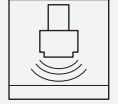




## Level Radar LCR20



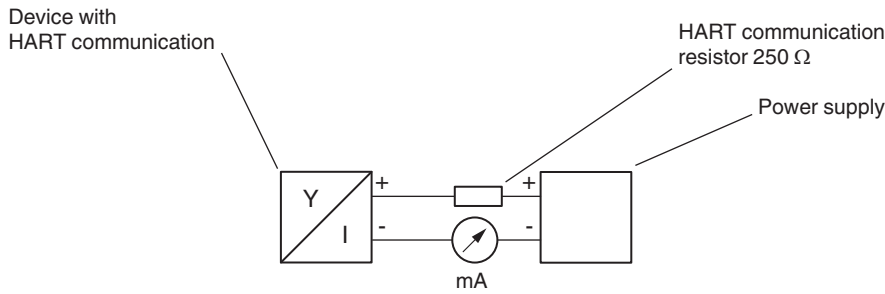
- Device for level measurement in liquids
- Radar measuring device with Bluetooth® wireless technology and HART communication
- Measuring range up to 20 m in fluids
- Process temperature up to 80 °C (176 °F)
- Process pressure up to 3 bar (43 psi)
- Accuracy up to ± 2 mm
- Commissioning, operation and maintenance via P+F Level app
- Configurable by PACTware



### 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 and HART communication. 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.

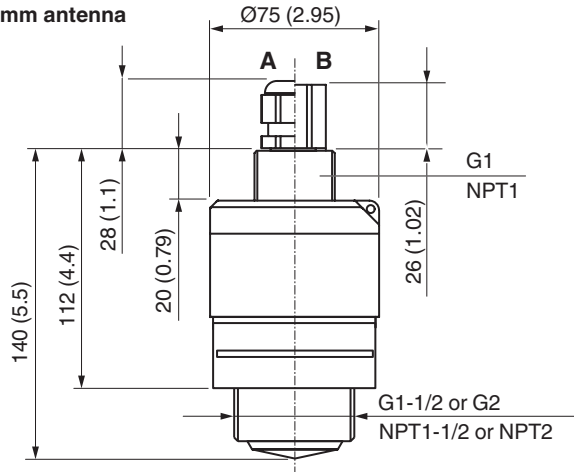
### Connection



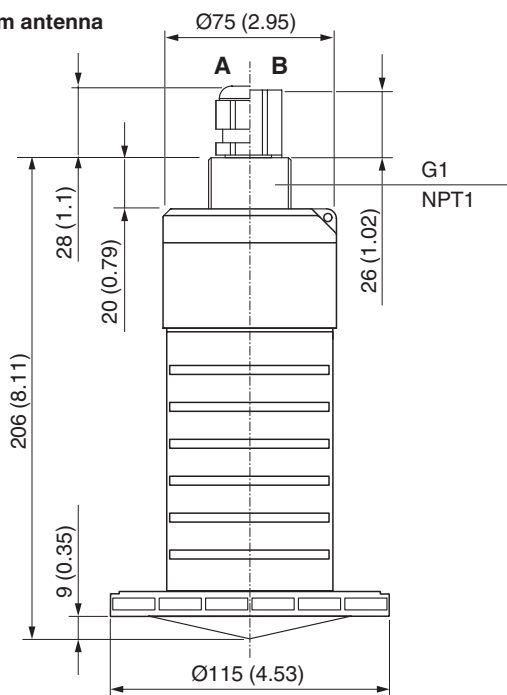
Release date: 2023-09-11 Date of issue: 2023-09-11 Filename: 70114396\_eng.pdf

## Dimensions

Device with 40 mm antenna



Device with 80 mm antenna



## 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 1

**Interface type** HART

## Technical Data

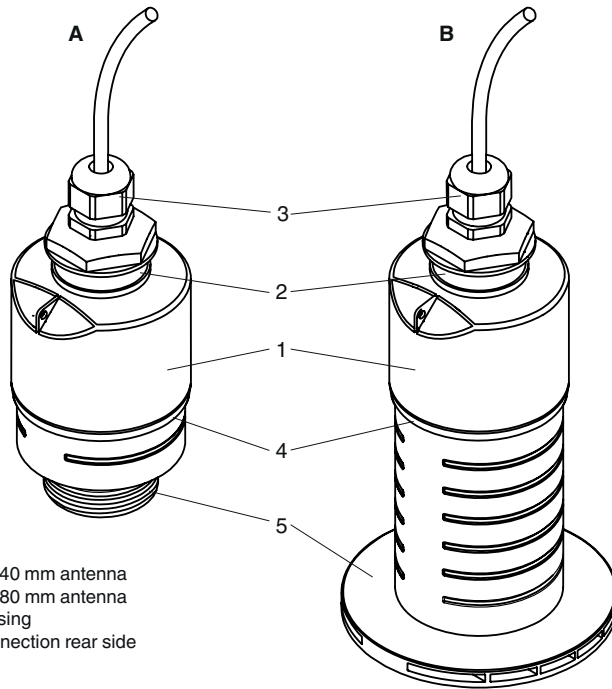
Specification	7.0
Supported functions	Additional Transmitter Status
Vendor ID	0x005D
Device ID	0x5DD3
Coding	signal encoding, FSK $\pm 0.5$ mA over current signal
Transfer rate	1200 Bit/s
Load	min. 250 $\Omega$
<b>Interface 2</b>	
Interface type	Bluetooth
Detection range	max. 25 m
Configuration	commissioning, operation and maintenance via P+F Level app - can be activated/deactivated - password encryption
Communication	encrypted
<b>Input</b>	
Measured variable	distance between reference point and product surface
Measurement range	- device with 40 mm (1.5 inch) antenna: max. 15 m (49 foot) - device with 80 mm (3 inch) antenna: max. 20 m (66 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/cm <sup>2</sup> - at a distance of 5 m (16 foot): < 0.4 nW/cm <sup>2</sup>
<b>Output</b>	
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) operating tool via digital communication (HART) or P+F Level (app) - status signal (as per NAMUR Recommendation NE 107) - plain text display with remedial action
<b>Directive conformity</b>	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013 (industrial locations)
Low voltage	
Directive 2014/35/EU	EN 61010-1:2010
<b>Conformity</b>	
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
<b>Measurement accuracy</b>	
Accuracy	up to $\pm 2$ mm
<b>Operating conditions</b>	
Process conditions	
Process temperature	-40 ... 80 °C (-40 ... 176 °F)
Process pressure	threaded process connection relative pressure : -1 ... 3 bar (-14.5 ... 43.5 psi) absolute pressure : < 4 bar (58 psi) UNI flange process connection relative pressure : -1 ... 1 bar (-14.5 ... 14.5 psi) absolute pressure : < 2 bar (29 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
<b>Ambient conditions</b>	
Ambient temperature	-40 ... 80 °C (-40 ... 176 °F) -40 ... 60 °C (-40 ... 140 °F) when using the Bluetooth connection
Storage temperature	-40 ... 80 °C (-40 ... 176 °F)
Vibration resistance	20 ... 2000 Hz, 1 (m/s <sup>2</sup> )/Hz
<b>Mechanical specifications</b>	

Release date: 2023-09-11 Date of issue: 2023-09-11 Filename: 70114396\_eng.pdf

## Technical Data

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 <sup>2</sup>
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	5 m 10 m 20 m specified length, any length from 5 to 300 m (16 ... 980 foot)
Mass		- device with 40 mm (1.5 inch) antenna with 5 m cable: 2.5 kg - device with 80 mm (3 inch) antenna with 5 m cable: 2.8 kg
Dimensions		- device with 40 mm (1.5 inch) antenna: Ø75 x 140 mm - device with 80 mm (3 inch) antenna: Ø115 x 206 mm
Process connection		Back side: thread ISO228 G1, ASME MNPT1 Front side: - thread ISO228 G1-1/2, ASME MNPT1-1/2 - thread ISO228 G2, ASME MNPT2 - UNI slip on flange 3 inch/DN80/80, 4 inch/DN100/100, 6 inch/DN150/150
<b>Data for application in connection with hazardous areas</b>		
EU-type examination certificate		see instruction manuals (SI)
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018 , EN 60079-11:2012 , EN 60079-26:2015
<b>International approvals</b>		
CSA approval		see instruction manuals (SI)
IECEx approval		see instruction manuals (SI)
<b>Certificates and approvals</b>		
Telecommunications		radio license FCC
<b>General information</b>		
Supplementary documentation		technical information (TI) manuals, brief instructions (BA, KA) instruction manuals (SI)
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> .
<b>Accessories</b>		
Designation		see technical information (TI)

**Assembly**



- A Device with 40 mm antenna
- B Device with 80 mm antenna
- 1 Sensor housing
- 2 Process connection rear side
- 3 Cable gland
- 4 Design ring
- 5 Process connection front side

**Type Code**

This overview does not mark options which are mutually exclusive.  
 Option with \* = on request/in preparation.  
 Option with \*\* = multiple options can be selected.

L	C	R	2	0	-	(1)	-	(2)	(3)	(4)	-	(5)	-	(6)	(7)
---	---	---	---	---	---	-----	---	-----	-----	-----	---	-----	---	-----	-----

<b>LCR20</b>	<b>Device</b>
LCR20	Level radar

<b>(1)</b>	<b>Antenna, maximum measuring range</b>
1	40 mm/1-1/2 inch, -40 to 80 °C (-40 to 176 °F), measuring range up to 15 m in liquids
2	80 mm/3 inch, -40 to 80 °C (-40 to 176 °F), measuring range up to 20 m in liquids
X	Special version

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

<b>(3)</b>	<b>Process connection front side, material</b>
A	UNI slip on flange 3 inch/DN80/80, PP, max. 4 bar abs/58 psia, suitable for 3 inch 150 lbs/DN80 PN16/10K 80
B	UNI slip on flange 4 inch/DN100/100, PP, max. 4 bar abs/58 psia, suitable for 4 inch 150 lbs/DN100 PN16/10K 100
C	UNI slip on flange 6 inch/DN150/150, PP, max. 4 bar abs/58 psia, suitable for 6 inch 150 lbs/DN150 PN16/10K 150
D	Thread ASME MNPT1-1/2, PVDF
1	Thread ASME MNPT2, PVDF
5	Thread ISO228 G1-1/2, PVDF
6	Thread ISO228 G2, PVDF
M	Mounting customer side without flange
X	Special version

<b>(4)</b>	<b>Cable length</b>
A	in foot, specified length, any length from 16 to 980 foot
1	5 m/16 foot
2	10 m/32 foot
3	20 m/65 foot
8	in m, specified length, any length from 5 to 300 m
9	Special version

Release date: 2023-09-11 Date of issue: 2023-09-11 Filename: 70114396\_eng.pdf

## Type Code

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

(6)	Approval
NA	Version for non-explosion-hazardous area
E1	ATEX II 1G Ex ia IIC T4 Ga
EX	ATEX II 1/2G Ex ia IIC T4 Ga/Gb
CG	CSA C/US General Purpose
C1	CSA C/US IS Cl. I Div. 1 Gr. A-D, AEx/Ex ia IIC T4
IA	IEC Ex ia IIC T4 Ga
IB	IEC Ex ia IIC T4 Ga/Gb
XX	Special version



### Additional Options

(7)	Service **
YY	Special version

(7)	Accessory enclosed **
RA	UNI flange 2 inch/DN50/50, PP, front side, max. 4 bar abs/58 psia
RB	* UNI flange 2 inch/DN50/50, PP, rear side, max. 4 bar abs/58 psia
RD	UNI flange 3 inch/DN80/80, PP, front side, max. 4 bar abs/58 psia
RE	UNI flange 3 inch/DN80/80, PP, rear side, max. 4 bar abs/58 psia
RG	UNI flange 4 inch/DN100/100, PP, front side, max. 4 bar abs/58 psia
RH	UNI flange 4 inch/DN100/100, PP, rear side, max. 4 bar abs/58 psia
R1	Weather protection cover, PVDF
R7	Flooding protection tube, PBT-PC metallized, suitable for 40 mm/1-1/2 inch antenna with process connection front side G1-1/2
R8	Flooding protection tube, PBT-PC metallized, suitable for 80 mm/3 inch antenna
R9	Special version

(7)	Marking
Z1	Tagging (TAG), see additional specification

## Accessories

	<b>DTM Level Control</b>	DTM collection
	<b>PACTware 5.0</b>	FDT Framework