

Monitoring Machine Health

Cloud

ENABLING REAL-TIME,
EDGE DRIVEN, CONDITION MONITORING OF CRITICAL
ROTATING EQUIPMENT



- Blue : Indicating Machine in Idle State
- Green : Indicating Machine is in Good Condition
- Yellow : Indicating Machine in Caution State
- Red: : Indicating Machine in Danger Condition

Industries We Serve

Steel

Cement

Food Processing

Fertilizer

Petrochemical

Paper

& Many More....

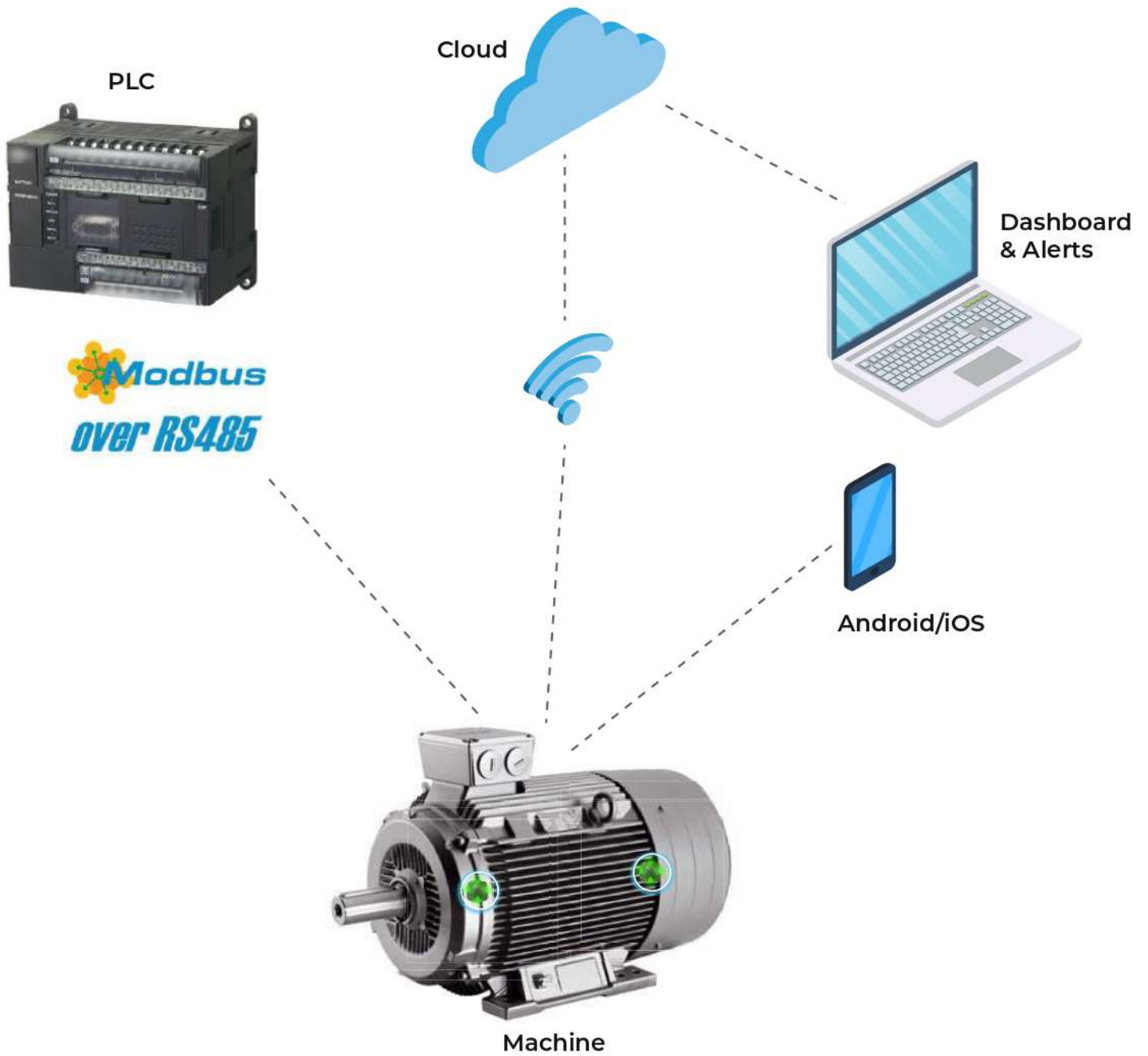
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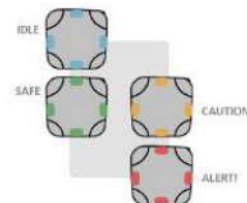
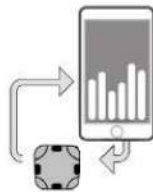
**COAST LUBRICANTS
& INDUSTRIAL SUPPLY**

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How it Works



1. vEdge device is mounted on machine using magnetic base or Vibration pad.
2. vEdge device is configured with android/iOS mobile app.
3. vEdge device, machine settings, diagnostics features are configured through dashboard.
4. You can get the details of the machine health by various reports/graphs on dashboard.
5. You can view the status of machine via LED on vEdge device.



Hardware

vEdge device with magnetic base (and LED indicators)

Vibration Pad



M8 4-pin Connector (For power supply and Modbus communication)

Mounting Stud

Android/iOS App

Web Portal



- Device registration
- Health indication
- Latest operational data
- Over The Air (OTA) upgrade



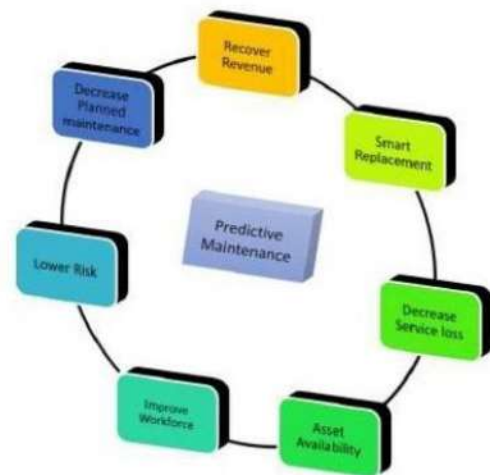
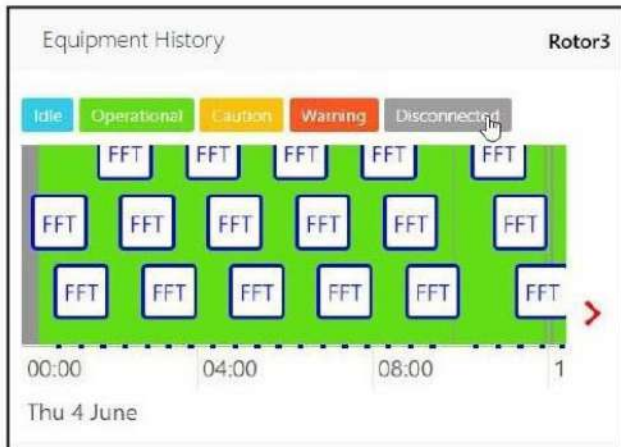
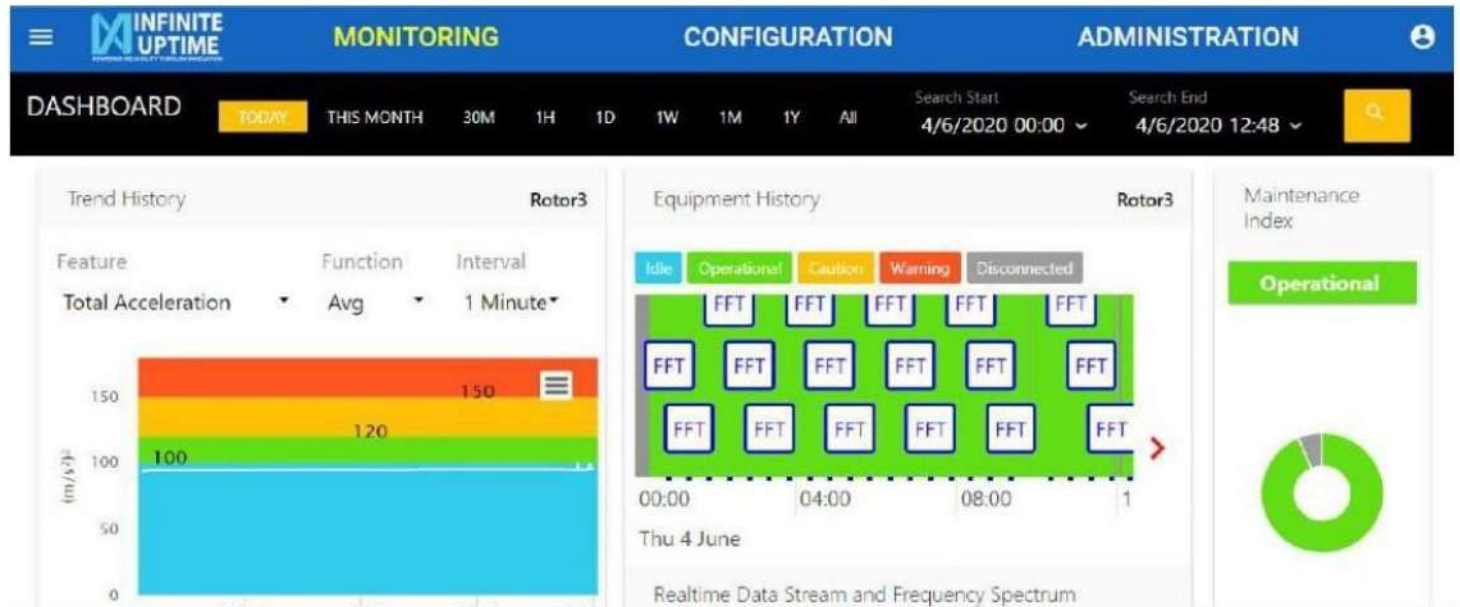
- User registration
- User group management
- Device parameter setting
- Settings for alert and alarm

- Equipment History
 - Real time Data
- Instantaneous data
- Maintenance Index
- Report Generation

Features

Dashboard at your Fingertips

- Easy to use interface.
- Graphical presentation of diagnostics features.
- Reports
- Alerts
- Colour coded graph for easy identification of machine status.



Information Available When you need it.

- 24x7 available data
- On-demand FFT spectrum
- FFT on alarm generation

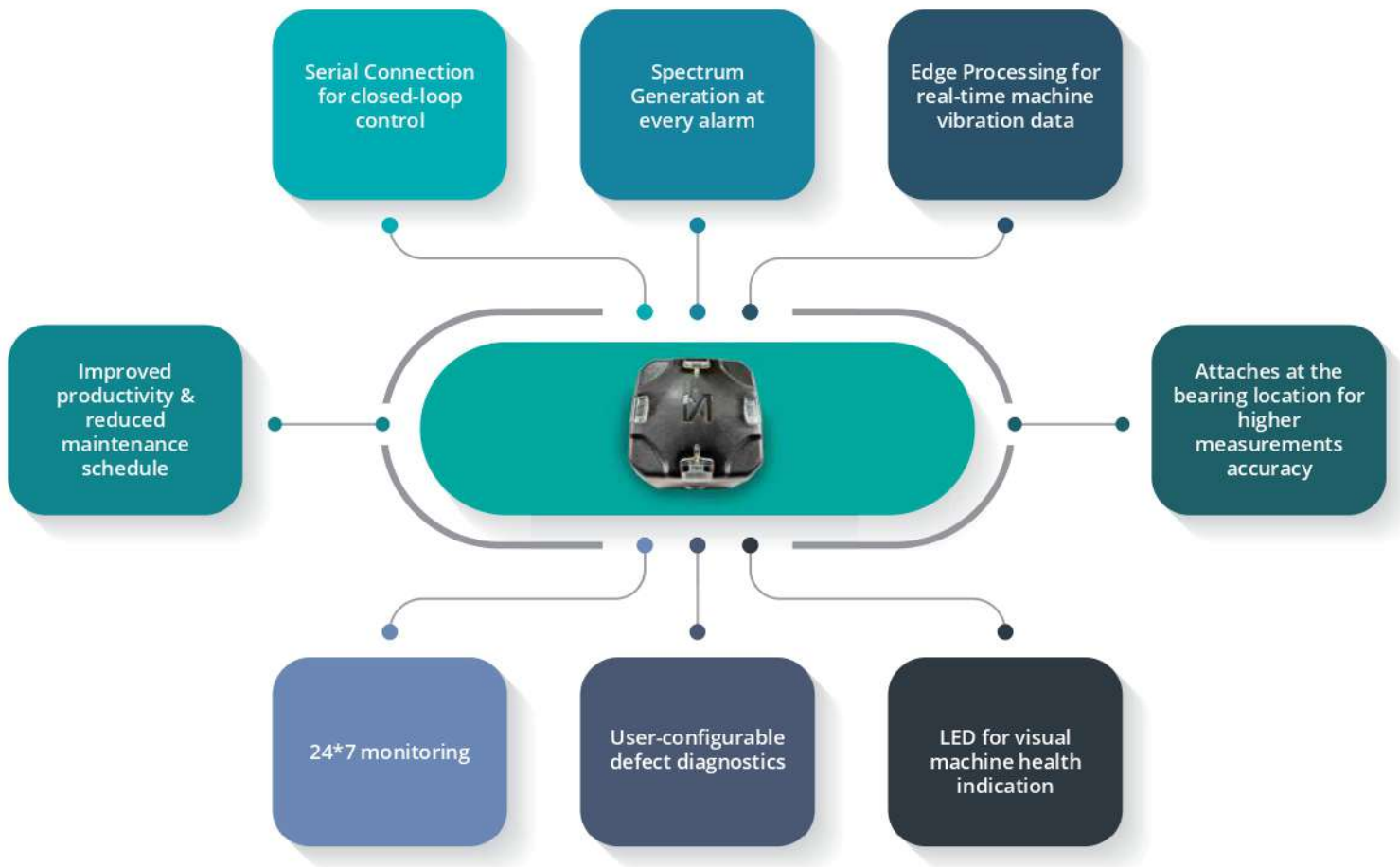
Energy Bands

- Asa data compression technique, Algorithms divide the spectrum into user-configured energy bands, which correspond to specific fault indications.
- It calculates the vibration energy within each energy band and passes these values to system for trending and alerts.
- You can set the Vibration limits as per ISO 10816 Standard (Velocity in mm/sec-RMS) based on your machine type

Track Your Plant Performance

- Predictive maintenance reduces maintenance costs by 10 to 40% as it eliminates the need for unnecessary planned maintenance work.
- Predictive maintenance can reduce wastage by 10 to 20% because it basically predicts faults before they become issue leading to a waste of time, resources, and energy.
- Compare the performance by reports generated.

vEdge Device benefits



Configurable Diagnostics

1.

The diagnostic configuration feature is very useful for machine designers, manufacturers and maintenance managers, as you are most aware of your specific equipment problems and you can tune the system to identify the root cause of failures just the way you do it manually.

2.

Get alerts based on the diagnostic features you have configured e.g. Alerts for misalignment, bearing wear or looseness

Modbus RTU RS 485



- Mod bus is the best way to connect smart devices with PLCs using a simple master/slave concept.
- RTU uses binary coding and CRC error-checking increasing the protocol's throughput and reliability.

- The Modbus protocol implementing remote data collection is very easy.
- Get Edge diagnostic data in your PLC, DCS, or SCADA system without any delay.
- Easy and fast configuration via Android App.
- Configure as per the need of the application.

Common Industry Challenges with machine Failure

Unexpected Downtime

Costly repairs | Expedited parts/freight | Lost revenue | Production is disrupted

Limited Health Visibility of Machine

Expertise required | No availability of on-site 24/7 monitoring | Unable to determine health of machine in remote locations

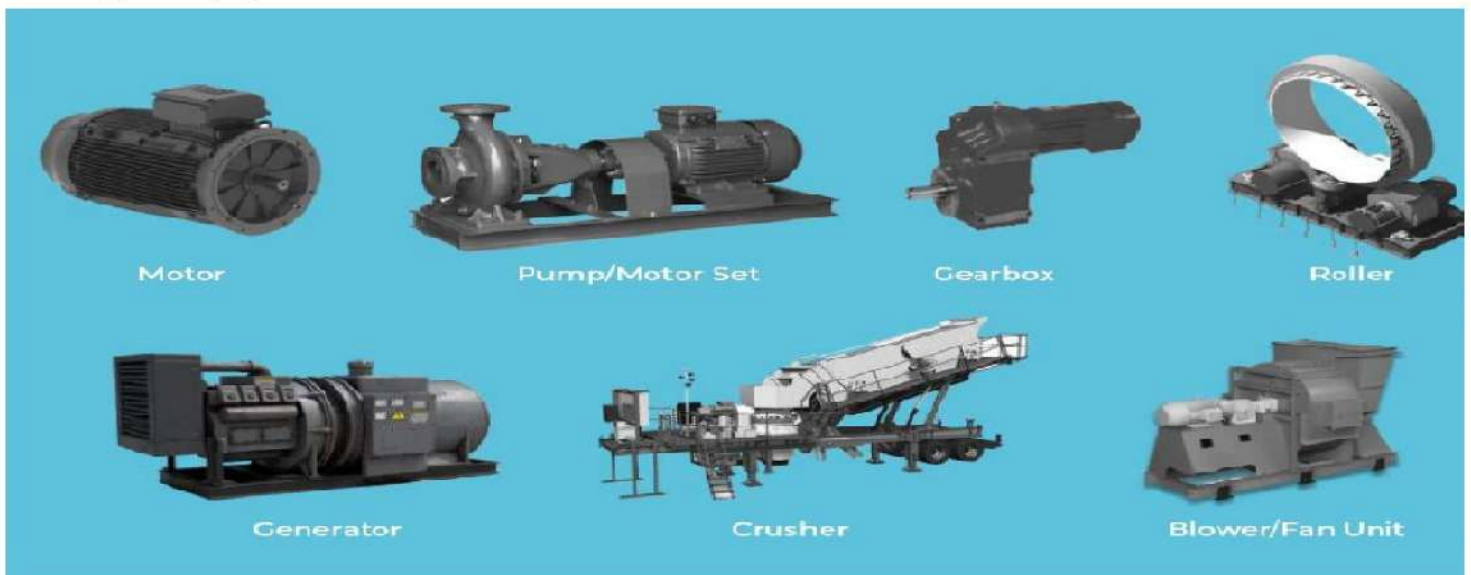


THE Solution



- The vEdge device monitors the Machine's health 24x7 and the machine health Status can be easily accessed remotely from the dashboard.
- Notifications are sent via email and SMS in case of any impending failures.
- Alert the operator before failure, giving the plant enough time to prepare and fix the problem.
- User-configurable diagnostic features for frequently occurring faults.

vEdge Application on



IDE Specification Sheet 2020

| Parameter | Specification |
|---|--|
| Vibration Sensing and Processing | |
| Vibration Sensor | MEMS based Triaxial Accelerometer |
| Frequency Range | 10Hz to 1300Hz (X,Y and Z axis) |
| Default Configuration | F _{max} : 1300 Hz and LOR: 200 to 3200 |
| Output Data Rate (Sampling Rate) | Up to 3.3 kHz |
| Sensitivity | 0.122 mg/LSB ($\pm 4G$) |
| Resolution | 16bit |
| Derived Values | <ul style="list-style-type: none">• 3-Axis acceleration RMS and Velocity RMS• 3-Axis acceleration and Velocity FFT• 3-Axis spectral features as per configuration |
| FFT Frequency Resolution (Delta-f) | Configurable between 0.2033 Hz and 6.5039Hz |
| Shock Tolerance Range | 10,000g for 0.2 ms |
| Temperature & Audio | |
| Temperature Sensor | Semiconductor based sensor |
| Contact Temperature Range | -20°C to 85°C |
| Audio | Acoustic Microphone |
| Audio Range | 50dB to 120dB |
| Wireless Interfaces | |
| WiFi Features | <ul style="list-style-type: none">• 35 m open-air range• MAC address displayed in Android App for MAC filtering in the Company network• Dynamic IP support |
| BLE Features | <ul style="list-style-type: none">• Low Power• 5m open-air range• Easy to connect the vEdge to Infinite Uptime Android App to:<ul style="list-style-type: none">- Configure the vEdge- Visualize real time data or use the vEdge as stethoscope |
| Data Transections | |
| Transfer to Server Interface | WiFi |
| Transfer interval | Real-time transfer every 0.5sec Real data transfer every 30 mins Raw data on-demand from server |
| Local Viewing | Mobile Android App |
| OTA | Over the Air-remote firmware upgrade |
| Configuration | Remotely on the dashboard Locally through the mobile android app |
| Electrical | |
| Power Supply | External Power Supply 24 VDC |
| Power Supply Protection | Polarity, Overload |
| Connector | 4-pin M8 connector (V+, O, A+B-) |
| Cable – External | 28 AWG 4-core shielded 5m cable with the open leads of 25 mm (cable extendable up to 300 m for 24V power and RS485 communication) |

IDE Specification Sheet 2020

| Parameter | Specification |
|--------------------------|---|
| Communication | |
| Protocol (Functionality) | Modbus RTU (Slave) |
| Physical Standard | RS 485, 4 Wire |
| Supported Baud | 1200 Kbps to 11.52 Kbps |
| Parity | Non/Odd/Even |
| Data bit | 7/8 |
| Stop bit | 1/2 |
| General | |
| Enclosure | Polycarbonate |
| LEDs | 4RGB LEDs, one on each edge of the enclosure |
| Axis Orientation | LED notch-lines † indicate "Y" axis |
| Size | Approx. 44(L) mm x 44(W) mm x 33 (H) mm |
| Weight | 85g |
| Mounting | Using Magnets (in-built) |
| Mounting Accessories | Vibration Pad (30 dia x 8, SS410) and Stud (1/4-28UNF) Using Vibration Pad and stud-(in-built brass insert)- this is the recommended mounting for optimum result |
| Operating temperature | -20°C to 85°C (by design) |
| Network Security | |
| Authentication Types | Open WiFi, PSK WiFi, Static IP, EAO-PEAP WiFi, EAP-TLS WiFi |
| Messaging Protocol | MQTTS, HTTPS |
| Encryption | TLS Encryption |
| White- Listing | Mac-Address Filtering |
| Device Authentication | Certificate based |
| WiFi | |
| Protocol | 802.11 b/g/n support |
| Frequency Range | 2.4 GHz to 2.5 GHz (2412 MHz to 2484 MHz) |
| Transmit Power | 802.11b: +19.5dBm, 802.11g: +16dBm, 802.11n: +14dBm |
| Receive Sensitivity | 802.11b: +91dBm (11Mbps), 802.11g: +74dBm(54Mbps) 802.11n: 71 dBm (MCS7) |
| Antenna | Integrated in Device |
| Security | WPA/ WPA2 |
| Encryption | WPA/TKIP/AES |
| Network Protocol | HTTP, MQTT, TCP/IPv4 |
| Bluetooth | |
| Version | Bluetooth 4.2 (Bluetooth Smart) Concurrent Central & Peripheral (S132) |
| Frequency Range | 2.360 GHz to 2.500 GHz |
| Transmit Power | Range:- 30dBm to 4dBm |
| Receiver Sensitivity | Nominal: + 4dBm |
| Antenna | Integrated |
| Encryption | AES-128 |