

LTU2XX SERIES – ULTRASONIC LEVEL TRANSMITTER

APPLICATION

Non- Contact Type

Continuous Level Transmitters for fluids
paste and coarse bulk materials etc.,

MAXIMUM MEASURING RANGE

LTU 200:

5m in Liquid

LTU 203:

15m in Liquid
6m in Solid

LTU 201:

8m in Liquid
2m in Solid

LTU 204:

30m in Liquid
15m in Solid

LTU 202:

10m in Liquid
4m in Solid

LTU 205:

50m in Liquid
25m in Solid



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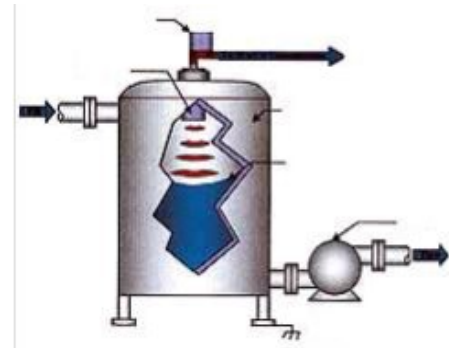
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INTRODUCTION

LTU 2XX type ultrasonic level meter absorb many advantages of domestic and foreign level meters. It is 2-wire level meter, adopt digit temperature compensation, wide voltage input and so on.... Thanks to non-contact detection, it is healthier than the other instruments, and is resistant to moisture, dust, high temperature, corrosive gas, and other harsh environment. It has characteristics of high reliability, pollution-free, stable performances, low prices, and so on, so it can be widely used in the field of solid materials level, liquid level or other fields related to measurement and control.

PRINCIPLE OF OPERATION:

Ultrasonic level instruments operate on the basic principle of “time of flight “It uses sound waves to determine fluid level. The frequency range for ultrasonic methods is ~20–200 kHz, and sonic types use a frequency of 10 kHz. As shown in Figure 1.1, a top-of-tank mounted transducer directs waves downward in bursts onto the surface of the material whose level is to be measured. Echoes of these waves return to the transducer, which performs calculations to convert the distance of wave travel into a measure of level in the tank. A piezoelectric crystal inside the transducer converts electrical pulses into sound energy that travels in the form of a wave at the established frequency and at a constant speed in a given medium. The medium is normally air over the material’s surface but it could be a blanket of nitrogen or some other vapor. The sound waves are emitted in bursts and received back at the transducer as echoes. The instrument measures the time for the bursts to travel down to the



reflecting surface and return. This time will be proportional to the distance from the transducer to the surface and can be used to determine the level of fluid in the tank.

For practical applications of this method, you must consider a number of factors. A few key points are:

- The speed of sound through the medium (usually air) varies with the medium’s temperature. The transducer may contain a temperature sensor to compensate for changes in operating temperature that would alter the speed of sound and hence the distance calculation that determines an accurate level measurement.
- The presence of heavy foam on the surface of the material can act as a sound absorbent. In some cases, the absorption may be sufficient to preclude use of the ultrasonic technique.
- Extreme turbulence of the liquid can cause fluctuating readings. Use of a damping adjustment in the instrument or a response delay may help overcome this problem.

To enhance performance where foam or other factors affect the wave travel to and from the

liquid surface, some models can have a beam guide attached to the transducer.

Ultrasonic or sonic methods can also be used for point level measurement, although it is a relatively expensive solution. An ultrasonic gap technique is an alternative way to measure point level with low viscosity liquids. A transmit crystal is activated on one side of a “measurement gap” and a receive crystal listens on the opposite side. The signal from the receive crystal is analyzed for the presence or absence of tank contents in the measurement gap. These noncontact devices are available in models that can convert readings into 4–20 mA outputs to DCSs, PLCs, or other remote controls.

**PERFORMANCE
SPECIFICATION**

Accuracy

+/-0.3%

Temperature

Working Temperature: 0-50 deg C/10-60 deg C/-20-70 deg C

Max. Power Loss

<0.5 W

Min. Display Resolution

1mm

FUNCTIONAL SPECIFICATION

Flow Rate Range

50m for liquids and 30m for solids

Power Supply

12-24V DC

19-30V DC

Output

4-20mA,

4-20mA, HART

4-20mA, RS485/RS232.

Load Impedance

1 k Ω

Display

4-digit 8 segment LCD

Working Frequency

20~350 KHz (various based on model specification)

Process Pressure

1 Bar0.1 MPa

Key

3 patch touch keys

Process Connection

M48*1.5mm

Overall Size

75mm*120mm*M50

PHYSICAL SPECIFICATIONS:

Non-Wetted Parts:

Degree of Protection:

IP67 with Ex-proof

Process Connections:

- 1) Thread 2" BSPT
- 2) Thread 2" NPT
- 3) Thread M65*1.5mm

Electrical Connections:

1/2" NPT Thread Female

CERTIFICATIONS:

CE mark: The measuring system is in conformity with the statutory Requirements of the EC Directives. We confirm successful testing of the device by affixing it to the CE mark.

C-tick mark: The measuring system meets the EMC requirements of the Australian Communications Authority (ACA).

Ex approval: Information about currently available Ex versions (ATEX, FM, CSA, etc.) can be supplied on request. All explosion protection data are given in a separate documentation which is available upon request.

ORDERING INFORMATION:

Accessories and material code

LTU2XX D | A | B | C | D | E | F | G | H | I | X | X | X | X | X | X

Code	Transmitter Type
A	MODEL
200	5M in liquid
201	8M in liquid & 3M in solids
202	10M in liquid & 4M in solids
203	15M in liquid & 6M in solids
204	30Min liquid & 15M in solids
205	50M in liquid & 25M in solids
2	Process Connection
B	Thread 2" BSPT
N	Thread 2" NPT
M	Thread M65*1.5mm
3	Material
D	PVDF/-10...60 deg C
P	PVC/-40...80 deg C
V	CPVC/-40...70 deg C
4	Approval
0	Non-Hazardous Area
1	E Ex ia IIC T4-T6

**RLT Instrumentation
(Unit of RLT Group)**

2	ATEX CI, II, div II, Zone 1
3	Flame proof CII, Div, 1&2 Zone 0&1
4	Ex proof CII, Div, 1&2 Zone 0&1
S	Special version to be specify
5	Output & Power Supply
A	4-20mA; 12-24V DC
H	4-20mA, HART; 19-30V DC
R	4-20mA, 485/Rs232; 24V DC
2	2XSPST/1A; 24V DC
6	Display
4	4 Digit LCD display
7	7 Digit LCD display
7	Housing
S	Plastic/IP65
N	Nylon/IP67 protection
P	PBT (Valox) NEMA 4X
C	Cast Aluminum XP Housing
8	Cable Entry
G	Gland 2*M20*1.5

Head Office



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