

ABB MEASUREMENT & ANALYTICS

## LLT100, LM80 and LM200

Lasers for level –  
now everything is possible



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## Measurement made easy

**The ABB family of non-contact laser level transmitters provides easy solutions for accurate and reliable level measurement.**

**Laser level measurement revolutionizes the level measurement industry. It is designed for all industrial applications and replaces open-path radar and other level transmitters. It will change the way you perform level measurement.**

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# Expertise in technology from more than a century of experience

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01 Tank farm

To operate any process efficiently, it is essential to measure, actuate, record and control. In selecting ABB you are choosing a partner who is offering the best measurement solution for your needs, enabling maximum return on your investment. When investing in ABB measurement products and solutions, you are receiving the best technology, reliability and service in the business.

Research and development is a vital source of ABB's technology leadership. ABB constantly builds on the foundation of existing technologies for new applications, and continues to develop the breakthrough technologies needed to meet the challenges of the future. ABB and its heritage companies have been leaders in innovation and technology for more than 100 years.

## **Comprehensive measurement solutions serving any industry**

ABB measurement products have been providing worldclass measurement solutions for any industry, utility or municipality for more than a century.

Our latest innovations deliver technological solutions to make it easier for you to run your plant. ABB measurement products are based on common technology, providing a common look and feel and method of operation.

This results in products that are easy configure, integrate and maintain.

## **ABB measurement products portfolio**

- Analytical measurements
- Flow measurement
- Natural gas measurement
- Valve automation
- Pressure measurement
- Temperature measurement
- Recorders and controllers
- Level measurement
- Device management
- Force measurement
- Service

# Non-contact laser level measurement solutions

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02 Laser level transmitter used in bulk solids silo, tank with an agitator and liquid tank

## Industries served

- Mining and construction
- Aggregates
- Fertilizers
- Chemicals
- Pulp and paper processing
- Oil & gas
- Power generation
- Food and beverage
- Water and wastewater

## Customer benefits

- Non-contact
- Maintenance free
- Narrow beam not affected by surrounding structures
- No echo mapping required
- Very flexible installation, can be aimed at an angle
- Range up to 200 m
- Very accurate
- Rapid response

## Level measurement with laser technology

Using a time-of-flight calculation, the LLT100, LM80, and LM200 can accurately measure the distance to the targeted surface.

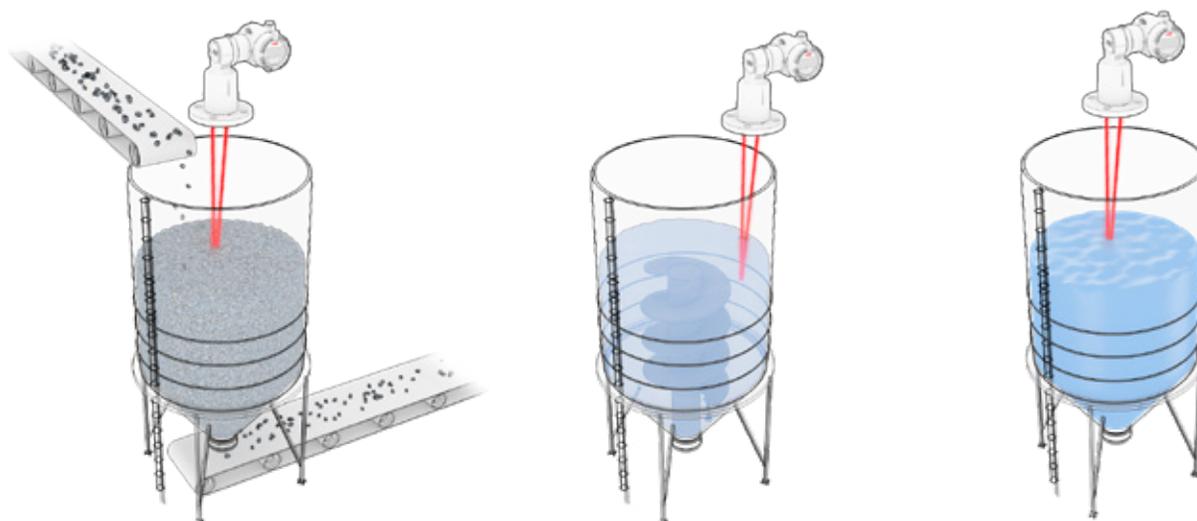
These level transmitters use invisible, eye-safe, infrared laser pulses to measure the distance to the surface. The on-board microprocessor calculates the distance by multiplying the known speed of light by the travel time of the laser pulse from the transmitter to the surface and back.

The laser beams have very little divergence (<0.3°) so accurate targeting is easy even in silos or vessels that have internal structures. Also, the narrow beam does not interact with local structures or build-up on vessel walls, making measurements very reliable even when the environment changes. This means no reconfiguration, no down-time and reduced lifetime costs.

## Made for industrial applications

- Measures through dust and fog
- Approved for hazardous areas
- Certified for high pressures

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# LM80 and LM200

## Intermediate and long range laser level and position transmitter

01 LM80 and LM200

### LM80

The LM80 is a non-contact laser level measurement transmitter designed for solid materials and opaque liquids. Based on pulsed laser technology, the LM80 embodies speed and accuracy in a single, easy to use and simple to install product.

The characteristic narrow beam divergence of the laser permits direct aiming to the target surface without interference from structures or falling material.

With both continuous 4 to 20 mA and single point relay outputs, the LM80 can operate as a process control sensor while simultaneously providing high and low alarms.

Whether measuring a few meters into the confined space of a crusher, or to the bottom of the tallest silo, the LM80 with its laser pointer is the “plug-and-play” solution to level measurement.

### Options

- Numerous mounting options
- Configuration device (LCD2)
- Dust tube
- Non-condensing optics (heated lens)
- Stainless steel housing

### LM200

The LM200 laser level measurement transmitter is dedicated to long range applications. It measures solids at distances up to 200 meters (656 feet) and up to 45 meters (148 feet) on opaque liquids. It finds many applications such as ore pass level monitoring in mining, for instance.

The LM200 is also ideal for long distance positioning applications up to 400 meters, with the use of a reflector on the targeted object. For instance, this can be used for tripper car positioning, providing a maintenance-free solution as the sensor will not wear because it is never in contact with the moving car.

### Options

- Many mounting options
- Configuration device (LCD2)
- Dust tube
- Non-condensing optics (heated lens)
- Reflector panel for positioning application (available for all laser level transmitter)

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## LLT100

# The new standard in industrial laser level transmitters

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02 LLT100 laser  
level transmitter

The LLT100 is the latest generation of laser level measurement transmitters. Building upon the success of the LM80, it incorporates a multitude of innovative technologies to specifically tailor laser time-of-flight measurement to the demands of industrial applications.

The LLT100 is therefore capable of measuring any all solids or liquids, even transparent liquids, by using precise timing circuits, laser pulse control, and powerful signal processing. The level of solids can be measured at up to 100 meters (330 feet) and liquids at up to 30 meters (100 feet). All of this available in a 2-wire powered device!

Specifically made for harsh industrial environments, the LLT100 provides continuous, non-contact level measurement capabilities for process automation and inventory management in industries such as chemicals, aggregates, oil & gas, mining, food & beverages, power, pulp & paper, pharmaceutical, and water & waste water.

### The LLT100 is available with a variety of process interfaces common in the industry

- Standard aluminum or stainless steel flange;
- High pressure flange;
- Hygienic triclover flange.

### Clear benefits

#### Optimize process or inventory management

- Precise measurement of any solid or liquid
- Independent of material properties and dielectric constant

#### Low cost of ownership

- Fast and flexible installation
- No reconfiguration when the environment changes
- Single product configuration works for many applications

#### Convenient

- Easy setup menu
- Adjustable embedded graphical user interface
- 2-wire powered and HART 7 communication

#### Reliable

- Dust and fog penetration capabilities
- Accurate measurement at distances up to 100 meters (330 feet)
- Approved for use in hazardous area class 1, division 1 and zones 0/1.

# Accessories

A wide variety of accessories are available to address different applications and specific environments.

Common accessories are:

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01 Rotating  
(pivot) bracket

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02 LLT100 Laser  
pointer tool

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03 Purge ring

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04 Swivel flange

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05 Cooling tube

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06 Dust tube

## Dust tube

- Avoids dirt or splashing liquids on the window

## Heated window

- Prevents condensation on window

## Rotating (pivot) bracket

- Ideal for aiming the laser beam

## Swivel flange

- Provides precise aiming of the laser beam and especially useful in liquid applications

## Cooling tube

- Allows measurement in contact with hot process interface up to 280°C (535°F)

## Purge ring

- Allows air purging of the LLT100 dust tube

## LLT100 Laser pointer tool

- Used to visually align the position of a bracket before installing the LLT100

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## The solutions meeting your industry needs



### LM80, LM200 and LLT100



LM80



LM200



LLT100

	LM80	LM200	LLT100
Product category	Non-contact level measurement	Non-contact level measurement	Non-contact level measurement
Range	Level up to 100 m (330 ft.)	Level up to 190 m (623 ft.)	Level up to 100 m (330 ft.)
	Positioning up to 150 m (500 ft.)	Positioning up to 400 m (1312 ft.)	Positioning up to 200 m (655 ft.)
Laser	Measuring 905 nm Infrared Laser Class 1M	Measuring 905 nm Infrared Laser Class 1M	Measuring 905 nm Infrared Laser Class 1
	Pointer 635 nm red Laser Class 3R	Pointer 635 nm red Laser Class 3R	Pointer 635 nm red Laser Class 3R
Resolution	± 10 mm (0.4 in.)	± 10 mm (0.4 in.)	± 5 mm (0.2 in.)
Typical accuracy	± 30 mm (1.2 in.)	± 40 mm (1.6 in.)	± 11 mm (0.4 in.)
Temperature	-40°C to +60°C (-40°F to +140°F)	-40°C to +60°C (-40°F to +140°F)	-40°C to +60°C (-40°F to +140°F)
Power	24 VDC (3 wires)		24 VDC (2 wires)
			24 VDC (4 wires) when using heated window option
Outputs	Analog output 4 to 20 mA	Analog output 4 to 20 mA	Analog output 4 to 20 mA
	2 relays	2 relays	HART v7
	RS232 for configuration	RS232 for configuration	
Enclosure type	Aluminum	Aluminum	Aluminum
	Stainless steel		Stainless steel
Process pressure	Atmospheric	Atmospheric	-1 to 50 bar depending on process flange
Enclosure rating	IP66/Nema4X	IP66/Nema4X	IP67 / NEMA 4X
Certifications	CE	CE	CE
	ATEX	ATEX	ATEX
	IECEX	IECEX	IECEX
	EAC		
	cCSAus	cCSAus	
	FM	FM	FM
			KCs
		3-A	
		CRN	

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## A wide variety of applications

### Laser level measurement for solids and liquid stored in vessels



01 ABB laser level transmitters used in municipal wells to measure wastewater level.

Lasers enable level monitoring measurement for various dry bulk solids and liquids stored in vessels. They can measure through narrow gaps and down to the bottom of vessels. They work in all types of storage vessels, including silos, tanks, feed chutes, bunkers, and hoppers.

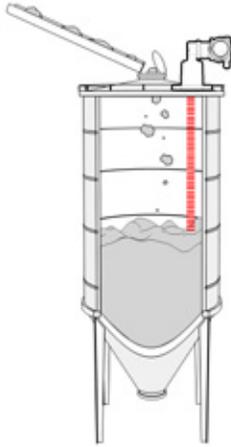
Laser levels are especially useful when measuring curved surfaces, such as biogas balloons.

Since the concept of echo mapping is not required for laser level measurement, it provides a reliable, maintenance-free measurement method for any application where build-up is formed on the vessel walls or when the local environment changes.

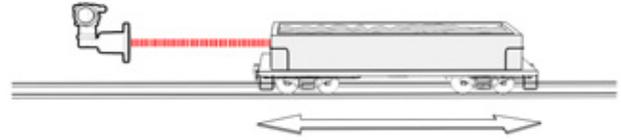
Also, multiple laser level measurement products do not interfere with each other, even when placed close together.

- Easy measurement in silos with internal structure and/or with build-up.
- Accurate, fast and long range positioning or anti-collision of moving machinery.
- Ideal for silos, bins and tank for plastic pellets, grain, coffee, dry bulk solids, powders.
- Ideal for all types of liquids, irrespective of their types, such as water, oils, liquid polymers, etc.

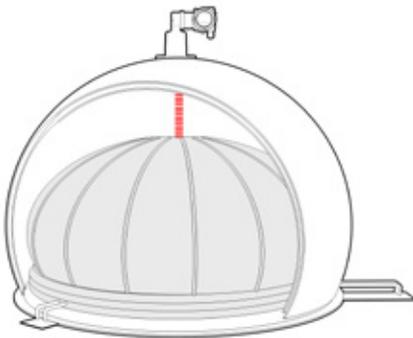
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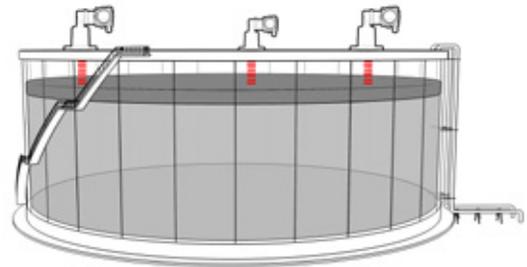
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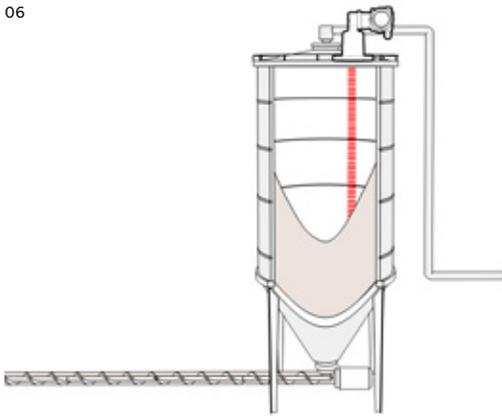
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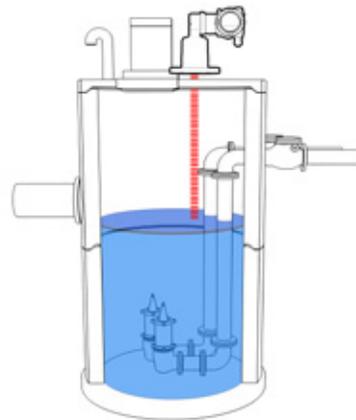
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02 Processing application (falling raw material)

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06 Processing application (build up silo walls)

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03 Positioning application

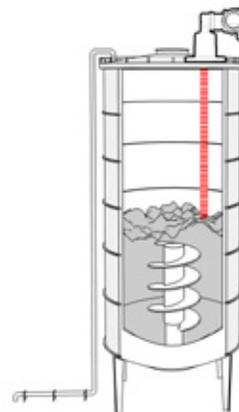
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07 Liquid level measurement

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04 Biogas level monitoring

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08 Processing application (with agitator)

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05 Floating roof level measurement

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