



TECHNICAL GUIDANCE

UW3000 ULTRASONIC LEVEL MONITOR

OUTLINE

The **UW3000** is a compact, lightweight ultrasonic level monitor with excellent cost performance.

The compact polypropylene body features a clean structure, which is ideal for managing the level of pure water, chemicals, and other liquids.

The DSP function ensures stable distance measurement.

The graphic LCD shows reflection waveforms that are useful during installation and maintenance. In addition, the UW3000 can mask obstacles within the beam angle to avoid the influence of unnecessary reflection on measurement. Remote management can be achieved with 4–20 mA DC output, high and low limit alarms, and RS485 (MODBUS) communication.

The UW3000 operates in the weir flowmeter mode as standard, enabling flow rates to be measured at V-notch and suppressed rectangular weirs.

FEATURES

- ❑ Compact, lightweight, and inexpensive
- ❑ Simple and clean construction made of polypropylene
- ❑ Can be used for semiconductor process tanks and food tanks since the UW3000 can measure levels without contacting the target liquid.
- ❑ The DSP function ensures stable distance measurement.
- ❑ The built-in graphic LCD indicates levels and ultrasonic reflection waveforms. Data can be set and changed easily with the key switches and LCD display.
- ❑ Can mask obstacles within the beam angle for accurate measurement.
- ❑ Can be remotely managed through 4–20 mA DC output, 2-point alarm output, and RS485 communication.
- ❑ Can measure distances of up to 10 m.
- ❑ Available with CE marking

SPECIFICATIONS

● Measured object	: Liquids
● Measurement distance	: Max. 10 m
● Dead zone (from the membrane)	: Min. 0.3 m
● Frequency	: 50 kHz (45 to 55 kHz)
● Beam angle	: 7 degrees (half)
● Operating mode	: Level meter mode Weir flowmeter mode
● Display (built-in)	:
Display	: Graphic LCD (128 × 64 dots)
Parameter display	: (switching with the key switches)
	: Level meter mode:
	TOP-based distance display
	BOTTOM-based level display
	% display
	Ultrasonic reflection waveform display
	: Weir flowmeter mode:
	Weir flowmeter display
	BOTTOM-based level display
	% display
	Ultrasonic reflection waveform display
Distance unit	: m

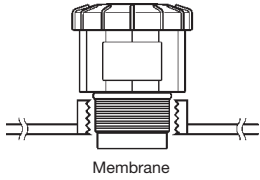


Resolution	: 1 mm
● Display accuracy	: ±0.25%F.S.
● Setting (set by using the built-in key switches)	: Display mode, current output, high and low limits of alarm output, weir flowmeter, and ultrasonic reflection waveform
● Output function	:
Current output	: 4–20 mA DC ±0.02 mA, max. load resistance of 500Ω
Alarm output	: Upper and lower, NPN open collector Rating capacity: Max. 30 V DC and 0.1 A
Digital output	: RS485 MODBUS (RTU) (Transmission distance: Up to 1200 m)
● Power supply	: 12–24 V DC ±10%
● Power consumption	: Less than 3 W
● Operating temperature	: –20°C to +70°C (no freezing, no condensation)
● Ambient humidity	: Up to 80% (31°C)
● Operating pressure	: Atmospheric pressure
● Storage temperature	: –30°C to +80°C (no freezing, no condensation)
● Material	:
Main body and cover	: Polypropylene (PP)
Membrane	: Polypropylene (PP)
O-ring	: Fluororubber (FKM)
● Installation	: G2 (PF2) male thread
● Protection class	: IP65 (IP20 when the cover is open)
● Memory backup	: FERAM
● Mass	: 350 g (excluding cables)
● Cable	: Cable length: 10 m (with a waterproof connector) 8 cores × 0.3 mm ² (with a shield) Finished outside diameter: Approx. 7 mm

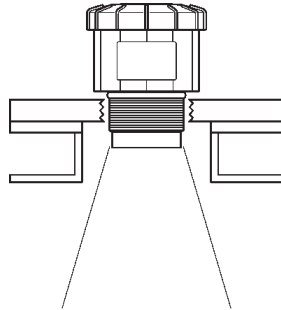
INSTALLATION

- Install the UW3000 on the top of a tank horizontally.
- Prepare a base with a G2 screw hole and screw the UW3000 into it.
- To prevent incorrect measurement, use resin nuts or flanges, not metal ones.

• Installation example



In the threaded socket

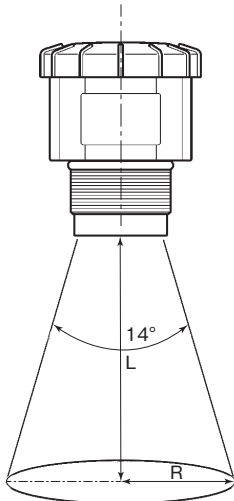


In the threaded flange

Precautions

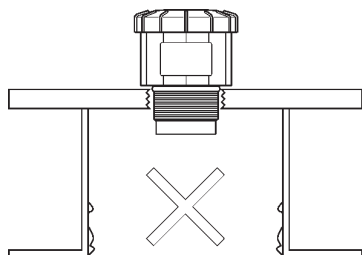
- ❑ Screw in the UW3000 by hand. Do not overtighten; doing so may damage the UW3000.
- ❑ Do not install multiple units in a vessel; they will interfere with each other and make measurement impossible.
- ❑ Install the UW3000 so that the membrane intrudes into the vessel.
- ❑ When installing the UW3000 in a nozzle, make sure that there is no unevenness on the inner side of the nozzle and that the inner diameter of the nozzle is larger than the length.
- ❑ Cover the UW3000 with a sunshade to avoid direct sunlight.
- ❑ Make sure that the sound robe is clear of obstacles. These are inner structures such as ladders, temperature sensors, and the inlet stream of liquids.
- ❑ Install the UW3000 as far away as possible from obstacles.
- ❑ Make sure that the sound robe is not affected by the nozzle or the vessel wall.
- ❑ Use the provided O-ring to ensure the proper emission of ultrasound. Do not install the UW3000 on a thin plate.

Sound robe (beam angle)

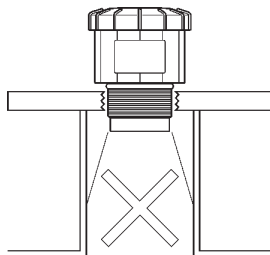


L (m)	R (m)
0.3	0.07
0.50	0.09
1.00	0.15
2.00	0.28
4.00	0.52
5.00	0.64
7.00	0.89
8.00	1.01
10.00	1.26

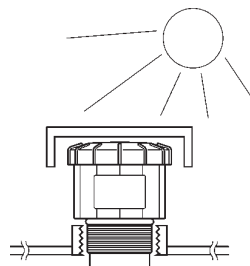
• Notes on installation



Make sure there are no bumps such as welding beads and burrs on the inner side of the nozzle.



Make sure that the sound robe is not affected by the nozzle.

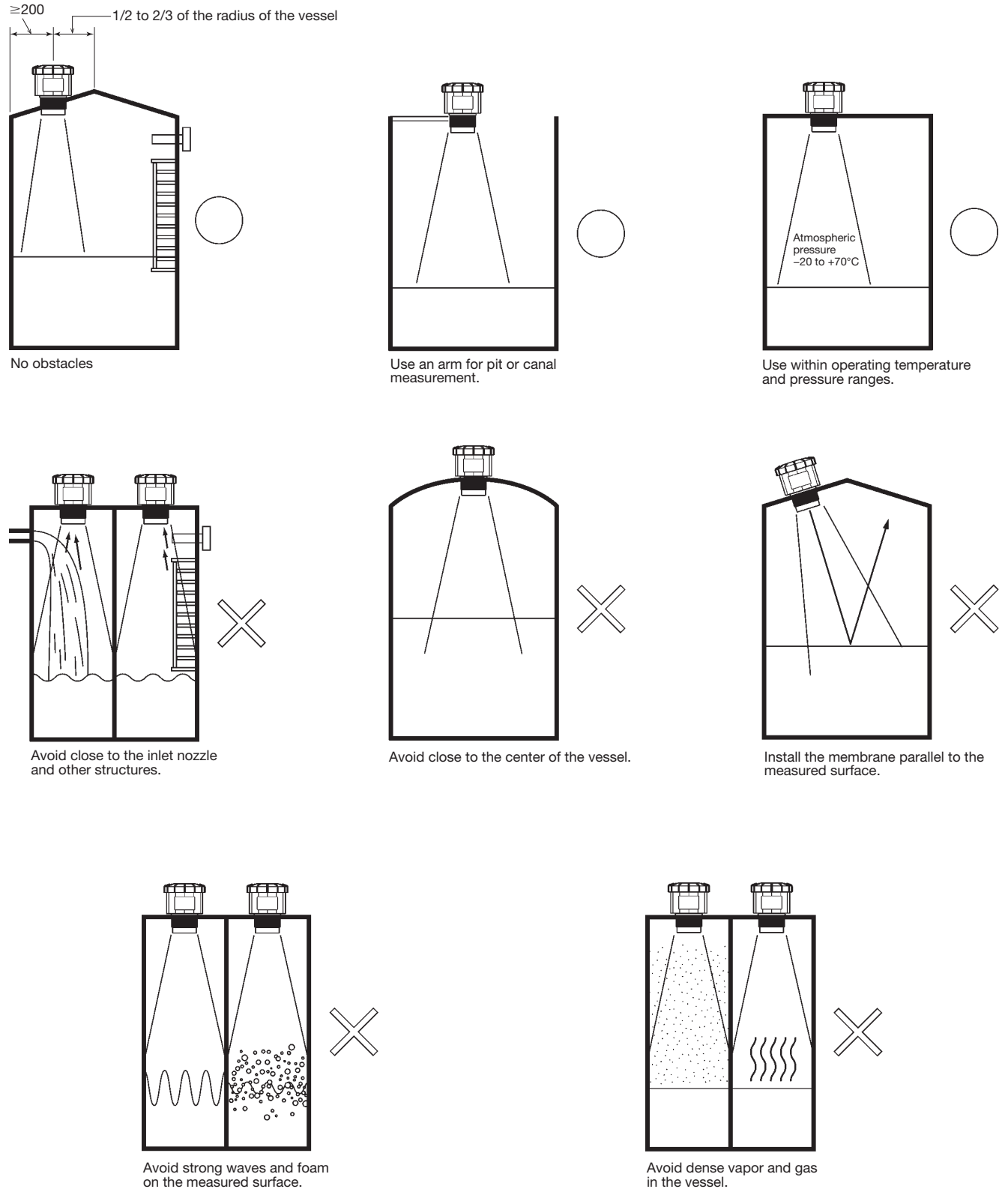


Place a sunshade to avoid direct sunlight.

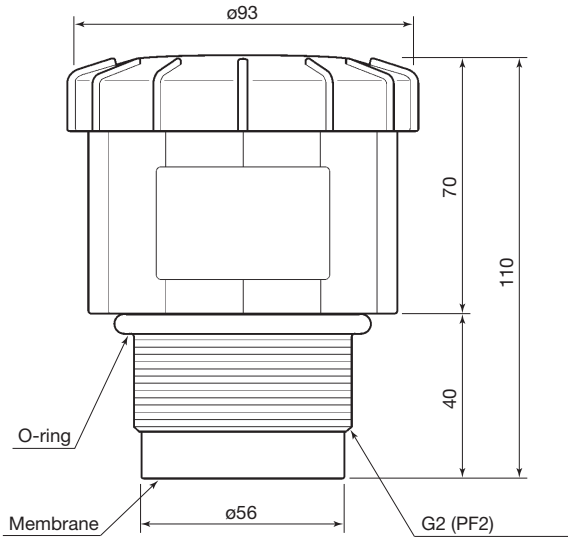
Installation location

- ❑ Install the UW3000 in a place where no object causes interference, parallel to the measured surface.
- ❑ Ensure at least 200 mm away from the vessel wall (in order to avoid noise that may cause malfunctions).
- ❑ Avoid a place close to the center of the vessel. It may cause multiple reflections, particularly in conical or dome roof tanks.
- ❑ Strong waves or foam on the measured surface or dense vapor and gas make measurement impossible.

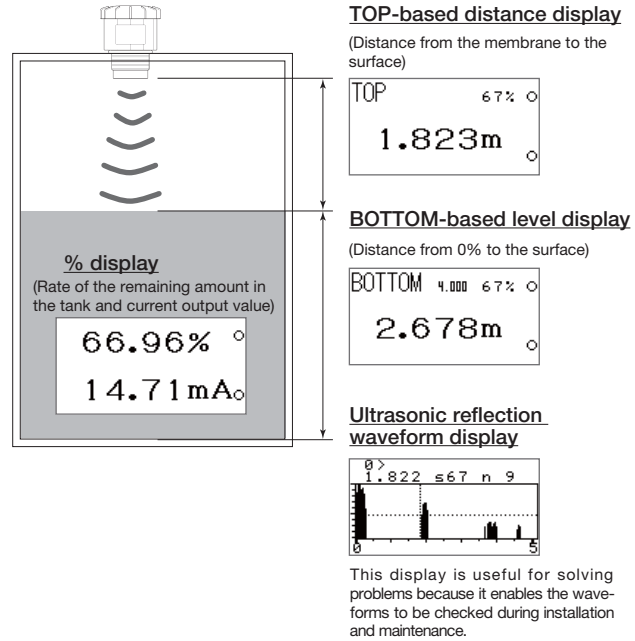
Installation example



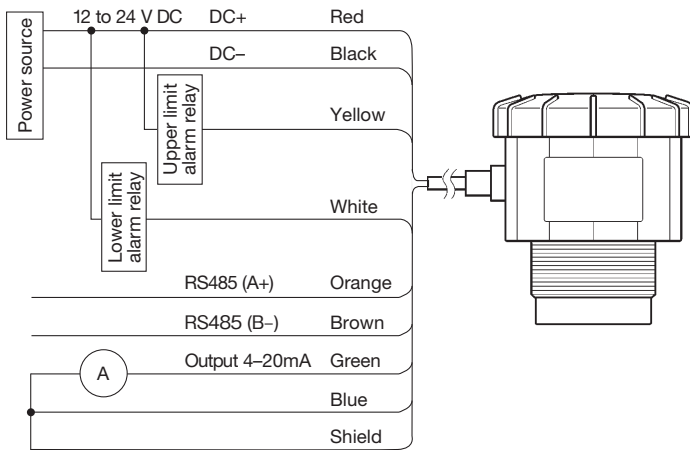
DIMENSIONS



FOUR DISPLAYS



WIRING



- Red lead wire..... 12 to 24 VDC (+)
- Black lead wire 12 to 24 VDC (-)
- Yellow lead wire..... Upper limit alarm switch (open collector output, NPN)
- White lead wire..... Lower limit alarm switch (open collector output, NPN)
- Orange lead wire RS485 (A+)
- Brown lead wire..... RS485 (B-)
- Green lead wire 4-20 mA output (+)
- Blue lead wire..... GND (-) (upper/lower limit alarm switch, 4-20 mA output)
- Shielded wire..... Grounding (connected to the blue lead wire and to the ground)

Note: Output ratings of upper/lower limit alarms is 30 V / 0.1A.
When a relay etc. is connected, the output rating of relay to be used must be within the above voltage and current.

MODEL CODE

Model: UW3000

Model code	Description
UW3200	Measurement distance: Max. 10 m
Optional /RS	To be delivered with specified parameters *If parameters are not specified, the UW3000 will be shipped with the default settings.

ORDERING INSTRUCTIONS

1. Model code
Example: UW3200
2. Optional specifications (specify only when necessary)
Specify optional items with /RS.
Example: UW3200/RS
Specify a 4 mA output position, a 20 mA output position, and high and low limit alarm positions (when necessary) as the distance from the membrane.

* Specification is subject to change without notice.

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