# INSPECTOR™

## PW PowerWadi

### First AI Power Quality Monitor for Superior Reliability!



**The Inspector Panel Watch** is a state-of-the-art monitoring solution that enhances operational efficiency across various sectors. Utilizing advanced AI, it collects critical data and offers predictive insights, empowering users to make informed decisions.

### Applications:

- Medical Equipment
- Industrial Facilities
- Data Centers
- Renewable Energy
- Telecom
- IT Infrastructure
- Building Management Systems
- Motor Conditioning
- EV Charging Stations

## PW PowerWadi

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Pending

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# Features

**1. AI-Powered:**
Utilizes advanced AI algorithms for continuous monitoring and predictive analysis of environmental and electrical parameters, ensuring proactive maintenance and reduced downtime.

**2. BMS Integration:**
Seamlessly connects with Building Management Systems via KNX and BACnet protocols, enhancing energy efficiency and occupant comfort.

**3. Industrial Communication:**
Supports CAN BUS and MOD BUS for robust connectivity with industrial equipment, improving monitoring capabilities in complex environments.

**4. Motor Conditioning Monitoring:**
Provides real-time insights into motor performance, helping to identify wear and tear and optimize maintenance schedules.

**5. Vibration Sensor Technology:**
Detects anomalies in machinery operations to prevent failures and ensure smooth operations.

**6. Thermal IR Camera:**
Links power quality events with thermal anomalies, offering advanced protection by identifying overheating components and potential electrical failures.

**7. Gateway Functionality:**
Capable of transferring data from several standards to the cloud, enabling remote monitoring and analysis.



# Technical Specifications (Preliminary Specs)

| Model: INS4-1-PWA | Part Number: BB0203D010 |
|---|---|
| **Main unit Specifications** | |
| Processor | OCTA Core processorup up to 2.4GHz (quad-core Cortex-A76 and quad-core Cortex-A55) |
| Flash Memory | 32 GB |
| RAM | 4 GB |
| Neural Processing Unit (NPU) | 6TOPs@int8, Supporting INT4/INT8/INT16/FP16 |
| **Internal Power Supply Specifications** | |
| Input Voltage source | AC: 90-264 V AC / 50 to 60 Hz |
| DC: +24 Vdc ±10% (polarity independent), 2.5A max. | |
| Rated Power | 50 Watt |
| **Main Unit Interfaces** | |
| SD Memory Card | 32 Giga (Externally access), Ability to add up to 256 GB |
| Ethernet | 2x RJ45 Connector - 10/100/1000Base-T |
| USB | 2xUSB |
| HDMI | 1xMicro HDMI socket (HDMI 2.0 (4K)) |
| **Industrial Interfaces** | |
| RS 485 | 1xRJ45 interface (Isolated) |
| CAN | 1xCAN FD (Isolated) |
| **BMS Interfaces** | |
| LONWORKS Module | 1xLonworks (Isolated) |
| M-BUS Module | 1xMBUS (Master/Slave) (Isolated) |
| DALI2 Module | 1x DALI2 (Isolated) |
| KNX Module | 1xKNX (Isolated) |
| Digital Input/Output | 4xDIO (Isolated) |
| **Analog Interfaces** | |
| Analog Input | 4 Channels Analog Inputs 24 bit (Isolated) |
| ATMP Input | 2 Channels |
| **Communication Protocols Supported** | |
| HTTP/HTTPS - DNP3 - BACnet - ModBus - IEC 61850 - MQTT - SNMP - Emails - IEC 62056 | |
| **Main Unit Power Quality Measurement** | |
| Power Quality Channel | Isolated Power Quality Channel (second channel is optional) |
| Number of input/channel | Voltage: 5 / Current: 5 per channel |
| Configuration/Connection | Single phase 2 wire - 1P2W |
| | 3-phase/3-wire (Delta connection)-3P3W |
| | 3-phase/4-wire (stare connection)-3P4W |

| Voltage Range | Resolution | Accuracy |
|---|---|---|
| 0 - 800 VRMS | 0.1 VRMS | ± 0.5% |

| Current Range | Resolution | Accuracy |
|---|---|---|
| 0 - 1000 A | 0.1 A | ± 2% |
| Sampling rate | 32 KSPS for each input | |
| ADC Resolution | 24-Bits | |

## Measurement parameters

### Voltage Parameters

RMS Voltage L-L, RMS Voltage L-N, Voltage Crest Factor, Active Power Demand Value, Reactive Power Demand Value, Apparent Power Demand Value, Voltage Total Harmonic Distortion, Voltage Harmonic Amplitude, Harmonics Voltage Phase Angle, Harmonics Voltage-Current Phase Difference, Voltage Waveform Peak (+, -), Voltage Unbalance Factor (Negative-Phase, Zero-Phase)

### Current Parameters

RMS Current, Current Crest Factor, Active Power Demand Quantity, Reactive Power Demand Quantity, Apparent Power Demand Quantity, Current Total Harmonic Distortion, Current Harmonic Amplitude, Harmonics Current Phase Angle, Current Waveform Peak (+, -), Current Unbalance Factor (Negative-Phase, Zero-Phase)

### Power Parameters

Active Power, Reactive Power, Apparent Power, True Power Factor, Displacement Power Factor, Demand Power Factor, Active Energy, Reactive Energy, Apparent Energy, Interharmonics Power

### Frequency Parameters

Frequency (10/12 cycle), Frequency (10 sec)

### Flicker Parameters

Instantaneous Flicker Value, Short Term Voltage Flicker, Long Term Voltage Flicker

### Harmonics & Interharmonics

Harmonics Power, Interharmonics Voltage, Interharmonics Current

### Other Parameters

K-Factor, Phase Sequence Detection

### Power Events Detection According to IEC classifications Of Power Quality (IEC61000-4-30)

| | |
|---|---|
| Types of events Detected | Voltage Dips, Voltages Swells, Interruption, Voltage Transients, Total harmonics distortion, RVC, Frequency variation, Inrush Current |
| Other Types of Events | Phase Sequence Detection |
| Event Details Saving | Start and End of event is captured and reported accurately with 5 cycles before and after |

## Environment sensors

| | |
|---|---|
| ATMP Inputs | 2xChannels |
| Temperature Range | 0 - 85 °C |
| Temperature Resolution | 0.1 °C |
| Temperature Accuracy | ± 0.5 °C |
| (4-20 mA) Inputs | 2xChannels |
| Type of Sensor | Any type of analog sensor:(pressure, flow, temperature.......) |

## Working Environmental Specifications

| | |
|---|---|
| Operating Temperature | 0 - 60 °C |
| Storage Temperature | 0 - 60°C |
| Relative Humidity | 0-95% RH |

## RE Module (Optional)

### Grounding Measurement

| | |
|---|---|
| Measurement Methods | Triping / Non Triping |
| Earth Current Range | 0 - 10 Amp |
| Earth Current Resolution | 1 mA |
| Earth Current Accuracy | ± 2% |
| Earth Resistance Range | 0 - 200 Ω Max |
| Earth Resistance Resolution | 0.1 Ω |
| Earth Resistance Accuracy | ±3 % |

## UPS Module (Optional)

| | |
|---|---|
| Type | Lithium-ion 4S2P |
| Back up time | 6 hours |
| The battery voltage | 14.5 VDC |
| Nominal capacity | 6700mAh |
| Protection type | Over voltage, Under voltage, Over Temperature, Under Temperature, Over Current, |
| Cell balancing | 0.1 Ω |
| Battery certificates | UN38.3, IEC62133, UL [CU 72405569] |

| Optional Attached Unit | Part number |
|---|---|
| AirWatch | BB0205A010 |
| Thermal Camera | |
| Vibration Sensor | |

## Inspector Cloud Service

**Upgrade Your Monitoring Experience**
The Inspector Cloud Service is a powerful web-based platform designed to collect, analyze, store, and export data from every inspector hardware connected to the cloud.

### Key Features

1. **24/7 Online Monitoring:** Stay informed with real-time notifications and advanced reporting from anywhere, at any time.

2. **Immediate Notifications:** Receive instant alerts via SMS and email to a predefined distribution list whenever changes occur at any monitoring location.

3. **Data Preservation:** In the event of an internet outage, the inspector hardware continues monitoring and saves data offline for up to 96 hours. Once the connection is restored, the data is automatically uploaded to the cloud for review and analysis.
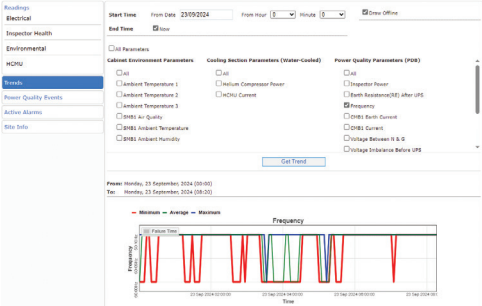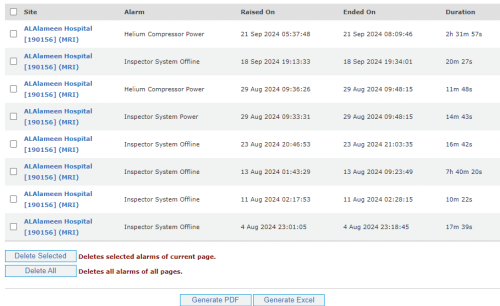
### Service Highlights:

1. **Comprehensive Data Analysis:** Generate eleven different types of power quality statistics over specified periods.

2. **Event Review:** Monitor power quality events and review notifications through an organized alarm log page.

3. **Predictive Analytics:** Utilize trend reports to forecast the health of monitored machinery.

4. **AI-Powered Decision Support:** Our system harnesses artificial intelligence, enabling engineers to make informed decisions effortlessly. With chat-bot functionality, users can engage in real-time dialogue for immediate insights and support, enhancing operational efficiency.
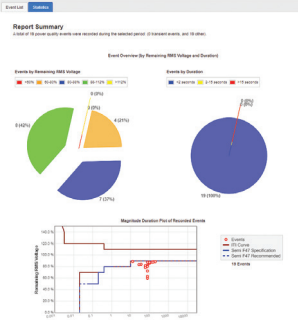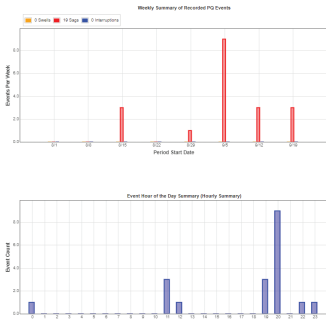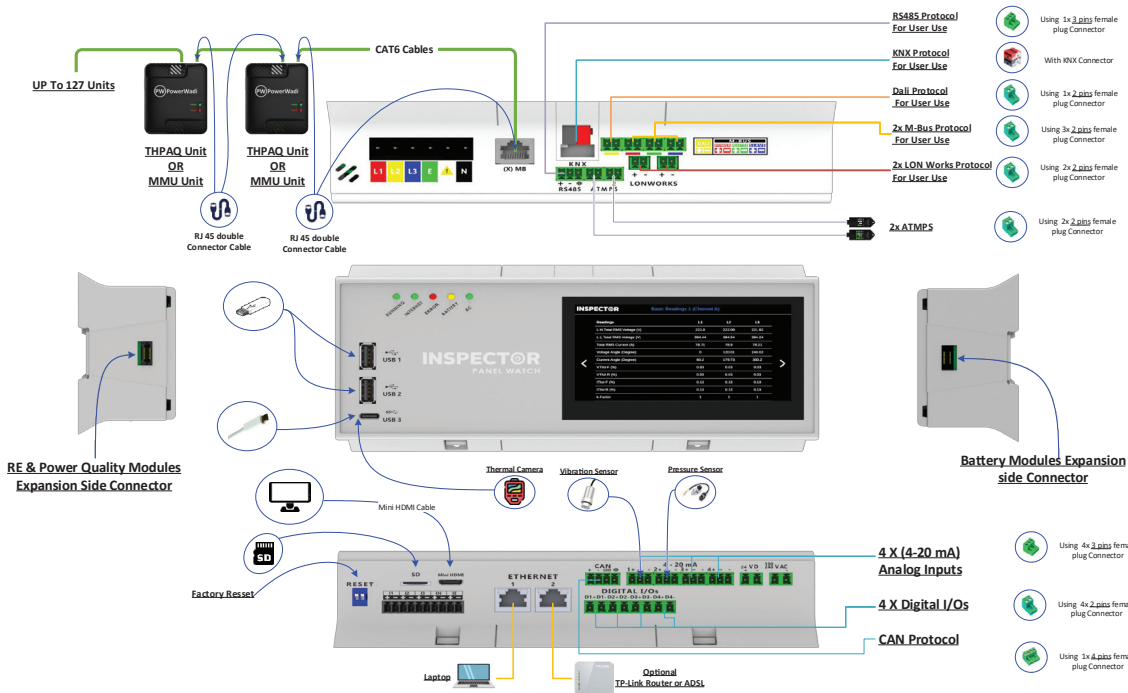
# INSPECTOR™

## Online Measurement



## Generated Report Examples
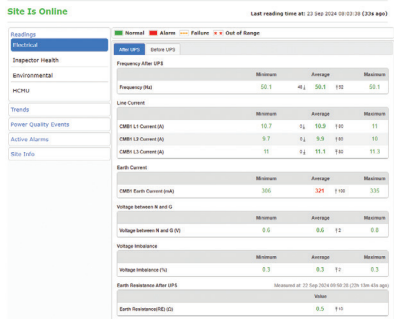


## Alarms System



## Trend Reading



## Generated Statistics Examples



## Inspector Panel Watch – Advanced Model System Layout



- UP To 127 Units
- CAT6 Cables
- THPAQ Unit OR MMU Unit
- RJ 45 double Connector Cable
- RE & Power Quality Modules Expansion Side Connector
- Factory Reset
- Mini HDMI Cable
- Thermal Camera
- Vibration Sensor
- Pressure Sensor
- Battery Modules Expansion side Connector
- Laptop
- Optional TP-Link Router or ADSL

- RS485 Protocol For User Use — Using 1x 3 pins female plug Connector
- KNX Protocol For User Use — With KNX Connector
- Dali Protocol For User Use — Using 1x 2 pins female plug Connector
- 2x M-Bus Protocol For User Use — Using 3x 2 pins female plug Connector
- 2x LON Works Protocol For User Use — Using 2x 2 pins female plug Connector
- 2x ATMPS — Using 2x 2 pins female plug Connector
- 4 X (4-20 mA) Analog Inputs — Using 4x 3 pins female plug Connector
- 4 X Digital I/Os — Using 4x 2 pins female plug Connector
- CAN Protocol — Using 1x 4 pins female plug Connector

## Inspector Panel Watch – Advanced Model Motor Conditioning Layout



- Phase Line 1
- Phase Line 2
- Phase Line 3
- Earth
- Neutral Line

**Clamps**
4x 100A Ø36mm
or
4x 600A Ø36mm
+
1x 10A Ø24mm (Earth)

- 1x 6 pins Female Plug
- Thermal Camera
- Temperature Sensor
- Vibration Sensor
- 5x 2 pins Female Plug
- Using 3 pins female plug Connector
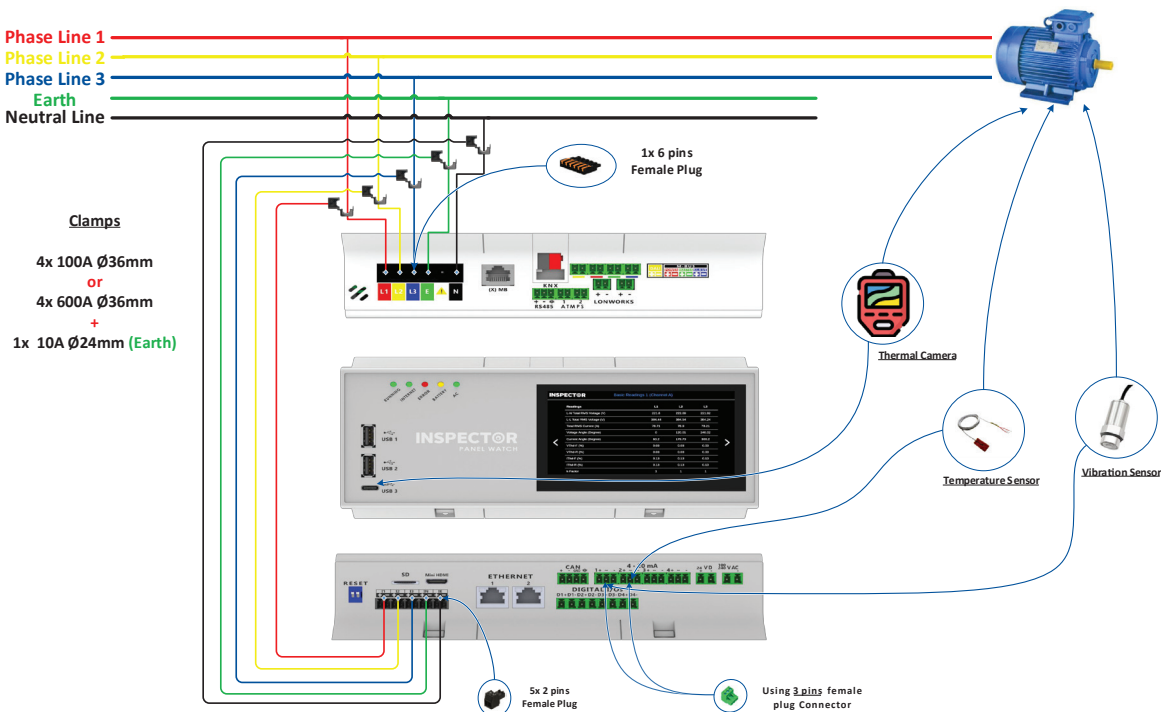
## Inspector Panel Watch – Advanced Model Distribution Panel Connection



- Phase Line 1
- Phase Line 2
- Phase Line 3
- Earth
- Neutral Line

**Clamps**
4x 100A Ø36mm
or
4x 600A Ø36mm
+
1x 10A Ø24mm (Earth)

- 1x 6 pins Female Plug
- 5x 2 pins Female Plug
- 2 pins Female Plug
- Optional 24 V DC