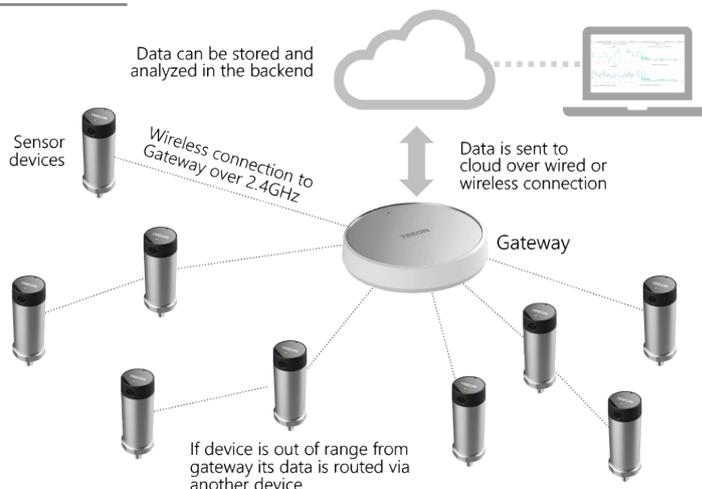# Wireless IoT Vibration Measurement Solution

Wireless IoT vibration and temperature sensor measurement solution.

In combination with it's technology partner Treon, Althen has developed a smart industrial Internet of things measurement solution for condition monitoring applications. The system consists of wireless battery powered industrial sensor nodes and a gateway for communication to transmit data to the cloud.

Data can be stored and analyzed in the backend

Sensor devices

Wireless connection to Gateway over 2.4GHz

Data is sent to cloud over wired or wireless connection

Gateway

If device is out of range from gateway its data is routed via another device

Industrial Sensor Nodes

Vibration specifications

- Acceleration measurement on 3-axis Axial, Horizontal and Radial
- Dynamic range +/- 4G (configurable to 2, 4, 8 or 16)
- Frequency range 10-1000Hz
- Sampling rate 6600Hz
- Resolution 16-bit
- FFT resolution 1Hz/bin

Temperature specifications

- Measurement range -40°C to +85 °C
- Resolution 0.1°C
- Accuracy +/- 2°C (mounting dependent)
- Repeatability +/- 0.1°C

Wireless communication

- 4GHz / Wirepas Mesh

Battery

- 3.6V lithium thionyl chloride
- Battery lifetime est. 3 years
- (Battery life is dependent on operating temperature and configuration

Dimensions of Node

- 5 x 28 mm
- Mounting to M8 thread
- Weight 129g
- Cover material 316 ss
- Top cap material PE HD

Environment

- Operating -40°C to +85 °C
- Storage 30 °C maximum
- IP68 (dust-tight and resistant to water up to 1m)

Designed for ATEX *

- ATEX II 2 G Ex ib IIC T4 Zone 1 & 2
- -40°C ≤ Ta ≤ +60°C

* not yet certified

Software

- Fully configurable data delivery and integration to major clouds
- Customer cloud application
- Device management

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Industrial IoT Gateway

Industrial IoT Gateway connects a mesh from few to hundreds of sensor nodes to backends. It collects, processes and transmits data to the cloud. Industrial IoT Gateway supports a wide range of wired and wireless connectivity, can integrate with any cloud platform, is extendable and runs edge applications. Stylish in design and compact in size, it fits any indoor environment and can be branded for OEM applications.

Hardware

Gateway specifications
- ARM Cortex-A8 1GHz Processor
- 1 GB DDR3L RAM
- 16 GB eMMC Storage
- Power supply 5V DC
- Size: ø95mm x 18,3mm

Connectivity
- USB A Host Port
- Ethernet
- 2G, LTE CAT M1 / NB-IOT · Wi-Fi, BT & BT LE 2.4GHz / Wirepas

Software

Development environment
- ARM-based Linux OS (Yocto)
- Pre-loaded Python and Node.js
- SDK, Native GCC
- Optional tools on request *

Networking
- Firewall (iptables)
- Linux TCP/IP stack
- MQTT
- BlueZ
- Wirepas Connectivity Library

Cloud support
- Microsoft Azure
- Amazon Web Services

Integration service to connect the gateway with any cloud *

Water and dust proof enclosure for Industrial IoT gateway

Industrial IoT Gateway Water and Dust proof enclosure has been designed to protect the Industrial IoT Gateway (model 1111) in outdoor or industrial indoor conditions. Enclosure includes gateway AC/DC power supply, DC cable and gateway holder. Class II design (no FG pin).

Ambient conditions
- Ambient temperature -20-50 °C
- Storage temperature -40-85 °C
- Relative humidity 20-90 %,
- noncondensing
- Flammability rating: UL 746C

Mechanical specifications
- Degree of protection IP67 for enclosure.
- Size 175 x 175 x 75mm, excl. cable glands
- Pressure equalizer plug.
  Wall mounting.
- Impact strength: IK08.
  Color: grey RAL-7035.
  Material: Base Fiberglass-reinforced PC
- Cover transparent PC plastic.

Power Supply
- Voltage Range 85-264VAC
- Frequency Range 47-440Hz
- Power Consumption 30VA Max
- Electrical connection variants:
  - EURO TYPE F UNGROUNDED 2 WIRE
  - NEMA 1-15 Class II Power Cords SAFETY and EMC
  - Safety UL60950-1, TUV EN60950-1
  - EMC immunity EN61000 1,2,3,5,6,8,11
  - Surge L-N 1kV

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