

# DATA SHEET

# TMI-Orion

## NanoVACQ Ex

## ATEX COMPLIANT

**Measurement of temperature, pressure, humidity in explosive environment**

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 environment, such as ethylene oxide sterilization validation.

### METROLOGY

Model	Operating range		Measurement range	Resolution			Internal reference channel calibration uncertainties*
	Battery 015ZEX	Battery 016ZEX		Temperature	Pressure	Humidity	
<b>NanoVACQ 1Tc Ex</b>	from -30°C to 140°C	From -30°C to +85°C	From 0°C to 140°C	16 bit converter <±0.04 °C			± 0.1°C from -30°C to +140°C (at 2σ)
<b>NanoVACQ 1Td Ex</b>							
<b>NanoVACQ PT Ex</b>	From -30°C to +140°C and from 10 mbar to 15 bar absolute, or 30 bar	From -30°C to +85°C and from 10 mbar to 15 bar absolute, or 30 bar	From 0°C to +140°C and from 30 mbar to 5 bar absolute, or 30 bar		16 bit converter <±0.8 mbar		± 0.1°C from -30°C at 140°C (at 2σ) and ±10 mbar (at 2σ) for 5 bar PE and ± 12mbar (at 2σ) for 15 bar PE
<b>NanoVACQ HT Ex</b>	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 2% to 98% RH			16 bit converter <±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...



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

Marking: II 1G Ex ia IIC T3 Ga



## 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. 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**

Material	Logger body: 316L Stainless steel	
Dimensions of the body	D.31 mm x H.31 mm	
Memory capacity	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
Acquisition rate	Programmable: minimum1 second, maximum 59 minutes and 59 seconds	
Program duration	Programmable: days, hours, minutes	
Recording	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	
Power	User replaceable battery pack	
Connectivity	USB wired interface to the PC	
Directives and norms	<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 94/9/CE, Directive 2004/108/CE.</li><li>• The loggersare 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, 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 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®/Vista/7/8/10.

Data transmission and visualization are done after the industrial process.

NanoVACQ Ex family of products also includes NanoVACQ Ex Radio loggers for real time reading of data.

## 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:** The NanoVACQ Ex models are associated with an annual preventative maintenance 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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