

## Overview

### Features

- Continuous level measurement of liquids and solids in standard applications in nearly all industries with 80 GHz FMCW radar
- Suitable for measurement of liquids in storage tanks and for water treatment
- Suitable for measurement of solids in small and medium storage silos and in open containers
- Measurement through the wall of a plastic tank is possible as well

#### Measurement range

- Up to 15 m (49.2 ft)

#### Mechanic

- Housing and antenna made of PVDF for high chemical resistance
- Simple mounting due to threaded process connection
- Accessories for further mounting options

#### Service

- Plug and play system, simple installation and commissioning
- Programming / communication wireless with standard mobile device or with push buttons

#### Approvals

- Approval for use in Hazardous Locations (Gas)
- 2011/65/EU RoHS conform



NR 7100 and  
 NR 7200 without Display  
 (non transparent lid)



NR 7200 with Display  
 (transparent lid)

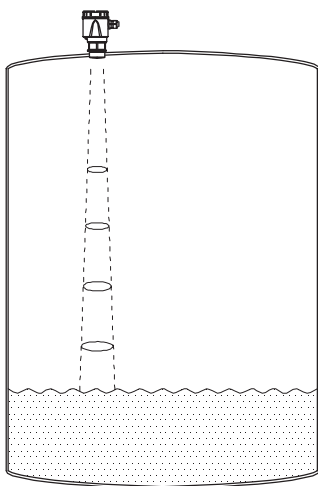


NR 7200  
 Plug on Display  
 With push buttons

## Application

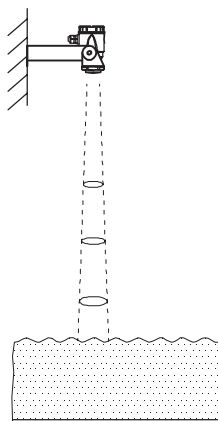
### Liquids measurement

Closed bins



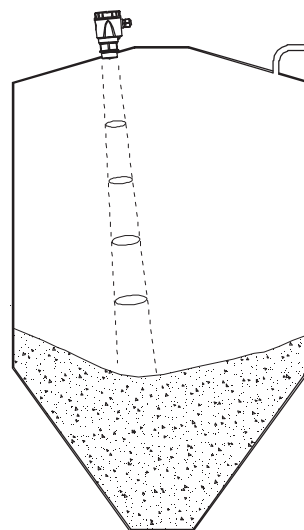
Vertical installation without aiming of the antenna

Open arrangements



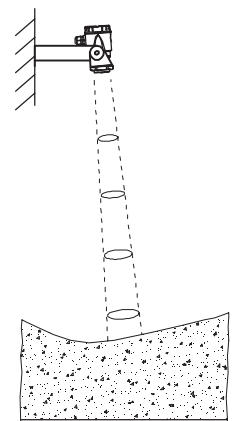
### Solids measurement

Closed bins



Aiming of the antenna to the center of the silo allows measurement down to the bottom

Open arrangements



## Specification

### Specification

<b>Process</b>	Measurement range	NR 7100: up to 8 m (26.3 ft) NR 7200: up to 15 m (49.2 ft)
	Ambient temperature	-40 .. +70°C (-40 .. 158°F) -25 .. +70°C (-13 .. 158°F) for Plug on Display (NR 7200)
	Process temperature	NR 7100: -40 .. +60°C (-40 .. 140°F) NR 7200: -40 .. +80°C (-40 .. 176°F)
	Process overpressure	-1 .. +3,0 bar (-14.5 .. +43.5 psi)
<b>Process</b>	Frequency	80 GHz FMCW
	Beam angle	8°
	Accuracy of measurement	Liquids: ≤ 2 mm (0.08") at distance >0,25m (0.82ft) Solids: depending on application
	Response time	Max. 3 seconds (with sudden distance change)
	Dielectric constant of material measured	≥ 1,1 (under ideal conditions)
<b>Mechanics</b>	Ingress protection	Type 4X, IP66/67
	Enclosure	Rotable 330° Material: PVDF NR 7200 with Plug on Display: Lid transparent to enable reading
	Antenna and process connection	Material: PVDF, FDA certification (for foodstuff and pharmaceutical)
	Process sealing (with G-thread)	Material: FKM EPDM (FDA certification, EG1935/2004)
<b>Electronics</b>	Power supply	4-20 mA 2-wire loop according to NE43 NR 7100: 12 .. 35 V DC NR 7100: 15 .. 35 V DC with use of Plug on Display
	Programming / communication	Wireless: Effective range typ. 25m (82ft) HART (NR 7200): Version 7.0 (not programmable via PACTware/DTM) Plug on Display (NR 7200): Graphic LCD, illuminated, 3 push buttons, bar graph representing level
<b>Approvals</b>	General purpose	CE / cFMus / UKCA
	Intrinsically safe zone 0, 0/1	NR 7100: not applicable NR 7200: ATEX / IEC-Ex/ cFMus / UKEX / INMETRO / KCs
	Intrinsically safe Cl. I Div.1	NR 7100: not applicable NR 7200: cFMus
	Radio approvals	According to country-specific standards for radar devices and wireless communication

### Wireless programming / communication

with standard mobile device via UWT LevelApp:

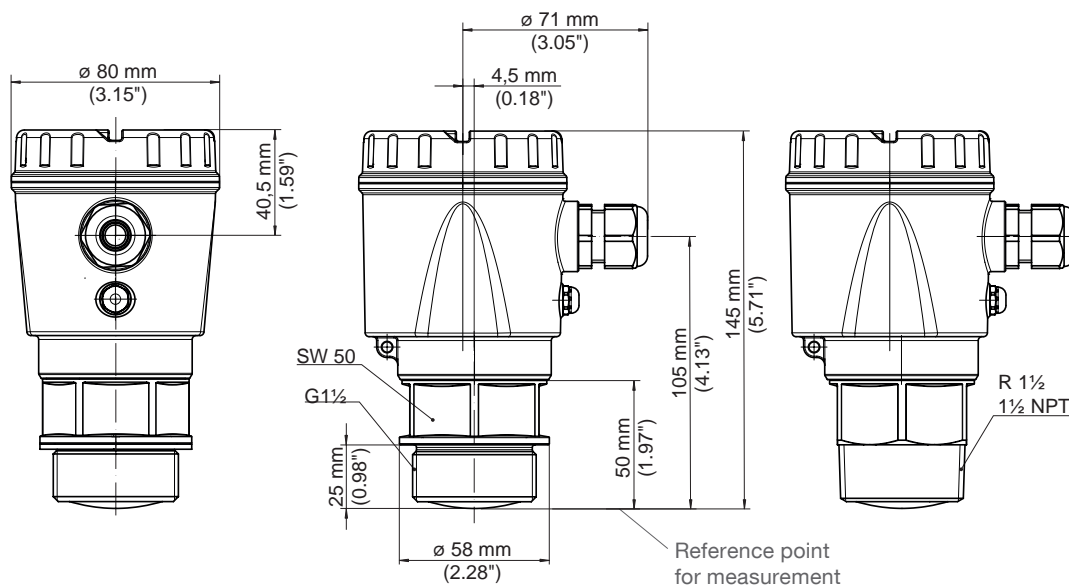
- Tablet or Smartphone (iOS- or Android-operating system)



## Dimensions / Detailed Ex-markings

### Dimensions

NR 7100  
 NR 7200



### Detailed Ex-markings

pos.2

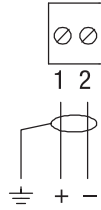
#### Certificate

S	ATEX	II 1G, 1/2G Ex ia IIC T4 Ga, Ga/Gb
	IEC-Ex	Ex ia IIC T4 Ga, Ga/Gb
	cFMus	IS Class I, Div.1, Gp.A-D T4 CI I, Zn 0, 0/1 AEx ia IIC T4 Ga, Ga/Gb
	UKEX	II 1G, 1/2G Ex ia IIC T4 Ga, Ga/Gb
F	INMETRO	Ex ia IIC T4 Ga, Ga/Gb
B	KCs	Ex ia IIC T4 Ga, Ga/Gb

## Electrical installation

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### 4-20 mA



4-20 mA 2-wire loop  
NR 7100: 12 .. 35 V DC  
NR 7100: 15 .. 35 V DC (use of Plug on Display)

With version "Intrinsically safe" (NR 7200 Pos.2 S, X, F, B) connection is done to an approved intrinsically safe circuit (barrier):

$U_i=30\text{ V}$   $I_i=131\text{ mA}$   $P_i=983\text{mW}$

The effective internal capacitance  $C_i$  and inductance  $L_i$  is negligibly small.

NR 7200 with Display: The terminals are located underneath the Display. Remove the Display to connect the wires.

Wire cross section: 0,2 mm<sup>2</sup> to 2,5 mm<sup>2</sup> (AWG 24 to 14)

Use of standard 2-wire cables. If electromagnetic interference is expected which is above the test values of EN 61326-1 for industrial areas, shielded cable should be used. Connect the cable screening to ground potential at one end on the supply side.