Your distribution network is the backbone of electricity delivery. Without visibility, how will you handle 21st century distribution challenges? The answer is simple: Tollgrade LightHouse MV Power Sensors.

**Accurate Voltage and Current Measurements; Seamless Integration into Your DMS**

High accuracy voltage and current measurements provide valuable real-time inputs to key planning models and control applications. Interval data logging, remotely configurable alarm thresholds, and waveform capture provide comprehensive visibility of grid conditions and events. Data and alarms can be accessed via reporting and graphing tools in the LightHouse Sensor Management System (SMS) software, or can be integrated via DNP3 to other back-end systems such as SCADA, Data Historians, Energy Management Systems (EMS), and Distribution Management Systems (DMS). MV Power Sensors provide key inputs to a wide range of applications including:

- CVR and Volt/VAR Optimization
- Enhanced Substation Monitoring
- Distributed Generation (DG) and DER Integration
- Enhanced DMS Powerflow Modeling
- Power Quality Monitoring
- Reliability, Fault Notification and Location

**Half the Cost of a Line Post Sensor Solution**

Our MV Power Sensors are designed to be an affordable turnkey solution. A single crew can install a set of sensors within minutes. Sensors are safely installed with a hot stick or insulated gloves, with no field calibration required – ever! Clamp-on line sensors with integrated wireless communications avoid the installation time, pole clutter and recurring field calibration associated with line post sensors, optical sensors and pole-mounted meter cabinets. Sensors are inductively powered to eliminate the costs of expensive battery maintenance. Finally, all sensors are remotely configurable and integrated with our LightHouse SMS software with Predictive Grid® Analytics. When you combine all of these benefits, Tollgrade offers the lowest total cost of ownership.

**Safe and Reliable Voltage and Power Measurements**

The LightHouse MV Power Sensors are easily installed on MV conductors and directly connected to system neutral, pole ground, or non-loadbreak cutouts via light gauge copper wire. Sensors are tested to meet comparable surge and insulation standards as line post sensors and surge arrestors.

**Flexible, Ubiquitous Communications Options**

LightHouse supports a wide range of communications options. Our cellular MV Power Sensors include 3G communications for high speed real-time reporting of events and data. Our Wi-Fi MV Power Sensors support easy integration with public and private IP-based networks via LightHouse Aggregators or third party communications nodes.
Technical Specifications

**LINE VOLTAGE RATING**
- Models up to 27.6kV and 35kV \(^{(1)}\) L- L
- BIL: 170kV
- Wet Sustain: 70kV

**GROUND REFERENCE**
- Integrated HV resistor connected via direct copper wire to neutral, pole ground, or non-loadbreak cutouts per utility standards
- Optional integrated ground lead disconnector

**CONDUCTOR SIZE**
- #6 AWG to 795 AAC (approx. 0.162 – 1.026” diameter, or 3.3 – 402 mm\(^2\) cross-sectional area)

**MOUNTING METHOD**
- Line mounted, clamshell design, optional pole mount
- Hotstick or insulated glove installation
- Grounded via hotstick

**DIMENSIONS**
- Case: 4.5 x 4.25 x 11 in. (114 x 108 x 279 mm)
- Antenna Height: 5” (Wi-Fi), 8” (cellular)
- HV Resistor Height: 12”

**WEIGHT**
- 9.25 lbs (4.2kg)

**OPERATING TEMPERATURE**
- \(-40^\circ\text{C} \text{ to } +60^\circ\text{C} \text{ (-40°F to } +140^\circ\text{F})\)
- Complies with IEEE 495 Temperature Cycling Test

**STORAGE TEMPERATURE**
- \(-40^\circ\text{C} \text{ to } +85^\circ\text{C} \text{ (-40°F to } +185^\circ\text{F})\)

**INGRESS PROTECTION**
- IP66

**MATERIALS**
- Case: UV stabilized polycarbonate
- HV Resistor: LSR (liquid silicone rubber) over mold, UV stabilized, non-tracking

**DEVICE POWERING**
- Inductively line powered
- Maintenance free super capacitors (no battery)

**CONFIGURATION MANAGEMENT**
- LightHouse SMS software for configuration, monitoring, and remote firmware upgrade

**COMMUNICATIONS OPTIONS**
- Integrated 3G CDMA cellular, certified for use with Verizon Wireless
- Integrated 3G quad-band GSM/GPRS/EDGE/HSDPA
  - UMTS: 900/2100 MHz
  - UMTS: 850/1900 MHz
  - Certifications: FCC, GCF, PTCRB
- Integrated 802.11b/g Wi-Fi, 2.4 GHz, WPA2-PSK

**GPS**
- Location, time-stamp reference, phase ID

**VISUAL INDICATION**
- Single red LED indicating communication and diagnostic status

**CURRENT RANGES**
- Operating current: 3 to 600A
- Fault current: up to 17kA

**OSCILLOGRAPHY & WAVEFORM CAPTURE**
- Fault current and voltage, up to 14 sec.
- COMTRADE export via LightHouse SMS

**MEASUREMENT & DATA LOGGING**
- Load current
  - \(< 100\text{A}: +/- 1\text{A}\)
  - 100-600\text{A}: +/- 1\%
- Fault current (peak or RMS)
- Voltage (+/- 0.5% accuracy), L- G
- Power (W, VA, VAR)
- Power Factor
- Phase Angle
- Sags, Surges
- Voltage Harmonics (THD and harmonics up to 7th order)
- Configurable logging intervals, down to 5 min

**ALARMS**
- Voltage Threshold
- Permanent Fault
- Momentary Fault
- Line Disturbance
- Outage / Power Off / Power On
- Power Disturbance
- High Current Threshold
- Loss of Voltage
- Sags/Surges
- Voltage Harmonics Threshold
- Substation Transformer Overload (summer, winter)

**ON-DEMAND READ**
- Supported

Availability and Ordering Information
For more information call toll free at Tel +1-800-878-3399 getLightHouse@tollgrade.com

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\(^{(1)}\) Future