

# Line IQ

## Data Sheet

LineIQ provides basic line fault indication, as well as intelligent remote monitoring. Basic fault indicators point only to the initial (primary) faults; however, intelligent monitoring helps utilities more quickly isolate faults and restore power through recording real-time data on true voltage\*, fault waveform, load profile, line status and condition, ambient and conductor temperature, and through providing time-stamped event recordings.

### LineIQ Comprises:

Overhead conductor mounted Sensors plus a Communications Gateway accommodating:

- Low powered, license free RF between LineIQ sensors and the Communications Gateway
- Real time transmission of event data to a control room or to trouble men from the Gateway, commonly via cellular network (GSM, CDMA) or via satellite or radio using DNP3, Internet access, etc.



### LineIQ Provides Data For:

#### System Operators:

RMS Load Current: Accuracy 2% of reading, +/- 1A, up to 85 days

Voltage Status: On or off, levels up to 138kV, 45 to 65Hz

Event Capture: Voltage and Current for 60 sec, sample rate, Current 1200Hz, Voltage 600Hz, up to 100+ events

Fault current: RMS up to 25kA, wave form for 240mS encapsulating the fault, up to 32+ waveforms

Time Voltage Off: Time of voltage return and outage duration

Fault Location: a) Simple on/off indicating lights and fault magnitude for single faults  
b) Changes in fault current magnitude and timing of change for secondary faults,

Power Factor: On each phase

Load Balance: Over 3 phases

Conductor Temperature: Up to +257 °F (+125°C), accuracy +/- 1°F, for dangerous sag or overload

#### Maintenance Personnel:

Temporary Faults: Spasmodic current increases insufficient to trigger protection but indicative of imminent permanent faults (e.g., from tree interference or cracked insulators, etc.)

Recloser Operation: Spasmodic without lockout, indicating a more imminent, permanent fault situation

#### Protection Engineers:

Protection Timing: Timing in relation to levels of fault current and wave shape

Design Engineers: Measurements to compare performance against design criteria (e.g., line loading, power factor, load balance, etc.)

**Regulator Reporters:**

Power Time Off: To compile and report statistical performance data such as SAIDI, CAIDI and SAIFI indices against regulatory standards

**LineIQ Technical Specifications:**

|                                    |   |                                |   |
|------------------------------------|---|--------------------------------|---|
| <b>Line Voltage</b>                | <138kV Phase-to-Phase                               | <b>Measured Parameters</b>     | Current and Power (On/Off)                              |
| <b>Frequency</b>                   | 45-65Hz   | Fault/Event Capture            | 60-Sec RMS profile (I & E-Field)                        |
| <b>Conductor Range</b>             | Up to 1.3" (32mm)                                   |                                | Pre-event line loading                                  |
| <b>Visual Indication</b>           | High-intensity red and amber LEDs                   |                                | Fault current magnitude up to 25KA                      |
| Fault indication                   | Red LED every 10 seconds                            |                                | Fault current waveform (240mS)                          |
| Line status                        | Amber LED every 30 seconds                          |                                | E-field waveform % change (240mS)                       |
| Fault indication reset             | Time-based and/or line-restoration reset            | Power outage                   | Time of power-off                                       |
| <b>Communications</b>              | Wireless local and remote options                   | Power restoration              | Time of Power-On and Outage Period                      |
| Local RF                           | Low-powered license-free range 100 ft (30m)         | Profiling                      | User-defined ave. profile (1-60 mins) of load           |
| Remote                             | Cell (GSM/CDMA), landline                           |                                | V50-60 Conductor & ambient temp. up to +257 °F (+125°C) |
| Protocols                          | DNP3, Web services                                  | <b>Sample Rate</b>             | Current 1200Hz, E-field 600Hz                           |
| System integration                 | SCADA & historian integration tools available       | <b>Accuracy</b>                | Current ±1% of reading ±2 A, Temp ±1 DegF               |
| <b>Energy Storage/Power Source</b> | Solar powered with battery backup (approx. 12 days) | <b>Memory Storage Capacity</b> | Rolling partitioned memory                              |
| <b>Housing material</b>            | UV stabilized polycarbonate and/or aluminum diecast | RMS records (60sec)            | 100+ events   |
| <b>Ingress protection</b>          | IP66  | Fault waveforms                | 32+   |
| <b>Weight</b>                      | 4.6 lbs (2.2kg)                                     | <b>Load Profiling</b>          | Up to 85 days   |

\*Requires external sensor