MAC ® Sensor Co.,LTD

PRODUCT OVERVIEW

LEVEL MEASUREMENT

Small-scale High Accuracy Ultrasonic Level/Distance Sensors

UL105

UL106

Profiles:

UL100 Series Ultrasonic Level Transmitter is developed
based on 30 years of experience in industrial
measurement and control specifically for low-cost,
small installation space. It combines ultrasonic sensors,
temperature sensors, ultrasonic servo circuit,
transmission circuit and uses SMD components
and ASIC which is developed together with
the United States partner. All these features realize
a concise and smart level transmitter.
All gold-plated circuit boards, internal electromagnetic
shielding and software digital filter are tested for (industrial)
48 hour under high and low temperature aging.
It promises higher and long-term reliability.
Shell is made of solid texture and good
NLEPF acoustic characteristics of synthetic material.
The body is shape sophisticated aesthetics, waterproof,
dustproof, and can adapt to the most of working
conditions on site. On liquid cans, the walls,
or equipment arm movement, it's easy to install
the UL105 ultrasonic transmitter.
There is no need of such tools as gongs nails,
as long as there is a M48 × 1.5 and M30*1.5 gongs hole.
A very quick and easy installation, maintenance can be realized.

UL105 Ultrasonic Level Sensors Installation Example

Two-gong mother-installed clamping

Blind spot 60 mm

$20mA=F \cdot S$(The largest range)

Level

$4mA=0m$
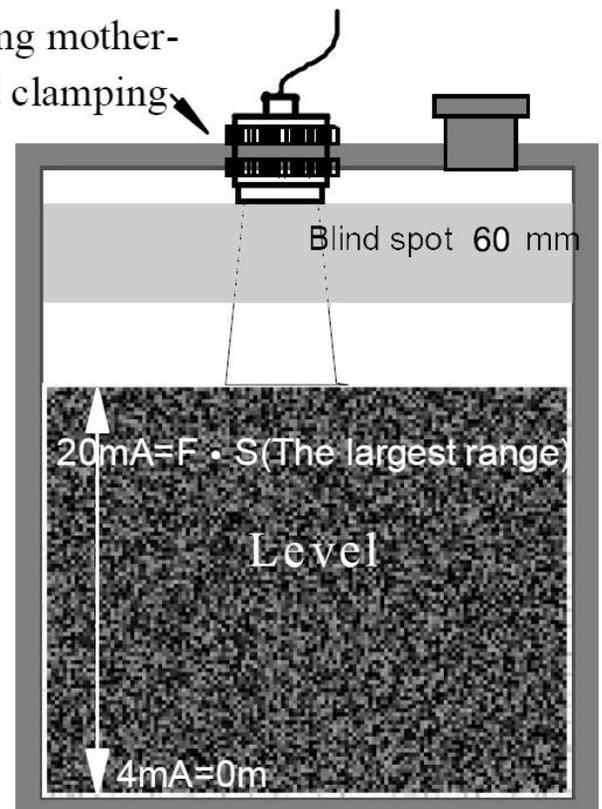
Specifications:

Measuring Range：0-1m...3m by customized.

UL105 (Max 1.2m Range), Blind Area: 1m≤6cm, 1.2m≤8cm

UL106 (Max 3m Range), Blind Area:≤15cm (≤2m Range)

Detection accuracy: 0.1%F.S. or 2mm (Max 1m Range); 0.25%F.S. or 3 mm (bigger 1m and Max 3m Range)

Supply: DC12-24V/50mA, power dissipation: ＜1.5W

Output: ① Voltage: 1 ~ 5V/ 0~5V/0~10V/1~10V

② Current: 4 ~ 20mA/ 0 ~ 20mA (loading big than 300 ohm)

③ Serial port: RS485 (Modbus)

④ PNP, NPN, Relay output optional (Max 2 channels)

Operating Temperature: -20 ~ +60 ℃; Relative humidity: 0~95%; Working pressure: atmosphere pressure

Protection class IP65 (default); IP68 (custom, another exercise price please)

Installation gong pattern install G1-1/2'' male or M30*1.5 male thread.

Wave beam Angle：9° （UE3008: 12°）

Net weight: 332g

Measuring mode：H-Value-added measurement：E-D values; D-value measurement：E-H values.

(According to user requirements, the factory Settings, as shown in the diagram)
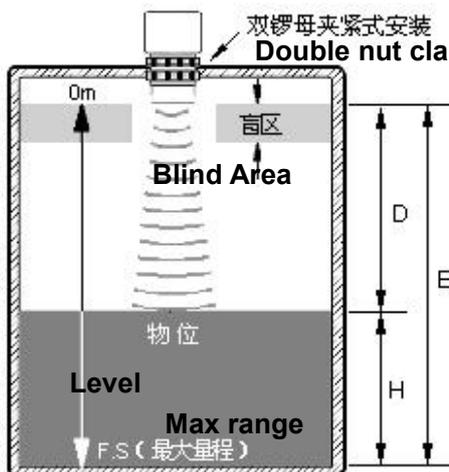
E---The total face height of container to the sensor, that is the actual installation height;

D--- The height of the sensor to the surfaces of level.

H---that is the actual level height

Selection of parameters:

1) Media type to be measured (Liquid or solid, such as: Water, sewage, mud, gasoline, diesel oil, toluene, sulfur dioxide, ore, coal, cement, soybeans, wheat, corn, flour, etc.)

If it is liquid: Is there liquid steam, mist, foam, wave, stirring, floating objects;

If it is solid: Is there a dust, granular or powder media is.

2) The minimum ~ maximum temperature and pressure of media.

3) Corrosion of media. If it is placed inside the jar, the jar needs to know the material, and if there is corrosion of the lining.

4) The need for anti-corrosion, explosion-proof, to split or an integrated one?

5) Working environment: exposure to the pond, cover the pond, liquid tank, pot is through atmospheric pressure and so on.

6) Power Supply: 12 to 24VDC

7) Output: 4-20mA or RS485 or NPN

Ultrasonic Level Transmitter Selection Guide:

(UL105 series with display and 3 buttons for adjustment)

UL105--- ☐☐☐☐☐

Temperature: $T=0\sim50\,^{\circ}\text{C}$
$T_1=-10\sim60\,^{\circ}\text{C}$
$T_2=-20\sim60\,^{\circ}\text{C}$

Supply voltage: $U_1=DC12V/300mA$
$U_2=DC24V/500mA$
$U_e=DC12V/300mA$ Ex

Signal output: A＝Current output（4~20mA of 0~20mA）
V＝Voltage output (V1=0-5V,V2=1-5V,V3=0-10V,V4=1-10V)
R＝Serial data output (RS485 Modbus)
M＝Switching output (1 to 3 switches optional)
J＝Relay output（1 to 2 relay）
P＝PNP Switch(1 to 2 Channels
O＝By Customized

Range of: 1＝0~1mLevel
2＝0~2mLevel

Type: S= Smaller blind zone (Max 6cm),
High Accuracy(0.1%F.S),
Min error (1 mm)
C= standard 15cm blind zone,
Accuracy: 0.25%F.S. or 3 mm error.

Modle number

Ultrasonic Level Transmitter Dimensions:

75

117

54

48

UL105 ABS (G1-1/2'' male)

75

63

92.0

29

30
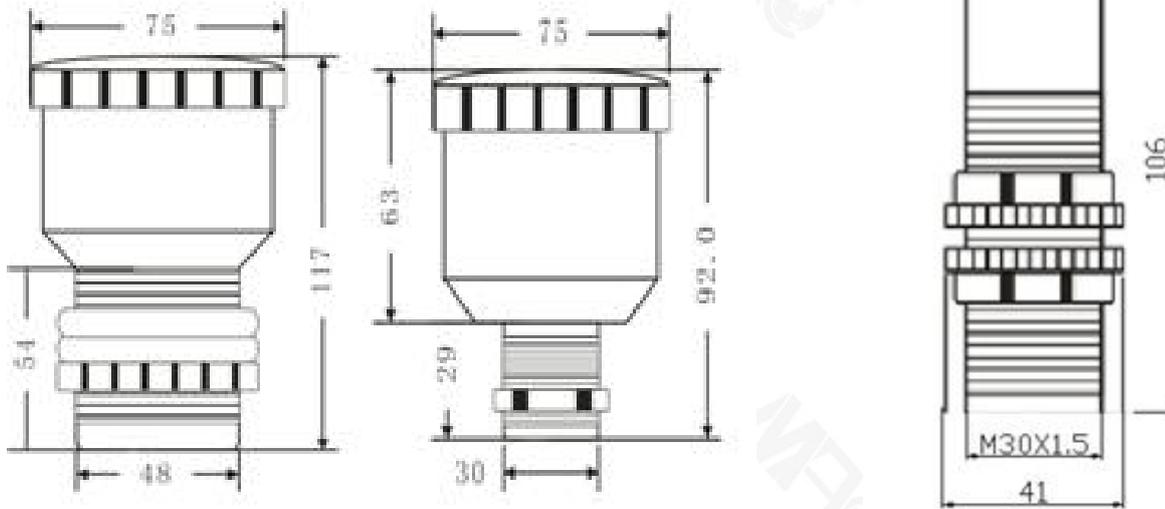
SST Type (Max 1m Range)

106

M30X1.5

41

UL106 (Max 3m Range)

Ultrasonic Level Transmitter Connection Diagram:

● **Lead Linear Type Products**

工作电源（Working Voltage）：红色(Red)   V+

输出信号（Signal output）：黄色(Yellow)   RS485-A；4~20mA

输出信号 (Signal output) ：白色(White)   RS485-B

工作电源(Working Voltage)：黑色(Black)   GND

Current Output---And digital instrumentation
connection example：

V+
GND

NC-Unspent

4~20mA

r

Remote Digital Instruments

R_L

8888

Twisted pair
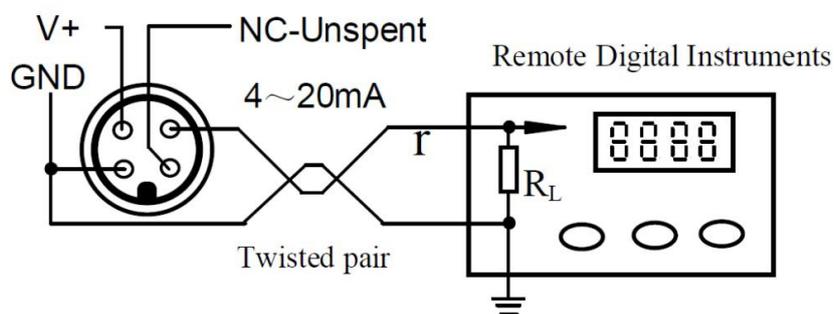
(R＝Transmission line resistancer
r＋Sampling Resistance R_L)≤200Ω

● **Socket type products**

◆ 电流输出型 Current output

```
    1 — GND
    3 — OUT: 4~20mA / 0~20mA
    2 — Vin+
      — 定位凸台
```

◆ 电压输出型 Voltage output

```
    1 — GND
    3 — OUT: 1~5V / 0~5V
    2 — Vin+
      — 定位凸台
```
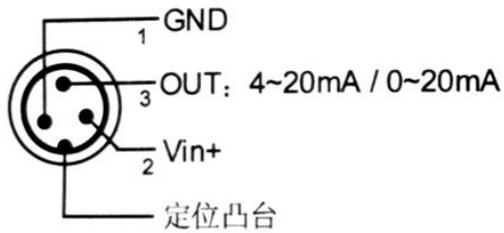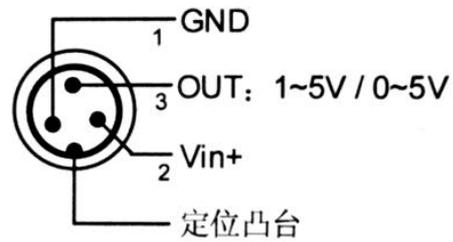
◆ 2个开关量输出型 Two switch output

```
    2 — Vin+
    3 — OUT: M1(L)
    4 — OUT: M2(H)
      — 定位凸台
    1 — GND
```

◆ 串口数据输出型 TXD
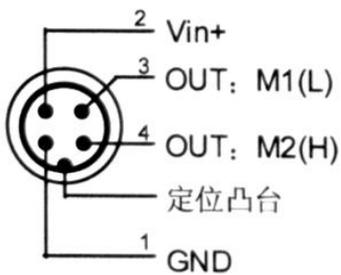
```
    2 — Vin+
    3 — OUT: RS485-A
    4 — OUT: RS485-B
      — 定位凸台
    1 — GND
```
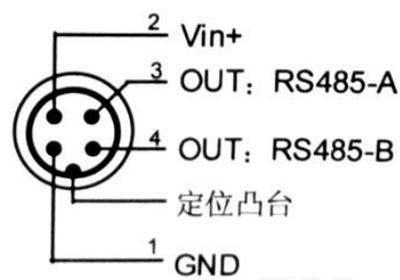
Installation Notes

◇ **Probe should be installed perpendicular to the measured surface**

液体

正确安装方法

Right Installation

液体

错误安装方法
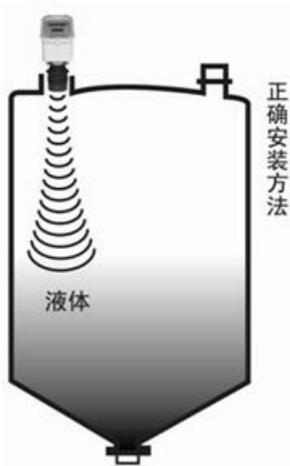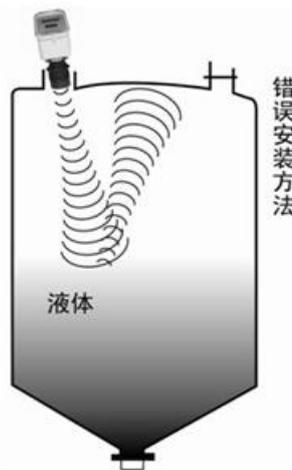
Wrong Installation

凸型 Current/ Voltage +TXD output

```
    — OUT: M1(L)
```

```
    — OUT: 4~20mA / 1~5V
```
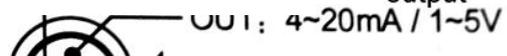
◇**Probe should be installed away from the feed opening, avoiding UL105 oracles：**
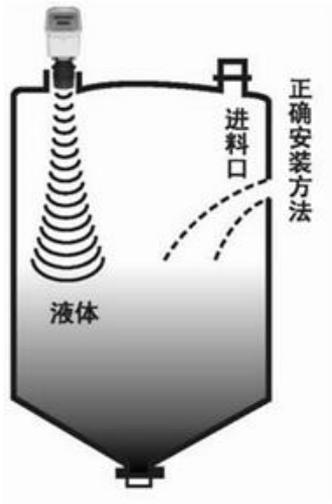

Right Installation
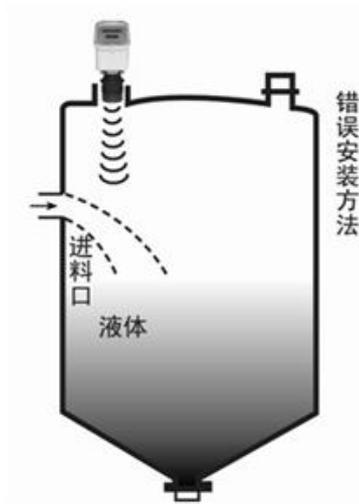
Wrong Installation

◇**to improve the probe mounting location, the maximum liquid level to prevent access to blind**
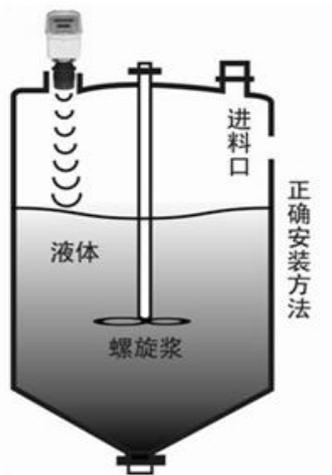

Right Installation
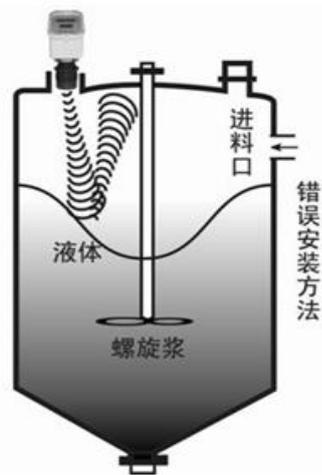
Wrong Installation

◇**not suitable for strong mixing of the real-time measurements:**

Right Installation

Wrong Installation

◇**to improve the probe mounting location, the maximum liquid level to prevent access to blind**

Right Installation

Wrong Installation