Predict

Analyse

Connect

# Moniteur

Complete turnkey solution,
set up in 15 min


## Avoid unnecessary maintenance operations

Vibration

Temperature

Acoustic

Power

www.monixo.com +33 9 72 57 00 46 contact@monixo.com

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# IIoT for machines monitoring

Our expertise in industrial data science through the detection of anomalies, the diagnosis of malfunctions and the prediction of failures on main industrial assets.
Neither too early nor too late to avoid unnecessary expenses and shutdowns such as heavy and costly breakdowns.

A library of rotating machines up to 900 physical models: CNC, HVAC, Power Transformer, Pellet Press, Conveyor, Pump ...
In-depth knowledge of the most common models in the industry.

Real time measurements
Early detection of anomalies
Notifications & Analysis Reports

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**Moniteur**
4 sensors per moniteur
32 sensors in multiplexed signal

**Temperature sensor**
Résolution : 0.1°C
Measurement range : −50°C /200°C
Consumption : 70 uA

**Vibrations sensor**
Measurement range : ±16g
Bandwidth : [0 Hz −5 kHz]
Sensitivity : 100 mV/g
Axis : Tri-axial (x, y, z)
Output : Level (RMS or PtoP) & FFT
Consumption : 80 uA

**Acoustic Emissions sensor (AE)**
Accuracy:  0.1%
SNR : 63 dBA
Consumption : 185 uA
AOP : 120 DB SPL
Frequency : 4.8 MHz

**Pressure/Delta P sensor**
Max value : 300 bar
Accuracy :  0.1%
Operating temperature : -30/+100 °C
Seal or diaphragm : NBR
Type of connection : G 1/4"

**Current / voltage sensor**
Max current value : 1000A (AC/DV)
Max voltage value : 1.3kV
Accuracy : current 1%
Accuracy voltage : 2%
Protection : IP66
CE marking
Frequency : 100Hz

**Ultrasonic Continued Fluid Level Limnimetric Probe**
Maximum sensor distance: 6000mm
Maximum operating temperature: + 80 ° C
Fluid types: all fluids
Marking: CE, RoHS
Consumption: 30 uA
Accuracy: 1%

**Ultrasonic flow sensor**
Linearity: 0.5%
Repeatability: 0.20%
Accuracy: 0.1%
Fluid types: all fluids
Pipe size: DN15-6000mm / DN60
Temperature: -40C ~ 90C
Consumption: 115 uA
Cable length: 3m

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**Position sensor**
Distance, motion alignment, tilt / Gyro, IP
Angle stability: X Y Z dynamic 0.1 ° static 0.05 °
Consumption: 44 uA
Stability: Acceleration: 0.01g, Gyroscope: 0.05 ° / s
Measurement accuracy: X Y Z 0.05%
Output frequency: 1kHz
Protection: IP67
Cable length: 3m

**Light sensor**
maximum value: 40000lx
Consumption: 0.5mA (low frequency)
Operating temperature: -40 / + 85 ° C
Interface: Analog
Accuracy: 5%
Protection: IP67
CE marking

**Wireless local communication (via Gateway)**
Capacity of the Bridge : 300 Monitors (1200 sensors)
Bandwidth : 868 Mhz
Sensitivity : -110 dBm
Maximum range indoor : 300 m
Maximum rate : 1,2 kbps
Frequency deviation : 45 kHz
Automatic Frequency Contral (AFC) : Activated
Encryption : Activated
Direction : Bidirectional
Output power : +5 dBm
Maximum range outdoor : 1000 m
Reception Bandwidth : 67 kHz
Messaging protocol : MQTT
Error Control : CRC
Modulation : FSK(frequency shift keying)

**External communication**
Connectivity : GSM, Ethernet, Lora(WAN), Sigfox, NB-IOT
Store & forward in real-time applied on data to avoid data lost in case of network issues

**Power**
Battery type : Lipo
Battery life :Reference*: 5years *1 RMS/180 seconds+ 1FFT/axe/24 hours
Rechargeable
Current consumption : In activity: 18 µA / In standby 0.13 µA

## The Network Architecture

**Option 1:**
Sensors --- (wire or BLE) ---> Moniteur --- (LoRa or BLE) ---> Bridge --- (4G/Ethernet)

**Option 2 :**
Sensors --- (wire or BLE) ---> Moniteur --- (LoRa or NBIoT) ---> Telecom Provider