Chloroprene Rubber

Cable:  $\Phi 7.5$ mm PE cable with vented tube

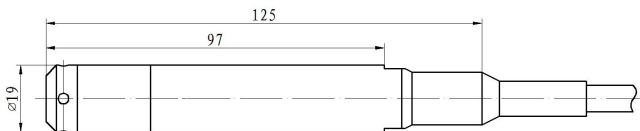
Diaphragm: SS 316L

Connection Box: Cast aluminium (ZL102)/ PBT

### 5 Outline Dimension of transmitter

5.1 The outline dimension is showed as Figure 1:(unit:mm)

Cable length: the maximum length is 300m.

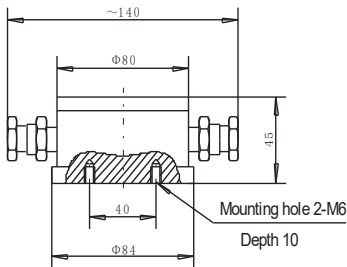


**Figure 1**

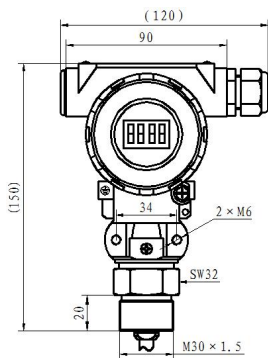
## 5.2 Connection Box Dimension(see Figure 2).

Connection box : Please note it in the order if the connection box is required.

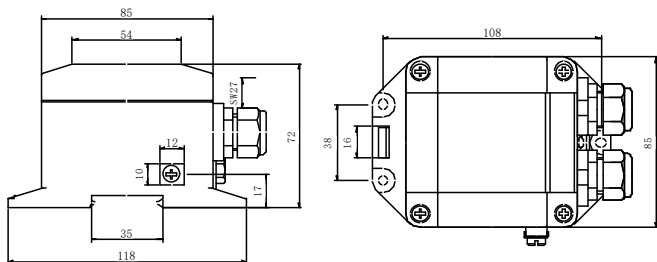
Indicator: Connection box Ye is available with the indicator upon the customer request.



Connection box Yb



Connection box Ye



Connection box Yc

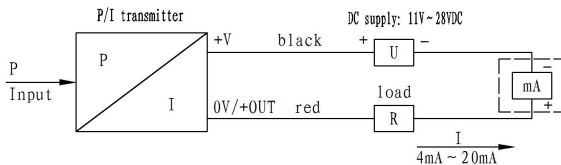
**Figure2**

## 6 Electrical Connection

### 6.1 Wiring

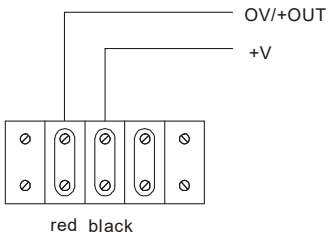
Wire Color	Definition
Black	+V
Red	0V/+OUT

### 6.2 Electrical connection for 4mA~20mA DC output transmitter



### 6.3 Electrical connection for transmitter with connection box:

There is a terminal connection board inside the transmitter connection box, and their definition is indicated below.



## 6.4 Notes

- There is a plastic tube in the transmitter special cable; the back pressure cavity of gauge sensor is connected to atmosphere by this tube. In the process of installation and operation, be sure to keep the reference tube be well connected with the atmosphere. Mud or sand should not be jammed into the reference tube. Be sure no water or other liquid flows into the reference tube and damages the transmitter.
- If the product is installed in the thunderstorm area, the Lightning-proof Protection Device is suggested to protect transmitter.

## 7 Unpacking, Enclosed Shipment and Storage

### 7.1 Unpacking

Attention:

- a) Check and make sure the package in good condition and the box should be put as the sign “up”.
- b) Striking the package violently is forbidden to avoid damages to instruments or accessory. Please be sure the cable casing and rubber sheath are well protected.

## 7.2 Enclosed Shipment

When delivery, the transmitter includes:

MPM489WZ1 Level Transmitter	1
PE Cable(connected with transmitter)	the ordered length
Connection Box (connected with cable)	comply with the order
Indicator (in connection box Ye)	comply with the order
Product Operation Manual	1
Product Quality Certificate	1

## 7.3 Storage

The transmitter should be stored in dry and ventilated room with ambient temperature  $-20^{\circ}\text{C}\sim 85^{\circ}\text{C}$ , relative humidity no more than 85% and the air in the room without corrosive gas.

# 8 Installation

## 8.1 Inspection before Installation

Notes:



- a) Whether the static pressure produced by the liquid at installation place exceeds the transmitter FS or not.
- b) Whether the measuring liquid is compatible with the transmitter construction material or not.
- c) Whether the measuring liquid can jam the holes on the protection cap or not.

## **8.2 Installation Methods**

The transmitter should be installed vertically down.

In the flowing water, the acted surface should be parallel with the water flowing direction.

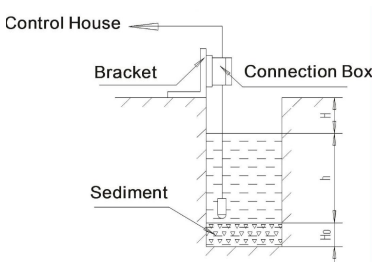
### **8.2.1 Installation in the Static Water**

The installation method in the static water see Figure 3.

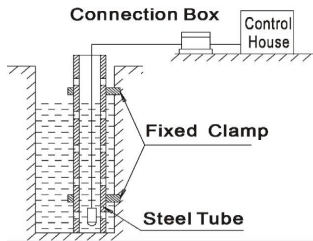
To prevent shaking or destroying the transmitter when pumping, the transmitter should be put away from the liquid resource. Otherwise it should be installed as Figure 4, protected by steel tube.

The installation method in the deep well see Figure 4.

Steel tube inserted method is usually used. The steel tube cannot be bent; the inner diameter of steel tube must be more than 30mm. Several holes should be made at different heights on the tube so as to easily raising and make water flow smoothly. If necessary, wrap steel wire around transmitter to prevent breaking the cable by lifting with the steel wire.



**Figure 3**



**Figure 4**

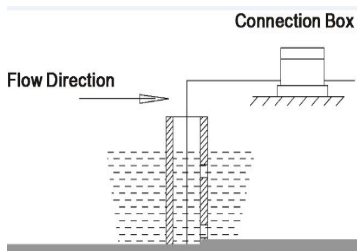
8.2.2 Installation in Flowing Water (e.g. river channel, reservoir area, etc.)

The water-calming equipment are required.

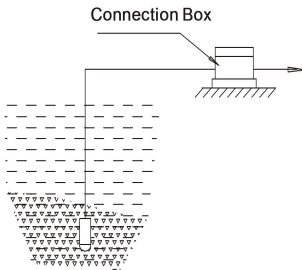
Method one: Insert a steel tube in the water channel (see Figure 5).

The steel tube wall should be thicker, and several holes should be made at different heights on the tube to damp waves and clear the water pressure influence.

Method two: Superficial burying is better in the sand and stone channel (see Figure 6).



**Figure 5**



**Figure 6**

Method three: see Figure 7.

This method can not only clear water flowing pressure and wave influence, but also filter the sand and mud.

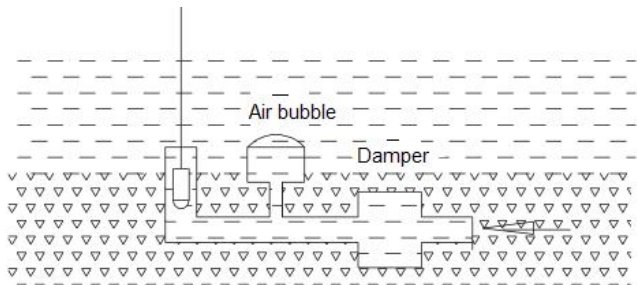


Figure 7

## 9 Operation、Maintenance and Fault Diagnosis

### 9.1 Operation

- The customer could operate the transmitter without adjustment.
- Please be sure that the installation and electrical connection are correct.
- Connect to power and operate.
- The transmitter could work at once as soon as it is connected with excitation, but the output signal could be more reliable after 30 minutes.

## **9.2 Maintenance**

MPM489WZ1 Level Transmitter does not need to be maintained regularly, but please pay attention to items in the below for better operating effect and reliability.

- a) Check wire connection is reliable or not, and the cable is broken and old or not.
- b) Clean the protection cap and diaphragm cavity periodically (be careful!)
- c) Don't violently pull cables or poke the diaphragm with metal or other hard objects.

## **9.3 Fault Diagnosis**

MPM489WZ1 Level Transmitter use integrative full-sealed construction without movable parts inside, have advantages of long-term stability and reliability.

If some failure occur, such as no output, output too big or too small or unreliable, please turn off the excitation firstly, then check the installation and wire connection conform with the operation manual or not, the excitation is correct or not and the reference tube is unobstructed or not.

If unsuccessful, the transmitter may be destroyed, please contact our company.

## **10 Ordering Note**

- a) The pressure range of transmitter should not be less than the max. static pressure of the measured level. The length of cable should be reserved enough.
- b) The supply power and digital display indicator can be provided if required, please note in the order.
- c) Please order according to the range, output signal, cable length and connection box required.
- d) Water-proof connection box is available. If the transmitter is used in the thunderstorms area., the PD100 dual-circuit transmitter protection device can be used to protect the product from high-voltage breakdown due to the weather.

## **11 Responsibility**

Within one year from the delivery date, we shall repair or replace the instrument with any quality fault caused by material parts or our manufacturing technique free of charge. For non-quality malfunction during user's operation, we are in charge of repair. However, The material cost and the shuttle transportation fees should be borne by users.





[www.microsensor.cn](http://www.microsensor.cn)



**MICRO SENSOR CO.,LTD.**

ADD:No. 18 Ying Da Road, Baoji City, Shaanxi Province

Tel: +86-(0)917-3600739/909 400 860 0606

Fax:0917-3600755

E-mail:sales@microsensor.cn