

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)

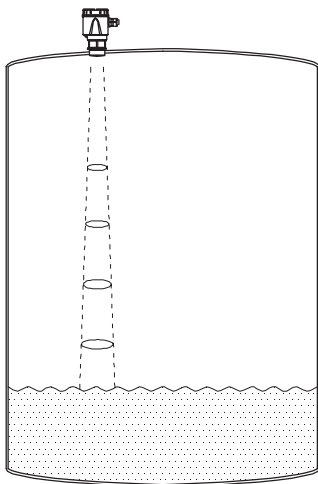


NR 7200
 Plug on Display
 With push buttons

Application

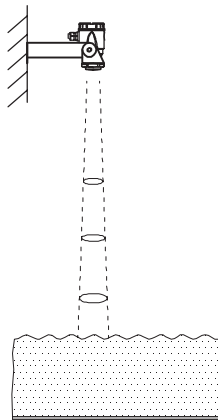
Liquids measurement

Closed bins



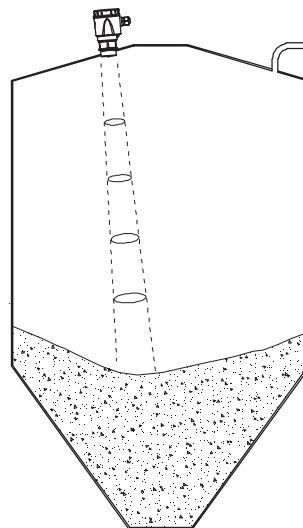
Vertical installation without aiming of the antenna

Open arrangements



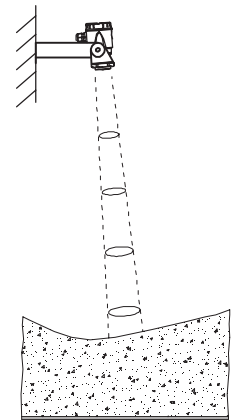
Solids measurement

Closed bins



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

Open arrangements



Specification

Specification

Process	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)
Process	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)
Mechanics	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)
Electronics	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
Approvals	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:

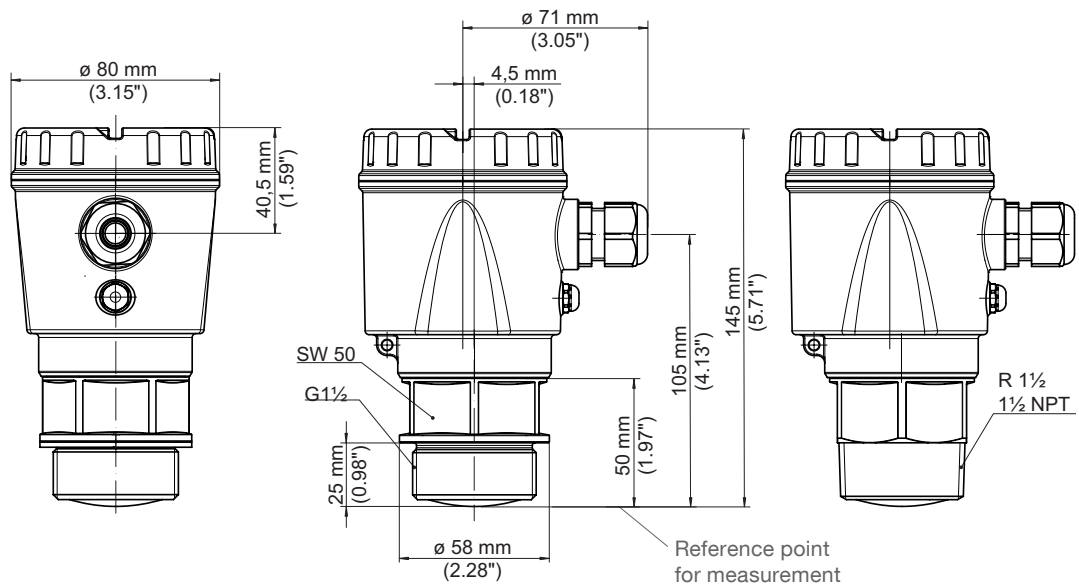
- Tablet or Smartphone (iOS- or Android-operating system)



Dimensions / Detailed Ex-markings

Dimensions

NR 7100
 NR 7200



Detailed Ex-markings

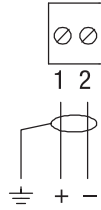
pos.2

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

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 mm² to 2,5 mm² (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.