

ABB MEASUREMENT & ANALYTICS | DATA SHEET

# LST200

## Ultrasonic level transmitter



reddot winner 2021  
industrial design

## Measurement made easy

### The easy choice for intelligent level measurement

#### Nice-looking and easy to use

- Winner of Red-dot which only awards "sought-after seal of quality that feature an outstanding design"
- Light Gray appearance, flexible installation, matching many indoor and outdoor industrial sites
- Easy setup menu and clear backlight for easy configuration
- Easy installation, maintenance and upgrade with modular design
- Easy open channel setup and batch operation with ABB FDI solution

#### Smart and reliable

- Smart algorithm with noise filtering for challenging applications
- Compact transmitter with real-time echo waveform display and diagnostic messages
- Reliable accuracy with temperature compensation (better than  $\pm 3$  mm or 0.25% of full span)
- Reliable high power adaptive sensor, effectively reduce the adverse factors from environment change
- Reliable anti-condensation feature based on ABB patented active surface technology, effectively alleviate the interference of condensate water to the measurement stability in closed, humid or large temperature difference environments
- Reliable protection grade IP66/IP68 which is typical for water and wastewater industry
- Reliable electromagnetic compatibility (IEC CISPR standard) proved by independent laboratory testing

#### Overview

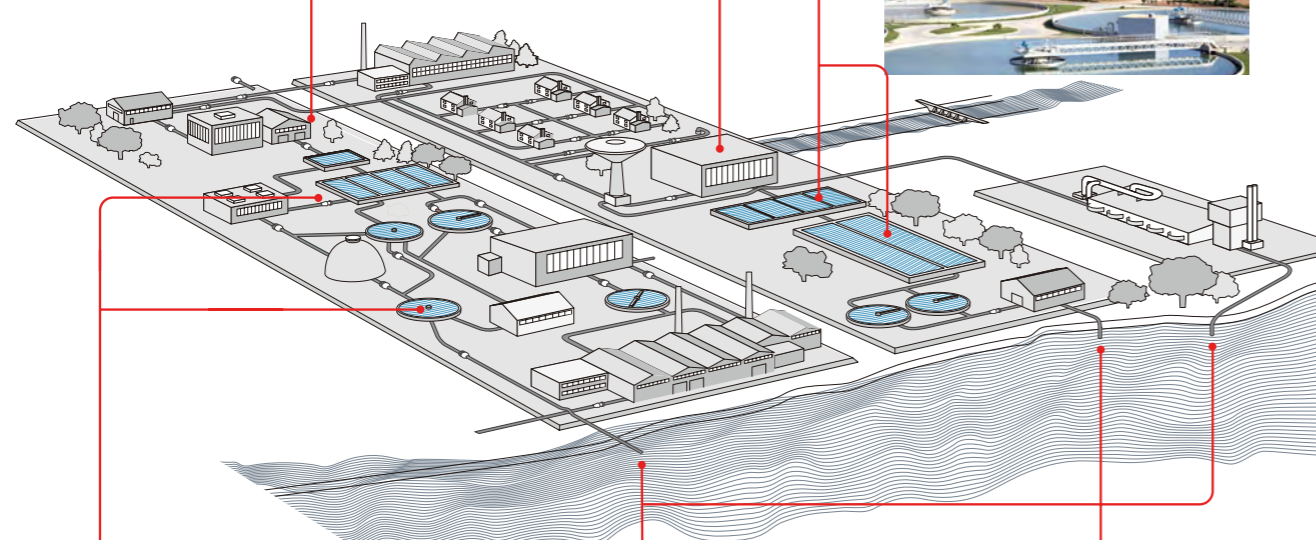
Level measurement is a key requirement in many industries where accurate data on liquid levels is needed for purposes ranging from managing storage through to reporting. In water and wastewater treatment applications, where dozens of level devices may be used, a product that offers simple commissioning, reliable operation, fast delivery and easy maintenance offers tremendous customer value.

Developed in conjunction with our customers and drawing on ABB's extensive experience in level measurement, the LST200 ultrasonic level transmitter offers a simple, smart and reliable level measurement solution. Featuring a modular design, the LST200 utilizes the latest developments in digital sensing technology, including built-in smart chip and an interface for upgrading with future modern data acquisition methods such as NB-IoT, offering the full benefits of digitalization for improved measurement and sharing of data.

Never before, in the more than 60-year history of the Red Dot design competition, LST200 wins the prestigious "Red Dot Award" for Product Design 2021.



## Typical applications-water & waste water



**Chemical storage**

- LST200's enclosure is made from polycarbonate which is resistant to mild acid and base, chloride, oxidizer.

**Lagoons & settling ponds**

- Backlit display with easy setup menu helps to simplify outdoor installation and commissioning.

**Open channel**

- Built-in equations and supporting software for open channel flow save you from doing the math manually.

**Wet wells, lift stations and pumping stations**

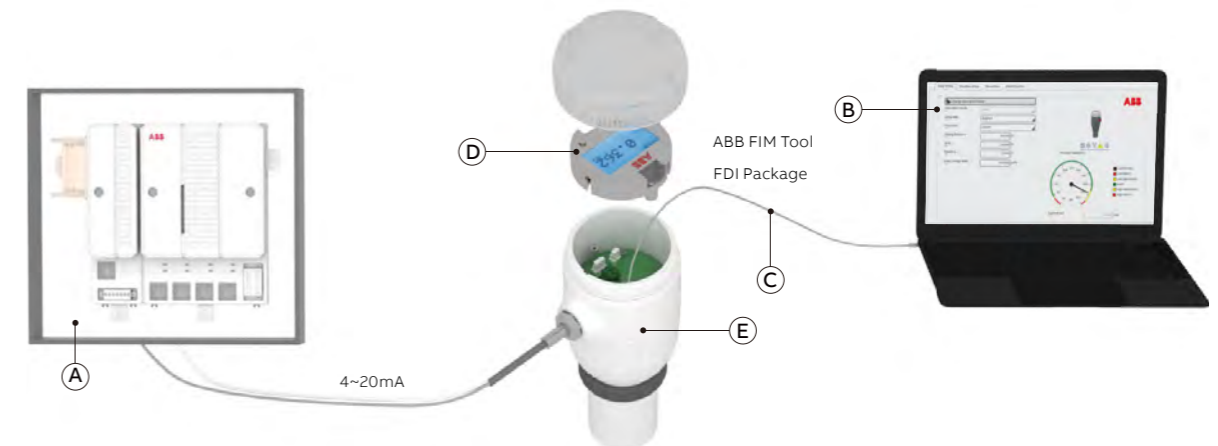
- Immune to noise caused by the presence of heavy equipment like variable speed drives, LST200 is the perfect choice in pumping stations.
- IP68-rated submersible design provides protection against flooding.
- Reliable anti-condensation feature based on ABB patented active surface technology, effectively alleviate the interference of condensate water to the measurement stability in closed, humid or large temperature difference environments.

**Process basins including aeration, chlorine contact, skimmer tanks, sedimentation and flotation thickeners**

- With advanced diagnostic functions such as detailed signal quality tracking and noise level diagnostics, the LST200 provides an easy to install alternative to remote instruments.
- Works easily in the presence of turbulence and foam using unique GAP (Gain, Amplitude, and Power) technology.

## Typical LST200 connection

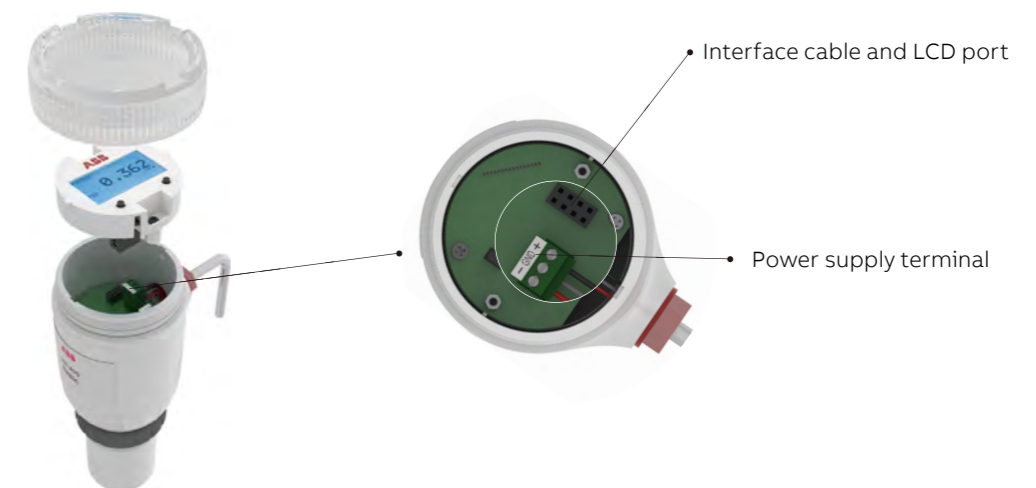
The LST200 is a two-wire loop-powered device that can be connected directly with a DCS or PLC. Setup can be performed either through the LCD display or on a PC or laptop.



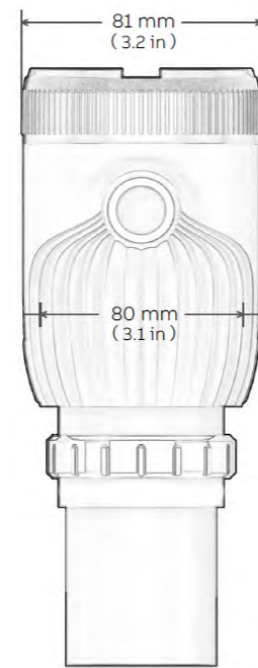
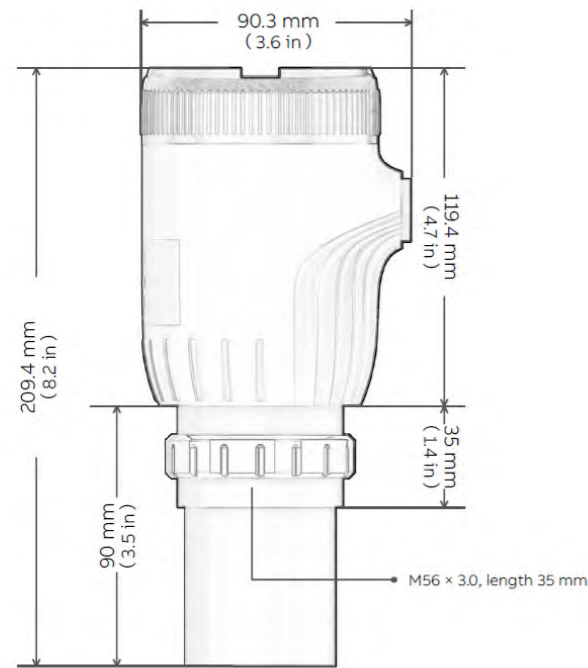
- (A) DCS or PLC
- (B) Computer with configuration software (through ABB FIM tool with FDI package)
- (C) Interface cable (specially designed for LST200, see order code in page 9)
- (D) LCD
- (E) LST200

## Terminal connections

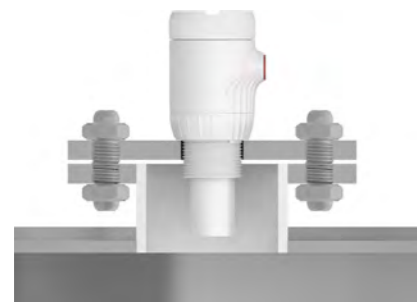
- Positive polarity of power supply (+)
- Negative polarity of power supply (-)
- Grounding for the shield layer of power supply (GND, Optional)



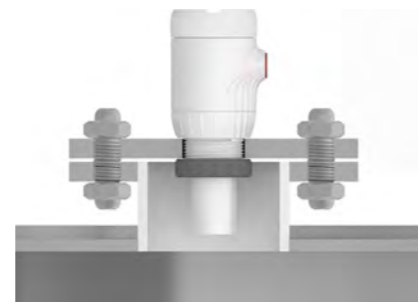
## Dimensions



## Direct installation



Using the thread

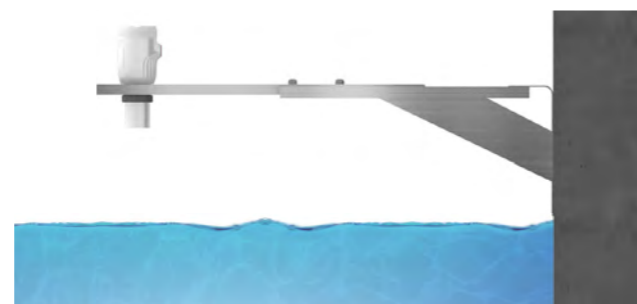


Using the nut(recommended hole size 60mm)

## Open channel or basin mounting

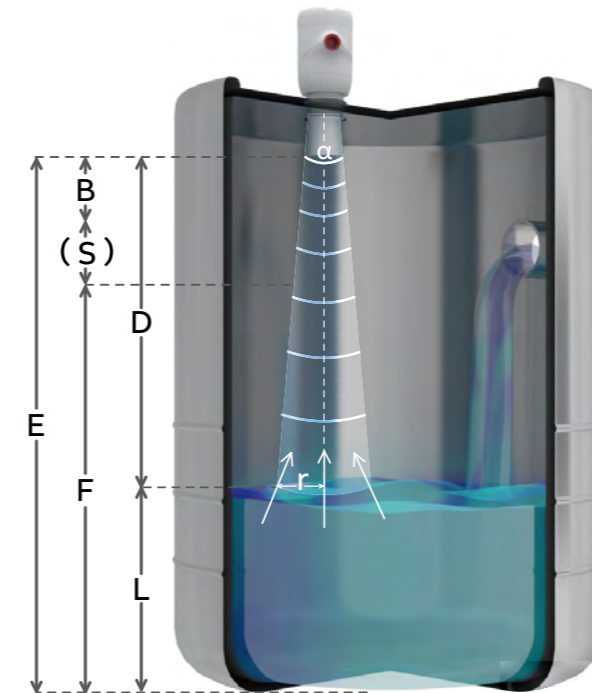


Floor mounting



Wall mounting

## Key parameters

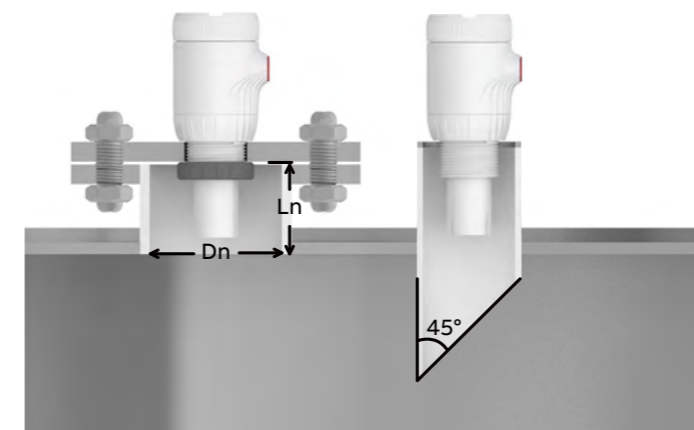


<b>B</b>	Blanking area	Should be set $\geq 350$ mm, signals within this area would be ignored
<b>D</b>	Distance	Distance from sensor surface
<b>E</b>	Empty distance	Max. 8 m, set according to the distance from tank bottom to sensor
<b>L</b>	Level	Level from tank bottom (defined by empty distance) sensor
<b>F</b>	Full range (Span)	Set according to users' 100% output point, suggest leave a safety distance "S" from blanking area
<b><math>\alpha</math></b>	Emitting angle 10°	Detection range reference, avoid obstructions (Filling water, switches, weld seam) in this range. Reference for best performance: distance from tank bottom to sensor D=8 m, r=694 mm D=6 m, r=519 mm D=5 m, r=431 mm D=4 m, r=344 mm D=2 m, r=169 mm D=1 m, r=81 mm

## Nozzle installation

For easier installation or keeping a safety distance 'S' between the blanking area and upper range limits (URV), you may need the help of a pipe nozzle to install the instrument at a certain height. The interior of the nozzle must be smooth without burrs or joints and a 45-degree angle edge would be ideal to minimize the disturbance. The limits of the nozzle are as below:

Note: Pipe with a 45-degree edge can effectively guide ultrasonic waves, increase signal strength and reduce interference, and the length of the pipe is not limited when the size of the pipe is over 200mm.



Nozzle dimension (Dn)	Max. length (Ln mm)
DN80 /3"	180
DN100 /4"	225
DN150 /6"	345
DN200 /8"	450
DN250 /10"	800
DN300 /12"	1500

## Technical specifications

### Measurement

#### Measurement range

S06 for 0.35 to 6m  
S08 for 0.35 to 8m

#### Note:

Operating conditions could attenuate the ultrasound, which may shorten the measurement range. Consult with ABB for applications involving bulk material, heavy vapor or dust, strong turbulence or foam.

### Beam angle

(@ -3 dB, full angle) : 10°

### Accuracy and repeatability

±3 mm or 0.25% of full span, whichever is larger.

#### Note:

Accuracy and stability are further ensured by algorithm including temperature compensation, GAP regulator and noise filter.

### Resolution

1 mm

### Update time

2 s

### Electrical data

#### Terminals

Max. cable cross section: 1.5 mm<sup>2</sup> (AWG 16)

#### Power supply

LST200-Basic: 15 to 30 VDC.

LST200-LCD: 19 to 30 VDC.

Ripple: Maximum 5%

#### Power consumption

60 mW to 600 mW

### Analog output

Two-wire output: 4 to 20 mA related to level/distance/volume/flow, full compensation for temperature effects

### Integrated LCD display (Optional)

Blue backlight, 6 mm height display with percentage bargraph

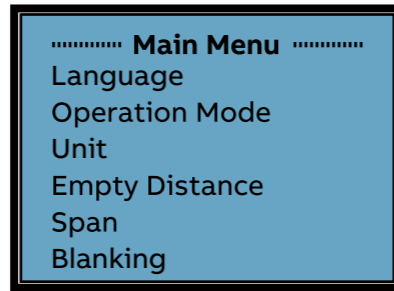
Simplified two-button programming with easy set up menu enables fast configuration

Real-time waveform

Diagnostics messages

Totalized and actual flow indication

Language: English and Chinese



### Mechanical data

#### Housing and sensor enclosure: PC (Polycarbonate)

Note: The chemical compatibility of the sensors must be checked before installation.

### Dimensions

90 × 81 × 209 mm (3.56 × 3.19 × 8.24 in)

### Weight

680 g

### Cable entry

M20 × 1.5 threaded bore for cable gland, directly on housing

### Process connection:

M56X3.0, length 35 mm

### Environmental data

#### Electromagnetic compatibility (EMC)

· IEC 61326-1 Table 2

· CISPR Class B

### Protect IP

IP66/67 according to EN 60529

IP68-rated up to 2 meters for 24 hours at room temperature

### Temperature

-30 to 60 °C (-22 to 140 °F) according to EN 60068-2-14

-20 to 60 °C (-4 to 140 °F) for display

### Humidity

Relative humidity: up to 100%

### Sensor pressure

Measurement range from -4 to 44 psi

(-0.25 to 3.0 bar)

### Vibration resistance

Random: according to EN 60068-2-64

Shock: IEC 60068-2-27

### Climate class

IEC 60068-2-38 Test Z/AD

## Ordering information

Typical option example: LST200.Y0.S08.M2.P3.L1.A4.CE.LB.M5										
LST200 ultrasonic level transmitter	LST200-	XX	XXX	XX	XX	XX	XXX	XX	XX	XX
<b>Explosion protection certification</b>										
General purpose		Y0								
<b>Sensor type and range</b>										
6m( anti-condensation sensor)			S06							
8m( anti-condensation sensor)			S08							
<b>Process connection type</b>										
M56 x 3.0, Length 35 mm				M2						
<b>Enclosure material/cable entry</b>										
Polycarbonate/ M20 x 1.5 threaded bore for cable gland					P3					
<b>Power supply</b>										
Loop powered						L1				
<b>Output</b>										
4 to 20 mA analog								A4		
<b>Certificate</b>										
Calibration report									CE	
<b>HMI</b>										
No LCD with blind cover										L0
LCD with backlight										LB
<b>Language</b>										
English										M5
Chinese										M6

## Accessories and spare parts

Ordering code	Description
3KXL065041U0100	Small L-shape bracket assembly,wall mounted(350 mm)
3KXL065041U0200	Extendable bracket assembly,wall mounted(547~732 mm)
3KXL065041U0400	Small L-shape bracket assembly,floor mounted(350 mm)
3KXL065048U0300	Extendable bracket assembly,floor mounted(547~732 mm)
3KXL065113U0100	Interface cable for configuring LST200 with computer
3KXL065068U1800	LCD (For configuring LST200 if you choose No LCD option or as spare part)



[Video for LST200 features](#)

## Notes





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**ABB Engineering (Shanghai) Ltd.  
Measurement & Analytics**

No. 4528, Kangxin Highway,  
Pudong New District Shanghai,  
201319, P.R. China

Tel: +86(0) 21 6105 6666

Fax: +86(0) 21 6105 6677

Mail: [china.instrumentation@cn.abb.com](mailto:china.instrumentation@cn.abb.com)

[abb.com/level](http://abb.com/level)

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