Contents

Supplementary documentation:

- Operating Instructions NivoRadar NR 4100
- EU-type approval certificate CSANe 23ATEX1079X (Document ID: 1017207)

Editing status: 2023-05-02

Area of applicability

These safety instructions apply to the NivoRadar of type series:

- NR 4100

With the electronics versions:

- H - Two-wire 4 ... 20 mA/HART

According to EU type approval certificate CSANe 23ATEX1079X (certificate number on the type label) and for all instruments with safety instruction 1017206.

The classification as well as the respective standards are stated in the EU type approval certificate.

Standards:

- EN IEC 60079-0: 2018, General Requirements
- EN 60079-11: 2012, Intrinsic safety "i"
- EN 60079-18: 2015 + A1: 2017, encapsulation "m"
- EN 60079-31: 2014

Type of protection marking:

- H - Two-wire 4 ... 20 mA/HART
  - II 2G, Ex ib mb IIC T4 Gb
  - II 1D, 1/2D Ex ta, ta/tb IIIC T_{200}121 °C Da, Da/Db
  - II 2D Ex tb IIIC T_{200}134 °C Db

Device configuration/-properties

Alternatively, you can find all via your smartphone:

- Download the UWT Level app from the " *Apple App Store*", " *Google Play Store*" or " *Baidu Store*"
- Scan the DataMatrix code on the type label of the instrument or
- Enter the serial number manually in the app

General information

The NivoRadar NR 4100 in ignition protection type encapsulation "m" are used for detection of the distance between medium surface and sensor by means of high frequency, electromagnetic waves in the GHz range.

The electronics uses the running time of the signals reflected by the medium surface to calculate the distance to the medium surface.

The NivoRadar NR 4100 consist of an electronics housing, a process connection element and a sensor or an antenna.

The NivoRadar NR 4100 are suitable for applications in hazardous atmospheres of all combustible materials of explosion groups IIA, IIB, IIC and IIIA, IIIB, IIIC.

The NivoRadar NR 4100 are suitable for applications requiring category 2G (EPL Gb) instruments.

The NivoRadar NR 4100 are suitable for applications requiring category 1D (EPL Da) instruments.

The NivoRadar NR 4100 are suitable for applications requiring category 1/2D (EPL Da/Db)

instruments.

Application area

Category 2G (EPL Gb instruments)
The NivoRadar NR 4100 with the mechanical fixing element are installed in hazardous areas of zone 1 requiring category 2G (EPL Gb) instruments.

Category 1D (EPL Da instruments)
The NivoRadar NR 4100 with the mechanical fixing element are installed in hazardous areas of zone 20 requiring category 1D (EPL Da) instruments.

Category 1/2D (EPL Da/Db instruments)
The NivoRadar NR 4100 with mechanical fixing element are installed in hazardous areas of zone 21 requiring instruments of category 2D (EPL Db). The mechanical fixing element, process connection element is installed in the separating wall, which separates areas requiring instruments of category 2D (EPL Db) or 1D (EPL Da). The sensor measuring system is installed in hazardous areas of zone 20 requiring instruments of category 1D (EPL Da).

Specific conditions of use ("X" identification)

The following overview is listing all special properties of NivoRadar NR 4100, which make a labelling with the symbol "X" behind the certificate number necessary.

Electrostatic charging (ESD)
You can find the details in chapter " *Electrostatic charging (ESD)*" of these safety instructions.

Ambient temperature
You can find the details in chapter " *Thermal data*" of these safety instructions.

Impact resistance
The NivoRadar NR 4100 have been subjected to the test according to the standard corresponding to a low degree of mechanical hazard (4J).

Additional instructions for safe operation

- For process pressures outside the standard atmospheric conditions of 80 kPa (0.8 bar) to 110 kPa (1.1 bar) additional requirements can be valid.

Connection conditions
- For fixed installation, the connecting cable is suitable for an operating temperature range of -40 ... +80 °C. The temperature at the connection cable may be +90 °C for max. 10000 operating hours.
- For flexible installation, the connecting cable is suitable for an operating temperature range of -25 ... +80 °C. The temperature at the connection cable may be +90 °C for max. 10000 operating hours.
- If necessary, a suitable overvoltage arrester can be connected in front of the NivoRadar NR 4100

Important information for mounting and maintenance

General instructions
The following requirements must be fulfilled for mounting, electrical installation, setup and maintenance of the instrument:

- The staff must be qualified according the respective tasks
- The staff must be trained in explosion protection
- The staff must be familiar with the respectively valid regulations, e.g. planning and installation acc. to IEC/EN 60079-14
- Make sure when working on the instrument (mounting, installation, maintenance) that there is no explosive atmosphere present, the supply circuits should be voltage-free, if possible.
- The instrument has to be mounted according to the manufacturer specifications, the EU type approval certificate and the valid regulations and standards
- Modifications on the instrument can influence the explosion protection and hence the safety, therefore repairs are not permitted to be conducted by the end user
- Modifications must only be carried out by employees authorized by UWT company
- Use only approved spare parts

Mounting
Keep in mind for instrument mounting

- Mechanical damage on the instrument must be avoided
- Mechanical friction must be avoided
- If the device is used as a separating wall device, the operator must observe the applicable installation regulations.

Maintenance
To ensure the functionality of the device, periodic visual inspection is recommended for:

- Secure mounting
- No mechanical damages or corrosion
- Worn or otherwise damaged cables
- No loose connections of the line connections, equipotential bonding connections
- Correct and clearly marked cable connections

Electrostatic charging (ESD)

Take note in case of danger of electrostatic charges:

- Avoid friction on the surfaces
- Do not dry clean the surfaces

The instruments must be mounted/installed in such a way that the following can be ruled out:

- electrostatic charges during operation, maintenance and cleaning.
- process-related electrostatic charges, e.g. by measuring media flowing past

The warning on the type label indicates danger:

- WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE INSTRUCTIONS
- AVERTISSEMENT – DANGER POTENTIEL DE CHARGES ELECTROSTATIQUES – VOIR INSTRUCTION

- For media with a conductivity smaller than 10^{-8} S/m applies:
  - The level measuring instrument must not be used in highly charge generating processes, e.g. mechanical friction and separation processes, spraying of electrons, etc.
  - In particular, the level measuring instrument must not be mounted in a pneumatic conveying flow
- In the case of extremely flammable dusts with a minimum ignition energy (MIE) of less than 3 mJ, the device must not be used in areas where intensive electrostatic charging processes can be expected

Electrical data

Electronics H, 4 ...20 mA/HART

Supply and signal circuit:	
Two-wire connection cable and shielding	Ignition protection type encapsulation "mb", Protection by enclosure "Ex t"
Supply [+] brown Supply [-] blue Shielding: black	Supply via a circuit with limited power (max. 100 W, see operating instructions), e.g. a class 2 power supply unit common in North America U_N = 12 ... 35 V, non-intrinsically safe U_m = 35 V
Power consumption	< 1 W
The shielding (black) must be earthed on the supply side.	

Thermal data

Operation in an explosive gas atmosphere:

Temperature class	**Permissible process temperature range on the antenna in zone 1 (EPL Gb)**	**Permissible ambient temperature range on the electronics housing in zone 1 (EPL Gb)**
T4 ... T1	-20 ... +80 °C	-20 ... +80 °C

Operation in an explosive dust atmosphere Zone 20 (EPL Da), Zone 20/21 (EPL Da/Db):

Electronics	**Permissible process temperature range on the instrument in zone 20 (EPL Da)**	**Permissible ambient temperature range on the electronics housing in zone 20 (EPL Da)**	**Max. surface temperature in zone 20**
Two-wire 4 ... 20 mA/HART	-20 ... +67 °C	-20 ... +67 °C	+121 °C

Operation in an explosive dust atmosphere Zone 21 (EPL Db):

Electronics	Permissible process temperature range on the instrument in zone 21 (EPL Db)	Permissible ambient temperature range on the electronics housing in zone 21 (EPL Db)	Max. surface temperature in zone 21
Two-wire 4 ... 20 mA/ HART	-20 ... +80 °C	-20 ... +80 °C	+134 °C

Printing date:

All statements concerning scope of delivery, application, practical use and operating conditions of the sensors and processing systems correspond to the information available at the time of printing.
Subject to change without prior notice

Technical support
Please contact your local sales partner (address at www.uwtgroup.com).
Otherwise please contact us:

UWT GmbH
Westendstraße 5
87488 Betzigau
Germany

Phone + 49 (0) 831 57 123 0
info@uwtgroup.com
www.uwtgroup.com

1017206-EN-230906