

# High-Precision 3-AXIS VIBRATION SENSOR

TECHNICAL DATA SHEET



ORDER CODE: TP-400V  
CATEGORY: Sensors

## Advanced Vibration Intelligence for Reliable Operations.

### PRODUCT OVERVIEW

#### General Description

E4A's advanced 3-axis vibration sensor is designed to provide precise, real-time monitoring of vibration levels in rotating machinery and vibrating structures such as generators, compressors, pumps, and piping systems. It enables early detection of issues including low-frequency structural oscillations, excessive vibration caused by deteriorating bearings, or the absence of vibration due to motor failures, disconnected couplings, or inactive valves. Featuring a high-performance accelerometer with a configurable full-scale measurement range up to  $\pm 64g$ , the sensor captures detailed vibration data, converts it to velocity, and performs in-depth frequency analysis using a custom Fast Fourier Transform (FFT) algorithm.

The TP-400V is powered by E4A's BP-100 (non-rechargeable) and BP-100R (rechargeable) battery packs, which are inserted directly into its cavity, providing flexible and reliable power for long-term operation. This combination of accuracy, flexibility, and powerful analytics makes it an essential tool for predictive maintenance and operational reliability.



### PRODUCT BENEFITS

#### 01 Precise Vibration Analysis

Using a high-performance  $\pm 64g$  accelerometer and advanced FFT algorithms, the sensor delivers accurate insights for detecting subtle changes in vibration behavior early.

#### 04 Reduced Manual Checks

Automated monitoring and data transmission eliminate the need for manual inspections, saving time, reducing human error, and enhancing workforce productivity.

#### 02 Extended Operation

BP-100 battery packs provide long-lasting operation in both rechargeable and non-rechargeable formats, ensuring continuous monitoring in diverse environments.

#### 05 Service-Friendly

Transmitters can be mounted in convenient areas, enabling safe and quick battery swaps without needing to access hard-to-reach equipment.

#### 03 Hot-Swap Batteries

Replace battery packs on the fly without disrupting performance or data collection, keeping monitoring uninterrupted at all times.

### MEASURED PARAMETERS

✓ Vibration



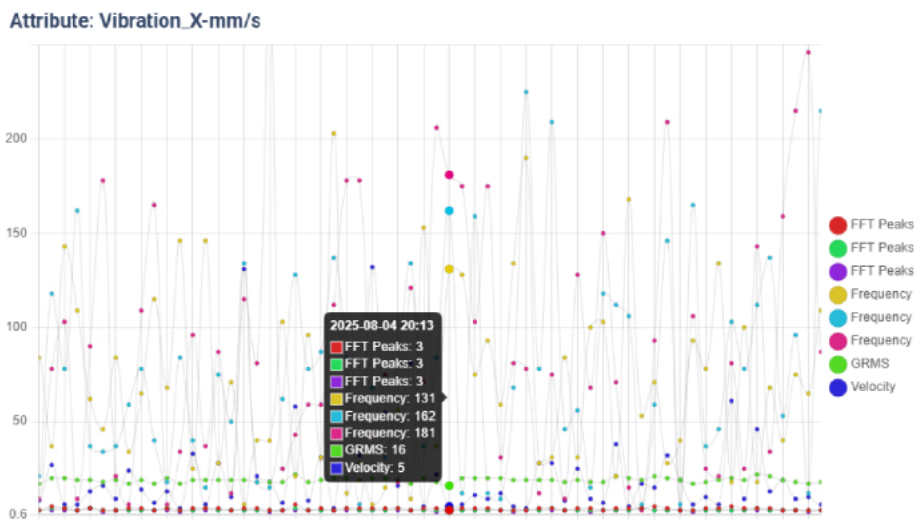
# FEATURES

- ✔ **24/7 Alarm Notifications**  
Continuously monitors conditions and sends alerts when temperature thresholds are exceeded
- ✔ **Extended Battery Operation**  
Ultra-low-power design, delivering over 5 years of continuous use at a 5-minute reporting interval
- ✔ **Fast, Scalable Deployment**  
Compact and easy to mount—ready for rapid rollout across enterprise-wide operations
- ✔ **Automatic Data Logging**  
Securely records all measurements and events for traceability, audits, and long-term trend analysis
- ✔ **Accessible Data**  
Sends data through a secure gateway to a central dashboard for real-time viewing and trend analysis
- ✔ **Wireless Data Transmission**  
Bluetooth connectivity enables quick, cable-free data transfer for flexible monitoring
- ✔ **Simple Installation**  
Compact design mounts easily utilizing screws on a threaded plate within the device

# VISUALIZATION SOFTWARE

## Real-Time Alarm Level Display and Historical Data

E4A's TP-400V vibration sensor provides real-time monitoring with configurable alarm setpoints, giving operators immediate insight when vibration levels indicate potential equipment issues. All measurements are stored as historical data, allowing teams to review trends over time, identify gradual changes in equipment behavior, and detect early warning signs of deterioration. Access to both live and historical vibration data enables predictive maintenance planning, helping maintenance teams schedule interventions more effectively, prevent unexpected downtime, and extend the life of critical machinery. By combining instant alerts with detailed trend analysis, the TP-400V ensures that operators and engineers have the information they need to make informed, proactive decisions.



## E4A IOT MANAGER

Unlock the full potential of your sensor network with E4A's IoT Manager — a powerful, web-based platform designed for real-time monitoring, control, and analysis of your IoT devices.

- 01 Device Management Dashboard
- 02 Real-Time Monitoring
- 03 Historical Data Review
- 04 Data Analytics and Visualization
- 05 Remote Configurability and Upgrades
- 06 Plus Much More!



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Just scan the QR code and follow the prompts. Once you contact us, we'll handle the setup and get you connected - quick and hassle-free.

# TECHNICAL SPECIFICATIONS

## Power Supply

Main Power	3VDC, BP-100 (non-rechargeable) 3.6VDC, BP-100R (rechargeable)
Battery Capacity	6000mAh (non-rechargeable) 6800mAh (rechargeable)
Input Voltage Range	1.8VDC to 5.0VDC
Average Current	22uA

## Operating Specifications

Operating Temperature	-20°C to +60°C
Storage Temperature	-20°C to +70°C (battery installed)
Permissible Humidity	20-85% RH (non-condensing)
Ingress Protection Rating	IP30 (without battery) IP55 (with battery)
Pollution Degree	2
Protection Class	3
Altitude	2000m

## Measurement Characteristics

Measurement Range	±8g, ±16g, ±32g, ±64g ±8g: 4096 counts/g ±16g: 2048 counts/g ±32g: 1024 counts/g ±64g: 512 counts/g
Velocity Accuracy	±5mm/s

# SPARE PARTS AND ACCESSORIES

Part Description	E4A Part Number
Quad-Band Gateway	E4A-BFA-00005-01
Dual-Band Gateway	E4A-BFA-00004-01
BP-100 Battery Pack	E4A-BFA-00008-00
BP-100R Battery Pack	E4A-BFA-00009-00

# CERTIFICATIONS

FCC	2AXVKTP400
Industry Canada	26661-TP400
Safety	Pending

## Physical Characteristics

Housing Material	ABS plastic
Physical Dimensions	Height: 110mm / 4.3 inches (without battery) Height: 147.5mm / 5.8 inches (with battery) Width: 100mm Ø / 3.9 inches
Weight	320g (without battery) 525g (with battery)
Mounting	1/4-28 UNF thread mount 13.5mm deep bolt hole

## Communications

Wireless Module	2.4GHz Bluetooth 5.0 transceiver
Communication Range	200m line of sight
Communication Interval	User programmable in 10s increments
Security	AES 128-bit crypto accelerator ECC and RSA public key accelerator (PKA) SHA2 accelerator (full suite up to SHA-512) True Random Number Generator (TRNG)

## User Interface

Pushbuttons	3 push buttons (pairing, trigger data report, enable/disable serial terminal interface)
Status LED	5 status LED (red, green, orange)
Alarm Range	User programmable

## CONTACT US!

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## DISTRIBUTORS

