TMI-Orion

HIGH TECHNOLOGY DATA LOGGING SOLUTIONS

FOOD
HEALTH
BIOTECHNOLOGY
CERAMICS
MANUFACTURING
METALLURGY
AERONAUTICS

...

TMI TMI-ORION

www.tmi-orion.com

VALIDATE, MONITOR, CONTROL YOUR PROCESSES

Validate, monitor, control your industrial processes

TMI-Orion has acquired since the introduction of the first pressure and temperature data logger in 1994, a significant know-how in industrial data logging systems.

Innovation and continuous quest for Customer Satisfaction have led to an exceptional portfolio of products. Thanks to our large diversification, most of the industrial needs can be satisfied.

Process validation, by an accountable measurement accuracy and a series of application driven software packages.

Process monitoring, by many measurements in real time thanks to a variety of communication systems (wired, wireless, 2.4 GHz) and physical parameters (temperature, pressure, humidity, air flow, weight, length, and others).

Process control, by using FullRadio transmission to control your process in real time or to transfer your data to any information system.

A flexible and innovative engineering team is constantly designing the best products and solutions for your needs.

Communication

As with any logger, data need to be downloaded to a PC. TMI-Orion offers real time data reading and/or post-process downloading.

- Real time data reading is done with the FullRadio option available on many of our loggers.
- Post-process reading is done through a wired interface on most of our loggers.
- Remote set-up and reading of data is available with FullRadio option on most NanoVACQ and VACQ loggers.

FullRadio

FullRadio option is available on most NanoVACQ and VACQ loggers. It allows remote set up and reading of data, wireless and real time. It is thus possible to stop the logger while it stays inside the industrial process. Associated with a control loop system, it enables real time process control.

- 2.4 GHz ISM band (frequency range 2.405 GHz to 2.475 GHz) / Can be used without licence / Universal band for industrial, scientific and medical devices with low radio transmission power / Maximum radiating 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 an unlimited number of equipments connected in star configuration in the same space.
- FullRadio data loggers are compliant with the following regulations: R&TTE Directive 1999/5/CE (EU), FCC Part 15.247 (USA), RSS-210 (Canada), ARIB TELEC (Japan), KCC RWA 58-2 (Korea).

Wired interface to the PC

The communication interface with the PC is an electronic device which links the logger to the PC, thus allowing 2-way data transmission to program and read the loggers.
Interfaces can be either "single" or "multi" type, and both are available in USB version.

A single logger interface communicates with one logger at a time, and the multi logger interface communicates with 6 loggers simultaneously. You can easily connect several Multi interfaces together in a daisy chain to communicate with up to 96 loggers at a time.

Process control, link to the web

TMI-Orion is considering any specific need of software development for process control or data transfer and processing through the Web.

DATA PROCESSING

Data processing

TMI-Orion develops specific software to enable optimized reading and processing of your data.

Qlever software is available in two versions:
- Qlever, for multi-logger extensive management.
- Qlever Lite, for simplified, low budget use, intended for a single logger.

Qlever operates alone or in combination with one or several industry specific modules. Qlever Lite only operates alone.

Qlever main features

QLEVER is an acquisition, analysis and data management software. It provides raw data downloaded from TMI-Orion loggers, calculation results and specific measurement reports.
Customizable, with numerous ergonomics and flexibility features, it is an outstandingly powerful software that is also easy to use.
These are just some of the features you will enjoy:

File management: Data storage in database, with a simple interface for easy file management, including recordings, calibration files, etc... This database can be shared with several users.
Configuration: Enjoy customization with intuitive menus for communication ports, measurement units, calibration files and directories management of calibration files and directories.
Communication ports: All available communication ports on the PC can be used simultaneously with TMI-Orion communication interfaces.
Loggers management: A single window shows all the status information for every connected logger (identification, battery and memory status, configuration file date, real time data, etc...).
Programming: Creation of a Set up library. Programming, starting and reading of loggers on a single or multi-logger mode.
Recordings: Raw data, graph and statistics displayed in a single window.
Many available functions for enhanced graphical analysis (zoom, cursor, limits, scales, etc…), recorded files merger, zoning of schemes.
Many calculation functions available per zone and on each channel (F0, A0, Pu, offset, slope, %, ax+b, …).

Qlever modules

- Qlever 21 CFR Part 11: security access management with creation of different users' accounts and access levels and audit trail.

- Qlever Pharma compliant with FDA 21 CFR part 11: detailed configuration of the thermal process in the setup, definition of cycles and steps, editing of a report with detailed calculations by cycle and report approval.

- Qlever Ceramics : definition of kiln, addition of items, superposition of thermal profile and kiln map, events management, placement of thermocouples inside kilns and tunnels, 3D modelling of wagons.

- Qlever Manual mode calibration (optional compliance with FDA 21 CFR part 11): Manual generation of the steps allowing calibration: as found calibration, adjustment and as left calibration of TMI-ORION temperature loggers, with creation of a report.

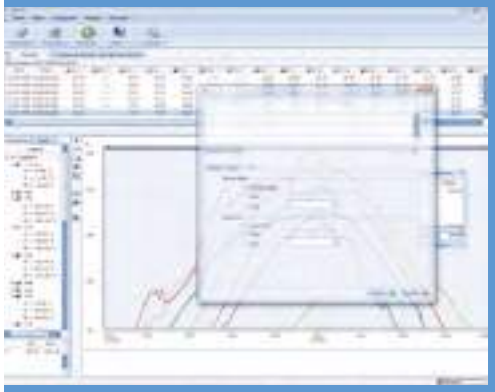
- Qlever Automatic mode calibration (optional compliance with FDA 21 CFR part 11): Thanks to the control by QLEVER of the bath and reference probe, automatic generation of the steps allowing calibration: as found calibration, adjustment and as left calibration of TMI-ORION temperature loggers, with creation of a report.

- Qlever Washing-disinfection validation compliant with ISO 15883 norm (optional compliance with FDA 21 CFR part 11): Set up and detailed analysis of washing and disinfection cycles, validation report creation in compliance with ISO 15883 norm.

- Qlever Autoclave validation compliant with ISO 17665 norm (optional compliance with FDA 21 CFR part 11): Set up and detailed analysis of the sterilization cycle, validation report editing in compliance with the norms ISO 17665 / EN 13060 / EN 554 / EN 285.
This sofware allows autoclave cycles validation for hospitals and pharmaceutical industry.

- Qlever Mapping : compliant with NFX15-140 norm (optional compliance with FDA 21 CFR part 11) Set up, analysis and report of climatic chamber mapping in compliance with the norms NFX-140 and IEC 60068.3.11.

• **Possible adaptations according to customer's specifications: wired real time monitoring, communication with PLC and closed loop control of your process.**
• **Operating system: Windows® XP(SP3)/Vista/7/8/10.**



DATA LOGGERS

Temperature data loggers

With a temperature operating range from -90°C to +140°C, TMI-Orion offers a solution to most industrial applications. Many loggers are watertight at high pressure and designed to be placed inside the processes.
Beyond the operating range, a thermal shield is necessary to measure temperatures up to +1300°C.
Sensors are Pt100, Pt1000 or thermocouples for high temperature data loggers. The probes have various forms and dimensions. They can be internal to the logger, placed at the end of a rigid probe 10 to 125 mm long or at the end of a flexible or semi-rigid probe, up to 1m long. Models from 1 to 30 measurement channels are available.

MiniVACQ

PicoVACQ

NanoVACQ

NanoVACQ Flat

NanoVACQ xFlat

VACQ xFlat

VACQ III

VACQ A140

VACQ A250

MiniVACQ

MiniVACQ is the entry-level product from TMI-Orion. Its miniaturization and technology is equivalent to the other high quality loggers from TMI-Orion.

PicoVACQ

PicoVACQ is the most miniaturized family of products from TMI-Orion. The latest electronic technologies are used while performances are boosted and dimensions reduced to the smallest possible.
Specially designed for clean industries, all the models of this family enable process validation of food and pharmacy industries. Among the most common applications : sterilization and pasteurization (steam or ethylene oxide), freezer mapping, temperature measurement in microwave ovens.

NanoVACQ

NanoVACQ (diameter 31 mm, length from 31 to 132 mm) can carry 1, 2 or 3 temperature sensors. The probes of the various standard models can vary in shape or length.

NanoVACQ Flat

NanoVACQ Flat, with a height of 11 mm, has been designed for low space applications. Various probe lengths and two probe diameters are available. This data logger can be placed at the top of vials, bottle or outside a can with the probe inside.

NanoVACQ xFlat

NanoVACQ xFlat, 7.5 mm high, fits all narrow space applications like wood or plasterboard thermal processes.

VACQ xFlat

With a height from 10 mm, and up to 16 thermocouples, the VACQ xFlat fits all industrial applications that need measuring high temperature at different points. With a thermal shield, it can be used for depyrogenation process, metal curing, kilns and tunnel ovens.

VACQ III

In its standard version, VACQ III enables temperature measurement inside kilns during ceramics, tiles and bricks curing.
The thermocouple connection head can be adapted to any other industrial application, depending on kilns configurations.
It has 8 or 16 thermocouple channels. VACQ III is a variation of the VACQ II with a new and more compact packaging. Watertight at high pressure.

VACQ Autoclave - A140, A185, A250

VACQ Autoclave has been specially designed for use in pressurized thermal chambers such as autoclaves. Watertight up to 15 bar, it has up to 30 thermocouple channels. This logger allows temperature measurement inside processes for applications such as mapping of thermal cycles or sterilization validation, curing, polymerization processes...

DATA LOGGERS

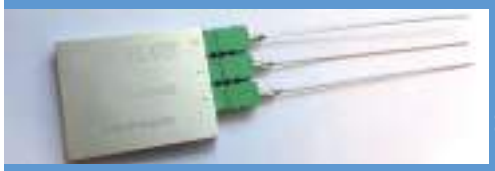
PicoVACQ Thermocouples
PicoVACQ Thermocouples has one thermocouple channel. It is designed for thermal processes requiring temperature measurement in industrial environment and quick response time (diameter 15 mm, measurement range up to 1300°C, operating range up to 140°C). A thermal shield adapted to the application can be used for temperatures between 140°C and 1300°C.


PicoVACQ Thermocouples

NanoVACQ Thermocouples
NanoVACQ Thermocouples has one to three thermocouple channels. It is designed for thermal processes requiring temperature measurement in industrial environment and quick response time (diameter 31 mm, measurement range up to 1300°C, operating range up to 140°C). A thermal shield adapted to the application can be used for temperatures between 140°C up and 1300°C.


NanoVACQ Thermocouples

VACQ uFlat
Ultra-flat thermocouple datalogger to measure temperature in 3 points in processes where clearance dimensions are an issue.


VACQ uFlat

Pressure and temperature data loggers

TMI-Orion offers data loggers measuring pressure and temperature simultaneously. They are available in both lines of products: NanoVACQ (31mm diameter) and PicoVACQ (15mm diameter).
They can measure pressure from 30 mbar absolute to 30 bar, depending on the models.

PicoVACQ PT
PicoVACQ PT enables measurement of pressure and temperature. While specially designed for food and health care validation applications, it can be used in many other processes. Its very small size makes it very useful for any application where size is a concern.
An Ex version is available.


PicoVACQ PT

NanoVACQ PT
NanoVACQ PT has one pressure sensor and one or two temperature sensors.
It has been designed to comply, by its accuracy and response time, with the requirements of the health care industry: hospital and pharmaceutical sterilization.
Many other industries are using this data logger.
Ex versions are available.


NanoVACQ PT

Humidity and temperature data loggers

Humidity and temperature can be measured simultaneously with TMI-Orion data loggers: NanoVACQ HT (31mm diameter) or PicoVACQ HT (15mm diameter).
They can measure humidity from 5% RH to 95% RH at maximum temperature of 80°C or 140°C, depending on models.

PicoVACQ HT
PicoVACQ HT enables measurement of humidity and temperature. While specially designed for food and health care validation applications it can be used in many other applications. Its very small size makes it very useful for any application where size is a concern.
An Ex version is available.


PicoVACQ HT

NanoVACQ HT
NanoVACQ HT has one humidity sensor and one or two temperature sensors.
It has been designed to comply with the norm of ethylene oxide sterilization and fits the needs of other industries where process temperature can reach 140°C.
An Ex version is available.


NanoVACQ HT

DATA LOGGERS

Shrinkage, humidity and temperature data loggers

CeriDry

CeriDry

CeriDRY correlates the variation of relative humidity and air temperature with the shrinkage of bricks, tiles or ceramics while they dry. It also enables the acute evaluation of drying within two parts of the same brick or tile.

A FullRadio version enabling real time data transmission and remote set up is also available.

High-T-Dry

High-T-Dry

High-T-Dry correlates the variations of air temperature with the shrinkage of bricks, tiles or ceramics while they dry. It also enables the acute evaluation of drying within two parts of the same brick or tile.
The product has been specifically designed to respond to the high temperature drying processes up to 250°C.
The High-T-Dry is an autonomous logger that includes a remote temperature sensor and a special shrinkage sensor. The NanoVACQ body can be exposed to a temperature of 125°C (257°F). The sensors are placed on a metallic board that can be exposed to higher temperature, up to 250°C.

Moisture in material : Water content

ACO AMMS

ACO Automation Components *

Moisture measurement system suitable for material production lines from our partner ACO Automation Components. The sensor is placed in contact with the material to be tested inside the manufacturing process (storage, drying, thermal treatments...). Connected to your process control system the sensors participate in your automatic conrol of quality.

Air flow velocity and temperature data logger

NanoVACQ Ad

NanoVACQ Ad

NanoVACQ Ad measures air flow velocity and temperature inside dryers and ovens. It is useful for applications such as ceramic drying processes or food cooking.
The wheel air flow sensor is connectable and can be associated with one temperature flexible or rigid temperature probe.

Rotation data logger

PicoVACQ Rotation

PicoVACQ Rotation

A logger, the size of a PicoVACQ (diameter 15 mm), for measuring rotation speed in rotating autoclave.

** Outside North America and France, please contact directly ACO Automation Components at www.acoweb.de*

DATA LOGGERS

Weight data loggers

TMI-Orion is offering two families of weight data loggers. In addition, custom designed solutions can be developed for many other industrial applications.

NanoVACQ Weight

NanoVACQ Weight is a temperature and force data logger with a mechanical structure customized to the needs of the application.
It is especially useful for weighing or measuring constraints created when stacking objects like cans or trays in industrial environments.
1 constraint gauge and 1 or 2 temperature sensors.

NanoVACQ Weight

DryBal

An extra thin scale for use inside drying industrial processes like ceramics.
DryBAL is a few cm high scale able to weigh 5 g variations on a 30 kg full scale, or 1 g on a 5 kg full scale. It is a temperature and weight data logger. Temperature range from 0°C to 140°C. Weight measurement is temperature compensated.

DryBal

Packaging deformation data logger

NanoVACQ Deformation

Measures dimension variations of cans, food containers, sachets or caps during thermal processes, cooking or sterilization.
Positioning kits are available for both static and rotative autoclaves.
This product is also available in a wired real time mode.
Measure package deformation, temperature and pressure, all in the same profile, in real time.

NanoVACQ Deformation

Thermal shields

TMI-ORION develops thermal shields, thus providing a significant extension of the loggers operating range.
In addition to a list of standard products, developed for specific needs (applications, temperature profile…), we also consider custom design.

Examples of thermal shields:

Accessories

TMI-ORION offers a line of accessories to fulfill your requirements. Standard accessories are available, but customized developments may be considered.

Examples of accessories:

TMI-ORION DATA LOGGERS AND SOFTWARE SOLUTIONS

Data loggers and software solutions to monitor and control your industrial processes

FOOD

Sterilization • Pasteurization • Packaging deformation • Drying • Cooking Microwave • Roasting • Freezing • Water content measurement

HEALTH – BIOTECHNOLOGY

Steam sterilization • Ethylene oxide sterilization • Freeze-drying processes Aerosol spray • Freezer mapping • Depyrogenation • Washing – Disinfection • Water content measurement

METAL PROCESSING

Hot piercing • Centrifugation molding • Annealing • Tempering Normalization • Quench hardening • Coating polymerization

THERMAL TREATMENTS

Alumina calcination - high purity • Wood pellets drying • Solar thermal glass coating • Printed circuit board coating • Composite polymerization • Water content measurement

AUTOMOTIVE & AERONAUTICS

Sensors life test • Sensors packaging • Coating on parts (relays, alternators...) • Windshield laminated glass autoclaving • Glass coating (silver, varnish, painting) • Headlight optical assembly manufacturing • Molding • Rubber drying and vulcanization • Shock absorber parts tempering • Composite polymerization • Performance tests on board

OVENS, KILNS AND AUTOCLAVE MANUFACTURING

CERAMICS

Curing • Drying – shrinkage, air flow, weight, mapping…

...and many other industrial processes including temperature, pressure, humidity, shrinkage, deformation, air flow velocity, rotation or weight measurement.

TO/DS/100203.ed9

TMI-ORION - Parc Bellegarde - Bât. C - 1, chemin de Borie - 34170 Castelnau le Lez - FRANCE - Tel +33 (0)4 99 52 67 10 - Fax +33 (0)4 99 52 67 19
TMI-USA - 11491 Sunset Hills Rd., Suite 310 - Reston, VA 20190 - USA - Tel +1 703 668 0114 - Fax +1 703 668 0118 - **www.tmi-orion.com**