

DATA SHEET

TMI-Orion

NanoVACQ Temperature Radio



Real time temperature measurement inside processes.

NanoVACQ Temperature FullRadio is a data logger with one to three sensors; some models are watertight under pressure up to 30 bar.

Its ruggedness allows temperature measurement in harsh industrial environments.

There are many models available, answering most industrial needs. The models vary by the number and type of probes, temperature operating range, and battery capacity.

The Radio function allows real time visualization and/or recording of data.

METROLOGY

Operating range	Batteries	Resolution	Uncertainty*
From -55°C to +140°C	Radio HE	0.008°C	+/- 0.1°C from -80°C to +140°C (+/- 0.05°C upon request) Except for NanoVACQ with Tdi probe: +/- 0.2°C after adjustment**
From -90°C to +85°C	014ZFL		
From -70°C to +140°C	Wide HE		
From -90°C to +85°C	Cold HE		

(*) The specified uncertainties correspond to two standard deviations. The uncertainties are calculated taking into account the various significant error sources, including the calibration probes, the equipment, the environmental conditions, the influence of the logger, repeatability, etc. . .

(**) +/- 0.5 before adjustment.

Each logger can be calibrated and adjusted at the temperature points corresponding to the user's needs.



TECHNICAL SPECIFICATIONS

Model	Number of channels	Probe type*	Probe dimensions	Water tightness**
NanoVACQ 1Tc Radio	1	Rigid (316L SS)	D. 3 mm, L. up to 200 mm or D. hybrid 3 > 1.9 mm, L. 30 mm	●
NanoVACQ 2Tc Radio	2	Rigid (316L SS)	D. 3 mm, L. up to 200 mm or D. hybrid 3 > 1.9 mm, L. 30 mm	●
NanoVACQ 1Td Radio	1	Semi-rigid (316L SS)	D. 2 mm, L. from 60 mm to 1150 mm with tip D.2 or 2.5 mm	●
	1	1 rigid tip at the end of 1 flexible probe (Teflon®PFA)	D.3 or 3.4 mm, L. from 30 to 100 mm D. from 2.2 to 5 mm, L. from 100 to 1000 mm	● ⁽¹⁾
	1	1 rigid tip at the end of 1 flexible probe (Viton®)	D.3 mm, L. from 20 to 100 mm D.5 mm, L. from 100 to 1000 mm	
NanoVACQ 2Td Radio	2	Semi-rigid (316L SS)	D. 2 mm, L. from 60 mm to 1150 mm with tip D.2 or 2.5 mm	●
	2	2 rigid tips at the end of 2 flexible probes (Teflon®PFA)	D.3 or 3.4 mm, L. from 30 to 100 mm D. from 2.2 to 5 mm, L. from 100 to 1000 mm	● ⁽¹⁾
	2	2 rigid tips at the end of 2 flexible probes (Viton®)	D.3 mm, L. from 20 to 100 mm D.5 mm, L. from 100 to 1000 mm	
NanoVACQ 3Td Radio	3	Semi-rigid (316L SS)	D. 2 mm, L. from 60 mm to 1150 mm with tip D.2 or 2.5 mm	●
	3	3 rigid tips at the end of 3 flexible probes (Viton®)	D.3 mm, L. from 20 to 100 mm D.5 mm, L. from 100 to 1000 mm	
NanoVACQ 1Tdi Radio	1	1 connector (Fischer Connectors®)	Interchangeable probes specifications according to customer request	
NanoVACQ 2Tdi Radio	2	2 connectors (Fischer Connectors®)		
NanoVACQ 1Tc-1Td Radio	2	1 rigid (316L SS) 1 semi-rigid (316L SS)	D. 3 mm, L. 30 mm or D. hybrid 3>1,9 mm, L.30 mm D. 2 mm, L. from 100 mm to 1150 mm with tip D.2 or 2.5 mm	●
	2	1 rigid (316L SS) 1 rigid tip at the end of 1 flexible probe (Viton®)	D. 3 mm, L. 30 mm or D. hybrid 3>1,9 mm, L.30 mm D. 3 mm, L.20 to 100 mm D.5 mm, L. 100 mm to 1000 mm	
	2	1 rigid (316L SS) 1 rigid tip at the end of 1 flexible probe (Teflon®PFA)	D. 3 mm, L. 30 mm or D. hybrid 3>1,9 mm, L.30 mm D. 3 or 3.4 mm, L.30 to 100 mm D. from 2.2 to 5 mm, L. 100 mm to 1000 mm	● ⁽¹⁾
NanoVACQ 1Tc-2Td Radio	3	1 rigid (316L SS) 2 semi rigid (316L SS)	D. 3 mm, L. up to 200 mm or D. hybrid 3 > 1.9 mm, L. 30 mm D. 2 mm, L. from 100 mm to 1150 mm with tip D.2 or 2.5 mm	●
	3	1 rigid (316L SS) 2 rigid tips at the end of 2 flexible probes (Viton®)	D.3 mm, L. up to 200 mm or D. hybrid 3 > 1.9 mm, L. 30 mm D.3 mm, L. 20-100 mm D.5 mm, L. from 100 to 1000 mm	
	3	1 rigid (316L SS) 2 rigid tips at the end of 2 flexible probes (Teflon®PFA)	D.3 mm, L. up to 200 mm or D. hybrid 3 > 1.9 mm, L. 30 mm D.3 or 3.4 mm, L. 30 to 100 mm D. from 2.2 to 5 mm, L. from 100 to 1000 mm	● ⁽¹⁾
NanoVACQ 1Tc-2Tdi Radio	3	1 rigid (316L SS) 2 connectors (Fischer Connectors®)	D. 3 mm, L. up to 200 mm or D. hybrid 3 > 1.9 mm, L. 30 mm According to customer request	

(*) Probes to be chosen depending on the application. (**) The non-watertight models must not be immersed or used in an autoclave.

⁽¹⁾ The Teflon®PFA flexible probes of the Td models are watertight. Do not immerse into oil or ethanol. This would damage the probes and make them non watertight.

TECHNICAL SPECIFICATIONS

Material	Logger body: 316L Stainless steel	
Dimensions of the body	With Radio HE battery pack	D.31 mm x H.52.2 mm
	With 014ZFL battery pack	D.31 mm x H.129 mm
	With Wide HE battery pack	D.31 mm x H. 76 mm
	With Cold HE battery pack	D.31 mm x H. 76 mm
Temperature sensor	Pt 1000 or Pt 100	
Memory capacity	48 000 acquisitions divided by number of measurement channels	
Memory capacity with BigMemory	294 500 acquisitions divided by number of measurement channels	
Acquisition rate	Programmable: minimum 1 second, maximum 59 minutes and 59 seconds	
Program duration	Programmable: days, hours, minutes	
Recording	Programmable start: by date, hour, minute or on temperature threshold	
Power	User replaceable battery pack	
Connectivity	2.4 GHz radio transceiver and USB wired interface to the PC	
Connectable antenna models for	Standard	length 49 mm, medium range - line of sight: 25 meters
	Short	length 25 mm, short range - line of sight: 15 meters
NanoVACQ Temperature FullRadio (*)	Long	length 79 mm, long range - line of sight: 30 meters
	Remote	see catalog for accessories and options

(*) A preliminary test is recommended to validate the hertzian transmission in the user's application.

FUNCTIONS

- 2.4 GHz radio communication,
- Start set up: immediate or delayed,
- Memory set up: stop at maximum capacity/loop writing,
- Real time or after the fact radio data transmission,
- Time stamped measurement data,
- Battery level alert with Qlever software.



NanoVACQ 1Tc Radio, short antenna



NanoVACQ 1Tc Radio, standard antenna



NanoVACQ 1Td Radio with Teflon® PFA probe



NanoVACQ 2Td Radio with semi-rigid probes



NanoVACQ 1Tdi Radio with connector Fischer Connectors® and connectable Teflon® PFA probe

Examples of NanoVACQ Temperature Radio models



NanoVACQ 1Tc Radio for freezing processes and TMI-Orion radio transceiver



RADIO-FREQUENCY COMMUNICATION

- 2.4 GHz ISM band (frequency range 2.405 GHz to 2.475 GHz) / Can be used without license / Universal band for industrial, scientific and medical devices with low radio transmission power / Maximum radiated power +5 dBm (3,2 mW).
- Radio transmission range depends on the environment.
- TMI-Orion 2.4 GHz bidirectional radio protocol, based on IEEE 802.15.4 standard / 14 RF channels for the user / Able to manage several pieces of equipment connected in star configuration in the same space.

AUTONOMY

The NanoVACQ Temperature FullRadio is powered by a battery pack; its autonomy depends on the environment and the operational conditions of the application (extreme temperatures, radio range, electromagnetic disturbances, data acquisition and transmission rate).

As a result of the variety of environments and operational conditions, TMI-Orion does not guaranty the battery lifetime and recommends that the user determine the battery lifetime according to his own process conditions and experience.

SOFTWARE AND RELATED PRODUCTS

NanoVACQ Temperature Radio is used with Qlever software platform and a TMI-Orion radio transceiver.

Qlever software platform: data acquisition, management and visualization of data from TMI-Orion data loggers. Qlever is installed on a PC and operates under Windows®Vista/7/8/10. Data transmission and visualization are done after the industrial process or in real time depending on the use of the NanoVACQ Humidity and temperature Radio.

TMI-Orion radio transceiver: this transmitting device connects to the PC in order to ensure radio link with the NanoVACQ Temperature Radio. Several antennas are available to optimize radio communications in the operational environment.

NanoVACQ Temperature family of products also includes:

- NanoVACQ Temperature FullRadio, for remote real time wireless set up and reading of data.
- NanoVACQ Temperature (wired).

DELIVERABLES

The NanoVACQ Temperature Radio solution usually includes the following items:

- The NanoVACQ Temperature Radio data logger with a battery pack,
- The NanoVACQ Temperature Radio calibration certificate,
- The NanoVACQ Temperature Radio configuration and calibration file,
- Qlever software (to be ordered separately),
- A TMI-Orion radio transceiver (to be ordered separately),
- A USB wired interface for PC (to be ordered separately),
- A case for storage and transport (optional - to be ordered separately),
- An opening wrench for NanoVACQ Temperature Radio (optional - to be ordered separately).

SERVICES

Maintenance: TMI-Orion recommends annual preventative maintenance and calibration service for the replacement of o-rings, functional checking, calibration and adjustment.

Accessories: The battery packs, engineered by TMI-Orion, are replaceable by the user and are referenced in our products list.

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