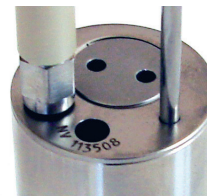


# DATA SHEET

# TMI-Orion

# NanoVACQ Pressure and Temperature Radio



**Real time simultaneous measurement of pressure and temperature.**

NanoVACQ Pressure and Temperature Radio is a data logger equipped with 1 pressure sensor and up to 2 temperature sensors on the same logger, answering the needs of many industrial processes.

The NanoVACQ Pressure and Temperature Radio models are described below and can vary by probe shape and length.

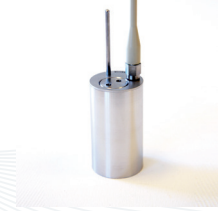
The Radio function allows real time visualization and/or recording of data.

## METROLOGY

Pressure operating range	Temperature operating range	Batteries	Resolution	Temperature calibration uncertainty*	Pressure calibration uncertainty*
<b>From 30 mbar to 5 bar, 15 bar or 30 bar from -55°C to 140°C</b>	<b>From -55°C to +85°C</b>	014ZFL	Temperature 0.008°C  Pressure 0.8 mbar (5 bar) 2.6 mbar (15 bar)	Temperature ± 0.1°C from -55°C to +140°C (± 0.05°C upon request)	<ul style="list-style-type: none"> <li>± 10 mbar from 0°C to 140°C and from 30 mbar to 5 bar</li> <li>± 12 mbar from 0°C to 140°C and from 30 mbar to 15 bar</li> <li>Unspecified from -30°C to 0°C</li> <li>Not functional from -55°C to -30°C</li> </ul>
	<b>From -55°C to +140°C</b>	Radio HE			
	<b>From -55°C to +140°C</b>	Wide HE			
	<b>From -55°C to +85°C</b>	Cold HE			
<b>Possibility of higher pressure</b>					

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

*\*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...*



## FUNCTIONS

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

## TECHNICAL SPECIFICATIONS

Model	Number of external channels	Internal temperature probe*	Pressure probe type	External temperature probe type	Temperature probe dimensions	Water tightness
<b>NanoVACQ PT Radio</b>	1	●	1 piezoresistive			●
<b>NanoVACQ PT-Tc Radio</b>	2	●	1 piezoresistive	Rigid (316L SS)	D. 3 mm, L. up to 200 mm	●
					Hybrid diameter 3 mm >1,9 mm L. 30 mm	
<b>NanoVACQ PT-Td Radio</b>	2	●	1 piezoresistive	Semi-rigid (316L SS)	D. 2 mm, L. from 100 mm to 1000 mm	●
				1 rigid tip at the end of 1 flexible deport (Teflon®)	D.3 mm, L. from 30 to 100 mm  D.from 2.2 to 5 mm, L. from 100 to 1000 mm	●
				1 rigid tip at the end of 1 flexible deport (Viton®)	D.3 mm, L. from 20 to 100 mm  D.5 mm, L. from 100 to 1000 mm	

\* Internal platinum temperature sensor for pressure sensor compensation



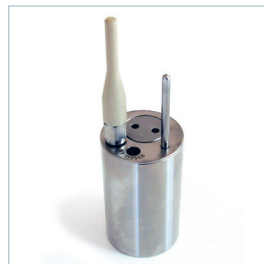
## TECHNICAL SPECIFICATIONS

<b>Material</b>	Logger body: 316L Stainless steel	
<b>Dimensions of the logger body</b>	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
<b>Pressure</b>	Piezoresistive	
<b>Temperature sensor</b>	Pt 1000 or Pt 100	
<b>Memory capacity</b>	48 000 acquisitions divided by number of measurement channels	
<b>Memory capacity with BigMemory</b>	294 500 acquisitions divided by number of measurement channels	
<b>Acquisition rate</b>	1 Hz	Programmable: minimum 1 second, maximum 59 minutes and 59 seconds
<b>Program duration</b>	Programmable: days, hours, minutes	
<b>Recording</b>	Programmable start: by date, hour, minute or on temperature threshold	
<b>Power</b>	User replaceable battery pack	
<b>Connectivity</b>	2.4 GHz radio transceiver and USB wired interface to the PC	
<b>Connectable antenna models for NanoVACQ Pressure and Temperature FullRadio(*)</b>	Standard	length 49 mm, medium range - line of sight: 25 meters
	Short	length 25 mm, short range - line of sight: 15 meters
	Long	length 79 mm, long range - line of sight: 30 meters
	Remote	see our web site for accessories and options

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



**NanoVACQ PT Radio**



**NanoVACQ PT-Tc Radio**



**NanoVACQ PT and PT-Tc Radio and radio transceiver**



**NanoVACQ PT-Tc Radio**

### Examples of NanoVACQ Pressure and Temperature Radio models



## 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 Pressure and Temperature Radio is powered by a battery pack; its autonomy depends on environment and 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 Pressure and 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 Pressure and temperature Radio.

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

**NanoVACQ Pressure and Temperature family of products also includes :**

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

## DELIVERABLES

**The NanoVACQ Pressure and Temperature Radio solution usually includes the following items:**

- The NanoVACQ Pressure and Temperature Radio data logger with a battery pack,
- The NanoVACQ Pressure and Temperature Radio calibration certificate,
- The NanoVACQ Pressure and 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 transport case (optional - to be ordered separately),
- An opening wrench for NanoVACQ Pressure and 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 the documentation available on our web site.

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