

# Tosilon Automation

Your Global Partner for Engineering

## Smart Ultrasonic Level Meter

TUL Series



*Design & Manufactured according to CE, RoHs Standard.*

Model: One of the Two /three /four linear; Split wall-mounted / Plate mounted

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**Tosilon**

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## Brief Description

The ultrasonic level meter is the intelligent non-contact liquid level measuring instruments.

Product has automatic power adjustment, gain control, to a false target, and temperature compensation. U.S. imports of chip processing and advanced testing computing technology to improve the measurement accuracy of the instrument, for the interference signal suppression function to ensure that the real measurement results. The products can be widely used for a high degree of measurement of the level of a variety of liquid and solid materials can also be used for distance measurement.



- Advanced Technology in Microprocessor and Echo Processing
- High Accuracy
- Wide Range of Application

## General Technical Specification

|                                 |                                                         |
|---------------------------------|---------------------------------------------------------|
| <b>Range</b>                    | <b>0.5~30m</b>                                          |
| <b>Accuracy</b>                 | 0.25%, 0.5%                                             |
| <b>Resolution</b>               | Range<10m:1mm; >10m: 10mm                               |
| <b>Frequency</b>                | ~40KHZ                                                  |
| <b>Launch Angle</b>             | 6° - 12°                                                |
| <b>Blind Area</b>               | 0.20~0.9m                                               |
| <b>LCD Display</b>              | Available                                               |
| <b>Supply Voltage</b>           | 220VAC/24VDC                                            |
| <b>Output Signal</b>            | 4~20mA Standard (Or optional RS485.RS232 when ordering) |
| <b>Maximum Load</b>             | 750 Ohm                                                 |
| <b>Case Material</b>            | PA6.ABS                                                 |
| <b>Degree of Protection</b>     | IP65.IP67.IP68                                          |
| <b>Ambient Temperature (°C)</b> | -20~+55                                                 |
| <b>Mounting Thread</b>          | M66x3, as required                                      |

## Ultrasonic Unit in General

All-in-One Type (2-wire)

|                            |                                                     |
|----------------------------|-----------------------------------------------------|
| <b>Power Supply</b>        | <b>24V DC</b>                                       |
| <b>Output</b>              | 4-20mA                                              |
| <b>Measuring Range</b>     | 0~5m, 0~10m, 0~15m, 0~20m, 0~25m, 0~30m             |
| <b>Display</b>             | 6-digit LCD                                         |
| <b>Launch Angle</b>        | 6° to 12°                                           |
| <b>Level Mode</b>          | Current Distance / Current Level                    |
| <b>Blind Area</b>          | 0.25~0.90m, it is in proportion to measuring range. |
| <b>Resolution</b>          | <10m, 1mm<br>≥10m, 10mm                             |
| <b>Class of Protection</b> | IP66, IP67                                          |
| <b>Accuracy</b>            | 0.25%F.S, 0.5%F.S                                   |
| <b>Ambient Temp.(°C)</b>   | -15 to +55                                          |
| <b>Relative Humidity</b>   | <95%                                                |
| <b>Installation Type</b>   | Thread Connection / Flange                          |
| <b>Thread Spec.</b>        | M66x3, as required                                  |
| <b>Enclosure</b>           | PA6 GF30, Aluminium, as required                    |



TUL-7 Standard Type



TUL-7C Anti-Corrosion Type



TUL-7E Ex Type

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## Ultrasonic Unit in General

All-in-One Type (3-wire, 4-wire)

|                            |                                                     |
|----------------------------|-----------------------------------------------------|
| <b>Power Supply</b>        | <b>24V DC, 220V AC</b>                              |
| <b>Output</b>              | 4-20mA, optional for RS485                          |
| <b>Wiring Type</b>         | 3-wire, 4-wire                                      |
| <b>Measuring Range</b>     | 0~5m, 0~10m, 0~15m, 0~20m, 0~25m, 0~30m             |
| <b>Display</b>             | 6-digit LCD                                         |
| <b>Launch Angle</b>        | 6° to 12°                                           |
| <b>Level Mode</b>          | Current Distance / Current Level                    |
| <b>Blind Area</b>          | 0.25~0.90m, it is in proportion to measuring range. |
| <b>Resolution</b>          | <10m, 1mm<br>≥10m, 10mm                             |
| <b>Class of Protection</b> | IP66, IP67                                          |
| <b>Accuracy</b>            | 0.25%F.S, 0.5%F.S                                   |
| <b>Ambient Temp.(°C)</b>   | -15 to +55                                          |
| <b>Relative Humidity</b>   | <95%                                                |
| <b>Dimension</b>           | 205(L)x115(W)x120(H) (without waterproof thread)    |
| <b>Installation Type</b>   | Thread Connection / Flange                          |
| <b>Thread Spec.</b>        | M66x3, as required                                  |
| <b>Enclosure</b>           | PA6 GF30, Aluminium, as required                    |



TUL-7 Standard Type



TUL-7C Anti-Corrosion Type

Optional for Function: Output for Relay

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## Ultrasonic Unit in General

Split Type

|                          |                                                                                         |
|--------------------------|-----------------------------------------------------------------------------------------|
| <b>Power Supply</b>      | <b>220V AC, 24V DC</b>                                                                  |
| <b>Output</b>            | 4-20mA, optional for RS485                                                              |
| <b>Wiring</b>            | 4-wire; recommend for shielded-wire(4x0.5)<br>Max. transmission distance is 300m        |
| <b>Measuring Range</b>   | 0~5m, 0~10m, 0~15m, 0~20m, 0~25m, 0~30m                                                 |
| <b>Display</b>           | 6-digit LCD                                                                             |
| <b>Launch Angle</b>      | 6° to 12°                                                                               |
| <b>Blind Area</b>        | 0.25-0.9                                                                                |
| <b>Resolution</b>        | <10m, 1mm<br>≥10m, 10mm                                                                 |
| <b>Class Protection</b>  | IP66, IP67                                                                              |
| <b>Accuracy</b>          | 0.25%F.S, 0.5%F.S                                                                       |
| <b>Ambient Tempt.</b>    | -15 to +55 °C                                                                           |
| <b>Relative Humidity</b> | <95%                                                                                    |
| <b>Dimension</b>         | 205x115x120                                                                             |
| <b>Probe Material</b>    | PA6 GF30                                                                                |
| <b>Control Output</b>    | Wall-mounted, 3-set 6channel output for relay<br>Panel, 2-set 4channel output for relay |
| <b>Wall-mounted unit</b> | Dimension: 160x80x120mm<br>Hole Size: 152×76mm<br>Material: ABS Plastic                 |



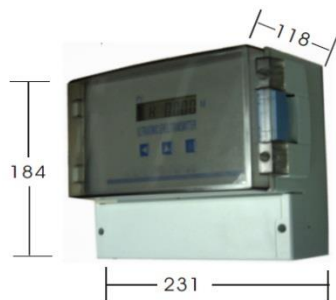
TUL-4MA Wall-Mounted Type



TUL-4PB Panel Type

## Outline Structure

A. Wall-Mounted Unit



B. All-in-One Type (2 / 3 / 4 wire)



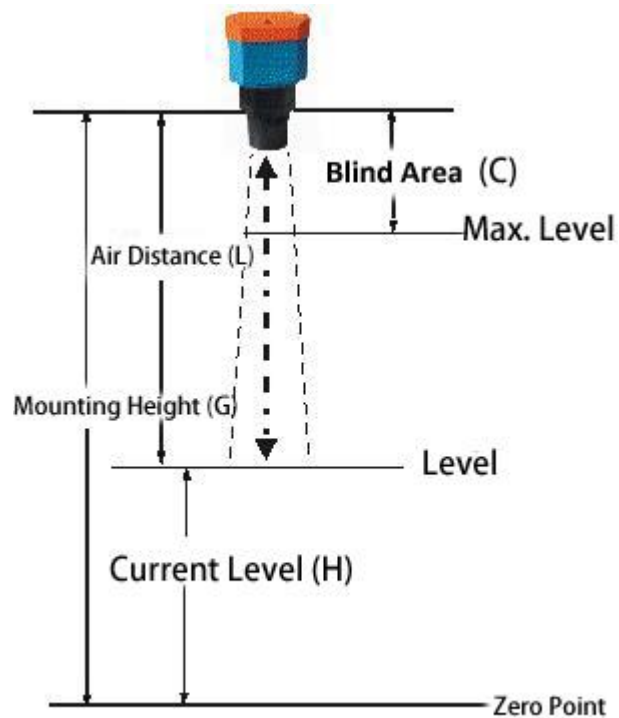
C. Panel Unit



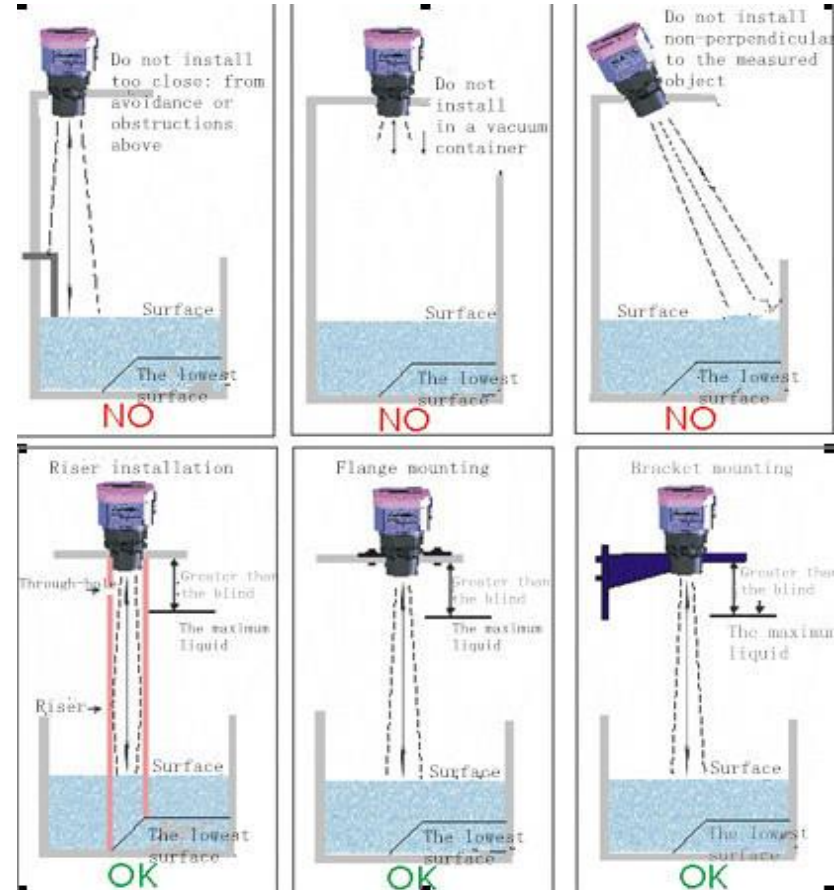
D. All-in-One Type Ex



## Installation

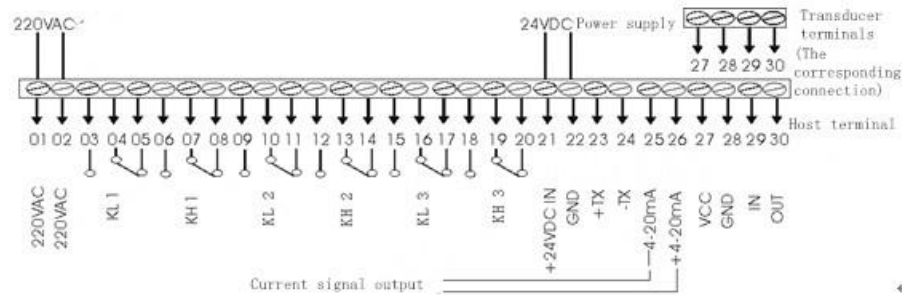


Note: In the consideration of the Blind Area, please keep distance between the Max. Level and the ultrasonic unit

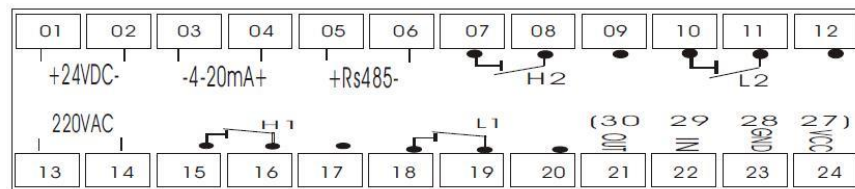


## Electrical Connection

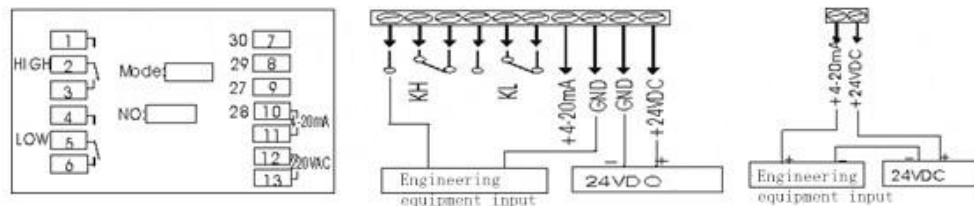
### A. Wall-Mounted Unit



### B. Panel Unit



### C. Points of disc capacity meter    D. One 3-wire instrument    E. One two-line instrumentation



## ORDER GUIDE

### TUL series Ultrasonic Level Sensor

|   |                 |                 |                                                      |  |
|---|-----------------|-----------------|------------------------------------------------------|--|
| 7 | All-in-One Type |                 |                                                      |  |
| 4 | Split Type      | A. Wall-Mounted |                                                      |  |
|   |                 | B. Panel        |                                                      |  |
|   |                 | Measuring Range |                                                      |  |
|   |                 | 1               | 0-5m                                                 |  |
|   |                 | 2               | 0-10m                                                |  |
|   |                 | 3               | 0-15m                                                |  |
|   |                 | 4               | 0-20m                                                |  |
|   |                 | 5               | 0-25m                                                |  |
|   |                 | 6               | 0-30m                                                |  |
|   |                 | Power Supply    |                                                      |  |
|   |                 | D               | 24V DC                                               |  |
|   |                 | G               | 220V AC                                              |  |
|   |                 | Output          |                                                      |  |
|   |                 | 1               | 4-20mA (2-wire, only for All-in-One Type)            |  |
|   |                 | 2               | 4-20mA (3 or 4-wire)                                 |  |
|   |                 | 3               | 4-20mA with 2 routes relay                           |  |
|   |                 | 4               | 4-20mA via RS485                                     |  |
|   |                 | 5               | 4-20mA via RS485, with 4 relay (only for Split Type) |  |
|   |                 | Accuracy        |                                                      |  |
|   |                 | A               | 0.25%F.S                                             |  |

|   |   |   |   |   |   |          |                |                                          |
|---|---|---|---|---|---|----------|----------------|------------------------------------------|
|   |   |   |   |   | B | 0.5%F.S  |                |                                          |
|   |   |   |   |   |   | Material |                |                                          |
|   |   |   |   |   |   | O        | Non-Corrosion  |                                          |
|   |   |   |   |   |   | F        | Anti-Corrosion |                                          |
|   |   |   |   |   |   |          | Enclosure      |                                          |
|   |   |   |   |   |   |          | N              | Without Explosive Proof                  |
|   |   |   |   |   |   |          | D              | With Explosive Proof (only for Aluminum) |
| 7 | B | 1 | D | 1 | B | F        | N              | The whole Spec. for reference            |

## Operation Manuel

### Parameter code

Circulating press the Shift key to view code information

- L Air distance
- G or E (G Mounting height; E The current matter-bit)
- D Range of the instrument
- C Blind area
- P Should output the current value
- U Current track
- A Factory mode (Must be:0.000)



You can hold down the SET button a few seconds, there-xxxx-interface, enter -0 000 - and then press the SET button to enter the menu cycle, hold down the SET button a few seconds you can (use the button to exit is also one of a flashing, so you should read need numbers)  
(The factory default settings to install a high degree of measurement Level, the current wait for track)

#### 01. Set the Level(That is, the benchmarking)

a. 04 set for .000, set to install a high degree of digital (analog setting)

(The current H value is equal to the installation height value minus the air distance value)

b. 04 set as 1.000, to set the level of the actual figures (must live setting)

(H to display the value equal to the value you set)

Due to the discrete nature of the probe and mounting height is difficult to estimate the requirements of high precision measurement, it is recommended to set the current level

- 02. Range (Current output and is proportional to)**
- 03. Level resection (usually in the measured flow rate, 0.003)**
- 04. Mode code set (0.000 behalf of the mounting height mode; 1.000 represents the current level mode)**
- 05. Measurement mode (0.000 on behalf of the measured material level; 1.000 on behalf of the measured air distance, distance measurement without setting)**
  
- 06. Current tracking mode (0.000 delegates, exception tracking, and 1.000 on behalf of continuing to wait for the track)**  
 (Exception tracking said time to refresh, waiting for tracking said detected target time to refresh, not measured to maintain the current wait for a few moment)
- 07. The rate of change (each receiving a variation, it is recommended 2.000)**
- 10. Factory mode (must be 0.000)**
- 21. The first group (programmable) the upper limit of control**
- 22. The first group (programmable) floor control**
- 23. The second group (programmable) the upper limit of control**
- 24. The second group (programmable) floor control**
- 25\*.The third group (programmable) upper limit of control**
- 26\*.The third group (programmable) lower control**
- 27. Upper limit of the audible alarm (programmable)**
- 28. The lower limit of the audible alarm (programmable)**  
 (When instrument alarm, press any key to clear the alarm sound)
- 29. Hysteresis control (to prevent the relay jitter, frequently recommended 0.050)**
- 30. Backlight (0.000 backlit delay off; 1.000 Illumination)**
- 31. Instrument No. (communication networking)**
- 32. Baud rate**

|                  |                 |
|------------------|-----------------|
| 1→1200, N, 8, 1. | 2→2400, N, 8, 1 |
| 3→4800, N, 8, 1. | 4→9600, N, 8, 1 |

## **Explain**

### **1. Split wall menu fully functional ibid.**

### **2. Split panel mounted menu ibid. the following function**

- 23. The second group the upper limit of control
- 24. The second group floor control
- 25\*.The third group upper limit of control
- 26\*.The third group lower control

### **3. One three-line menu, ibid, the following function**

- 23. The second group the upper limit of control
- 24. The second group floor control
- 25\*.The third group upper limit of control
- 26\*.The third group lower control
- 27.Upper limit of the audible alarm
- 28. The lower limit of the audible alarm
- 30. Backlight

### **4. One second-tier menu as above, the following functions without**

- 21. The first group the upper limit of control
- 22. The first group floor control
- 23. The second group the upper limit of control
- 24. The second group floor control
- 25\*.The third group upper limit of control
- 26\*.The third group lower control
- 27.Upper limit of the audible alarm
- 28. The lower limit of the audible alarm
- 30. Backlight
- 31. Instrument No. (communication networking)
- 32. Baud rate

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