ABB MEASUREMENT & ANALYTICS | DATA SHEET

LWT300 series
Guided wave radar

LWT310 guided wave radar

The LWT300 series guided wave radar level transmitter, with LevelExpert technology, emphasizes measurement made easy.

Measurement made easy

Overview

Unlike traditional guided wave radars that use device parameters requiring multiple adjustments, the LWT300 series of instruments does it for you. The instrument uses LevelExpert™, a built-in intelligence to differentiate between the actual level and other false signals. It also keeps monitoring all these false signals while maintaining a reliable level reading. It is like having a level expert in each device.

The LevelExpert concentrates 20 years of industrial level measurement experience into an intelligent algorithm made to accurately detect the level even in the most demanding conditions. Forget baseline mapping and echo selection, LevelExpert knows how to find the right level through the clutter. The expert is now inside your guided wave radar.

Customer benefits

ABB's LWT300 series transmitters are equipped with on-board diagnostics that can be used for safety monitoring, improved reliability, downtime reduction, and performance verification. Standard on-board diagnostics monitor minimum and maximum electronics temperature, input voltage, probe loss or breakage, buildup detection and leakage of the primary process seal.

These diagnostic features assist you in troubleshooting common problems without extensive testing and allow device health monitoring without requiring removal from the process or taking the device offline, thus saving valuable time and improving uptime.

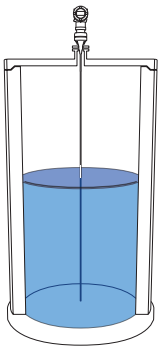
Key features

The LWT300 series addresses several industries such as oil and gas, petrochemical, chemical, power generation, water and wastewater, pulp and paper, and marine. To meet these challenging applications, this series of instruments offers a wide range of configurations.

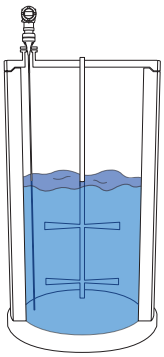
- Temperature range: up to 204 °C (400 °F)
- Maximum process pressure: 207 bar (3000 psi)
- LevelExpert software for easy configuration, reliable surface detection and easy troubleshooting
- 2-wire powered and HART 7 communication model, with SIL2 (no redundancy), SIL3 (redundant configuration)
- Certified for potentially explosive atmospheres

Applications

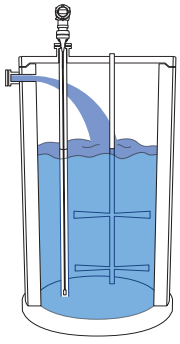
Storage vessel



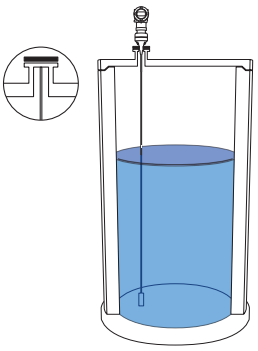
Agitated vessel



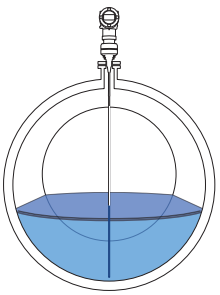
Stilling wells



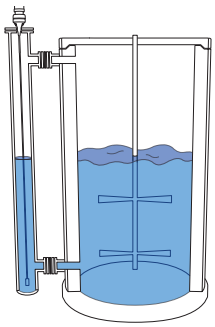
Plastic vessels



Horizontal cylinder



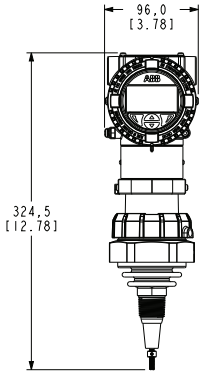
External chamber/bridle/displacer replacement/MagWave™



LWT310 (Liquids)

The LWT300 series is comprised of the LWT310 and LWT320. The LWT310 fits in a 19 mm (¾ in) NPT interface and is offered in a flanged version.

	LWT310
NPT interface	19 mm (¾ in)
Cable probe diameter	4.8 mm (³⁄₁₆ in)
Rod probe diameter	9.5 mm (³⁄₁₈ in)
Coaxial cable diameter	22 mm (⅞ in)
Pull force	450 kg (1000 lb)

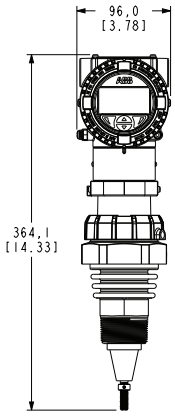


LWT320 (Solids)

The LWT320 fits in a 38 mm (1 ½ in) NPT interface and is offered in a flanged version.

For solids applications, the LWT320 is recommended since it can withstand a higher pull force. The LWT320 is also useful for applications having a 38 mm (1 ½ in) NPT interface.

	LWT320
NPT interface	38 mm (1 ½ in)
Cable probe diameter	6.4 mm (¼ in)
Rod probe diameter	12.7 mm (½ in)
Coaxial cable diameter	22 mm (⅞ in)
Pull force	635 kg (1400 lb)



Specification

Accuracy
2 mm (5⁄64 in) or 0.03 %

Resolution
1 mm (3⁄64 in)

Temperature drift (digital)
0.001 %/°C

Range
Maximum: 60.00 m (197 ft)
Minimum: 0.05 m (0.16 ft) (with rod probe; for more details, see accuracy diagram on next page)

Update rate
5 Hz

Temperatures
Ambient operating
–50 to 85 °C (–58 to 185 °F)[1]
Process
–50 to 204 °C (–58 to 400 °F)
Storage
–50 to 85 °C (–58 to 185 °F)
Process seal type vs temperature rating
- Viton (–26 to 204 °C [–15 to 400 °F])
- Kalrez (–20 to 204 °C [–4 to 400°F])
- EPDM (–50 to 120 °C [–58 to 248 °F])
- Markez (–10 to 204 °C [14 to 400 °F])

Process pressure
- 207 bar at 38 °C/3000 psi at 100 °F
- 83 bar at 204 °C/1200 psi at 400 °F

Dielectric constant
1.4 (minimum)

Process viscosity
- Coaxial probe: 500 cp
- Single probe: 10,000 cp

Power supply
- 15.5 to 42 V DC (4–20 mA functionality)
- 21 to 42 V DC (HART functionality)
- 10.5 to 28.5 V DC @ 30 mW (max.) (Modbus units)

Power consumption
- 56 mW (@ 15.5 V DC, 3.6 mA)
- 903 mW (@ 42 V DC, 21.5 mA)
- 30 mW (Modbus units)

Line resistance
950 Ω (maximum @ 36 V, 21.5 mA)

Enclosure material
Powder coated aluminum or 316 L stainless steel

Vibration resistance
IEC 60068-2-64
IEC 60068-2-6

EMI/EMC
FCC part 15 subpart B, CISPR11
IES61000-4-3

Protection class
IP 66/68
NEMA 4X/6P

Process connections
Threaded
¾ inch (LWT310) or 1 ½ inch (LWT320)
Flanged
ASME flanges: from 1 ½ to 8 inches, class 150 to 900
DN flanges: from DN 20 to DN 200, PN25 to PN160

Display
- Integrated 128 × 64 pixels liquid crystal display (LCD) with through-the-glass (TTG) interface
- Push button display (does not allow waveform display on screen)

Communication protocols
- 4–20 mA analog output with HART 7 communication (currently allows measurement of level only, not interface)
- Modbus communication (allows measurement of level and interface)

Lifespan
MTBF : 76 years

Wetted materials
- Duplex 2205 stainless steel
- Super duplex 2507 stainless steel
- C-276 alloy
- 304L stainless steel
- 316L stainless steel

Approvals

CE
FM/ATEX/IECEx hazardous area, flameproof, instrinsically safe methods of protection
SIL 2 (no redundancy), SIL 3 (redundant configuration)
CRN

[1] See tables in FM approval Certificate for limits of different protection methods

ABB Inc.
Measurement & Analytics
Mail: radars@ca.abb.com
abb.com/level

DS/LWT300_SHORT/EN Rev B 11.2019