

NRV 4-20 RADAR SENSOR

1 SPECIFICATIONS

Mechanical specifications:

Housing material	ABS
Dimensions / Weight	121 x 121 x 45 mm / 450 g
Cable	2 wires shielded cross-section 0.5mm ² , diam. 5.5mm, 50Ω/Km Length 2m (other lengths on request)

Electrical specifications:

Technology	Pulse radar
Measurement frequency	24.05 to 26.5 GHz
Repeat frequency	3.57 MHz
Pulse duration	1.2 ns
Radiated power	<20 dBm
Antenna aperture at -3dB	+/-4° by +/-6° (8°/12°)
Power supply voltage	10 to 33Vdc
Output signal	4/20mA
Clearance (*)	NRV420-3: 0.3 to 3m - NRV420-8: 0.3 to 8m - NRV420-12: 0.3 to 12m
Fault signal	Configurable from 4 to 22 mA (22 mA by default)
Fault time delay	Configurable from 10 to 250 s (240 s by default)
Smoothing depth	Configurable from 2 to 60 s (30 s by default)
Minimum heating time	Case where sensitivity is set to 0 and the fault signal to 22 mA: 2 s (+ smoothing depth)
Maximum heating time	Case where sensitivity is set to 7 and the fault signal to 22 mA: 16 s (+ smoothing depth) Case where sensitivity is set to 7 and the fault signal to 4 mA: 19 s (+ smoothing depth)
Resolution	1 mm or 2 µA (1 mm for a full scale of 1 to 8 m and 2 µA for a full scale of 8 to 12 m)
Precision, excluding temperature drift (**)	Clearance of 30 cm to 50 cm: +/-20 mm Clearance of 50 cm to 12 m: +/-5 mm (EMC +/-10 mm)
Temperature drift	< 0.2 µA/°C (from -20°C to +60°C)

(*) Distance between the water surface and the flat section at the front of the radar. For an NRV420-12, the configuration software tools allow you to enter a clearance of 0 to 12000. With the factory setup (0-12000), the current does not drop to 4 mA.

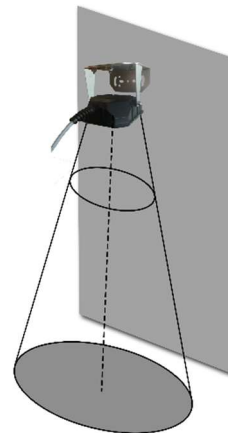
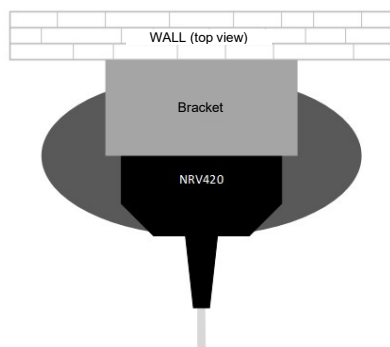
(**) With an echo on a planar metal surface and a clean radome.

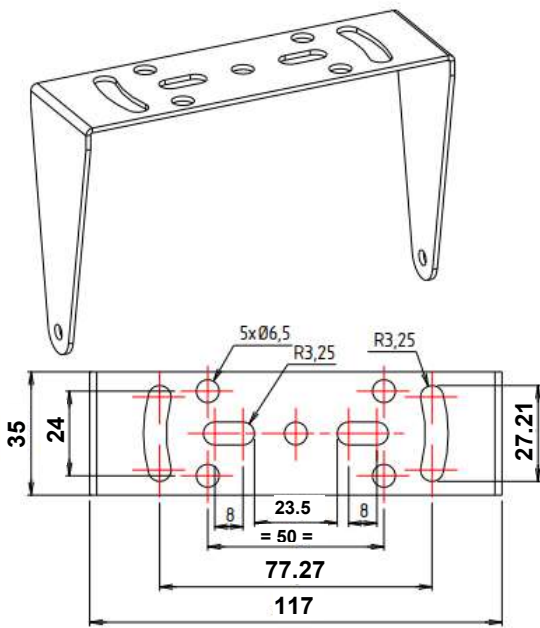
Environment, standards:

Protection rating	IP68, 100 days under 1 metre of water
Fire rating	UL94-V2
Storage temperature	-20 to 60°C
Operating temperature	-20 to 60°C
Altitude	0 to 2000 m
CE Mark:	EN 302729-1/2(2011-05) - EN 60950-1(2006-09)+ Av A1, A2, A11, A12 EN 61326-1 (2013-05) - EN 62479 (2010-11) - EN 50581 (2013-01)
Fast transients	Level 4
Lightning protection, wave 1.2/50 - 8/20	2 Kv
As per ISO 4373 standard	Physical principle of the device: radar echo-location Maximum variation rate: not applicable Response time (with 2s smoothing): 4 s Performance class (clearance > 50cm): 1 Temperature class: 2 Relative humidity class: 1 IP rating: IP68 Drinking water compatibility: not applicable Explosive environment compatibility: no

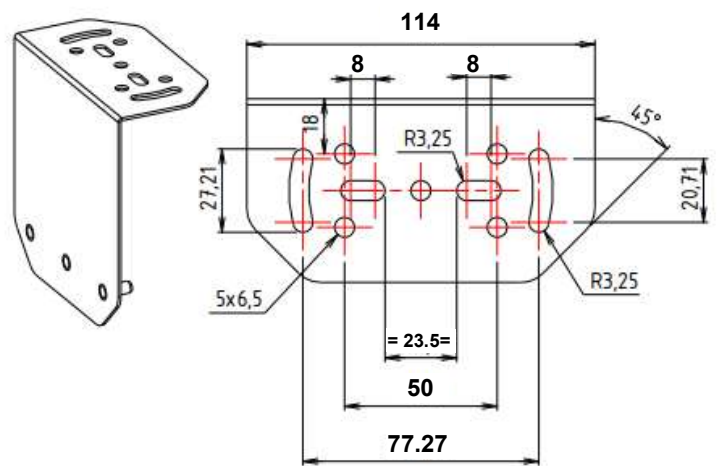
2 INSTALLATION

- The NRV radar sensor is mounted directly using the hanger provided (or using the optional angle bracket). Positioning and fastening are carried out using two M4 screws (3 mm hex key).
- To be able to perform measurement, the radome (radar antenna) must be parallel with the water level to be measured (horizontal).
- As the measurement cone is oval, the zone where the measurement is made and the potential presence of obstacles in the cone are directly dependent on the sensor orientation (see diagram below). As the angle of aperture is +/- 4° by +/- 6° with respect to the vertical, it is necessary to envisage offsetting the walls by at least 10 cm (20 cm recommended) per metre of clearance.
- To avoid any interference when it is sought to run 2 radars simultaneously, it is recommended not to install them in the immediate proximity of one another. The minimum distance is dependent on the eddy currents of the water area and the reflective surfaces located above it (the underside of a bridge, for example, the station ceiling, etc.), which may require tests. In any case, the distance separating 2 radars should be at least equivalent to the clearance value.



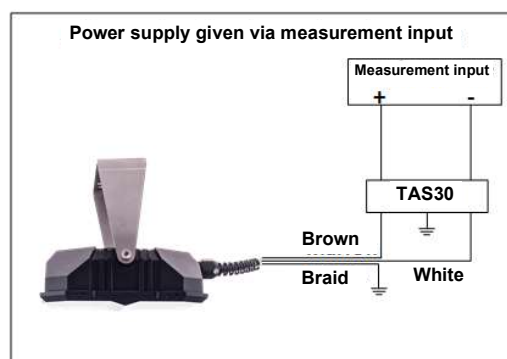
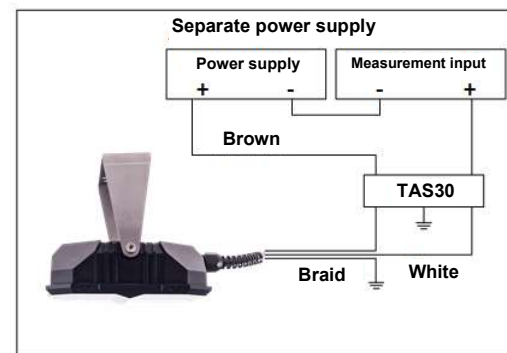
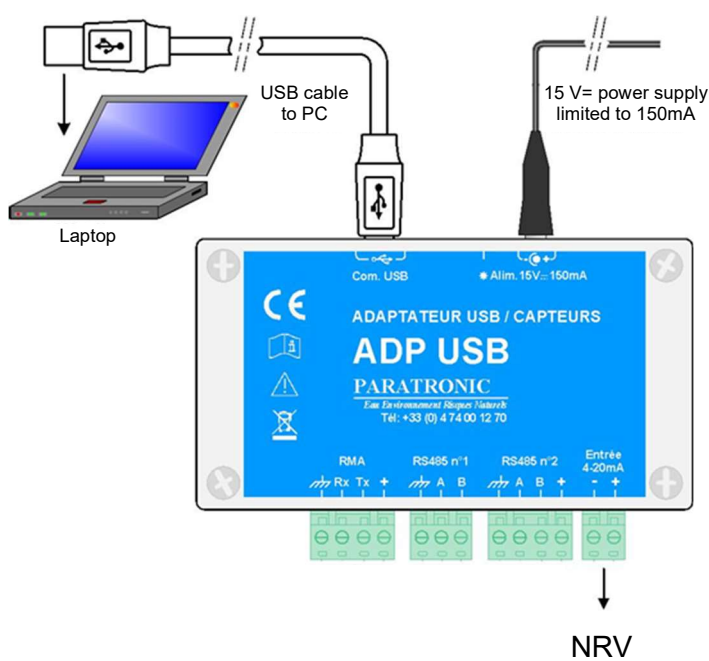


Hanger (provided)



Angle bracket (optional)

3 CONNECTIONS



4 CONFIGURATION

➤ No configuration is required on the NRV sensor. In fact, it can be used directly with the “factory settings” in most use scenarios. In specific cases in which the configuration needs to be modified, the “IHM capteur” software provides access to some of the radar settings:

As needed, use the “IHM capteur” software with a Paratronic “ADP USB” adapter to access the following settings:

- Fault time delay (default 240 sec.)
- Fault current (default 22 mA.)
- Smoothing depth (default 30 sec.)
- Sensitivity between 0 and 7 (default 4 = normal)
- Sensitivity via automatic setting
- Usable measurement range (clearance): used to remove “parasitic” echoes by defining a minimum clearance value and a maximum clearance value (default = radar range)
- Level or Drawdown measurement (default Drawdown)
- Clearance at 4 and 20 mA (default 0 – radar range)
- “Current value” input (application of scale correction or offset)

In the event of any reflective obstacles located outside the usable measurement zone or a risk of multiple reflections, it is recommended to reduce the measurement range to that strictly necessary.

In the event of a risk of condensation on the radome or poor reflection conditions (e.g. the presence of moss), perform an automatic sensitivity setting. Run the setting process under good reflection conditions (clean radome, normal reflection surface), and after checking that the clearance specified matches the required echo.

➤ The radar sensor settings can be modified with:

- The “ADPUSB” adapter to connect to your sensor (refer to the specific instructions I157F).
- AND
- The “IHM capteur” software for the configuration of your sensor (refer to the specific instructions I158F).

N.B.:

For the first use, you will need to install the software and its driver:

To be able to install PARATRONIC “IHM capteur” software, you must be the computer Administrator.


Download the latest software version at www.paratronic.fr/catalogue on the pages of compatible sensors. Run, as administrator, the “setup.exe” application to install the software. Follow the instructions on the screen and refer to document I158F “IHM Capteur”.


After installing “IHM capteurs”, you also need to install the drivers for the USB port.


For this purpose, use (as administrator) the executable “Paratronic_drivers_USB.exe” contained in the “IHM capteurs” folder. Follow the instructions on the screen and refer to document I158F “IHM Capteur”.

5 SAFETY SYMBOLS AND MARKS

: Hazard risk. Important information. Refer to the instructions for use.

: Read the instructions for use.

: Compliant with European Union and EFTA directives.

: European Directive 2002/96/EC of 27 January 2003 on waste electrical and electronic equipment (WEEE Directive) was transposed in France by Decree No. 2005-829 of 20 July 2005.

Electrical or electronic appliances, and their spare parts and consumables must never be disposed of in household waste.

PARATRONIC has undertaken to set up an Individual Collection System.

PARATRONIC waste electrical and electronic equipment should be returned by customers (End users) to our company's head office, at the following address:

PARATRONIC - Zone Industrielle - Rue des Genêts, 01600 REYRIEUX, France
Service Recyclage DEEE

6 SAFETY INSTRUCTIONS

: WARNING: The protection offered may be compromised if this appliance is not used as specified.

The specifications described in this document are subject to change by the manufacturer without notice.