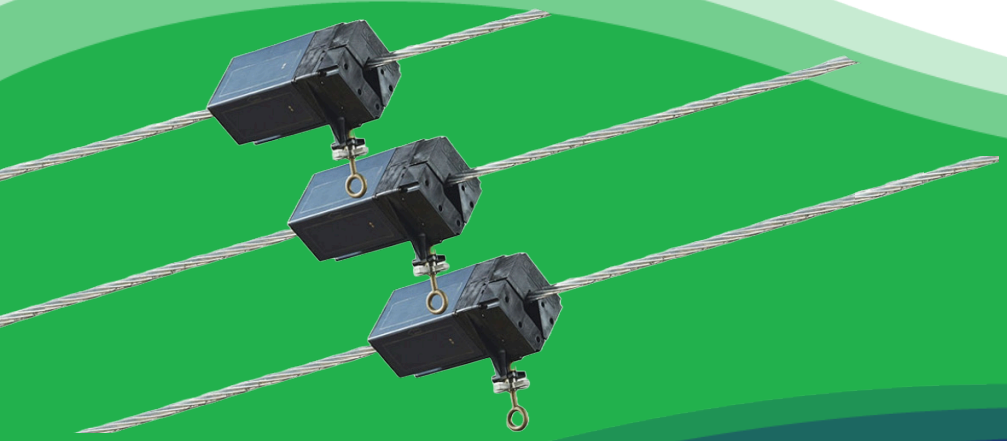
LineWatch™
Powering Grid Awareness



# LineWatch M

## Distribution Grid Sensing and Monitoring for Medium Voltage Applications

### Power performance monitoring of the medium voltage distribution grid without a neutral connection

LineWatch M delivers near revenue grade (0.5%) current and voltage accuracy to address a variety of utility applications. The "bird-on-wire" design supports fast and safe hot stick installation greatly reducing deployment expense and total cost of ownership. LineWatch incorporates a flexible design that supports any utility communications platform.

## Market applications:

**Grid Automation**
Enable remote monitoring and operation of grid infrastructure for more efficient and lower operational cost management.

**Volt/VAR Optimization**
Sensors can be used as part of a centralized VVO system or locally—an easily installable alternative to instrumentation transformers or line post sensors.

**Substation Monitoring**
Enablesremote monitoring and supervision of critical assets located at substations without need for costly renovations or service interruptions.

**Fault Detection and Outage Management**
Easily indentify the location of a fault to quicker power restoration.

**Asset Management**
Asset monitoring for improved management and allocation of capital.

**Theft Detection/Anomalous Usage**
Identify,reduce and eliminate power theft by deploying sensor technology as an energy balancing tool identifying losses, interruptions and anomalous usage.

**Voltage , Current and Power Measurement**
Improve the eficiency of the distribution grid by monitoring voltage, real and reactive power

**Green Energy/Renewables Integration**
Distributed generation interconnection permitting and ongoing monitoring.

## FEATURES/BENEFITS

- Delivers near revenue-grade (0.5%) current and voltage accuracies
- No neutral connection
- Safe and easy installation with a hot stick
- Accommodates any utility communications platform
- Power quality measurements for voltage and current up to the 13th harmonic
- Records up to 40 fault current waveforms in the 10kA and 25kA range
- Continuous monitoring; data recorded in one minute intervals
- User configurable alarms/events
- Reporting available in three modes:
  – At scheduled intervals
  – By exception
  – On demand polling

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# Technical Specifications

## Sensing System Capabilities

| | | | |
|---|---|---|---|
| **Available Configuration** | Up to 6 Sensors per Data Collector | **Reporting Interval** | 60 seconds |
| **Electrical Frequency** | 50 and 60 Hz | **Rated Current** | 400 Arms |
| **Rated Voltage** | 2.4 to 19.9kVRMS ϕ to Neutral | **Maximum Current** | 600 Arms |
| **Voltage Accuracy** | ± 0.5% | **Current Accuracy** | ± 0.5% |
| **Power & Energy Accuracy** | ± 1% | **Power Quality** | Computes amplitude of voltage/current up to the 13th harmonic; total harmonic distortion |
| **Power Factor Accuracy** | ± 24 arc minutes | **Data Storage** | 30 days of data; downloadableCSV or .XLSX file |
| **Fault Detection** | Waveform capture of fault currentas per IEEE 495 (10 kA and 25 kA scales, 4 cycles before fault, 8 after event starts) | | |

## LineWatch M tested to ANSI C12.20 Standard

## Physical and Environmental

| | | | |
|---|---|---|---|
| **Weight** | Sensor – 4.4 lbs.<br>Data Collector – 3.45 lbs. | **Dimensions** | Sensor – 9.1”Wx 5.1”H x 10.2”D<br>Data Collector – 10.5”W x 18.1”H x 5.9”D |
| **Operating Temperature** | -40°C to 50°C | **Storage Temperature** | -40°C to 85°C |
| **Humidity** | 0 – 95% RH | **NEMA Rating** | Sensor – IP65<br>Data Collector – NEMA 4X (6 available) |
| **Environmental Condition** | Patent-pending weather resistant sensing method, impervious to rain/snow/etc. | **Conductor Size** | Maximum conductor size: 447 kcmil<br>Minimum conductor size: #2 AWG |

## Communications and Security

| | | | |
|---|---|---|---|
| **Communication Option** | Wired Ethernet Port | **System Logs** | Maximum conductor size: 447 kcmil<br>Minimum conductor size: #2 AWG |
| | WiFi 802.11 b/g/n | **DNP3 Communication** | DNP3 Level 4+ Subset Definitions |
| | Cellular Modem Communications Supports 4G LTE Networks and CDMA/GSM | **Communications Protocols** | On demand reporting to a central monitoring or SCADA system compatible via DNP3 |
| | WiMAX | | |
| | Serial Port for NIC integration | | Support also includes TCP / IPv4, TCP / IPv6, UDP / IPv4, UDP / IPv6 |

**LineWatch Medium Voltage Collector mounted on utility pole**

**LineWatch Medium Voltage Sensors deployed on utility lines**


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