

# DATA ACQUISITION

## Radio Transmitters: T2RN RADIO

Radio communication  
Process monitoring  
Quick Installation: NO cabling

When your sensors are scattered on wide area or when modularity is an essential component of your application, radio measurement module solution is the answer to your needs.

This solution allows to important cable length not to be installed and to simplify installation. T2RN radio modules digitize main signals from temperature sensors and analog signals type 4-20mA (Pressure, humidity, ...) and next they transmit them to a PC by radio link.

T2RN are an economic alternative to centralized acquisition systems



### Specifications:

A T2RN Pt RADIO module allows 2 Pt100 temperatures to be monitored.

Other modules are available to meet all your needs:

- Measurement of 4-20mA output from pressure, pH, humidity sensors
- Thermocouple measurement for high temperature

System is able to manage up to 256 modules thanks to link multi-channel.

### Applications: Monitoring

Temperature monitoring taking into account door opening and closing.

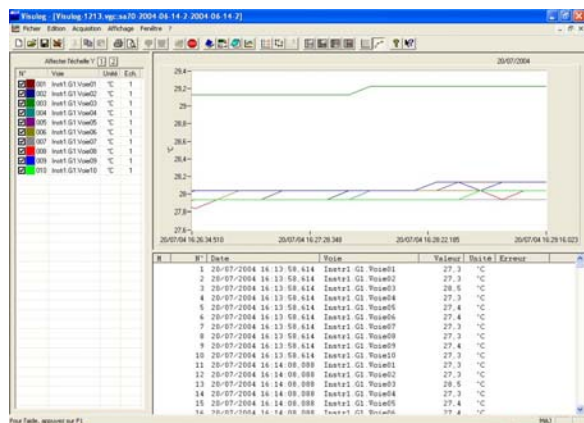
Display of average, minimum, maximum and standard deviation of each sensor.

Numeric values, curves, bargraphes and installation mimic diagram can be used for visualisation.



### Environmental control and monitoring system

Allows evolution and events to be monitored in real time thanks to VISULOG software, to save data on PC and then to insure data traceability.



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## Technical specifications:

- Process inputs

Function	Range	Resolution	Accuracy at 1 year
Current 0-20 mA	-0.2 to +24 mA	1 $\mu$ A	0.1 %R + 4 $\mu$ A
Voltage 0-10 V	-3 to +14 V	1 mV	0.1 % R+ 2 mV

Input impedance for voltage process R= 1 M $\Omega$   
 Power supply of current loop 24V, maximum current I=50mA  
 Shunt value for current process gauge R=22 $\Omega$

- Temperature inputs

### Resistive probes according to CEI 751

Sensor	Range	Resolution	Accuracy at 1 year
PT100	-200 °C to +850 °C	0.01 °C	0.05 % R + 0. 2°C
PT1000	-200 °C to +850 °C	0.01 °C	0.05 % R + 0. 2°C

### Thermocouples according to CEI 584-1

Sensor	Range	Resolution	Accuracy at 1 year
K	-250°C to -200°C	0.5°C	0.02 % R + 1°C
	-200°C to -120°C	0.2°C	0.02 % R + 0.2°C
	-120°C to +60°C	0.1°C	0.02 % R + 0.2°C
	+60°C to +250°C	0.1°C	0.02 % R + 0.1°C
	+250°C to +900°C	0.1°C	0.02 % R + 0.1°C
T	-250°C to -200°C	0.5°C	0.02 % R + 1°C
	-200°C to -100°C	0.2°C	0.02 % R + 0.3°C
	-100°C to +80°C	0.1°C	0.02 % R + 0.2°C
	+80°C to +400°C	0.1°C	0.02 % R + 0.1°C
S	-50°C to +150°C	1°C	0.2 % R + 1°C
	+150°C to +550°C	1°C	0.2 % R + 1°C
	+ 550°C to +1 450°C	0.5°C	0.2 % R + 0.5°C
	+ 1450°C to +1750°C	0.5°C	0.2 % R + 0.5°C

Using the internal reference junction compensation, add  $\pm 0,5$  °C to accuracy on table above.

For other available thermocouple types, contact us: [www.aoip.com](http://www.aoip.com) or [export@aoip.com](mailto:export@aoip.com)

**Power supply**  
 Main 220V; 50Hz

**Communication:**  
 Radio system: 25mW  
 Range: around 1000m in free area  
 Frequency: 868 MHz  
 According to european standards:  
 EN 300-220, EN 301-489

### CEM Standards

T2RN Performances are according to generic standard EN 61326  
 Emission EN 55022, EN 61000-3-2, EN 61000-3-3.  
 Immunity : EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11.

### Operating conditions

According to publication CEI 359 (National standard NF C 42-600).  
 Reference range: 23 °C  $\pm$  1 °C, Relative humidity: 45 % to 75 %.  
 Nominal range and limit of use: 0 °C to +50 °C, Relative humidity: 20 % to 80 % without condensation.  
 Limit range of storage and transport: -30 °C to +70 °C.  
 According standards range from 0 to 2 200 m.

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## Other models

**T2RN Pt RADIO:** 2 Pt100 or Pt1000 inputs

**T2RN AR RADIO:** Via network, allows siren and alarm flash to be activated thanks to 2 relays addressable on alarm thresholds of other T2RN.

**T2RN Tc RADIO:** 2 thermocouples inputs

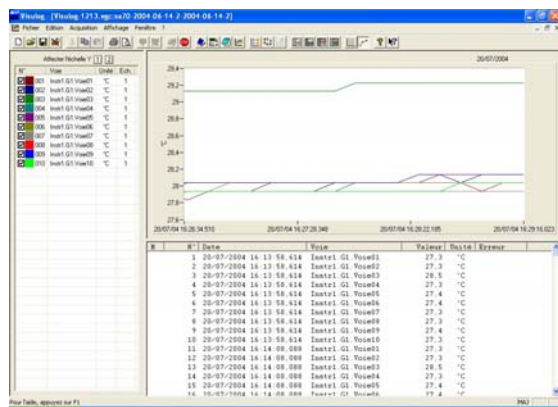
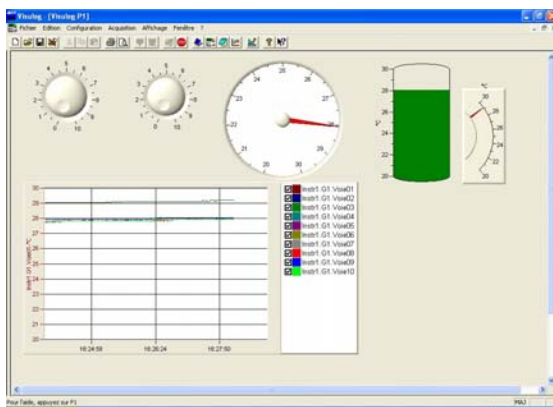
**T2RN Process RADIO:** 2 process inputs

## Software

**LTCTM:** Configuration software of T2RN network: Channels declaration, choice of connected sensor, scaling for an easy reading, sensor correction after calibration.

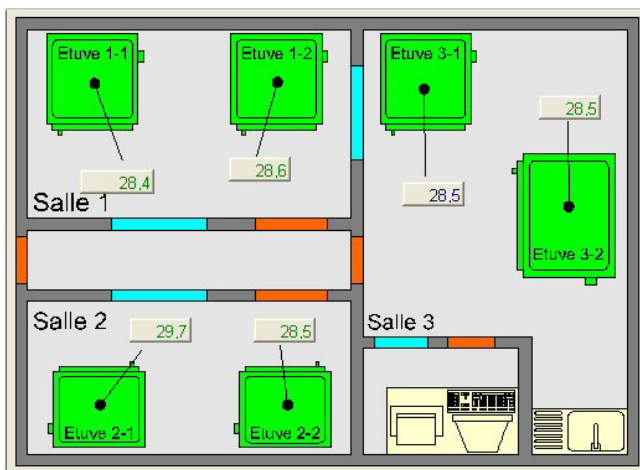
**VISULOG TM:** Supervision, acquisition and traceability software. Allows measurement events to be monitored in real time.

Visulog-TM has functions as login, password, user group and administrator, audit trail for an utilisation according to 21 CFR part 11 standard. Downloading modem (Windows NT4, XP, 2000, consult us for other environments) is supply with software.

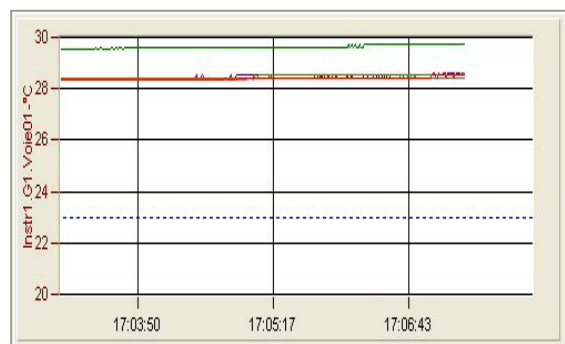


## Applications examples

### Localisation and display of probe



### Chambers stability visualisation



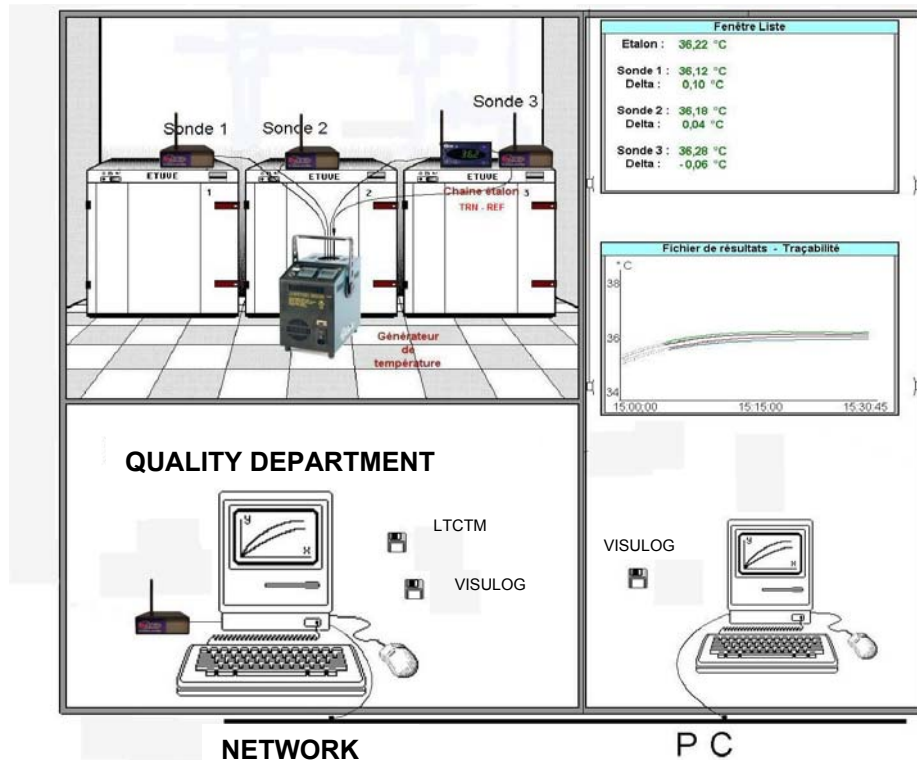
## Instructions to order

Pt100 transmitter:  
4-20mA transmitter:  
Thermocouple transmitter:  
Relay transmitter:  
Acquisition & visualisation software:  
25mW downloading modem:  
Software **LTCTM** is supply in standard

**T2RN Pt RADIO**  
**T2RN Process RADIO**  
**T2RN Tc RADIO**  
**T2RN AR RADIO**  
**VISULOG RADIO**  
**ATC 060**

# ACQUISITION DE DONNEES

## CALIBRATION OF RADIO MODULES



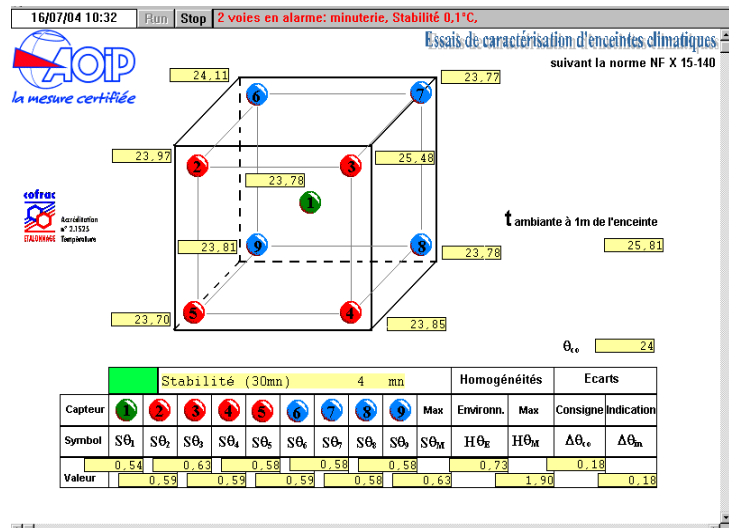
AOIP proposes calibration furnaces and baths, temperature reference chains to do necessary calibrations.

Our laboratory accredited COFRAC is able to calibrate your instruments and to insure your link up to national standards.



Measurement probes are compared with reference probe. Deviations are stored and can be corrected probe per probe.

## MAPPING CARTOGRAPHY according to standard NFX15-140



Acquisition system PC10 allows enclosure cartography. Results are given per probe and for all probes. Then a paper report is edited. Data transmission by radio communication



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