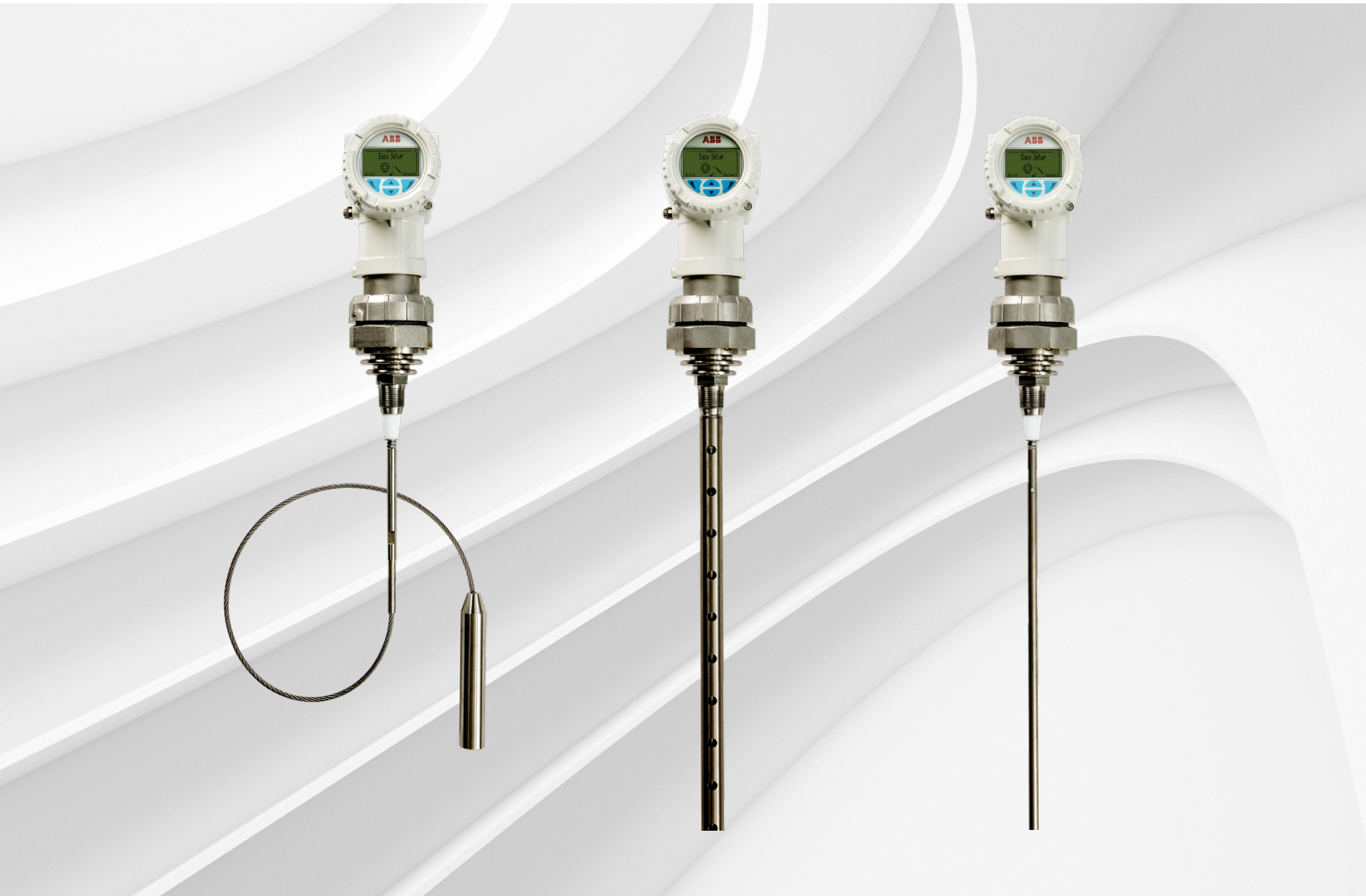
ABB MEASUREMENT & ANALYTICS | DATA SHEET

LWT300 series

Guided wave radar



Measurement made easy

LevelExpert™: the expert inside

LevelExpert concentrates 20 years of industrial level measurement experience into an intelligent instrument made to accurately detect levels, even in the most demanding conditions.

Forget about 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.

LWT300 series instruments cover a wide range of applications. They can meet your needs for applications up to 200 °C (392 °F) and 200 bars (2900 psi).

Customer benefits

With fast and reliable settings, ABB's LWT300 series of instruments emphasizes measurement made easy. With its LevelExpert technology based on 20 years of experience, simply enter installation data and basic process conditions, and let LevelExpert do the rest: no echo mapping or baseline correction required.

Unlike traditional guided-wave radars that use device parameters requiring multiple adjustments, the LWT300 series of instruments does it for you. The instrument uses 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.

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.

Main features

To meet the most challenging applications, the LWT300 series of instruments offers a wide range of configurations.

Temperature range: –45 to 200 °C (–49 to 392 °F)
Maximum process pressure: vacuum to 200 bars (2900 psi)

- LevelExpert software for easy configuration, reliable surface detection and easy troubleshooting
- 2-wire powered and HART 7 communication
- SIL2 (no redundancy), SIL 3 (redundant configuration
- Certified for potentially explosive atmospheres

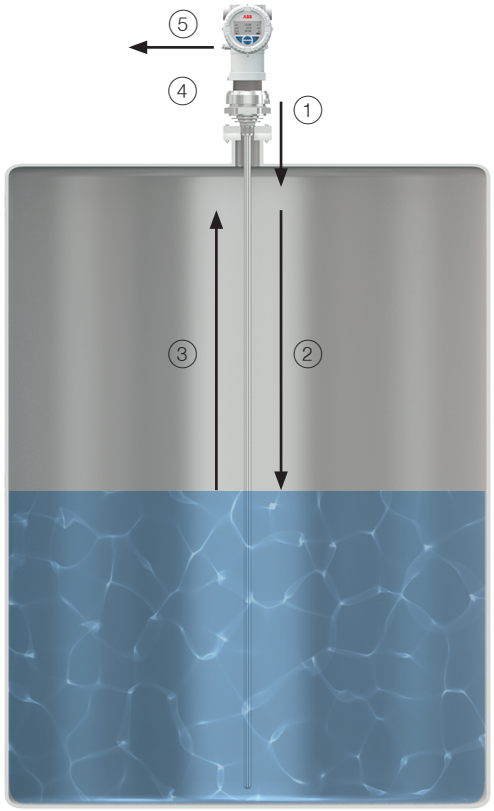


How the technology works

Guided wave radars use very low power microwave energy to determine the level or interface of the products being measured.

To obtain optimum performance, it is important to understand the basic principles of operation. The instrument electronics housing (a.k.a. “the head”) is fitted with a special adapter (the coupler) that serves as a connection between the head and the process in which measurements will be taken. A rod or cable (the probe) hangs from the coupler into the product being measured and acts as a wave-guide, i.e. the probe guides the microwave energy to the product surface, instead of being dispersed in a cone, as it would be if there was no probe.

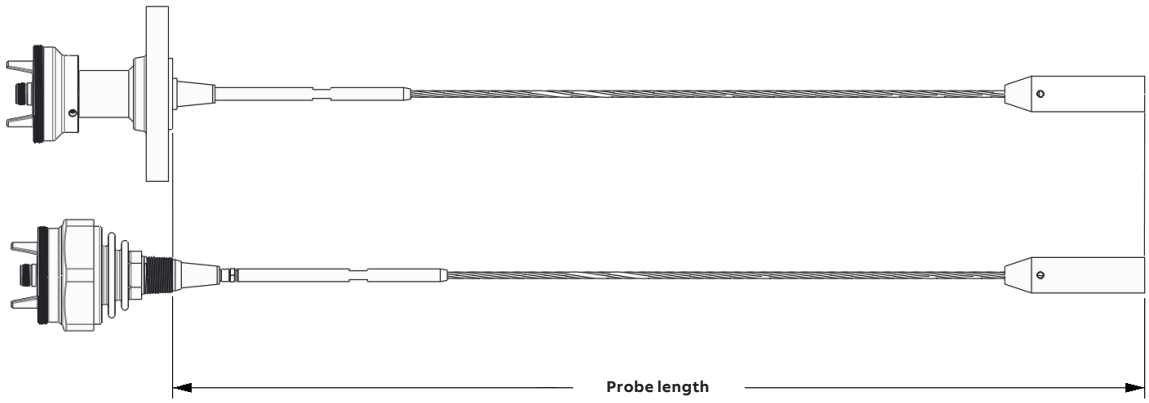
A measurement cycle consists of the following:
The head sends a very short pulse of microwave energy through the coupler and down the probe (1). That pulse travels along the length of the probe (2) and, when it encounters the product surface (or some other change in the dielectric constant), some of the energy is reflected and travels back towards the coupler (3). When the reflected energy reaches the coupler, it is sensed by the electronics (4). By measuring the time elapsed between the initial pulse and the reflected one, the electronics can calculate the product level (5).



Since microwave energy travels at the speed of light, one complete measurement cycle is made up of several thousand pulses. The time domain reflectometry (TDR) sampling technique is used to reconstruct, from these numerous pulses, a waveform that can be processed by the instrument microprocessor. Depending on instrument configuration and probe length, measurement cycles are created up to five times every second. Results from these cycles are processed to generate a current output proportional to the level of the product.

How to measure probe length

The probe length is defined in one of two ways, depending on the type of process interface. For a threaded interface, the probe length is measured from the thread closest to the bottom of the coupler to the end of the probe, including accessories such as a cable weight, for instance. For a flanged interface, the probe length is measured from the bottom of the flange to the end of the probe, including accessories.

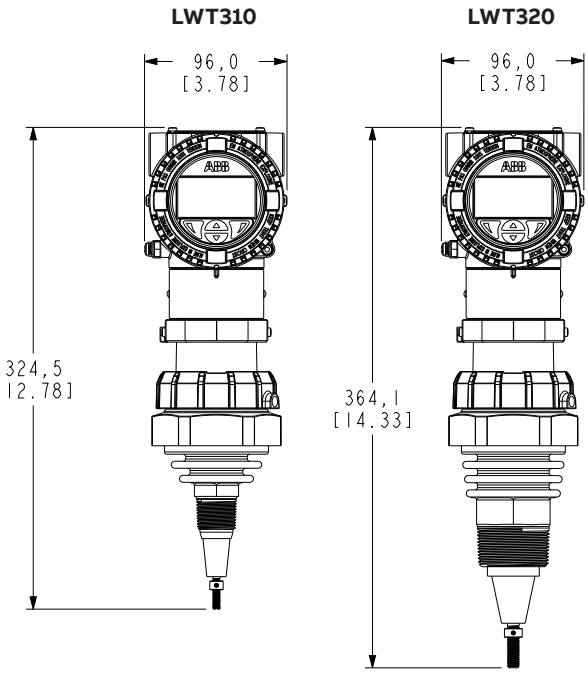


LWT310 vs LWT320

The LWT300 series is comprised of the LWT310 and LWT320. The LWT310 fits in a 19 mm (¾ in) NPT interface while the LWT320 fits in a 38 mm (1 ½ in) NPT interface. Both are offered in flanged versions.

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.

	LWT310	LWT320
NPT interface	**19 mm (¾ in)**	**38 mm (1 ½ in)**
Cable probe diameter	**4.8 mm (3⁄16 in)**	**6.4 mm (0.25 in)**
Rod probe diameter	**9.5 mm (⅜ in)**	**12.7 mm (½ in)**
Coaxial cable diameter	**22 mm (⅞ in)**	**22 mm (⅞ in)**
Maximum pull force	**450 kg (1000 lb)**	**635 kg (1400 lb)**

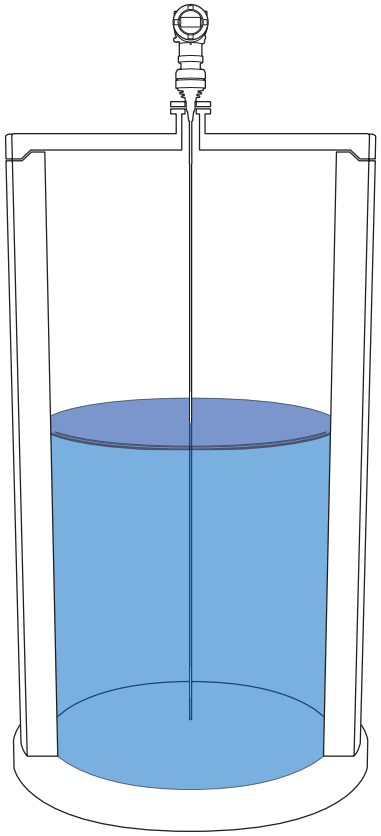


Applications

Storage vessel
Storage vessels are one of the most common applications for guided wave radar.

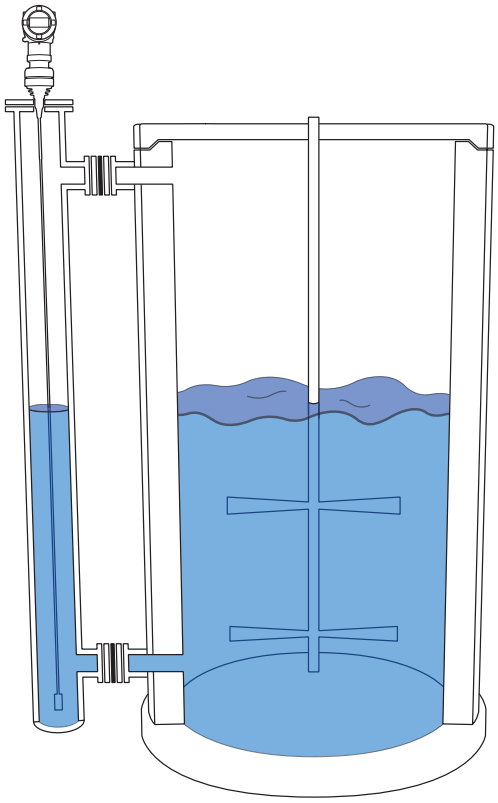
- Guided wave works where most other technologies fail because of its very strong signal-to-noise ratio (SNR) and its ability to master fluids with low or changing dielectrics.
- Instrument signal **is not** affected by steam, vapor, mist, spray, turbulence, flashing, changing pressures or temperatures, or changing dielectrics.
- Foam generally does not affect signal, but **excessive** foam can cause a negative offset.
- Light buildup can be managed, but heavy buildup should be avoided.
- Probe selection: rod and coaxial probes can be used at depths comprised between 0.3 m (12 in) and 6.1 m (20 ft). Cable probes are preferred and can be used from 0.3 m (12 in) up to 30 m (100 ft).

Note: Do not mount the probe where it can touch vessel walls or internal structures. Do not install the probe in the fill stream of the vessel. Coaxial probes or stilling wells are best if there is excessive foaming or installation in the fill stream cannot be avoided. Rod and coaxial probes allow measurements very close to the EOP. Cable probes with a heavy weight should be used in extremely turbulent or agitated conditions. A tie-down should be considered if the probe must remain stationary.

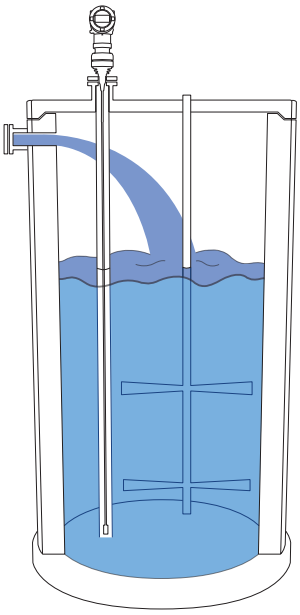


External chamber/bridle/displacer replacement/MagWave™
Applications such as boiler drums, feedwater heaters, compressed hydrocarbons and process vessels with multiple obstructions require external chambers.

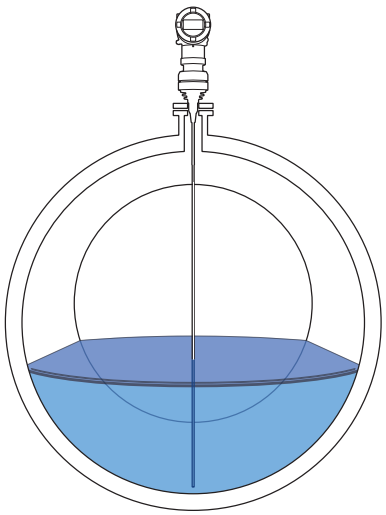
The LWT310 guided wave radar is the best measurement choice for installation in external chambers, bridles, and displacer retrofits. Due to the concentrated signal, it is used for measuring low dielectric fluids. If a chamber is 100 mm (4 in) or smaller, this actually helps to further concentrate the signal.



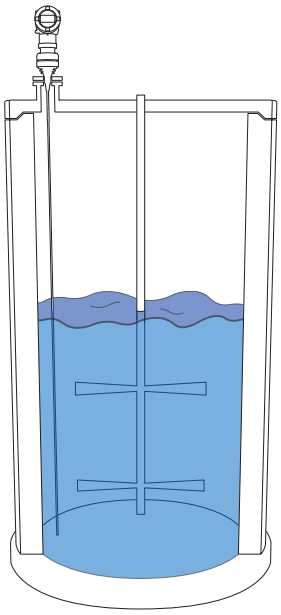
Stilling wells
Stilling wells are used if the probe must be installed in the process fill stream, to avoid obstructions and agitators as well as to retain signal strength in applications with very low dielectric fluids and long measuring lengths.



Horizontal cylinder
Horizontal cylinders are commonly used as settling tanks, separation vessels, and storage tanks. The LWT301 is not affected by the internal geometry of horizontal cylinders. Unlike traditional non-contact devices which must contend with false level reflections being created by the cylinder walls, the LWT retains the signal on the probe. Furthermore, the LWT is able to measure close top the end of the probe, allowing measurement until the vessel is near empty.



Agitated vessel
Reactor vessel and mixing tanks often have agitator blades. Best practice is to use a non-contact device such as the LLT100 laser or LST300 ultrasonic or a stilling well in these applications. If these solutions are not possible, guided wave radar can be used in agitated vessels without a stilling well, but care should be taken to insure the probe cannot become detached or make contact with the agitator blade. Consideration should be made concerning fixing the probe at the bottom, lateral forces and vibration. Consult engineering for assistance in these applications.



Open sumps and lift stations
- The LWT310 works well in open sumps, lift stations, cooling tower sumps, catch basins, etc.
- Signal is unaffected by rain, turbulent surface conditions, floating debris, algae growth, or foam.
- Probe selection: Rod and coaxial probes can be used at depths comprised between 0.3 m (12 in) and 6.1 m (20 ft). Cable probes can be used from 0.3 m (12 in) up to 30 m (100 ft)

Note: Coaxial probes are best when there are concerns of personnel touching the sensor probe or presence of excessive foaming, or if installation in the fill stream cannot be avoided. Rod and coaxial probes allow measurements very close to the EOP. In extremely turbulent or agitated conditions, cable probes with a heavy weight should be used. A tie-down should be considered if the probe must remain stationary.

Plastic vessels
In plastic vessels, RF waves slow down when interacting with the sides of the vessel.

LWT300 series instrument can easily compensate for this effect, providing accurate level measurement.

For RF waves to be properly guided down the probe, a conductive launch plate must be used (metal plate of flange) at the top of the vessel.

Specification

Accuracy
2 mm or 0.03 %

Resolution
1 mm

Temperature drift (digital)
0.001 %/°C

Range
60 m

Update rate
5 Hz

Temperatures
Ambient operating
–40 to 80 °C (–104 to 176 °F)
Process
–50 to 204 °C (–122 to 400 °F)
Storage
–40 to 85 °C (–104 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 (–55 to 120 °C [–67 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

Power consumption
- 56 mW (@ 15.5 V, 3.6 mA)
- 325 mW (@ 15.5 V, 21 mA)

Line resistance
1740 Ω (maximum @ 36 V, 21 mA)

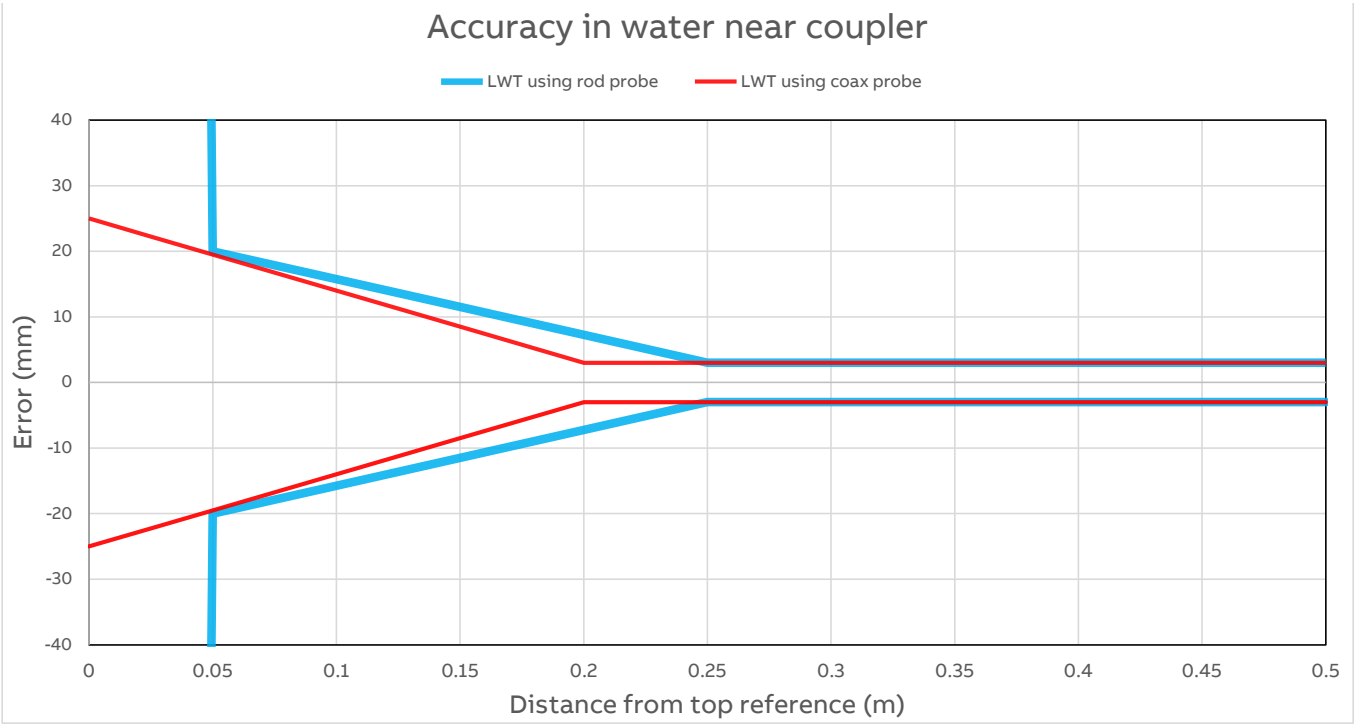
Enclosure material
Powder coated aluminum or 316 L stainless steel

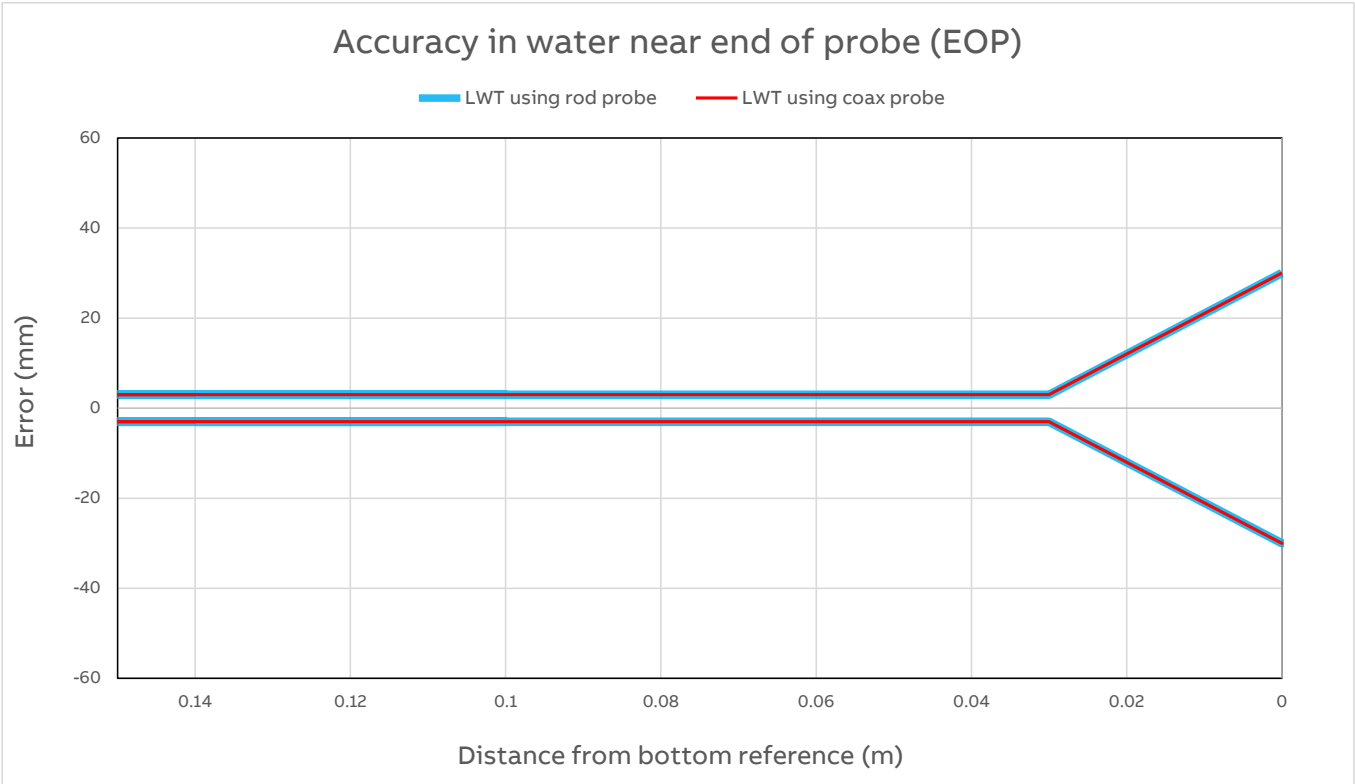
Protection class
IP68/NEMA 6P

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

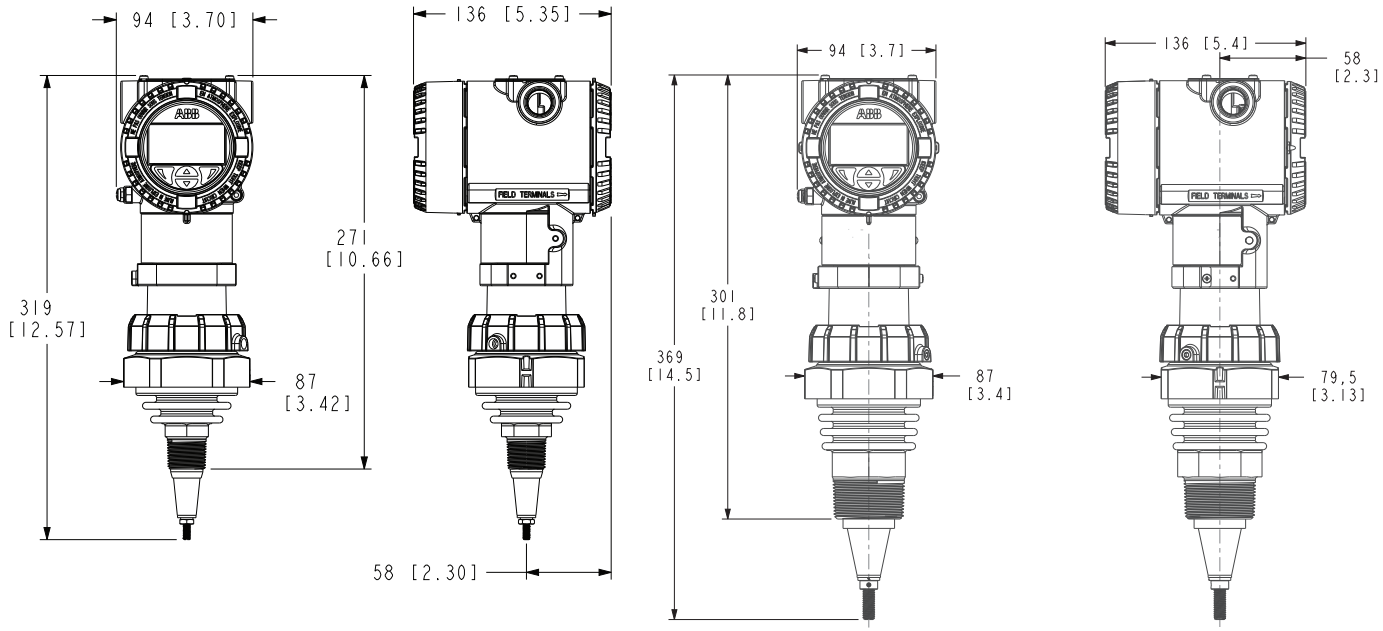
Wetted materials
- Duplex 2205 stainless steel
- Super duplex 2507 stainless steel
- C-276 alloy
- 304L stainless steel
- 316L stainless steel


Accuracy in water near coupler
LWT using rod probe
LWT using coax probe
Error (mm)
40
30
20
10
0
-10
-20
-30
-40
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
Distance from top reference (m)

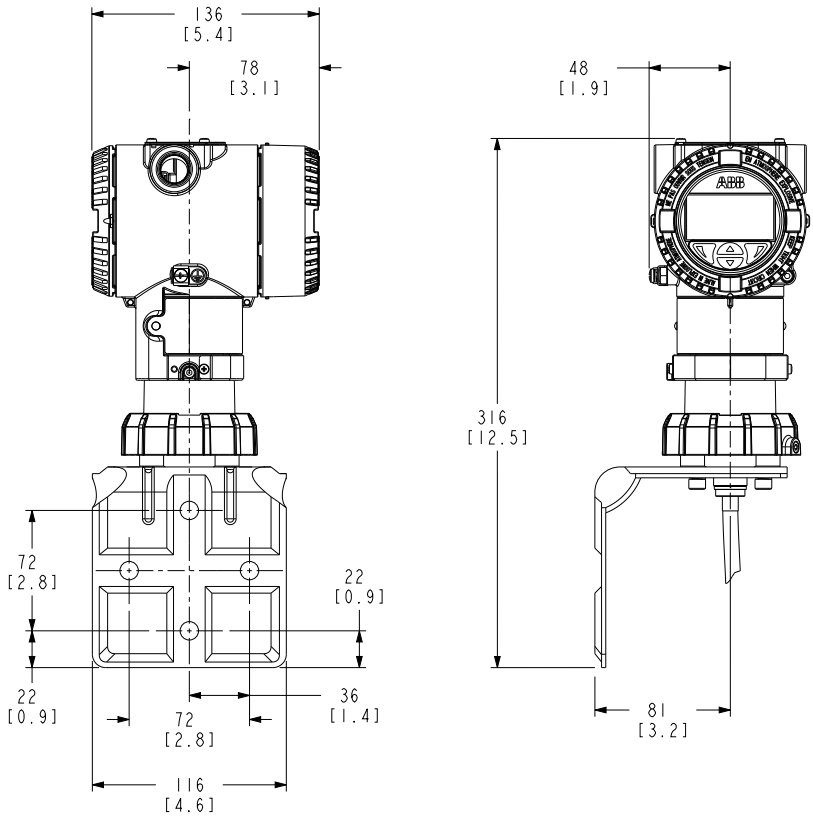

Accuracy in water near end of probe (EOP)
LWT using rod probe
LWT using coax probe
Error (mm)
60
40
20
0
-20
-40
-60
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
Distance from bottom reference (m)

Dimensions (mm [in])

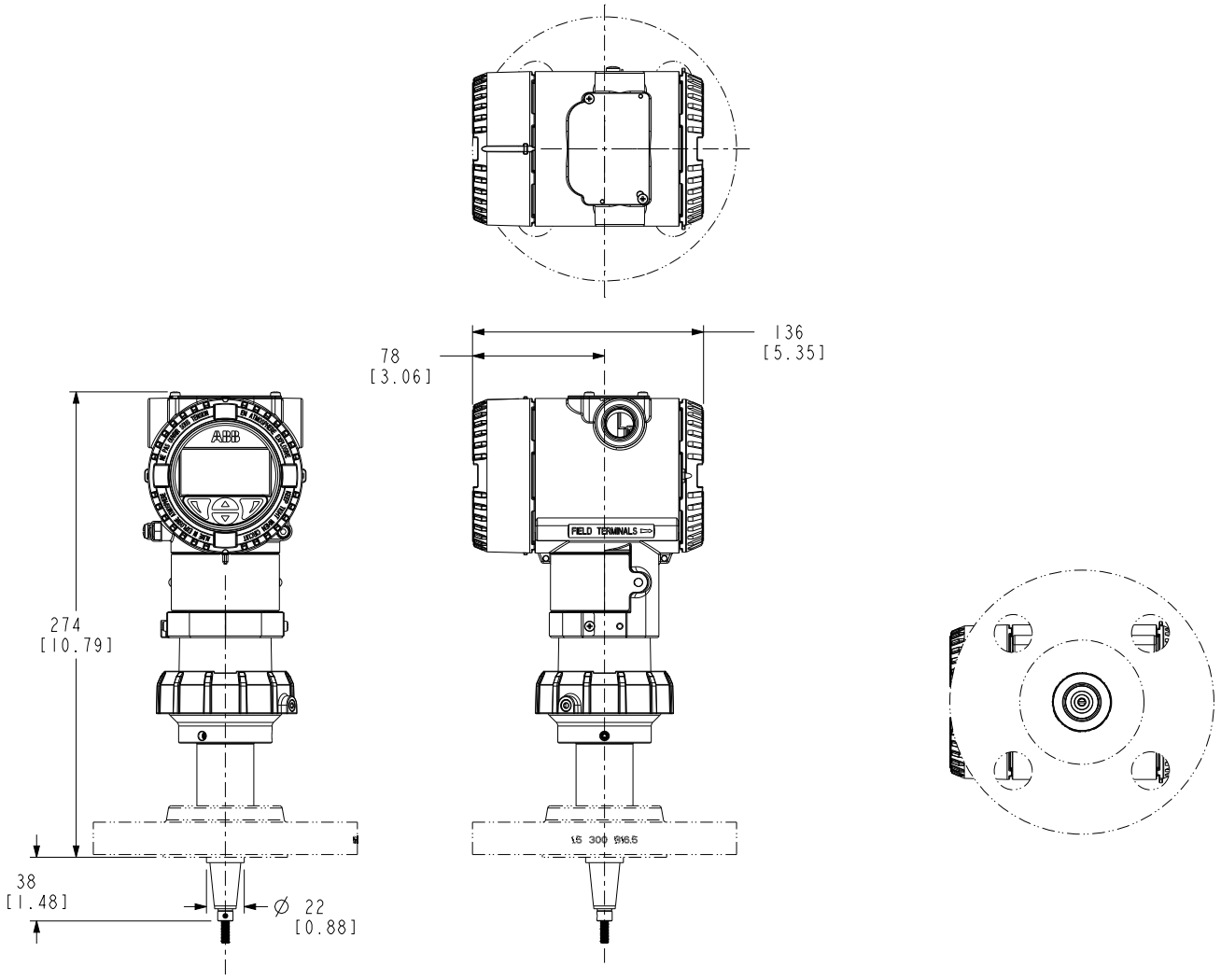
Instrument, threaded interface (LWT310 left, LWT320 right)



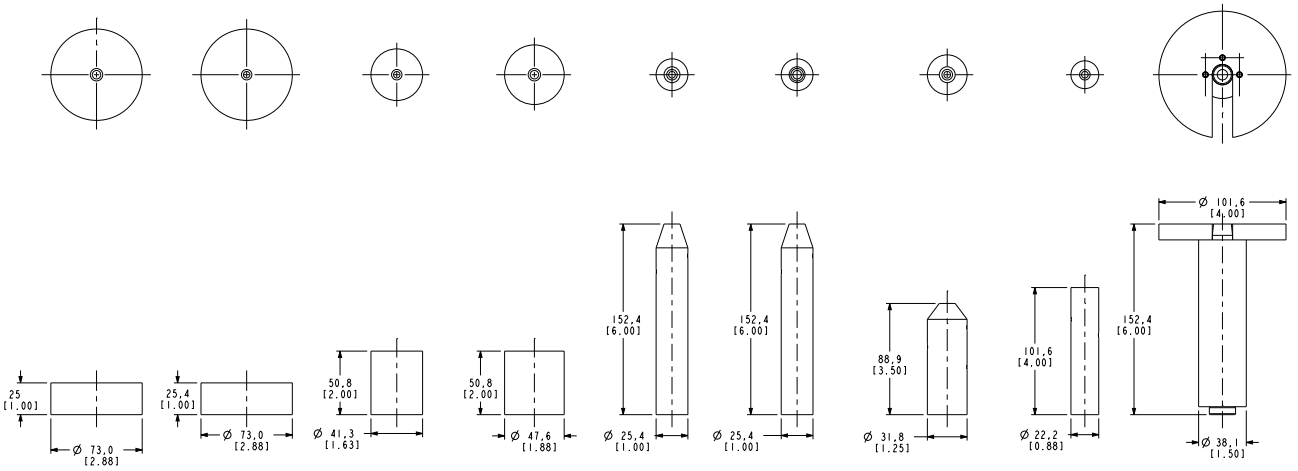
Remote head



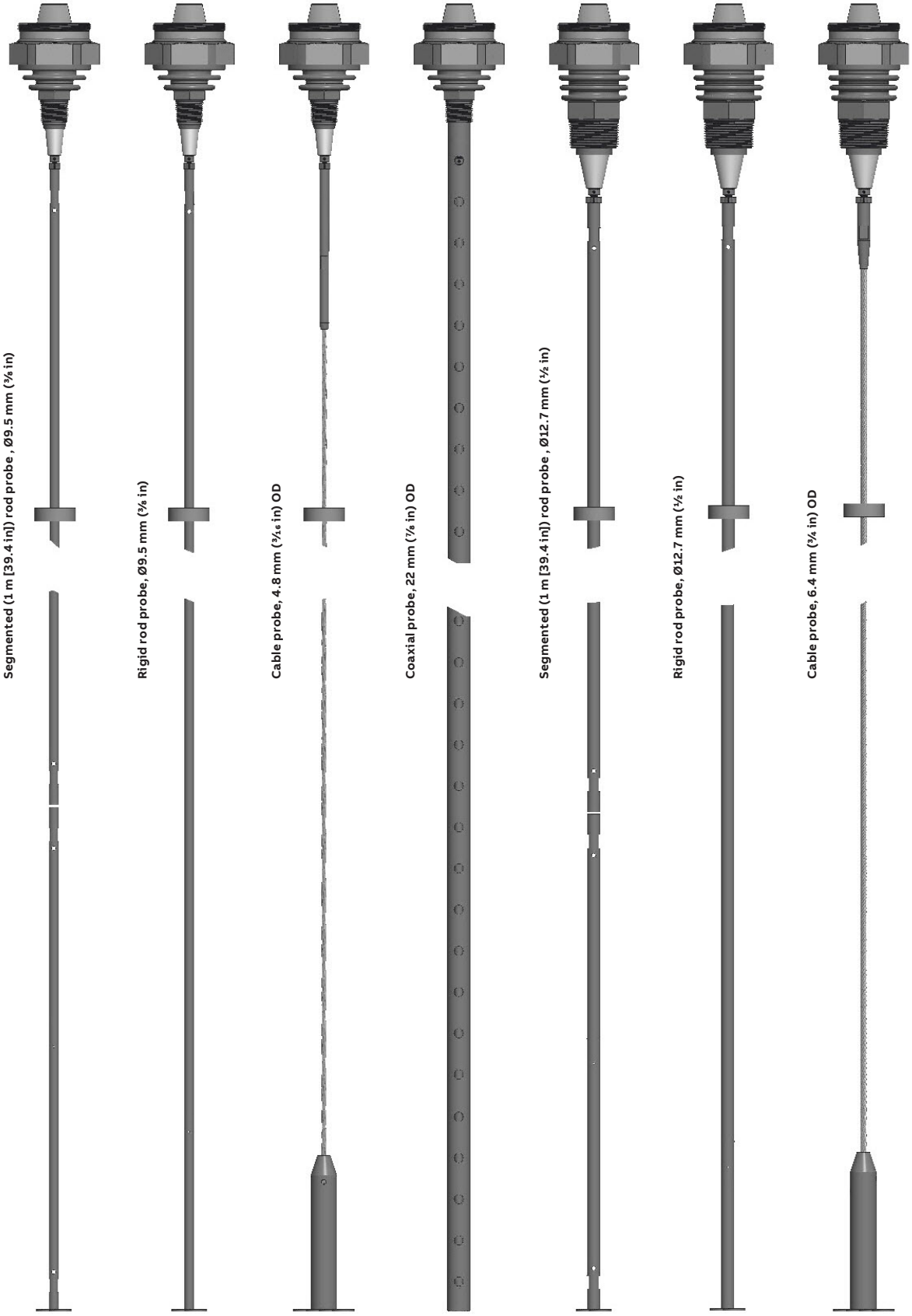
Flanged interface



Probe weight options



Probe types


Segmented (1 m [39.4 in]) rod probe , Ø9.5 mm (⅜ in)
Rigid rod probe, Ø9.5 mm (⅜ in)
Cable probe, 4.8 mm (3⁄16 in) OD
Coaxial probe, 22 mm (⅞ in) OD
Segmented (1 m [39.4 in]) rod probe , Ø12.7 mm (½ in)
Rigid rod probe, Ø12.7 mm (½ in)
Cable probe, 6.4 mm (¼ in) OD

Approvals (pending)

Standard body		Applied standard
CE	ATEX directive 2014/34/EU ("nnnn" refers to the notified body doing factory surveillance)	
	Electromagnetic Compatibility (EMC) directive 2014/30/EU	EN 61326-1:2013, EN/IEC 60529,
	Restriction of Hazardous Substances (RoHS) directive 2011/65/EU	EN/IEC 61010-1:2010
	Waste of Electrical and Electronic Equipment (WEEE) 2012/19/EU	61 m
ATEX, IECEx	ATEX: FM18ATEX00xxX, IECEx FMG 18.00xxX	EN/IEC 60079-0, EN/IEC 60079-1,
	Flame proof/dust proof (local configuration):	EN/IEC 60079-11, EN/IEC 60079-15,
	II 1/2 G Ex ia/db IIC T6...T1 Ga/Gb –50 °C ≤ Ta ≤ +75 °C...+85 °C	EN/IEC 60079-26, EN/IEC 60079-31,
	II 1 D Ex ia ta IIIC T85 °C... T135 °C Da –50 °C ≤ Ta ≤ +75 °C...+85 °C—IP66/IP68	EN/IEC 60529
	Flame proof/dust proof (remote configuration):	
	II 2 G Ex db [ia] IIC T6...T1 Gb –50 °C ≤ Ta ≤ +75 °C...+85 °C	
	II 1 D Ex ia ta IIIC T85 °C... T135 °C Da –50 °C ≤ Ta ≤ +75 °C...+85 °C—IP66/IP68	
	Intrinsically safe:	
	II 1 G Ex ia IIC T6…T1 Ga –50 °C ≤ Ta ≤ +75 °C...+85 °C	
	II 1 D Ex ia ta IIIC T85 °C...T135 °C Da –50 °C ≤ Ta ≤ +75 °C...+85 °C—IP66/IP68	
	II 3/1 G Ex ic/ia IIC T6...T1 Gc/Ga	
	II 3/1 D Ex ic/ia IIIC T85 °C... T450 °C Dc/Da	
	Category 3 (Zone 2):	
	II 3 G Ex nA [ia Ga] IIC T6...T1 Gc	
	II 3 D Ex nA [ia Da] IIIC T85 °C...T450 °C Dc	
	II 3 G Ex ic [ia Ga] IIC T6...T1 Gc	
	II 3 D Ex ic [ia Da] IIIC T85 °C...T450 °C Dc	
FM	FM18US0000X, FM18CA0000X	FM Class 3600:2011, FM Class 3610,
	Explosion Proof :	FM Class 3611,FM Class 3615:2006,
	CLI DIV1 GP ABCD, CLII DIV1 GP EFG, CLIII T6…T1	FM Class 3616:2011, FM Class
	Flame proof/dust proof (local configuration):	3810:2005, ANSI/ISA 61010- 1:2012,
	CLI Zone 0/1, AEx/Ex ia/db IIC T6…T1 Ga/Gb	ANSI/ISA 60079-0:2013, ANSI/UL
	CLII/III Zone 20 AEx/Ex ia ta IIIC T85 °C…T135 °C Da	60079-1:2015, ANSI/ISA 60079-11,
	Flame proof/dust proof (remote configuration):	ANSI/ISA 60079-15, ANSI/ISA
	CLI Zone 1, AEx/Ex ia/db IIC T6…T1 Gb	60079-26: 2011, ANSI/ISA
	CLII/III Zone 20 AEx/Ex ia ta IIIC T85 °C…T135 °C Da	60079-31:2015, ANSI/ISA
	Intrinsically Safe:	12.27.01:2011, UL50, ANSI/NEMA
	CLI DIV1 GP ABCD, CLII DIV1 GP EFG, CLIII T6…T1	250:2014, ANSI/IEC 60529:2004
	CLI ZONE 0 AEx/Ex ia IIC T6…T1 Ga;	CSA-C22.2 No. 0.4:2013, CSA-C22.2
	CLII/III Zone 20 AEx/Ex ia ta IIIC T85 °C...T135 °C Da	No. 0.5:2012, CSA-C22.2 No.
	CLI ZONE 2/0 AEx/Ex ic/ia IIC T6…T1 Gc/Ga;	25:2014, CSA-C22.2 No. 30:2012,
	CLII/III Zone 22/20 AEx/Ex ic/ia IIIC T85 °C...T135 °C Dc/Da	CSA-C22.2 No. 94:2011 CAN/CSAC22.2
	Division 2/Zone 2/22:	No. 60079-0:2015, CAN/CSAC22.2
	CLI DIV2 GP ABCD, CLII DIV2 GP FG, CLIII T6…T1	No. 60079-1:2011, CAN/CSAC22.2
	CLI Zone 2, AEx/Ex nA [ia] IIC T6…T1 Gc	No. 60079-11. CAN/CSAC22.2
	CLII/III Zone 22 AEx/Ex nA [ia] IIIC T85 °C…T450 °C Dc	No. 60079-15, CAN/CSAC22.2
	CLI ZONE 2 AEx/Ex ic [ia Ga] IIC T6…T1 Gc;	No. 60079-26, CAN/CSAC22.2
	CLII/III Zone 22 AEx/Ex ic [ia Da] IIIC T85 °C...T450 °C Dc	No. 60079-31:2015, CSAC22.2
	ENCL. TYPE 4X, IP66/IP68 (1 meter - 3 days) - Amb. temp.: –50 °C ≤ Ta ≤ +75 °C...+85 °C	No. 60529:2015, CAN/CSAC22.2
CRN	Canadian Registration Number (CRN) # 0FXXXXX.XC	No. 61010-1:2012 CAN/CSA No. B51:2014
	Category "F" Type of fittings - Measuring devices	ASME B31.1/ASME B31.3
SIL (Safety Integrity Level)	Certificate # XXXXXXX SIL 2/SIL 3 capable device	IEC 61508/IEC 61511

Ordering information

	Main code										Optional code
LWT310/LWT320	**XX**	**XX**	**XX**	**XXX**	**X**	**XX**	**XXXX**	**XX**	**XX**	**XX**	**XXX**
Approvals											
General purpose	Y0										
ATEX/IECEx Intrinsically Safe, Ex ia	E1										
ATEX/IECEx flame proof/dust proof housing, Ex db/ia, Ex tb ia	E2										
ATEX/IECEx non-sparking, Ex nA category 3	E3										
ATEX/IECEx Ex ic category 3	E8										
ATEX/IECEx Ex ic/ia, category 3/1	E9										
Combination approval US standards FMus, ATEX, IECEx flame proof/explosion proof, intrinsically safe, dust proof (protection type marked by customer)	M1										
Combination approval Canadian standards cFM, ATEX, IECEx flame proof/explosion proof, intrinsically safe, dust proof (protection type marked by customer)	M2										
Combination approval US standards FMus and INMETRO flame proof/explosion proof, intrinsically safe, dust proof (protection type marked by customer)	M3										
Combination approval North American, cFMus and INMETRO flame proof/explosion proof, intrinsically safe, dust proof (protection type marked by customer)	M4										
cFMus standards intrinsically safe, Ex ia	N1										
FM US standards explosion proof/flame proof/dust proof Ex db/ia, Ex tb ia	N2										
cFMus standards non-incendive/non-sparking, Ex nA	N3										
Canadian standards by FM Explosion proof/Flame proof/Dust proof, Ex db/ia, Ex tb ia (also meeting FMus)	N4										
cFMus standards Ex ic (category 3)	N5										
cFMus standards Ex ic/ia (category 3/1)	N6										
Wetted material											
Duplex 2205 stainless steel		D1									
Super duplex 2507 stainless steel		D2									
C-276 alloy		H1									
304L stainless steel		S4									
316L stainless steel		S6									
Seal type (O-ring)											
Viton, process service temperature range: –26 to 204 °C (–15 to 400 °F)			V0								
Kalrez, process service temperature range: –20 to 204 °C (–4 to 400 °F)			K0								
EPDM, process service temperature range: –55 to 120 °C (–67 to 248 °F)			E0								
Markez,process service temperature range: –10 to 204 °C (14 to 400 °F)			M0								

	Main code										Optional code
	LWT310/LWT320	**XX**	**XX**	**XX**	**XXX**	**X**	**XX**	**XXXX**	**XX**	**XX**	**XXX**
Process connection type and pressure rating											
ANSI/ASME, raised face Class 150					ARD						
ANSI/ASME, raised face Class 300					ARE						
ANSI/ASME, raised face Class 600					ARG						
ANSI/ASME, raised face Class 900					ARH						
DIN, raised face PN25					DRD						
DIN, raised face PN40					DRE						
DIN, raised face PN100					DRG						
DIN, raised face PN900					DRH						
NPT threaded connection					NTN						
Special (industry standard flanges only)					ZZZ						
Process connection size											
DN 20/ANSI ¾ in **(LWT310 only)**						B					
DN 40/ANSI 1 ½ in **(LWT320 only)**						E					
DN 50/ANSI 2 in						F					
DN 80/ANSI 3 in						H					
DN 100/ANSI 4 in						J					
DN 150/ANSI 6 in						M					
DN 200/ANSI 8 in						P					
Special (industry standard flanges only)						Z					
Probe type											
LWT310 rod probes											
Rod probe Ø9.5 mm (⅜ in), 6.1 m (20 ft) maximum length							R2				
Segmented rod probe (1 m [39.4 in]) Ø9.5 mm (⅜ in), 6.1 m (20 ft) maximum length							R5				
LWT320 rod probes											
Rod probe Ø12.7 mm (½ in), 6.1 m (20 ft) maximum length							R3				
Segmented rod probe (1 m [39.4 in]), Ø12.7 mm (½ in), 6.1 m (20 ft) maximum length							R6				
LWT310 cable probes											
Cable probe 4.8 mm (3⁄16 in) O.D. 61 m (200 ft) maximum length							F1				
Cable probe 4.8 mm (3⁄16 in) O.D., with PEEK spacers 61 m (200 ft) maximum length							FA				
Cable probe 4.8 mm (3⁄16 in) O.D., with Teflon spacers 61 m (200 ft) maximum length							FB				
Cable probe 4.8 mm (3⁄16 in) O.D., with ceramic spacers 61 m (200 ft) maximum length							FE				
LWT320 cable probes											
Cable probe 6.4 mm (¼ in) O.D. 61 m (200 ft) maximum length							F2				
Cable probe 6.4 mm (¼ in) O.D., with PEEK spacers 61 m (200 ft) maximum length							FC				
Cable probe 6.4 mm (¼ in) O.D., with Teflon spacers 61 m (200 ft) maximum length							FD				
Cable probe 6.4 mm (¼ in) O.D., with ceramic spacers 61 m (200 ft) maximum length							FF				

	Main code										Optional code
LWT310/LWT320	**XX**	**XX**	**XX**	**XXX**	**X**	**XX**	**XXXX**	**XX**	**XX**	**XX**	**XXX**
LWT310 coaxial probes											
Coaxial probe 22 mm (⅞ in) O.D. 6.7 m (22 ft) maximum length						C3					
Coaxial probe 22 mm (⅞ in) O.D., with ceramic spacers 6.7 m (22 ft) maximum length						CC					
Coaxial probe 22 mm (⅞ in) O.D., with Teflon spacers 61 m (200 ft) maximum length						CT					
Coaxial probe 22 mm (⅞ in) O.D., with PEEK spacers 61 m (200 ft) maximum length						CP					
Probe material											
2205 duplex stainless steel							PMD1				
2507 super duplex stainless steel							PMD2				
C-276 alloy							PMH1				
304/L stainless steel							PMS4				
316/L stainless steel							PMS6				
Housing											
Aluminum with 2 × M20 × 1.5								D1			
Aluminum with 2 × NPT ½ in								D2			
316L stainless steel with 2 × M20 × 1.5								D3			
316L stainless steel with 2 × NPT ½ in								D4			
Remote/Aluminum 2 × M20 × 1.5								R1			
Remote/Aluminum 2 × NPT ½ in								R2			
Remote/Stainless steel 2 × M20 × 1.5								R3			
Remote/Stainless steel 2 × NPT ½ in								R4			
Display											
No display, with blind cover									L0		
With HMI keypad display and glass cover									L1		
With cover and HMI TTG glass display									L2		
Output											
Single 4 to 20 mA + HART										H1	

	Main code											Optional code
	LWT310/LWT320	**XX**	**XX**	**XX**	**XXX**	**X**	**XX**	**XXXX**	**XX**	**XX**	**XX**	**XXX**
Optional codes												
Remote electronics coaxial cable length (for remote coupler only)												
1.5 m (≅5 ft)												SRW
3 m (≅10 ft)												SRT
5 m (≅16 ft)												SR1
6 m (≅20 ft)												SRR
10 m (≅32 ft)												SR2
15 m (≅49 ft)												SR3
20 m (≅66 ft)												SR4
25 m (≅82 ft)												SR5
30 m (≅98 ft)												SR6
35 m (≅115 ft)												SR7
40 m (≅131 ft)												SR8
45 m (≅147 ft)												SR9
50 m (≅164 ft)												SRA
60 m (≅197 ft)												SRB
Custom coaxial remote length												SRZ
End-of-probe attachments												
Cable probe weight												
Cable weight												WC1
Centering disks												
Metal centering disk												WD1
Device identification plate												
Additional stainless steel hang tag												T1
Certification plate, plastic adhesive label												TA
Additional screwed-on steel tag plate												TD
Plastic adhesive label with TAG number												TC
Add stainless steel hang tag, custom markings 4 lines, 22 characters per line												TS
Certificates												
Test report 2.2 acc. EN 10204												C1
MTR 3.1, Material monitoring with inspection certificate 3.1 acc. EN 10204												C2
MTR 3.2, Material monitoring with inspection certificate 3.2 acc. EN 10204												C3
Declaration of compliance with the order 2.1 acc. EN 10204												C4
With dye penetrant test on pressure bearing parts												C9
Boiler Certification EN 12952-11, EN 12953-9												CC
Printed record of configured settings in transmitter												CG
With hydrostatic test report												CH
PMI Positive Material Identification without carbon content												CJ
Certificate of compliance for calibration 2.1 acc. EN 10204, calibration test report												CM
Material monitoring NACE MR 0175, MR 0103 with inspection certificate 3.1 acc. EN 10204												CN
SIL2 - certified acc. to IEC61508												CS
Drawings												
Drawings for approval required prior to construction												GD1
Drawings for record required												GD2
Certified as built drawings required												GD3

	Main code											Optional code
	LWT310/LWT320	**XX**	**XX**	**XX**	**XXX**	**X**	**XX**	**XXXX**	**XX**	**XX**	**XX**	**XXX**
Documentation language (user and safety guides, hard copy)												
Not included												M0
German												M1
French												M4
English												M5
Chinese												M6
Programming and parameter settings												
Custom parameter settings												N6
Calibration type												
Calibration verification certificate												R9
Custom linearization or strapping table entered (up to 20 points)												RL
Pipe or chamber internal diameter for spacer, weight or end-of-probe disk sizing												
Inner diameter ≥24.3 mm (0.96 in) and <34 mm (1.34 in), spacer O.D.: 22.3 mm (0.88 in)												QP1
Inner diameter ≥34 mm (1.34 in) and <42.8 mm (1.69 in)												QP2
Inner diameter ≥42.8 mm (1.69 in) and <54 mm (2.13 in)												QP3
Inner diameter ≥54 mm (2.13 in) and <66.7 mm (2.62 in)												QP4
Inner diameter ≥66.7 mm (2.62 in) and <82.8 mm (3.26 in)												QP5
Inner diameter ≥82.8 mm (3.26 in) and <102.3 mm (4.03 in)												QP6
Inner diameter ≥102.3 mm (4.03 in) and <122.3 mm (4.81 in)												QP7
Inner diameter ≥122.3 mm (4.81 in)												QP8
Custom dimension (not for gas phase compensation)												QPZ
Probe length UOM (this code will not appear on label - only the length + units)												
mm												QL3
in												QLN

*Not available for meter sizes below 100 mm (4 in)
** Not available for steam applications

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