

NanoVACQ Temperature

A platform for multiple solutions under permanent technologic evolution.

Chose your probe configuration for thermal process validation.

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 to 3 temperature sensors.

Application range is wide: control of temperature inside cans, pouches, trays, containers, validation of autoclaves, pasteurization, ovens, dryers, freezers, dry-freezers...



- NanoVACQ family (diameter 31mm, length from 31 to 125 mm) is composed of various standard models that can vary in length or probe shape.

NanoVACQ 1Tc NanoVACQ 2Tc

1 or 2 sensors Pt1000 type, at the end of a rigid probe (diameter 3 mm (or 3>1,9mm for the hybrid model) and up to 100mm long.

Ex Option

The 2 models above are available with Ex Option for use in Explosive environment.

NanoVACQ 1Td NanoVACQ 2Td NanoVACQ 3Td

1, 2 or 3 Pt100 or Pt1000 type remote sensors at the end of 1, 2 or 3 flexible cables (diameter max 5mm, length to be determined between 100 and 1000 mm) or at the end of semi-rigid probes (diameter 2mm, length to be determined between 100 and 1000mm).



NanoVACQ 1Tc-2Td

1 Pt100 or Pt1000 type sensors at the end of a rigid probe (Diameter 3mm, length 30mm) + 2 Pt100 or Pt1000 sensors at the end of 2 flexible probes (diameter max 5mm, length to be determined between 100 and 1000 mm) or at the end of semi-rigid probes (diameter 2mm, length to be determined between 100 and 1000mm).

NanoVACQ 1Tc-2Tdi

1 Pt1000 type sensor at the end of a rigid probe (diameter 3 mm, length up to 100 mm) + 2 Pt100 or Pt1000 sensor at the end of 2 removable flexible probes. This device is not watertight.



For use inside autoclave, semi-rigid sheathed probe is recommended. Nevertheless new flexible probes can be used in autoclaves and should be considered as an option when high flexibility is needed.

Batteries to be used depending on operation range and height of the logger (diameter 31 mm)

Operation range	from -80°C to +85°C	from -55°C to +140°C	from 0°C to +125°C	from 0°C to +150°C
Height 31 mm			014Z	
Height 39 mm		014ZF*		Calivac 015Z
Height 125 mm	014ZFL			

To benefit of greater temperature ranges, it is possible to exchange batteries on the same device.

*Battery 014ZF is not recommended for sustained use at high temperature (ex: sterilization).

Metrology

- Operation range: from -80°C to +150°C (and more with thermal shield)
- Calibration uncertainty: +/- 0,1°C from -80°C to 140°C for version 1Hz (+/-0.05°C upon request)
The uncertainties specified correspond to two standard deviation.
The uncertainties are calculated taking into account the various significant error sources, including the calibration probes, the equipments, the environmental conditions, the influence of the logger, repeatability, etc...
- Resolution : 0,015°C
- Annual recalibration and check up recommended.
- Each logger can be calibrated and checked at the temperature points needed by the user.

Technical specifications

- Dimensions: diameter 31 mm, height from 31 mm to 125 mm depending on battery.
- Water tightness : up to 20 bar for the NanoVACQ (except for models 1Tc-2Tdi and FM option)
- External materials biocompatible and sterilizable: 316 L Stainless steel
- Sensors: Pt1000 or Pt100
- Memory capacity: 48 000 acquisitions divided by number of measurement channels.
- Programmable acquisition rate: minimum 1 second, maximum 59 minutes and 59 seconds.
- Programmable acquisition duration
- Programmable recording start by date or on temperature threshold.
- High autonomy battery.
- High temperature power supply 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

NanoVACQ FM : All the models described above are available with optional radio transmission.

NanoVACQ FM are 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 -80°C to $+140^{\circ}\text{C}$.

- The body of the NanoVACQ FM is 31 mm in diameter, its height is 45 or 132 mm according to the chosen autonomy.
- The NanoVACQ FM antenna is removable 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 -80°C and $+140^{\circ}\text{C}$.

Reach between transmitter and receiver:

- 25 meters in clear field,
- 5 meters in air, for range -55°C to $+140^{\circ}\text{C}$ 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 -55°C to +140°C)
- Body height of NanoVACQ FM : 132 mm (range -80°C to +85°C)

Example of use:

