

NanoVACQ Pressure

Temperature and Pressure data logger NanoVACQ a platform for multiple solutions, under permanent technology evolution.

Control pressure and temperature inside packagings, autoclaves...



With its diameter of 31 mm, NanoVACQ is a platform enabling the use of **3 sensors on the same logger**, thus answering a lot of industrial needs.

Designed for "clean" industry as well as "heavy" industry, NanoVACQ can be equipped with 1 pressure sensor and 1 or 2 temperature sensors.

The combination of pressure and temperature is the best way to control saturated steam as in **sterilization validation**.

Following is a list of standard models for temperature and pressure, but they can vary by shape and length of the probes if necessary:

NanoVACQ PT 1 piezoresistive pressure sensor
1 internal Pt1000 temperature sensor for pressure sensor compensation.

NanoVACQ PT-Tc 1 piezoresistive pressure sensor
1 internal Pt1000 temperature sensor for pressure sensor compensation
1 Pt1000 temperature sensor at the end of a rigid probe
diameter 3mm>1,9mm (hybrid) or diameter 3mm and length
30 mm (possible from 10 mm to 120 mm)

NanoVACQ PT-Td 1 piezoresistive pressure sensor
1 internal Pt100 or Pt1000 temperature sensor for pressure sensor
compensation
1 Pt100 or PT1000 type at the end of a rigid probe (diameter
3mm, length to be defined between 20mm and 100mm), at the end
of a flexible probe (diameter max 5mm, length to be defined between
100 mm and 1000 mm), or also at the end of a semi-rigid probe coated
with stainless steel (diameter 2 mm and length to be defined between
100 mm and 1000 mm).

Version 10Hz All the above models are available in 10Hz version.
(10 acquisitions par seconde).



Metrology

- Operating range:
 - In temperature
 - from -30°C to +150°C (and more with thermal shield)
 - possible from -55°C (optional)
 - In pressure
 - from 30 mbar to 5 bar or 15 bar from -30°C to 150°C.
 - possibility of higher pressure.
- Calibration uncertainties :
 - In temperature
 - +/- 0.1°C from -55°C to 140° (+/-0.05°C upon request)
 - In pressure
 - +/- 10 mbar from 0°C to 140°C and from 30 mbar to 5 bar (mode 1Hz or 10Hz)
 - +/- 12 mbar from 0°C to 140°C and from 30 mbar to 15 bar (mode 1Hz)
 - +/- 17 mbar from 0°C to 140°C and from 30 mbar to 15 bar (mode 10Hz)

The uncertainties correspond to 2 standard deviations.
The uncertainties are calculated taking into account the various significant sources of error, including calibration sensors, the equipments, the environmental conditions, the influence of the logger, repeatability, etc...
- Resolution :
 - In temperature 0.015°C
 - In pressure 0.3 mbar
- Annual recalibration and checkup recommended.
- Each logger can be calibrated and check up at the temperature points needed by the users..

Technical specifications

- External material biocompatible and sterilizable : 316 L stainless steel
- Dimensions: diameter 31 mm, height from 31 mm to 125 mm depending on the battery used.
- Sensors :
 - Temperature Pt1000 or Pt100
 - Pressure piezoresistive
- Memory capacity: 48 000 acquisitions, divided by the number of measurement channels
- Programmable acquisition rate: minimum 1 second, maximum 59 minutes and 59 seconds for 1Hz version
minimum 100 ms to maximum 59 minutes and 59 seconds for 10Hz version
- Programmable acquisition duration.
- Programmable recording start by date or on temperature threshold.
- High autonomy battery.
High temperature power supply block replaceable by the user.
- Non volatile memory (EEPROM).

Software operating conditions

- Data transfer with a communication interface connected to the serial or USB port.
- Operates under Windows® 98/Me/NT/2000/XP

Option FM : All the models above are available with optional radio transmission (except for 10Hz version)).

NanoVACQ FM autonomous transmitters/recorders equipped with sensors. They have been developed to enable two functions: real time radio transmission of the data given by the sensors and recording of the transmitted data.

They are designed to support temperatures from -30°C to +140°C.

- The body of the NanoVACQ FM is 31 mm in diameter, its height is 45 or 132 mm depending on the autonomy needed.
- The NanoVACQ FM antenna is unpluggable from the body, its length is 185 mm and it is protected by an insulating material. It allows data transmission by hertzian channel.



- The NanoVACQ FM can be set up by the user. The operation mode of the device may be selected during programming:
 - Radio transmission of data without recording them in memory.
 - Recording the data without radio transmission.
 - Radio transmission of data while recording them in the memory.

NanoVACQ FM radio transmission:

- The frequency used by the radio transmitter is within ISM 433MHz bandwidth (industrial, scientific or medical devices). This bandwidth can be used without licence if the power is inferior to 10mW.
- NanoVACQ FM transmits within this bandwidth with a power between 8 and 10mW on 50 ohms.
- The modulation of the radio transmission is of frequency modulation type (FM) and the hertzian transmission speed is of about 4800 bauds.
- The electronic parts enabling radio transmission are operational for temperatures between -60°C and +150°C.

Reach between transmitter and receiver:

- 25 meters in clear field,
- 5 meters in air, for range -30°C to +140°C in industrial environment,
- 3 meters in autoclaves, saturated steam,
- 1 meter in spraying or immersion.

For all applications, a preliminary test must be done to validate the hertzian transmission in the user's application.

Dimensions of NanoVACQ FM :

- Body height of NanoVACQ FM : 45 mm (range 0°C to +140°C)
- Body height of NanoVACQ FM : 132 mm (range -55°C to +85°C)

