

# DATA SHEET

# TMI-Orion

## NanoVACQ Ex

## ATEX COMPLIANT



**Measurement of temperature, pressure, humidity in explosive environments.**

NanoVACQ is a family of data loggers measuring temperature, temperature and pressure, or temperature and humidity during thermal processes. Some models are ATEX compliant and are used in explosive environments, such as ethylene oxide sterilization validation.

Compliant with the following regulations: EN 60079-0 and EN 60079-11

Marking: II 1G Ex ia IIC T3 Ga

### METROLOGY

Model	Operating range		Measurement range	Resolution			Internal reference channel calibration uncertainties*
	Battery 015ZEX	Battery 016ZEX		Temperature	Pressure	Humidity	
NanoVACQ 1Tc Ex	from -30°C to 140°C	From -30°C to +85°C	From 0°C to 140°C	<±0.008 °C	<±0.8 mbar		± 0.1°C from -30°C to +140°C (at 2σ)
NanoVACQ 1Td Ex							
NanoVACQ PT Ex	From -30°C to +140°C and from 10 mbar to 15 bar or 30 bar absolute	From -30°C to +85°C and from 10 mbar to 15 bar or 30 absolute	From 0°C to +140°C and from 30 mbar to 5 bar, 15 bar or 30 bar absolute				
NanoVACQ PT-Tc Ex							
NanoVACQ HT Ex	From -30°C to +140°C and from 0% to 100% RH non condensed	From -30°C to +85°C and from 0% to 100% RH non condensed	From 0°C to 140°C and 10% to 98% RH			<±0.06 % RH	± 0.1°C from -30°C to 140°C (at 2σ) and ± 3.5% HR (at 2σ)

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

- Start set up: immediate or delayed
- Memory set up: stop at maximum capacity/loop writing
- Time stamped measurement data
- Battery level alert with Qlever software

## TECHNICAL SPECIFICATIONS

Model	Temperature sensor	Pressure sensor	Humidity sensor	Temperature Probe dimensions	Probe dimensions
NanoVACQ 1Tc Ex	Pt 1000	Piezoresistive		Rigid (SS 316L)	D. 3 mm L. up to 120 mm
NanoVACQ 1Td Ex	Pt 100			Semi-rigid (SS 316L)	D. 2 mm or 3 mm L. up to 1000 mm
NanoVACQ PT Ex	Pt 1000				
NanoVACQ PT Tc Ex	Pt 1000			Rigid (SS 316L)	D. 3 mm L. up to 120 mm
NanoVACQ HT Ex	Pt 1000			Capacitive	



NanoVACQ 1Tc Ex



NanoVACQ PT Ex



NanoVACQ HT Ex

<b>Material</b>	Logger body: 316L Stainless steel	
<b>Dimensions of the body</b>	D.31 mm x H.39 mm	
<b>Memory capacity</b>	NanoVACQ 1Tc Ex	48 000 acquisitions
	NanoVACQ 1Td Ex	
	NanoVACQ PT Ex	24 000 acquisitions
	NanoVACQ PT-Tc Ex	16 000 acquisitions
	NanoVACQ HT Ex	24 000 acquisitions
<b>Acquisition rate</b>	Programmable: minimum 1 second, maximum 59 minutes and 59 seconds	
<b>Program duration</b>	Programmable: days, hours, minutes	
<b>Recording</b>	NanoVACQ 1Tc Ex	Programmable start: by date, hour, minute or on temperature threshold
	NanoVACQ 1Td Ex	
	NanoVACQ PT Ex	Programmable start: by date, hour, minute
	NanoVACQ PT-Tc Ex	
	NanoVACQ HT Ex	
<b>Power</b>	User replaceable battery pack	
<b>Connectivity</b>	USB wired interface to the PC	
<b>Directives and norms</b>	<ul style="list-style-type: none"> <li>• Compliant with norms: EN 60079-0 (Explosive atmospheres - Part 0: material - General requirements) and EN 60079-11 (Explosive atmospheres - Part 11: protection of material by intrinsic security «i»).</li> <li>• Compliant with directives: Directive ATEX 2014/34/UE, Directive CEM 2014/30/UE.</li> <li>• The loggers are marked Ex II 1G Ex ia II C T3 Ga</li> </ul>	



## AUTONOMY

The NanoVACQ Ex models are powered by a battery pack; their autonomy depends on environment and operational conditions of the application (extreme temperatures, data acquisition 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 Ex models are used with Qlever software.**

**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® 7/8/10/11.

Data transmission and visualization are done after the industrial process.

## DELIVERABLES

**The NanoVACQ Ex models solution usually includes the following items:**

- The NanoVACQ Ex model data logger with a battery pack
- The NanoVACQ Ex model calibration certificate
- The NanoVACQ Ex model configuration and calibration file

- Qlever software (To be ordered separately)
- A USB wired interface for PC - (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 the documents available on our web site.

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