T600 Ultrasonic Level Sensor

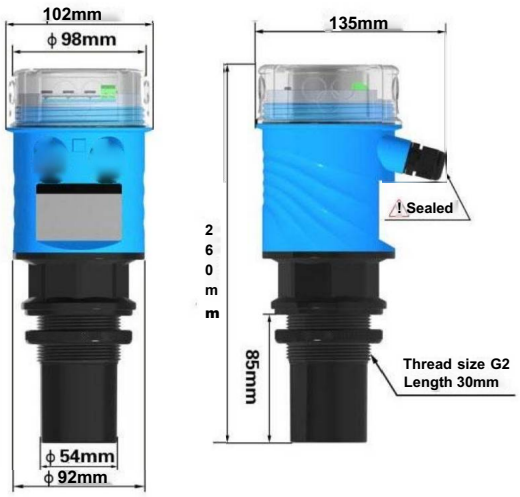
Intelligent Ultrasonic Level Sensor

Specifications^

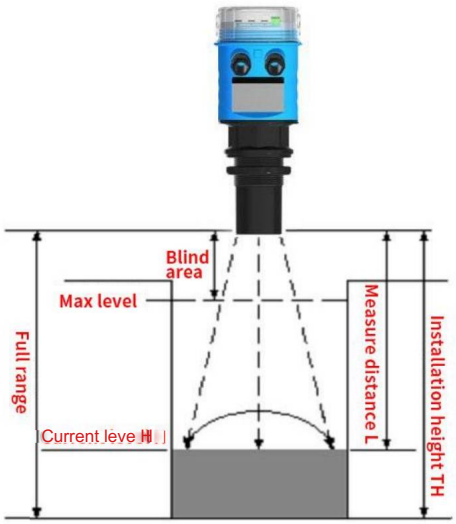
+ Measuring range: 0 - 25m (selectable)
> Blind area: 0.25-0.5m
+ Accuracy: 0.25-0.5% + Resolution: 1mm
+ Pressure: Below 4 atmospheres
+ Display: LCD display, shows level height and distance with Temp optionally
+ Analog output: 4~20mA (Standard) 0-10V, 0-5V etc on request
+ Digital comms output: RS485 Modbus RTU
+ Power supply: DC24V, AC220V (built-in lightning protection)
< Ambient temperature: -20°C - +60°C (high temperature customized version)
< Ingress Protection grade: IP67

Dimensions

(Product external dimensions)



(Thread material, size and length can be customized)

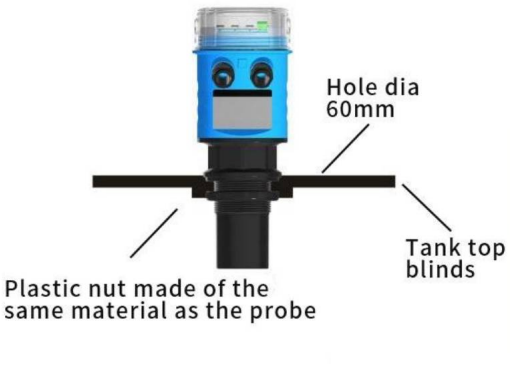


(Installation principle schematic)

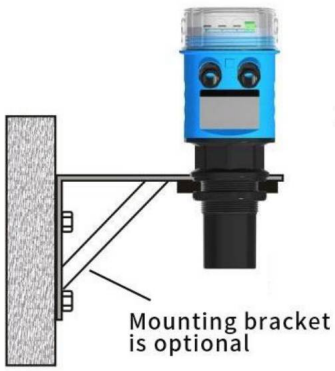
Installation

(Product installation method)

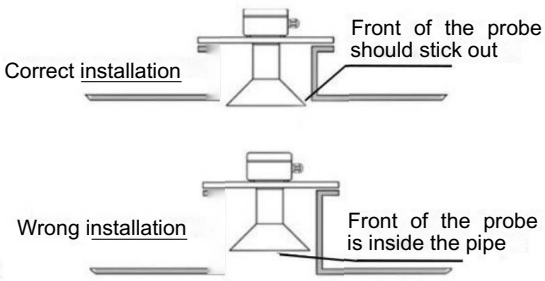
In an open liquid level monitoring environment users generally adopt the bracket mounting method, fixed with the instrument's own flange or nut. For tank mounted installations, position the sensor and cut a hole slightly larger than the diameter of the probe (60mm), the instrument is then to be fitted and then the flange or nut screwed from bottom to top to secure in place. The installer must ensure that the probe surface (end of the horn) of the instrument is aligned level with the measured liquids surface and that it clears the edges of the hole when tank mounted. The following installation methods are commonly used.



a) Plastic nut installation

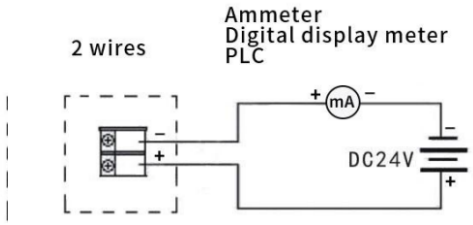


b) Bracket installation



c) Installation reference

Wiring diagram



2 wire wiring

Note: Do not use the same DC24V power supply as the inverter.

4 wire wiring

Note: P is power, DC24V or AC220V optionally available. L1 & L2 are low limits, H1 & H2 are high limits. I- I+ are 4-20mAoutput, B & A are for the RS485 output.

Calibration

Key description

[SET] : Menu key. Press [SET] to show the password interface, enter the password to goto the menu, after changes press [SET] to exit the menu.

[▲] : Flip-up key and numeric key. In the menu this key is used as the up key of the menu, when changing the data, this key is used as the numeric key.

[►] : Shift key. This key is used as a shift key when changing data.

[OK] : Confirmation. (Selects a menu or confirms changes)

Password

Press [SET] key, the password interface appears: "0000", press [▲] key to change the first unit to show "2000" then press [OK] key to enter the parameter setting menu interface.

Parameters setting

I] Liquid level calibration (P01) (Note: now this function is configured by the P04 menu)

After the instrument is installed and powered on, the liquid level value is displayed on the LCD, which sometimes does not match the exact liquid level, so level calibration is required. As long as the P04 menu is followed, it will automatically calibrate the liquid level (liquid level value H) and the distance (measurement distance value L).

Liquid level calibration automatic steps are as follows: Press SET key, enter the password and then press OK key to enter the parameter setting menu, move to the P04 menu, Press OK key for P04 probe mounting height calibration; with the key (shift) and ▲ key (numerical change) it should be changed to the actual mounting height (such as 2.100), press OK key to confirm, press SET key to exit the menu. At this time the first line H" is displayed for the current liquid level value indicating that the instrument probe installation height calibration is complete. The liquid level calibration (liquid level value H) and measure distance calibration (measure distance value L) are both automatically calibrated.

II] Full scale 20mA value setting (P02)

When the instrument is working normally, press the SET key to enter the parameter setting menu, press ▲key to select PO2 menu, the second line of numbers is the 20mA corresponding to the liquid level, press OK key to set.

II] Display mode setting (P03)

P03 menu can change the display mode, there are 3 display modes to choose from:.
00 shows the level value (H) and temperature value (F);
01 shows the measure distance value (L) and temperature value (F)
02 shows the level value (H) and measure distance value (L).
Press ▲ to select the desired mode and then press OK to confirm.

IV Probe mounting height setting and automatic level calibration (P04)

The P04 menu is for the probe mounting height setting, which must be accurately measured. Once the actual installed mounting height value is set, the H and L values (i.e.: level value and distance) are automatically calibrated.

V Reaction speed setting (P05)

The P05 menu changes the speed of the sensors response. (The faster the meter is required to respond.)
The meter has 4 modes to choose from: 00 fastest response speed;
01 fast response speed; 02 medium response speed; 03 slow response speed.

Press ▲ to select the desired mode and then press OK to confirm.

Note: The faster the reaction speed of the meter, the bigger the data display jumps; on the contrary, the slower the reaction speed of the meter, the more stable the data display is. If the liquid level does not change particularly fast, it is generally not necessary to modify the factory settings.

VI Blind area setting (P06)

The instrument's blind zone can be changed to accommodate some of the more complex conditions in the field. For example, it is possible to avoid the influence of nearby protruding objects on the instrument.
In general, there is no need to modify the factory settings.

VII ID number setting (P07) (Note: Only the 4 wire instrument has this function)

Used for unique address RS485 communication, default is 01.

VIII Relay output setting (Note: Only the 4 wire instrument has this function)

The sensor comes with two relays, H (upper limit), L (lower limit).

Press SET key the password interface appears: "0000" Press [▲] key to change the first digit to 3 eg."3000", press [OK] key to enter the relay parameter setting menu.

Each group of relays has two parameters corresponding to it, which are the control value and the return value. H(high point) relay is controlled by the menu parameters H (control value) and dH (return value)

L (low point) relay is controlled by the menu parameters L (control value) and dL (return value).

For the high point relay (H). the relay closes when the measured value rises and is greater than the control value (H); the relay opens again when the measured value falls to less than the control value minus the return difference value (H-dH).

For the low point relay (L), the relay closes when the measured value falls lower than the control value (L); the relay opens again when the measured value is larger than the control value plus the return difference (L+dL).

IX Relay (Alarm type)

Press the SET key password interface "0000", press the [▲] key to change the first digit to 4 eg."4000", press the [OK] key to enter the relay settings, PH: 01 for the High alarm, PL: 02 for the Low alarm, set the type of alarm according to demand (for example, need two high alarms settings for PH: 01, PL: 01; low alarm settings for PH: 02, PL: 02 can be realized). Set the alarm type according to the demand (e.g. need two high alarm set to PH:01, PL: 01; low alarm set to PH:02, PL:02 can realize this function).

X Examples

(1) 8 metres of liquid level and you need to (energize) close the relay to turn on the pump to inject more water when the level is lower than 2 metres, and then (de-energize) open the relay to stop the pump when the level is higher than 7 metres.

This can be achieved by using a lower limit alarm relay, setting the return difference dL=7-2=5 metres and setting L=2 meters. So that when the liquid level is less than 2 metres, the relay closes and the pump is turned on to inject water. When the liquid level is greater than 7 metres, the relay is opened and the pump is turned off.

(2) 5 metres of liquid level, when the level is higher than 4 meters, you want to (energize) close the relay to activate the suction pump and when the level is lower than 1 metre (de-energize) open the relay to stop the suction pump.

This can be achieved using the upper limit relay. Set the return differential dH= 4-1=3 metres and H= 4 metre so that when the liquid level is greater than 4 metres the relay closes to activate pump drainage and at less than 1 metre level, the suction pump stops as the circuit is de-energized by the level sensors relay.

The above two examples are in the case of only one pump, the use of differential control of the two liquid level points is also possible.

SPLIT

Intelligent Split ultrasonic Level Meter

Standard configuration

Cable 10m, a universal mounting bracket, Output: 4-20mA + RS485 + 2 relays

3 types of display\mode

00 shows the level value (H) and temperature value (F);
01 shows the measure distance value (L) and temperature value (F);
02 shows the level value (H) and measure distance value (L).