Polaris-Smart accelerometer
Information sheet

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In a nutshell

The Polaris-Smart accelerometer is a complete sensing solution that starts at the measuring point and finishes by delivering digital data and alerts. We also provide an optional cloud interface.
As all our products, it uses photons (i.e. light), which makes it intrinsically safe and operational in many harsh environments. Thanks to photonics, we can have long distances between the sensing point and the controller, with no loss in the signal through long distance (up to kilometers). Moreover, our sensor is very small and light, allowing us to be extremely precise and to measure inside the core of the process.

- ★ Pure photonics, no electronic at sensing point
- ★ Intrinsically safe for many harsh environments
- ★ Sensor housing very small and light
- ★ Longue distance between sensor and controller
- ★ Large acceleration and frequency ranges (compared to FBG technology)
- ★ Available for 3 kHz and 20 kHz (Bandwidth max)

Product description

With the Polaris-Smart accelerometer, Miraex provides a full-stack solution that starts at the measuring point and finishes by delivering digital data and alerts. The Polaris-Smart accelerometer is composed of:

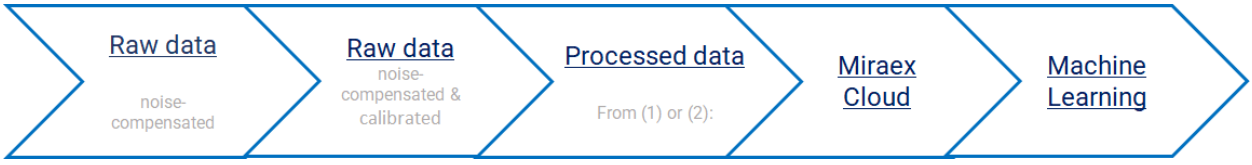
- 1 unit-Polaris Smart accelerometer with 5m long optical link
- 1 Edge Controller
- Edge Software: local user interface, edge data processing features, data visualizer & recorder

It includes a connectivity API to link to your acquisition system or data platform. We provide an optional cloud interface for dashboarding and alerts, in case the user does not already have a cloud solution.

Like all our products, it uses photons (i.e. light), which makes it intrinsically safe and operational in many harsh environments. For example, the Polaris-Smart accelerometers are immune to electromagnetic interference (EMI), radiation, high-voltages, high/low temperatures and more. Available in 2 models (maximum frequency range of 3kHz or 20kHz), it finds application in industrial sensing for many industries.

Available data output & analyze levels

Several types of output data are available: from raw to processed, either local or through the cloud.



No Analogue output is available for this generation of controller.

Controller generation

The architecture of the “Gen 2” generation of Edge Controller allows one sensor per Edge Controller.

Main features & benefits

- Physical and mechanic
  - 5m long Optical link
  - Easy to install & mount
- Environment conditions at sensing point/area
  - Operation temperature range : 0; 155°C
  - RFI and EMI: intrinsically insensitive
  - Magnetic field Range:intrinsically insensitive
  - Voltage / Electric field Range:intrinsically insensitive
  - Grounding: intrinsic galvanic isolation
- Sensing specs:
  - High Maximum frequency range*: 3 kHz or 20 kHz
  - High Acceleration range*
- Edge data processing
  - RMS value
  - Filtering
  - Average
  - Real time FFT analysis
  - Collection of processed data via MQTT
- User Interface
  - Data visualization
  - Data recording
- Miraex Cloud**
  - Collect & store measurement data from Edge Controller
  - Dashboarding (realtime + history) & alerts
  - API access

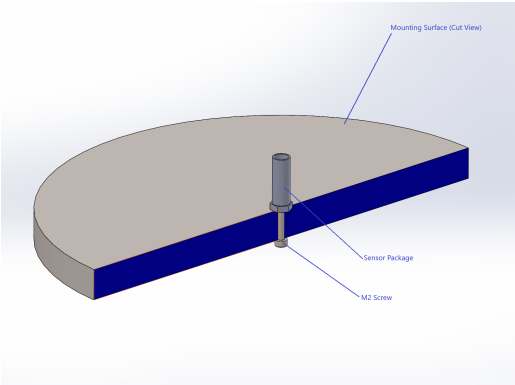
* compare to FBG technology
** Optional

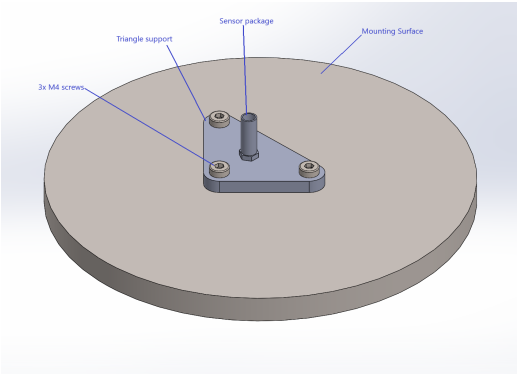
Available versions

The Polaris-Smart accelerometer is available:

- For 2 different bandwidth range (BW Range): :
  - Polaris-Smart accelerometer #3 : Bandwidth max ~ 3 kHz-Values ±5%
  - Polaris-Smart accelerometer #20 : Bandwidth max ~ 20 kHz-Values ±5%

- With 2 mounting solution:
    - Punctual Screw Mounting (Fixing the sensor directly on the surface using a metric screw)
    - Surface Triangle Support Mounting (when screwing the sensor with the triangle support and screwing the triangle on the surface)





User Interface

Miraex Edge Controller comes with a web browser based user interface. It allows you to configure the Edge Controller connectivity but also gives you access to a simple visualization of the measured data as well as their recording.

User Interface for configuration

- WiFi connectivity configuration (enable/disable WiFi chip, access to a WiFi network, change hotspot SSID and password)
- IP configuration (DHCP, static IP)
- NTP (Network Time Protocol) server configuration.
- Port Forwarding configuration and activation to allow remote support.
- Visualizer and recorder activation and access.
- Socket streamer (UDP/TCP) configuration and activation.
- MQTT streamer configuration and activation.
- Bandwidth filtering configuration.

Visualizer and recorder

- Live visualization of the raw data.
- Live visualization of the signal spectrum (FFT, FFT dB, PSD, PSD dB)[1].
- Live visualization of RMS values[2].
- Raw data recorder at full sampling rate (64000 points recorded/sec).

[1] 4 FFTs per sec. with 1 Hz resolution.
[2] The averaging time can be selected from 250ms to 2000ms. 4 RMS value calculated per sec.

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AC Channel Visualizer

PAUSE | QUIT AND RETURN THE EDGE CONTROLLER INTERFACE

Recalibration

▸ Details

AC RECALIBRATION

Recorder

Comment header for csv file

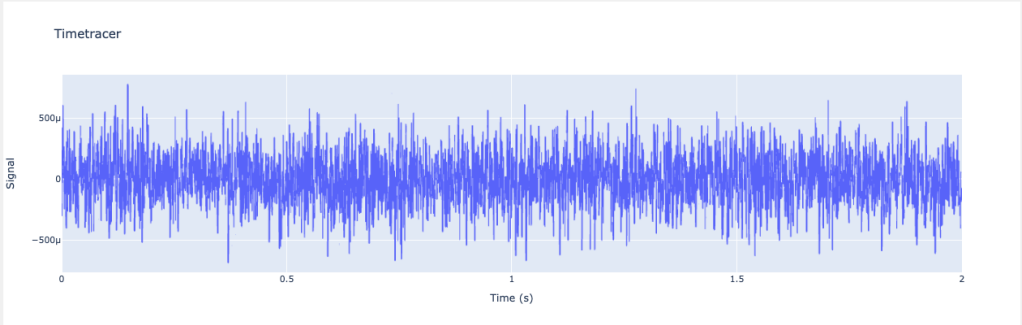
▸ Details

Press to start/stop recording data. Raw data recording will slow down the visualization.

RECORD RMS DATA | RECORD RAW DATA

Graphs

Raw data



Spectrum

Spectrum type

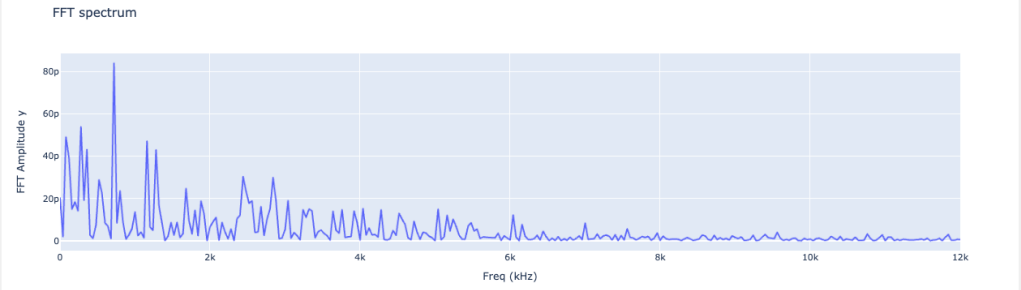
FFT

Decimation type (advanced)

peak detection

Threshold for peak detection (advanced)

0.0005

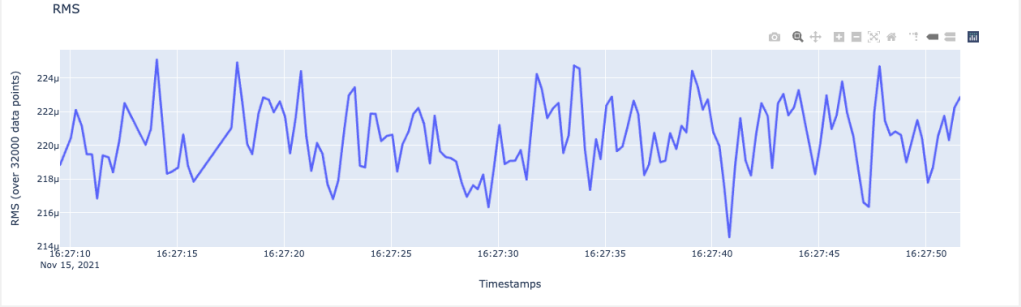


RMS

RMS averaging period

▸ Details

500 ms

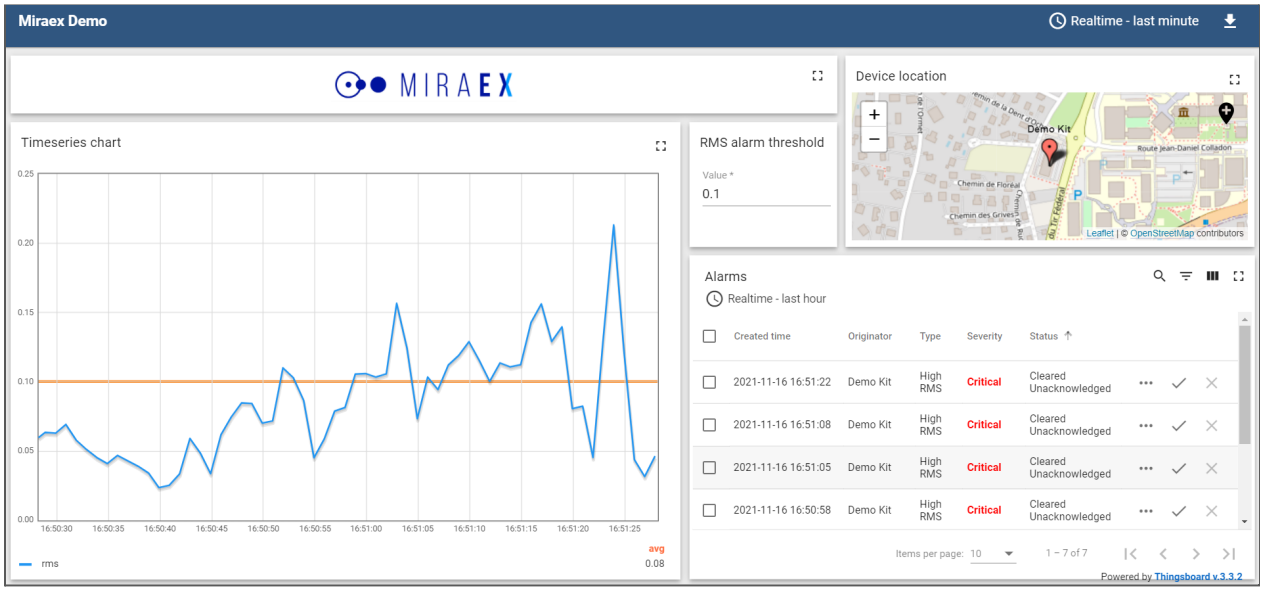


Optional Cloud

For customers looking for a Cloud solution, Miraex has developed this option. When the sensor is connected to the internet, the following basic features are available out of the box:

- Collect & store measurement data from Edge Controller
- Dashboarding (realtime + history) & alerts
- API access

Example dashboard:



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