# VACQ xFlat universal FullRadio





**Real time wireless temperature measurement for thermal process control and validation with a 10 or 16 thermocouple configurable channels data logger.**

The VACQ xFlat universal FullRadio is an autonomous data logger with configurable channels. Two models are available:

- The VACQ xFlat 2.8 universal FullRadio is equipped with 16 universal miniature connectors for thermocouples.

- The VACQ xFlat 1.10 universal FullRadio is equipped with 10 connectors Fischer Connectors® for thermocouples.

It must be protected by a thermal shield when temperature exceeds +140°C.

The VACQ xFlat universal 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 TMI-Orion radio transceiver connected to a PC. The PC is equipped with the Qlever software platform for logger setup and process data collection, management and display.

## METROLOGY

| Operating range* | Battery packs | Measurement range | Resolution | Internal reference channel uncertainty** |
|---|---|---|---|---|
| 0°C to +140°C | Interchangeable power supply: with batteries | **Depending on the thermocouple:**<br>Type K : 0°C to +1300°C and -200°C to +1300°C<br>Type T : 0°C to +400°C and -230°C to +400°C<br>Type N : 0°C to +1300°C and -150°C to +1300°C<br>Type J : 0°C to +760°C and -200°C to +760°C<br>Type B : +600°C to +1820°C | <± 0.1°C | ± 0.2°C from 0°C to +140°C |
| 0°C to +60°C | Interchangeable power supply: with AC adapter | Type E : 0°C to +690°C<br>Type S : 0°C to +1660 °C<br>Type R : 0°C to +1760°C<br>Other measurement range upon request.<br>**Set up with Qlever Software** | | |

*(\*) A thermal shield is necessary when used in processes beyond +140°C*

*(\*\*) 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
- Start set up: immediate or delayed
- Real time or after the process radio data transmission
- Time stamped measurement data
- Battery level alert with Qlever software
- Interchangeable power supply

# TECHNICAL SPECIFICATIONS

| Material | Anodized aluminum | |
|---|---|---|
| Dimensions | L.150 mm x H.20 mm x W.80 mm | |
| Number of channels | VACQ xFlat 1.10 universal FullRadio | 10 connected thermocouple elements<br>1 internal reference channel |
| | VACQ xFlat 2.8 universal FullRadio | 10 connected thermocouple elements<br>1 internal reference channel |
| Temperature sensor | Thermocouples: K, T, N, J, B, E, S, R | |
| Connector type | VACQ xFlat 1.10 universal FullRadio | Fischer Connectors® |
| | VACQ xFlat 2.8 universal FullRadio | Universal miniature connectors |
| Memory capacity | Acquisitions are stored in a non-volatile memory (EEPROM)<br>13700 acquisitions per thermocouple channel | |
| Watertightness | This logger is not watertight | |
| 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 | |
| Power | Interchangeable power supply to be used according to the application :<br>AC adapter (+ backup battery pack) / two user replaceable 015S batteries (user replaceable batteries) | |
| Connectivity | 2.4 GHz bidirectional radio transceiver and embedded 2.4 GHz radio transceiver module | |
| Connectable antenna model for VACQ xFlat universal FullRadio(*) | Standard | Length 49 mm, medium range - line of sight: 25 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.



**VACQ xFlat 2.8 universal FullRadio,**

**with 16 miniature connectors for thermocouples**



**VACQ xFlat 1.10 universal FullRadio with 10**

**connectors Fischer Connectors®**

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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 channel for the user / Able to manage several pieces of equipment connected in star configuration in the same space.

## AUTONOMY

The VACQ xFlat universal FullRadio universal is powered interchangeably by an AC adapter, or by two 015S batteries. The battery pack autonomy depends on environment and operational conditions of the application (temperatures, radio range, electromagnetic disturbances, data acquisition and transmission rate). Please contact our sales department

to optimize the choice of the battery pack according to the temperature of your application.

As a result of the variety of environments and operational conditions, TMI-Orion does not guarantee the battery lifetime and recommends that the user determine the battery lifetime according to his own process conditions and experience.

## SOFTWARE AND RELATED PRODUCTS

**VACQ xFlat universal 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 VACQ xFlat FullRadio,

data transmission and visualization is done in real time or after the process.

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

## DELIVERABLES

**The VACQ xFlat universal FullRadio solution usually includes the following items:**

- The VACQ xFlat FullRadio data logger with a battery pack and/or AC block + AC adapter,
- The VACQ xFlat FullRadio calibration certificate,

- The VACQ xFlat FullRadio configuration and calibration file,
- A TMI-Orion 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 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.

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