# PdMA ᴇʏᴇ
## Online Electric Motor Monitoring

PdMA® Corporation is the leader in electric motor testing. We are committed to bringing you the most comprehensive test equipment available on the market today. We know how difficult it is keeping an eye on all your critical motors and that is why PdMA is proud to release the PdMAᴇʏᴇ continuous monitoring for your electric motors. The PdMAᴇʏᴇ is your answer to keeping an ᴇʏᴇ on your motors 24/7.



*24-hour machinery condition feedback integrates directly into your electric motor reliability program*
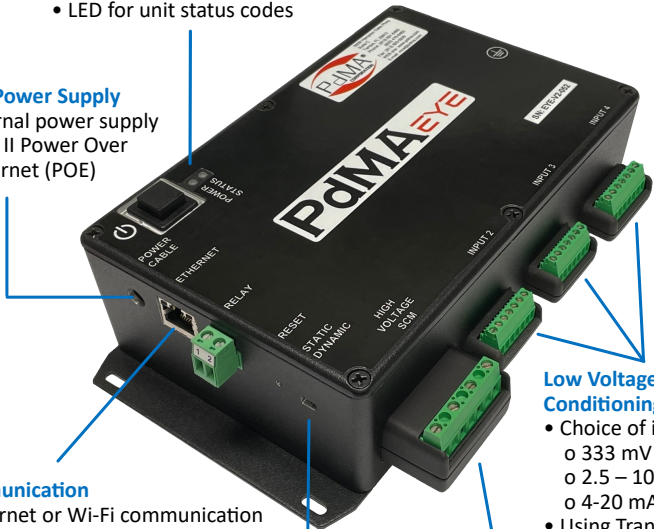
# Description

The PdMAEYE test equipment offers the most versatile approach to troubleshooting and trending energized electric motors on the market today.

With the PdMAEYE watching your motors 24 hours every day you will be able to focus your limited resources and attention on other priorities.

Powered by PdMA's MCEGold® software, you will be warned of changes in the condition of your critical assets. Immediately following an event you will be notified, prompting you to sign on to the MCEGold analysis software to confirm the condition. Red or yellow color-coded alarms identify any test data that is outside the acceptance criteria.

Utilizing PdMA Cloud Services, key performance data can be automatically integrated into the analytics software of your choice, or your analysts can rely on the Fault Zone Analysis software and mobile app alert system to communicate the asset condition directly to your mobile device. With MCEGold the entire test history of your electric motor along with the latest in acceptance criteria from IEEE and NEMA is at your fingertips.

Additionally, with PdMA Cloud Services your MCEGold software is evergreen and always updated to the latest version through push technology.

**On/Off & Status**
• Secure power for long term outages or hardware upgrades
• LED for unit status codes

**Dual Power Supply**
· External power supply
· Type II Power Over Ethernet (POE)

**Communication**
• Ethernet or Wi-Fi communication to controller
• Ethernet or Cellular to network

**Network Connectivity**
· Dynamic or Static IP Addressing
· Factory Default reset

**Low Voltage Signal Conditioning Modules**
• Choice of inputs:
  o 333 mV
  o 2.5 – 10.0 Volts
  o 4-20 mA
• Using Transducers, LV SCMs support higher input voltages such as 690-1000 Volts

**High Voltage Signal Conditioning Modules**
· Choice of 120-600V Inputs to support a broad range of electric motors

- **IEC 61010 Safety Tested**
- **External Control Relay**
- **Installed internally or externally of switchgear/MCC**
- **No field calibration required**
- **Wide bandwidth and full DC compatibility (0-110kHz frequency response)**
- **Auto restart from loss of power (Bootstrap)**

*Protect your critical electric motors with early, predictive, automatic health assessment from the PdMAEYE.*

## Safety First

The PdMAEYE is fully compliant and TUV tested to safety standard IEC 61010.

## Expandable

The PdMAEYE is part of PdMA's arsenal of test equipment including the MCE®, EMAX, and MCEMAX® technologies for complete analysis of your electric motor. Each PdMA technology integrates seamlessly with MCEGold, our best of breed electric motor analysis software to provide easy analysis, storage, and interoperability with your preferred asset management platform and dashboard.

## Interoperable-Interface

Utilizing the industry leading CCOM Restful API the data from your PdMAEYE is easily communicated via cloud services to your analytics team, field operations, dashboard programs, and third-party groups like remote contract analysts, CMMS and EAM software, and even semi-retired work from home employees. The PdMAEYE sensor via PdMA Cloud Services provides CCOM RESTful messages continuously to a variety of programs to ensure maximum reliability and uptime from your critical assets.

## Reliable and Informative

The PdMAEYE event logic helps prevent false alarms through built in fault zone analysis, which utilizes the decades of knowledge and experience of our PdMA analysts.

The asset health information delivered to your technicians and analysts will greatly improve their immediate knowledge of the assets operational and health performance, improving their decision making and value to the reliability team. Some of this information includes data from:

- **Power Quality**: Increases in temperature resulting from excessive harmonic content will shorten the life expectancy of your motor.

- **Power Circuit**: Voltage imbalance caused by high resistance connections is a commonly occurring anomaly that will increase circulating currents, increase temperature, and shorten a motor's life.

- **Stator Windings**: Coils with unbalanced or shorted turns, and manufacturing flaws in the stator windings will create a magnetic imbalance resulting in localized heating, excessive vibration and shortened motor life.

- **Rotor**: Broken or cracked rotor bars will reduce the performance of your motor and could lead to catastrophic failure of your rotor and stator.

- **Eccentricity**: Non-symmetric air gap between the rotor and stator creates magnetic imbalance and potential rotor/stator rub. The result is mechanical damage and overheating.

- **In-Rush/Start-Up**: Motor starts are stressful and informative. High In-Rush and delayed starts indicate a variety of anomalies including operator mis-operation.
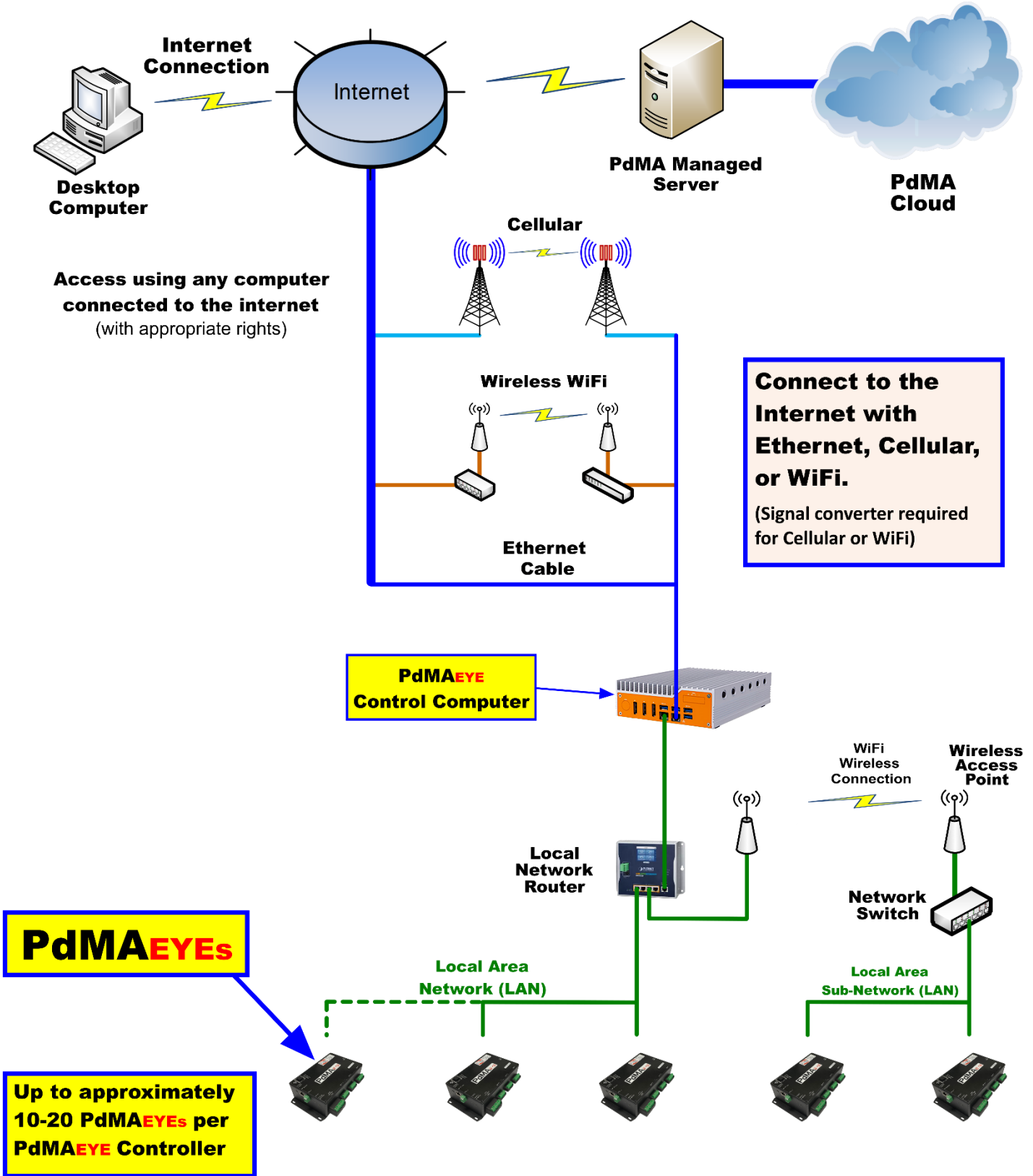
## Mobile Application

In addition to the event logic sending a message immediately to the PdMA Mobile Application following an alarm, a site overview of Asset Health can be reviewed on the mobile application's home screen.

Whether on site, at home, or in a meeting, your analysts will know immediately what fault zone is responsible for the alarm and if any action is required. All with the peace of mind knowing that there is an extra EYE on the motor 24/7.
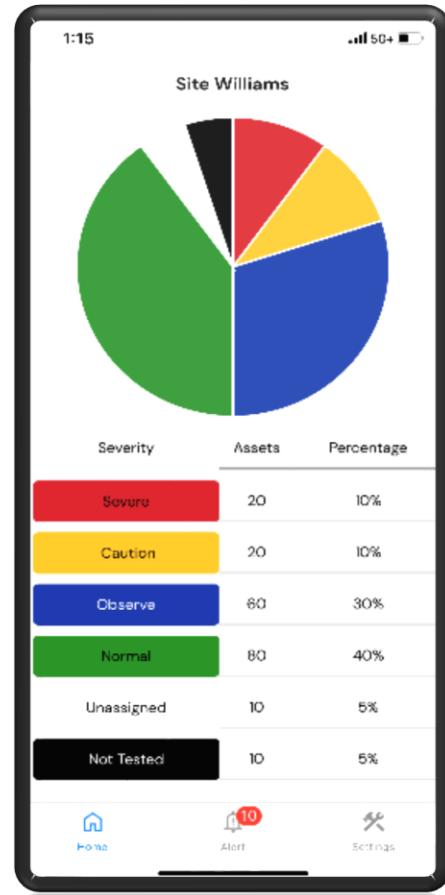




# Features

- Surveillance monitoring of Power Quality, Power Circuit, Stator, Rotor, and Air Gap

- Low, medium, and high voltage AC and DC Motors

- 12-channel simultaneous acquisition

- Automated In-Rush/Start-Up testing

- Torque and efficiency analysis

- Impedance and phase angle measurement

- Power and current signature tests

- Event triggered auto mobile alert

- Mobile site condition dashboard

- Historian database of all KPI's for trend plotting

**Internet Connection**

Internet

**Desktop Computer**

**PdMA Managed Server**

**PdMA Cloud**

**Access using any computer connected to the internet**
(with appropriate rights)

**Cellular**

**Wireless WiFi**

**Connect to the Internet with Ethernet, Cellular, or WiFi.**

(Signal converter required for Cellular or WiFi)

**Ethernet Cable**

**PdMA**EYE **Control Computer**

**WiFi Wireless Connection**

**Wireless Access Point**

**Local Network Router**

**Network Switch**

**PdMA**EYEs

**Local Area Network (LAN)**

**Local Area Sub-Network (LAN)**

**Up to approximately 10-20 PdMA**EYEs **per PdMA**EYE **Controller**

PdMA
CORPORATION

www.PdMA.com

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## Flexibility

Managed switches allow multiple PdMAEYE units to be connected to a single controller computer where data is processed before sending it to the network. The flexibility of PdMAEYE's 12-channel acquisition is perfectly designed to support the broad types of rotating machinery found in industry today. Across the line AC induction motors may only need six channels, and a critical medium voltage drive motor combination may use all twelve channels to fully assess the motor and drive system. Some of the configurations include:

- **Low Voltage AC**: The workhorse of the industry will only need PdMA provided current transformers (CT's) to connect current signals to the input. >600v will use transducer output for voltage analysis.

- **Medium Voltage AC**: In addition to CT's, Medium/High Voltage motors will require a potential transformer (PT) output for voltage analysis.

- **Synchronous Motor:** The synch stator requires the same input as a medium voltage AC, but the field may utilize a combination of CT's and transducers utilizing up to twelve channels.

- **DC Motors:** DC motors and drives will use a combination of transducers on the motor output and CT's on the line and load side of the DC drive.

- **Auxiliaries:** A variety of inputs such as position indicators, temperature detectors (RTD's), or even on/off switches can become an input for trending through available channels on the PdMAEYE.

**Data Includes:**
- Current Spectral Analysis
- High Frequency Eccentricity Analysis
- Three Phase In-Rush/Start-Up
- Phase-to-Phase Voltage RMS
- Line-to-Neutral Voltage RMS
- Voltage Imbalance
- Crest Factor
- Total Harmonic Distortion (THD)
- % Full Load Amps
- Average Current RMS

- Phase Current RMS
- Phase Impedance
- Impedance Imbalance
- Power (KW, KVA, KVAR)
- Power Factor
- Efficiency
- Energy Cost Analysis
- Output Power
- AC/DC Motor Testing
- Torque

**Voltage Measurement:**
AC Voltage 0-600 Vrms
DC Voltage 0-600 Vpeak
Voltage Measurement tolerance +/- 1% of reading from 10% to 100% of range.

**Current Measurement AC/DC:**
Transformers/Transducers
tolerance +/- 0.5% of reading from 10% to 100% of range.

**Power Measurement:**
THD/HVF/Spectrum – 50th harmonic

**Sampling Rate:**
256,000 samples/second

**Dimension:**
5 x 8 x 2 in.

**Frequency Response:**
0Hz (DC) – 110kHz (AC)

**Low Voltage Input:**
333mV, 2.5-10v, 4-20mA

**Communication:**
Both Dynamic and Static IP addresses
Ethernet – Compatible with 1000BaseT (IEEE 802.3-2008)
Protocol: TCP/IP with custom HTTP/Post.
Cellular/WiFi adaptor compatible-See Image

**EAC Computer (variable):**
AC 100-240 V, 50/60 Hz
Fanless 10th Gen Intel Core i3 3.0 GHz
Memory: 4GB
Hard Disk: 256 GB SSD
Network: Dual Gb LAN ports CPU

**Environmental**
PdMA EYE Temperature – designed to operate at rated capacity from -20°C to 40°C Average / 60°C Max

**Standards and Certification**
IEC 61010 Safety