

Watchman AIR™



High Resolution Wireless Vibration Solution

High Resolution for Prediction & Prescription

Watchman AIR™



✓ Advanced Acquisition

The most advanced acquisition technology available to capture high resolution vibration data capable of detecting early component-level faults on machines as slow as 350 RPM and to frequencies detectable to 10kHz. Combined with Symphony Industrial AI's proprietary Impact Demod algorithms, analysis is on-par with portable collection systems.

✓ Automation and AI

The world's largest asset data lake and most advanced, trained automated diagnostic engine on the market, provides rapid time to setup and time to achieve accurate results. Over 67 trillion individual vibration data points from 2.25 million machine tests, Symphony Industrial AI has diagnostic models for over 128,000 specific component faults.

✓ Actionable Results

Early detection of emergent faults & root cause to prioritized repair recommendations with specific actions, all decision makers can be alerted and involved in decisions that effect plant operations and minimize downtime. Health score, business metrics and other KPIs can be delivered through the web portal or direct to your mobile.

✓ Analysis Services

Symphony Industrial AI's team of over 40 ISO certified vibration analysts, Level 2-4, are available to provide domain expertise and remote condition monitoring of assets with a 24-hour turn-around of serious and extreme faults or urgent requests.

Accel 310™ - Triaxial Vibration Sensor

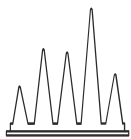
Wireless Vibration with Actionable Diagnostics

High resolution data allows for the detection of more machine faults, giving users better insights to emerging problems and root causes.

The Expert Automated Diagnostic System can identify 1,200+ unique fault types on 40+ common machine components using over 6000 diagnostic rules, providing prioritized recommended repair actions.



Getting the right alert at the right time starts with having a well trained AI platform to leverage from the moment you first turn on the sensor, and learns as it keeps all users informed with actionable alerts and notifications



High-resolution
Vibration



Long Battery
Life



Mesh
Networked

Wireless Vibration



Accel 310

Frequency Range: 10Hz to 10kHz

High range, with FFT to 10KHz provides most common component and fault feature identification.

Sample Rate: 26.7 kHz

Best sample rate to support proprietary Impact Demod early bearing fault detection.

Max Input Range: +/-16 G

Capture higher quality data from more assets with a wide dynamic input range.

Max FFT Resolution: 0.24 Hz

Resolve spectra down to 0.24 Hz with Fmax of 386 Hz at 1600 lines to best identify frequencies of interest.

Vibration Analysis

- 1** **Impact Demod Waveform** and **Impact Demod Peak** for early bearing fault detection and slow speed machines down to 350 RPM.
- 2** Automatically configured to capture best quality vibration data to support the **Expert Automated Diagnostic System** for simple installation and configuration.
- 3** Supports **most common machine assets** such as motors, pumps, fans, blowers, compressors, gearboxes, purifiers.
- 4** **Daily Full diagnostic vibration data** for automated analysis with **hourly summary** vibration and temperature trends.

Accel Gateway



Accel Sensor Gateway forms a mesh network for any number of wireless sensors. Each gateway is pre-configured to support the Eureka AI platform and PredictivePortal and is ready to deploy using a wide range of network connectivity options.

The gateway bridges the sensors to the Eureka AI cloud using multiple communication options, such as **Wi-Fi, ethernet, or integrated cellular.**

Gateways are available in two options: **Standard** for **IP-20** rated environments and **Industrial** which is **IP66/IP67** rated.

Each gateway can communicate with **any number of meshed sensors.** Providing a very flexible deployment throughout a plant floor.



Ethernet,
Cellular,
Wi-Fi



Standard or
Industrial
Rated

Technical Specifications



Specifications are subject to change and represent hardware full capabilities, subject to asset types, analysis requirements and system configurations.

Accel 310 Sensor

Signal Processing

- Filtering: Butterworth high, low, band pass
 - Low pass cut off, max.: 13,335Hz
 - High pass cut off, min.: 0.5Hz

Measurements

- Measurement Axis: Triaxial or in-line axis
- Input range, max.: +/-16G
- Flat Frequency range: 10-6300Hz (+/-3dB)
- Detectable FFT: 10.4kHz
- Sample rate: 26,667Hz
- Effective resolution: 16bit
- Sample amount, max.:
 - Single axis: 110,592 samples
 - Triaxial: 36,864 samples/axis
 - Up to 4 seconds of data at 26.7kHz
- Bin width: as low as 0.24Hz @ 1600 lines
 - Averages, max: 9
 - Overlap: 0-100%
 - Windowing: Hanning
- Full Diagnostic Measurement Types:
 - High & low-range narrow band spectra
 - Impact Demod Waveform
 - Raw Acceleration
- Summary Data Measurement Types:
 - Impact Demod Peak
 - Acceleration & Velocity RMS, Pk-Pk, Pk
 - Acceleration Crest Factor
 - Surface Temperature (mount tip)

Surface Temperature

- Temperature Measurement: -40 - 105C
- Accuracy/Resolution: +/-0.3C / 0.1C

Physical

- Size: 3.09" x 1.1" (78.5 x 28mm)
- Weight: 0.28lbs (129g)
- Battery: 3.6V lithium thionyl chloride
- Expected battery life: greater than 3 years
- Communication: 2.4Ghz Wirepas Mesh
- Mounting: Adhesive pad or stud mount

Environmental Ratings

- Temperature: -40 to +85C
- Enclosure: IP68

Certifications: CE, FCC, ISED, ATEX II 2 G Ex ib IIC T4 Zone 1 & 2 when $-40^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$, US/Canada Class 1, Division 2, Groups A, B, C, D, T4 (-40 - 80C)

Accel Gateway

Communication

- Connectivity: 2.4GHz Wirepas
- Direct connection: 14 nodes, unlimited meshed nodes
- Number of channels: 40
- Radio bitrate: 1000kbs
- Packet throughput: 150pps
- Routing: De-centralized & automatic
- Channel selection: Adaptive
- Device commissioning: Automatic
- Network: WiFi, Ethernet, Cellular, external modem via USB
- Cellular: LTE-M (AT&T), NB-IOT
- Cloud: Pre-configured, Microsoft Azure integrated with Symphony Industrial AI Eureka AI platform and PredictivePortal

Standard Gateway

- Size: 3.74" x 0.72 (95 x 18mm)
- Weight: 2.9 oz (82g)
- Power Supply: 5V, 3.6A DC Wall plug (incl.)
 - Input: 100-240VAC, 50-60Hz, 0.6A
- Environment rating: IP20

Industrial Gateway

- Size: 7.09" x 5.12" x 3.19" (180x130x81 mm)
- Weight: 1lb 6oz. (624g)
- Ambient Temperature: -20 - 50C
- Storage Temperature: -40 - 85C
- Relative Humidity: 20 - 90%
- Flammability: UL 746C 5"
- Impact Resistance (EN 62262): IK08
- Power: Worldwide AC/DC supply (5VDC, 6A), NEMA 1-15, Class II (customer to install)
 - Input: 100-240VAC, 50-60Hz, 0.75A
- Environmental: IP66/IP67

Cloud Security

- Verified CA certificate & PKI, 128-bit, TLS 1.2



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