INFINITE UPTIME
POWERING RELIABILITY THROUGH INNOVATION

Plug-n-Play Industry 4.0

vEdge 2.0 Smart Sensor Specification Sheet

Digitize any equipment within 1 minute!

Infinite Uptime manufactures and supplies Smart Edge devices along with Connectivity, Communication, Software Analytics, and the local RS485 - Modbus RTU communication capability, Dashboard, and reports to provide an end-to-end solution to our customers. Industrial Data Enabler (IDE) vEdge, is compact with better Wi-Fi and Bluetooth Low Energy (BLE) connectivity, and new OTA firmware upgrade technology. It gives immediate feedback through visual fault detecting indicators and remotely monitors any critical mechanical rotating equipment to mirror notifications and provides real-time diagnostic insights.

Functions and Features

Machine Monitoring

- Rotating Machine Fault Detection and Alerts.
- Real-Time and Long-Term Data Reporting with Trend monitoring.
- FFT for Spectral Analysis of Rotating equipment.
- Detection of Bearing fault based on bearing type selected from the list.
- Fixed and variable rotation speed input option available for better analysis.
- Availability of Automatic and Manual rollback feature for firmware upgrade OTA (Over The Air) by wireless technology.
- Prediction of Remaining Useful Life (RUL).
- Visual feedback through LEDs and color codes.
- Polarity reversal and Overload power supply protection.
- Easy 1-min installation through Mobile App.

2150 Shattuck Avenue, Berkeley CA, USA - 94704. www.infinite-uptime.com Office 5B, 5th floor, Vasundhara Space, Nagras Road, Aundh, Pune - 411 007

Device Specifications

Vibration Sensing and Processing

Parameter	Specification
Vibration Sensor	MEMS based Triaxial accelerometer
Bandwidth of accelerometer with stud mounting	Up to 8 kHz for X & Y axes Up to 5 kHz for Z-axis
Bandwidth of accelerometer with magnetic mount	Up to 648 Hz for X, Y, and Z axes
Configuration range	F_{max}: 325 Hz to 8 kHz LOR: 100 to 3200 (LOR = Lines of Resolution)
Vibration sampling rate	Configurable up to 25.6 kHz
g-range with stud mount	Up to ± 16 G
g-range with magnetic mount	Up to ± 2 G
Resolution of accelerometer	16 bit
Derived values	• Overall Vibrations in RMS-All 3 axis • Spectrum in RMS-All 3 axis • Waveform in RMS-All 3 axis • Shock pulse spectrum-All/Single axis • Shock pulse Waveform-All/Single axis
FFT frequency resolution (delta-f)	Configurable up to 0.1 Hz (depends on Fmax and LOR settings)
Shock Tolerance Range	10,000 g for 0.2 ms

Temperature & Audio

Temperature sensor	Semiconductor based sensor
Contact temperature range	0 °C to 85 °C
Audio	Acoustic microphone
Audio range (calibrated using Phoenix SM-10)	60 dB to 115 dB

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Wireless Interfaces

WiFi features	• MAC address displayed in Android/iOS app for MAC filtering in the company network • Static & Dynamic IP support
BLE features	• Low power • 5 m open-air range • Connect the vEdge sensor to the Android device (version above 4.2 Jellybean) or iOS device (version above iOS 8) to: - Configure the vEdge sensor - Visualize real-time data

Data Transactions

Transfer to server Interface	Wi-Fi
Transfer interval	• Overall Vibrations in RMS for All 3 axis-Configurable for 1, 5 & 10 sec interval. • Spectrum in RMS-All 3 Axis, every 30 minutes interval, for described bandwidth and RSSI Specifications. • Waveform in RMS-All 3 Axis, every 30 minutes interval, for described bandwidth and RSSI Specifications. • Shock pulse spectrum-All/Single-axis, every 30 minutes interval, for described bandwidth and RSSI Specifications. • Shock pulse Waveform-All/Single-axis, every 30 minutes interval, for described bandwidth and RSSI Specifications.
Local viewing	• Mobile Android app • iOS app
OTA	Over The Air - remote firmware upgrade
Configuration	• Remotely on the dashboard • Locally through the android device (version above 4.2 Jellybean) or iOS device (version above iOS 8)
RSSI level between Access point and the device	-60 dBm minimum
Throughput / Bandwidth from the device to server	Minimum 50 Kbps upload speed per device. Access point make and configuration: Make: Grandstream, Model: GWN7630, Antennas: 2.4 GHz Gain: 4dBi, Radios: 2.4 GHz 802.11 a/b/g/n/ac Maximum TX Power: 2.4G: 27 dBm

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Electrical

Power supply	External power supply 24 VDC 100mA
Power Supply Protection	Polarity reversal protection, Overload protection
Connector	4-pin M8 connector (V+, 0, A+, B+)
Cable - external	28 AWG 4-core shielded 5 m cable with the open leads of 25 mm
Cable temperature range	0 ºC to 90 ºC

Local Communications

Protocol (Functionality)	Modbus RTU (Slave)
Physical standard	RS 485, 2 Wire
Supported Baud	4.8 kbit/s to 57.6 kbit/s
Parity	None/Even
Data bit	8
Stop bit	1/2

General

Enclosure	Aluminum base with Polycarbonate cover
LEDs	4 RGB LEDs, one on each corner of the enclosure, rated up to 85 °C
Axis orientation	Y axis along with the power cord
Size	Approx. 46 (L) mm x 32.6 (W) mm x 24.5 (H) mm
Weight	80 g
Mounting	Using vibration pad
Mounting accessories	Vibration pad (28 mm x 8 mm, SS410)
Operating ambient temperature	Vibration pad (30 dia x 8, SS410) and Stud (¼-28 UNF)
Operating ambient temperature	0 ºC to 85 ºC

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Magnetic Base Specification

Magnet Type	NdFeB Magnet
Magnet Dimensions	18 mm x 5 mm x 5 mm, 2 magnets weighing 3.42g each
Pull Strength of magnetic base when mounted flat	1.7 lb minimum (includes 2 magnets assembled in the Edge device)

Network Security

Authentication WiFi Types	Pre-shared key (PSK), Open, Hidden Network (Hidden SSID)
Messaging Protocol	MQTT, HTTP / MQTTS, HTTPS (as per configuration)
Encryption	AES-256
Cryptographic Algorithm	SHA-256
White-listing	IP (Source IP & Destination IP), Port (For Secured :8883,443,8000 & for Unsecured 1883,80), URL or Mac-Address (Depending upon the network)
Device Authentication	Certificate-based authentication (as per configuration)

Certifications & Approvals

IP68 (Waterproof and Dustproof)	Certified
TELEC (Japan Radio Approval)	Under certification
ATEX zone 0	Under certification

Wireless Specifications

WiFi

Protocol	IEEE 802.11 b/g/n support
Frequency Range	2.4 GHz
Antenna	Integrated in device
Security	WPA / WPA2 - PSK based authentication
Encryption	TKIP/AES
Network Protocol	MQTT, HTTP / MQTTS, HTTPS (TCP/IPv4), As per configuration

Bluetooth

Version	Bluetooth 4.2 (Bluetooth Smart) Concurrent Central & Peripheral (S132)
Frequency Range	2.4 GHz
Encryption	AES-128 (between the device and the mobile app)