

UW-100

ULTRASONIC LEVEL METER

GENERAL

- ❑ UW-100 is ULTRASONIC LEVEL METER.
- ❑ The level of various liquids is outputted as a current output signal in DC 4 to 20mA.
- ❑ Having new functions such as indication mode of echo form and invasion signal to the dead band (MAX ALARM).

FEATURES

- ❑ Complete display function
Various contents of setting can be displayed in addition to the indication of level (digital bar graph) and temperature, the state of measurement and relay action.
- ❑ Direct display function of reflecting waveform
The echo from the liquid level can be directly indicated by the indication part of converter of level meter. Since the echo from obstacles besides the liquid level can be also displayed, the detailed measuring situation inside the tank can be definitely grasped.
- ❑ Monitoring and alarming the approach of liquid level to the dead band (MAX ALARM).
In case of the ultrasonic level meter, it may result in an indication error that the indication decreases suddenly when the liquid level enter into the dead band.
In case of UW-100, the dead band warning is given by the contact signal and current output etc. when the liquid level approaches the dead band, exceeding the upper limit of measuring range.
- ❑ Easy initializing
The measurement can be made by setting the measuring range, alarm point, indication unit etc. just by the simple operation. (No special equipment is required for the adjustment.)

MAIN APPLICATIONS

- ❑ Measurement of liquid level of drainage pit and rain water pit
- ❑ Measuring liquid level of the various kinds of the atmospheric pressure storage tanks.

OPERATION PRINCIPLE

Ultrasonic level meter is composed of a sensor and a converter. The ultrasonic wave radiated from the sensor hits the liquid level and echo. The sensor detects the echo and calculate the distance up to the liquid level by the time the ultrasonic wave goes to the level and back between the sensor and the liquid level, and the current output signal in proportion to this can be outputted.



STANDARD SPECIFICATION

Converter

- Model : UW-143T
- External dimension : Refer to "DIMENSIONS".
- Operating temperature : 10 TO +60°C (Free from the dew condensation)
- Analog output : DC4 to 20mA (Insulation output)
Allowable load resistance 540Ω
Fail-safe function
Select the output at the time of abnormalities from 2mA, 22mA and HOLD.
- Relay output : NO (normally opened) contact point
Rating AC/DC 125V 5A (Resistance load)
* High Alarm (HA)
(Set position arbitrarily)
* Low Alarm (LA)
(Set position arbitrarily)
* Alarm of invasion to dead band (MAX)
* Measuring range - lower end alarm (MIN)
* "Echo loss" alarm (AGC)
* Temperature (TEMP) alarm
- Indication (LCD) : Level value (m or %) (Basis of the bottom)
Air space valve (m or %) (Basis of the sensor face)
Measuring state (Indication mode of echo)
State of various alarms
(HA, LA, MAX, MIN, AGC, TEMP)
Various set values
Temperature
- Accuracy : Larger value of either ±0.25%F.S. or ±2cm
(20°C at whole area, Atmospheric pressure, Humidity : less than 65%, Stationary liquid level, Free from obstacles within ultrasonic beam angle.)
- Resolving power : Indication: 1cm, Analog output: 0.018mA
- Conversion error : ±0.5%F.S. (Temperature : 20°C fixed)
- Temp. characteristic : ±0.015% F.S./°C
- Power source : AC100V, 117V, 220V, 240V ±10% 50/60Hz
- Power consumption : 25VA Max
- Structure : Stainless steel weather proof container,
IP54 equivalent
- Cable entry : 5 x ø21 hole (with water-proof cap)
(Option: Gland for cable dia. ø9 to 11)
- Installation : Wall mounting type
- Mass : Approx. 5 kg
- Cable(Optional) : Sensor cable RF coaxial cable
: RG62A/u
Cable for temperature sensor : MVVS
- Expanding distance : Max 90m (between sensor and converter)

Sensor

- Type : UW-143S
- Maximum range : 10m (0.4m to 9.94m)
- Frequency : 43kHz
- Beam angle : 8° (one side)
- Operating temperature : -20 to +70°C
- Operating pressure : Atmospheric pressure
- Material : Body : CPVC
Face : Teflon
- Structure : Weather proof, IP65 equivalent
- Mechanical connection : NPT 1"
- Mass : Approx. 0.6kg
- Electrical connection : Lead wire - 3m

SPECIFICATIONS

(Fill in the check mark on the applicable contents. It may be that the measurement cannot be made when the actual working conditions are different from this specifications.)

Tank specification

Tank No. : _____ // Equipment No. : _____
 Tank material : Metal Concrete Resin lining Resin Others _____
 Kind of tank : Cone-roof type Vertical pillow type Bottom cone type Lateral pillow type Others _____
 Inside Dia. (ID) : _____ mm In case of rectangular tank _____
 Height of tank (H) : _____ mm
 Distance between inside wall and mounting nozzle : _____ mm
 Height of mounting nozzle : _____ mm
 Mounting nozzle flange : 100A JIS 10K FF 6" ANSI/JPI#150RF Others _____
 Structure inside tank *1 : No Yes (In case of "Yes", fill up with check mark for whatever applicable. If there is any other thing, fill in the column "Others").
Piping Cleaning nozzle Ladder Nozzle to put liquid Duct Coil Thermometer
Liquid output pipe Liquid injection flow Agitator (Wing dia. ϕ _____ mm) Others _____

Note*1 In order not to obstruct the measurement, the structure inside the tank shall not get in the cone area of the ultrasonic beam angle from the outside diameter of sensor face. The suggested position of the sensor installation shall be considered in accordance with tank dimension, shape, and the figure which shows the position and dimension of each nozzle and structure.

Remarks : _____

Measurement specifications

Applicable fluid : Name of liquid (Concretely) _____
 Temp. inside tank (°C) : _____ min. _____ to max. _____ (Not to be less than -20°C, nor more than 70°C.)
 Ambient temp. : _____ min. _____ to max. _____ (Not to be less than -10°C, nor more than 60°C.)
 Pressure inside tank : Atmospheric pressure Others _____

Note : Recommending atmospheric pressure in principle.

Note : The properties are not clear in case of a special name liquid. The conformity of the material quality shall be confirmed by customer.

Specification for level meter

Structure of meter : Weather proof type (Place order for microwave type when the explosion proof type is required.)
 Material of sensor : Body : CPVC Face side: Teflon
 Power source : AC100V AC117V AC220V 240V \pm 10%, 50/60Hz

Measurement environment (1)

Liquid level change speed (m/sec.): less than 0.5 _____ min. _____ to max. _____
 Wave at liquid level : No Yes, a little (Wave height; less than 5cm) Yes (Wave height: Less than 15cm)*2
 Bubble at liquid level : No Yes, a little *2 Yes, in large quantity or boiling state*2
 Floating matter (Liquid level) : No Yes, a little *2 Yes, in large quantities*2
 Vapor, Gas, Mist : No Yes, a little *2 Yes, in large quantities*2
 Corrosion : No Yes \rightarrow Corrosion element _____
 Drifting powdered dust : No Yes *2
 Adhesion to the sensor of liquid, mist and drifting powdered dust:
No Yes *3 Yes, in large quantities *3

Note*2 It may cause the measurement impossibility or difficulty according to the degree.

Note*3 : It may cause the measurement impossibility or difficulty. The regular removal of the accretion and an adhesion prevention countermeasure are taken.

Measurement environment (2)

Tank installation place : Indoors Outdoors
 Prevention from overflowing : The equipment besides Ultrasonic level meter takes charge of it. The Ultrasonic level meter takes charge of it.
 Prevention from being empty : The equipment besides Ultrasonic level meter takes charge of it. The Ultrasonic level meter takes charge of it.
 How to warn when it is impossible to catch the echo (Select from the following.):
Fix the current output at the just before value(HOLD). Fix at 2mA. Fix at 22mA.

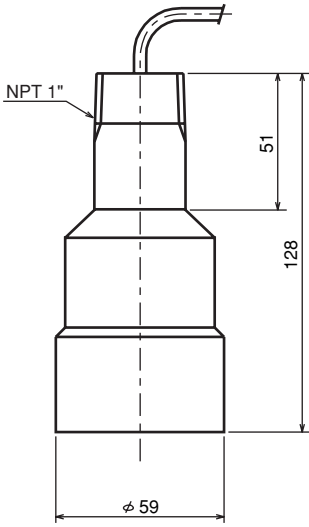
Initial adjustment

Initial adjustment : It is possible to make the initial adjustment after making an actual liquid go back and forth.
 (Time required for one round trip _____ hours) Others _____

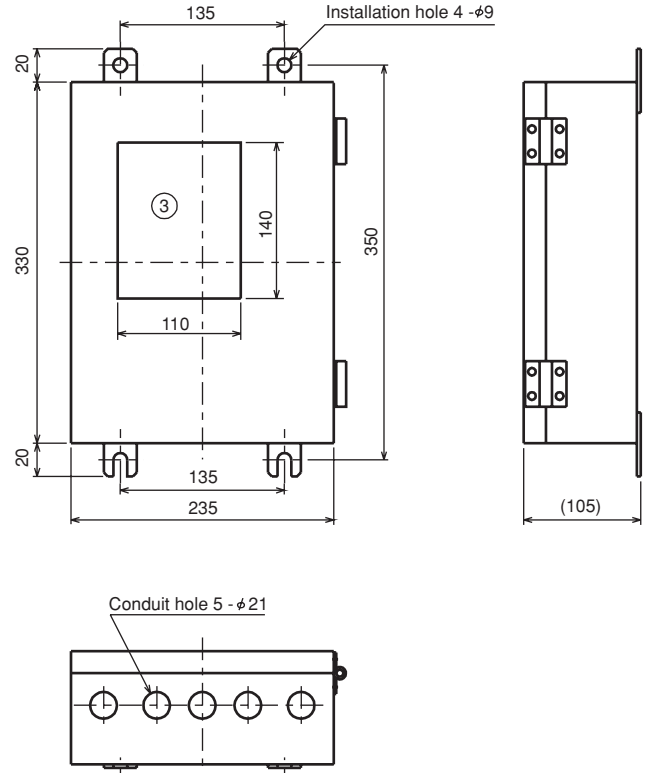
Note : Even if the trouble occurs in the warranty period by the cause except for the obvious meter trouble, the cost to dispatch engineer to settle the trouble must be paid by customer in principle.

DIMENSIONS

Sensor UW-143S



Converter UW-143T



* Specification is subject to change without notice.

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