



## 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 include:

##### 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

Enables remote monitoring and supervision of critical assets located at substations without need for costly renovations or service interruptions.

##### Fault Detection and Outage Management

Easily identify the location of a fault for 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 Measurements

Improve efficiency of the distribution grid by monitoring voltage, current, 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 10 kA and 25 kA 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

## Technical Specifications

### Sensing System Capabilities

<b>Available Configuration</b>	Up to 6 Sensors per Data Collector	<b>Reporting Interval</b>	60 seconds
<b>Electrical Frequency</b>	50 and 60 Hz	<b>Rated Current</b>	400 Arms
<b>Rated Voltage</b>	2.4 to 19.9 kV <sub>RMS</sub> $\phi$ to Neutral	<b>Maximum Current</b>	600 Arms
<b>Voltage Accuracy</b>	$\pm$ 0.5%	<b>Current Accuracy</b>	$\pm$ 0.5%
<b>Power &amp; Energy Accuracy</b>	$\pm$ 1%	<b>Power Quality</b>	Computes amplitude of voltage/current up to the 13th harmonic; total harmonic distortion
<b>Power Factor Accuracy</b>	$\pm$ 24 arc minutes	<b>Data Storage</b>	30 days of data; downloadable CSV or .XLSX file
<b>Fault Detection</b>	Waveform capture of fault current as per IEEE 495 (10 kA and 25 kA scales, 4 cycles before fault, 8 after event starts)		

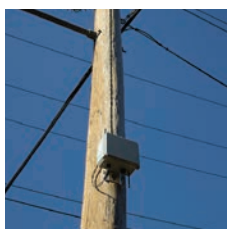
**LineWatch M tested to ANSI C12.20 Standard**

### Physical and Environmental

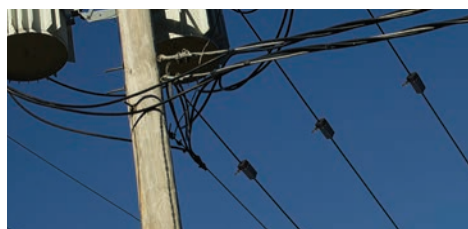
<b>Weight</b>	Sensor – 4.4 lbs. Data Collector – 3.45 lbs.	<b>Dimensions</b>	Sensor – 9.1”W x 5.1”H x 10.2”D Data Collector – 10.5”W x 18.1”H x 5.9”D
<b>Operating Temperature</b>	-40°C to 50°C	<b>Storage Temperature</b>	-40°C to 85°C
<b>Humidity</b>	0 – 95% RH	<b>NEMA Rating</b>	Sensor – IP65 Data Collector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

### Communications and Security

<b>Communication Option</b>	Wired Ethernet Port	<b>System Logs</b>	30 days of storage of 1 minute intervals of measurement, system and status data	
	WiFi 802.11 b/g/n	<b>DNP3 Communication</b>	DNP3 Level 4+ Subset Definitions	
	Cellular Modem Communications Supports 4G LTE Networks and CDMA/GSM	<b>Communications Protocols</b>	On demand reporting to a central monitoring or SCADA system compatible via DNP3	
	WiMAX		Support also includes TCP / IPv4, TCP / IPv6, UDP / IPv4, UDP / IPv6	
	Serial Port for NIC integration			
	Cisco “Connected Grid” IEEE 802.15.4g Mesh Network with IPv6			



LineWatch Medium Voltage Collector mounted on utility pole



LineWatch Medium Voltage Sensors deployed on utility lines

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