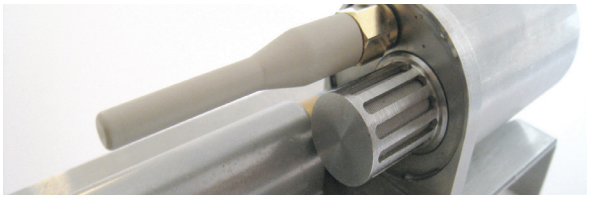
DATA SHEET

# TMI-Orion

# CeriDry FullRadio

## Temperature, humidity and shrinkage data logger



**Real time monitoring of temperature, humidity and shrinkage in drying processes of bricks, tiles and ceramics.**

CeriDry FullRadio is an autonomous data logger equipped with one temperature sensor, one humidity sensor and one rectractometer. This data logger correlates the changes in relative humidity and air temperature with the shrinkage of bricks, tiles or ceramics during the drying process.
It also enables the acute evaluation of drying within two parts of the same brick or tile.

CeriDry 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 process, through a radio modem connected to a PC. The PC is equipped with Qlever software platform for logger setup and process data collection, management and display.

## METROLOGY

| | Operation range | Measurement range | Resolution | Uncertainty* |
|---|---|---|---|---|
| **Temperature** | - 30°C to +140°C | 0°C to +140°C | 0,04°C | ± 0.1°C |
| **Humidity** | 0 to 100 % RH non condensed | 2 to 98 % HR | 0,05 % hr | ± 3.5 % RH |
| **Shrinkage** | 20 mm movement | 140 mm à 160 mm | 0,01 mm | ± 0.5 mm |

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…*



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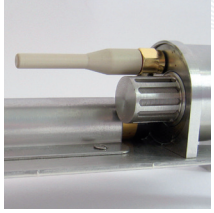


## FUNCTIONS

- 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

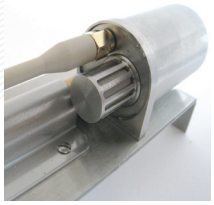
## TECHNICAL SPECIFICATIONS

| | | |
|---|---|---|
| **Material** | 316 L Stainless Steel | |
| **Dimensions** | Length 169 mm, width 55 mm, height 52 mm | |
| **Temperature sensor** | PT1000 | |
| **Humidity sensor** | Capacitive | |
| **Shrinkage measurement** | Linear potentiometer | |
| **Positioning support** | 3 points | |
| **Memory capacity** | 12 000 acquisitions per measurement channel | |
| **Memory capacity with Big Memory option** | 73 500 acquisitions per measurement channel | |
| **Acquisition rate** | Programmable: min. 1 second, max 59 minutes 59 seconds | |
| **Program duration** | Programmable: days, hours, minutes | |
| **Recording** | Programmable start: by date, hour/minute | |
| **Power** | User replaceable battery pack | |
| **Connectivity** | 2.4 GHz bidirectional radio transceiver and embedded 2.4 GHz radio transceiver module | |
| **Connectable antenna models for CeriDry 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 catalog for accessories and options |

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

## RADIO-FREQUENCY COMMUNICATION

- 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 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 equipments connected in star configuration in the same space.



## AUTONOMY

The CeriDry 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 an indicator, for an industrial drying process of ceramics, bricks or tiles, autonomy is 550 hours at 140°C with an acquisition rate of 1 acquisition every 10 seconds.

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

**CeriDry FullRadio 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. Depending on the use of Ceridry FullRadio, data transmission and visualization are done in real time or after the industrial process.

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

## DELIVERABLES

**The CeriDry FullRadio solution usually includes the following items:**

- The CeriDry FullRadio data logger with a battery pack
- The CeriDry FullRadio calibration certificate
- The CeriDry FullRadio configuration and calibration file
- A 2.4 GHz radio transceiver (to be ordered separately)
- Qlever software platform (to be ordered separately)
- A transport 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 website.

**Headquarters: TMI-Orion S.A.**
**Parc Bellegarde - Bâtiment C**
**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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