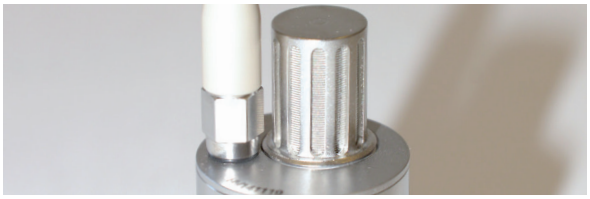
DATA SHEET

TMI-Orion

NanoVACQ Humidity and Temperature FullRadio



Real time and wireless simultaneous measurement of relative humidity and temperature inside processes

NanoVACQ Humidity and Temperature is equipped with 1 relative humidity sensor and up to 2 temperature sensors on the same logger.

The various NanoVACQ Humidity and Temperature models are described below and can vary by number and type of probes, operating range and battery pack capacity.

NanoVACQ Humidity and Temperature FullRadio is equipped with a 2.4 GHz radio transceiver as the unique communication interface. In addition to its data logger functionalities, it is designed for remote set up and radio data transmission, in real time or after the fact, through a TMI-Orion radio transceiver connected to a PC. The PC is equipped with Qlever software for logger setup and process data collection, management and display.

METROLOGY

Humidity operating range	Temperature operating range	Batteries	Noise resolution	Temperature uncertainties*	Humidity calibration uncertainties*
From 0 to 100 % RH non condensed	**From -55°C to +140°C**	Radio HE	Temperature 0.008°C Humidity 0.06 % RH	Temperature ± 0.1°C from 0°C to +140°C (± 0.05°C upon request) Except for NanoVACQ with Tdi probe: +/- 0.2°C after adjustment**	± 3.5 % RH from10 % to 98 % RH (optional: ± 2% RH)
	From -60°C to +85°C	014ZFL			
	From -60°C to +140°C	Wide HE			
	From -60°C to +85°C	Cold HE			

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… (**) +/- 0.5 before adjustment.*

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FUNCTIONS

- Radio set up, start and reading of data
- 2.4 GHz bidirectional radio communication
- Radio transceiver set up: transmission duration and rate (1 per hour to 1 per second)
- 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*	Humidity probe type	Temperature probe type	Temperature probe dimensions	Water tightness **
NanoVACQ HT FullRadio	1	1 Pt 1000	1 capacitive			
NanoVACQ HT-Tc FullRadio	2	1 Pt 1000	1 capacitive	Rigid (316L SS)	D. 3 mm, L. 30 mm (or from 10 mm to 120 mm upon request)	
					Hybrid diameter 3 mm >1,9 mm L. 30 mm (or from 10 mm to 120 mm upon request)	
NanoVACQ HT-Td FullRadio	2	1 Pt 1000	1 capacitive	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 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 semi-rigid (316L SS)	D. 2 mm L. from 100 mm to 1000 mm	
NanoVACQ HTd-Tdi FullRadio	2	1 Pt 1000	1 capacitive connectable probe	1 connector (Fischer Connectors®)	Specifications of connectable probes according to customer request	

** Internal platinum temperature sensor for pressure sensor compensation*

***This data logger is not watertight*

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TECHNICAL SPECIFICATIONS

Material	Logger body: 316L Stainless steel	
Dimensions of the logger 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
Pressure	Capacitive	
Temperature sensor	Pt 1000	
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 bidirectional radio transceiver and embedded 2.4 GHz radio transceiver module	
Connectable antenna models for NanoVACQ Humidity and Temperature FullRadio(*)	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 HT FullRadio

Examples of NanoVACQ Humidity and Temperature models

NanoVACQ HT-Td FullRadio

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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 Humidity and Temperature FullRadio 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 Humidity and Temperature FullRadio is used with Qlever software platform and 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.

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

DELIVERABLES

The NanoVACQ Humidity and Temperature FullRadio solution usually includes the following items:

- The NanoVACQ Humidity and Temperature data logger with a battery pack
- A TMI-Orion radio transceiver (to be ordered separately)
- The NanoVACQ Humidity and Temperature FullRadio calibration certificate
- The NanoVACQ Humidity and Temperature FullRadio configuration and calibration file
- Qlever software (to be ordered separately)
- A case (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.

Headquarters: TMI-Orion S.A.
Parc Bellegarde - Bâtiment A
1, chemin de Borie
34170 Castelnau-le-Lez - France
T.: +33 (0)4 99 52 67 10 – F.: +33 (0)4 99 52 67 19

TMI TMI-ORION
www.tmi-orion.com

USA : TMI-USA, Inc.
11491 Sunset Hills Road, Suite 310
Reston, VA 20190 - USA
T : +1 703 668 0114 – F : +1 703 668 0118

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