Level Radar

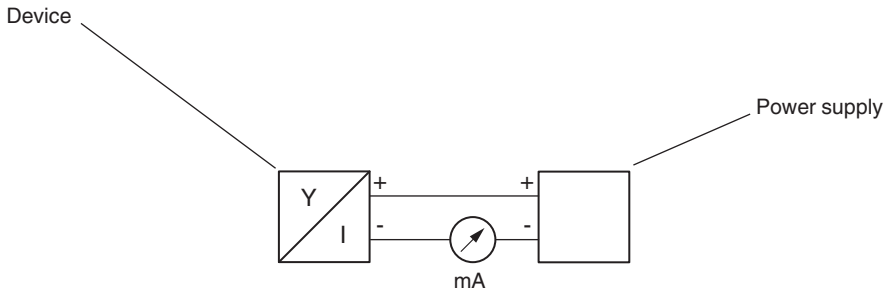
LCR10

- Device for level measurement in liquids
- Radar measuring device with Bluetooth® wireless technology
- Measuring range up to 12 m in fluids
- Process temperature up to 60 °C (140 °F)
- Process pressure up to 3 bar (43 psi)
- Accuracy up to ± 5 mm
- Commissioning, operation and maintenance via P+F Level app

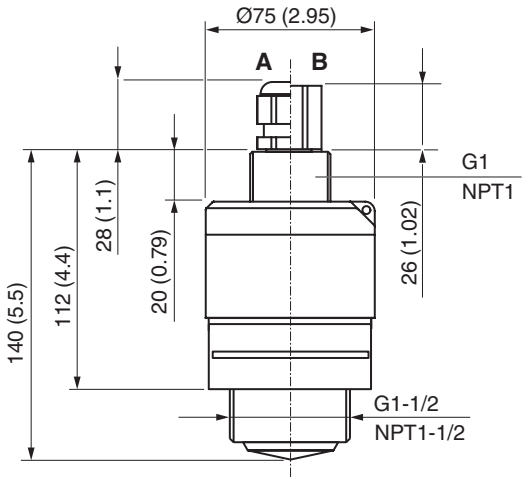
Function

The device is suitable level measurement for liquids in storage tanks, open basins, pump shafts and canal systems.
The device is a radar measuring device with Bluetooth® wireless technology.
Due to the wireless remote access, the device can be used in places difficult to reach and in hazardous areas.
The device can be configured and operated via the free iOS/Android app P+F Level.
The device has a PVDF housing, which guarantees a long lifetime.
The hermetically sealed wiring and fully potted electronics prevent water ingress and allow use under harsh ambient conditions.

Connection



Dimensions



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Technical Data

General specifications		
Measuring method		The device is a measuring system that functions according to the time-of-flight method. The distance from the reference point (process connection of the measuring device) to the product surface is measured.
Construction type		compact device
Series		LCR
Supply		
Rated voltage	U_r	10.5 ... 30 V DC
Current consumption		input current : max. 25 mA start-up current : max. 3.6 mA
Power consumption		input power : max. 675 mW
Electrical specifications		
Surge protection		integrated
Start-up time		first stable measured value after 20 s at 24 V DC
Interface		
Interface type		Bluetooth
Detection range		max. 25 m
Configuration		commissioning, operation and maintenance via P+F Level app - can be activated/deactivated - password encryption
Communication		encrypted
Input		
Measured variable		distance between reference point and product surface
Measurement range		- device with 40 mm (1.5 inch) antenna: max. 8 m (26 foot) - device with 40 mm (1.5 inch) antenna and flooding protection tube (accessory): max. 12 m (39 foot)
Operating frequency		approx. 26 GHz , K-Band
Transmitter radiated power		mean power density in the direction of the beam - at a distance of 1 m (3.3 foot): < 12 nW/cm² - at a distance of 5 m (16 foot): < 0.4 nW/cm²
Output		
Output signal		4 ... 20 mA , measured value output and power supply
Signal on alarm		current output: 22.5 mA (in accordance with NAMUR recommendation NE 43) P+F Level (app) - status signal (as per NAMUR Recommendation NE 107) - plain text display with remedial action
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013 (industrial locations)
Low voltage		
Directive 2014/35/EU		EN 61010-1:2010
Conformity		
Electromagnetic compatibility		NE 21
Degree of protection		IEC 60529:2001
Vibration resistance		DIN EN 60068-2-64 / IEC 60068-2-64
Climate class		DIN EN 60068-2-38/IEC 68-2-38
Bluetooth		IEEE 802.15.1
Measurement accuracy		
Accuracy		up to ± 5 mm
Operating conditions		
Process conditions		
Process temperature		-40 ... 60 °C (-40 ... 140 °F)
Process pressure		relative pressure : -1 ... 3 bar (-14.5 ... 43.5 psi) absolute pressure : < 4 bar (58 psi)
State of aggregation		liquid
Dielectric constant		4 ... 10 , e. g. concentrated acid, organic solvents, ester, aniline, alcohol, acetone, ... > 10 , e.g. conductive liquids, aqueous solutions, diluted acids and bases
Ambient conditions		

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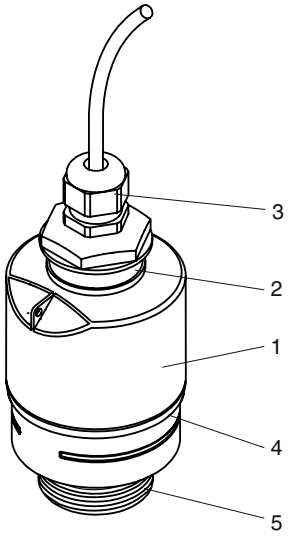
Ambient temperature		-40 ... 60 °C (-40 ... 140 °F)
Storage temperature		-40 ... 80 °C (-40 ... 176 °F)
Vibration resistance		20 ... 2000 Hz, 1 $(m/s^2)^2/Hz$
Mechanical specifications		
Degree of protection		IP68, NEMA 6P (24 hours in water 1.83 m (6 ft) deep) IP66, NEMA 4X
Connection		cable 2 x 0,75 mm^2
Material		sensor housing: PVDF seal: EPDM back side process connection: PVDF cable gland: PA conduit adapter: CuZn nickel-plated O-ring: EPDM counter nut: PA6.6 design ring: PBT-PC front side process connection: PVDF cable: PVC
Cable		
Length	L	10 m
Mass		approx. 3 kg
Dimensions		Ø75 x 140 mm
Process connection		Back side: thread ISO228 G1, ASME MNPT1 Front side: thread ISO228 G1-1/2, ASME MNPT1-1/2
Certificates and approvals		
Telecommunications		radio license FCC
General information		
Supplementary documentation		technical information (TI) manuals, brief instructions (BA, KA)
Accessories		
Designation		see technical information (TI)

Assembly



Device with 40 mm antenna
1 Sensor housing
2 Process connection rear side
3 Cable gland
4 Design ring
5 Process connection front side

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Type Code

This overview does not mark options which are mutually exclusive.

L	C	R	1	0	(1)	–	(2)	(2)	(2)	(3)	(4)	–	(5)	(5)	–	(6)	(6)	+	R	7	Z	1

LCR10	Device
LCR10	Level radar

(1)	Antenna, maximum measuring range
1	40 mm/1-1/2 inch, -40 ... 60 °C (-40 ... 140 °F), measuring range up to 8 m in liquids
X	Special version

(2)(2)(2)	Process connection rear side, material
G31	Thread ISO228 G1, PVDF
N31	Thread ASME MNPT1, PVDF, FNPT1/2 conduit
XXX	Special version

(3)	Process connection front side, material
D	Thread ASME MNPT1-1/2, PVDF
5	Thread ISO228 G1-1/2, PVDF
X	Special version

(4)	Cable length
2	10 m/32 foot
9	Special version

(5)(5)	Power supply, output, operation
IQ	2-wire, 4 to 20 mA HART, HART/Bluetooth (App) configuration
XX	Special version

(6)(6)	Approval
NA	Version for non-hazardous area
CG	CSA C/US General Purpose
XX	Special version

Additional Options

R7	Accessory enclosed
R7	Flooding protection tube, PBT-PC metallized, suitable for 40 mm/1-1/2 inch antenna with process connection front side G1-1/2, measuring range up to 12 m in liquids

Z1	Marking
Z1	Tagging (TAG), see additional specification

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