



WSO-10 Wireless Sensor for Use With Landis+Gyr Radio Frequency Mesh Communications Network

Integrate Into a SCADA System to Improve System Reliability Using Wireless Sensor With Fault Detection



Major Features and Benefits

The WSO-10 Wireless Sensor for overhead lines with Landis+Gyr Radio Frequency Mesh Communications Network is a distribution automation sensor that stores load data as it monitors the distribution line for loss of current and faults. The sensor transmits reports with an integrated radio to an access point on a Landis+Gyr radio network, helping personnel locate faults more quickly and easily. The WSO-10 also:

- Reduces fault-finding time by communicating fault status back to a central location.
- Reports faults to a utility outage management system or SCADA via your Landis+Gyr radio communications network using an integrated radio.
- Detects and indicates faults with field-proven AutoRANGER® technology.
- Monitors load current, fault threshold, outage and event history.
- Reports directly to Landis+Gyr mesh network repeaters, virtually eliminating the need for, and cost of, a pole-mounted-collector type box that typically requires an additional power source.
- Coordinates with automated reclosing schemes using inrush restraint feature.
- Installs quickly with an industry standard hotstick tool.
- Guides line crews with integrated visual target display in addition to remote reporting.
- Improves accuracy of reliability metrics, such as MAIFI, CAIDI, etc.

Functional Overview

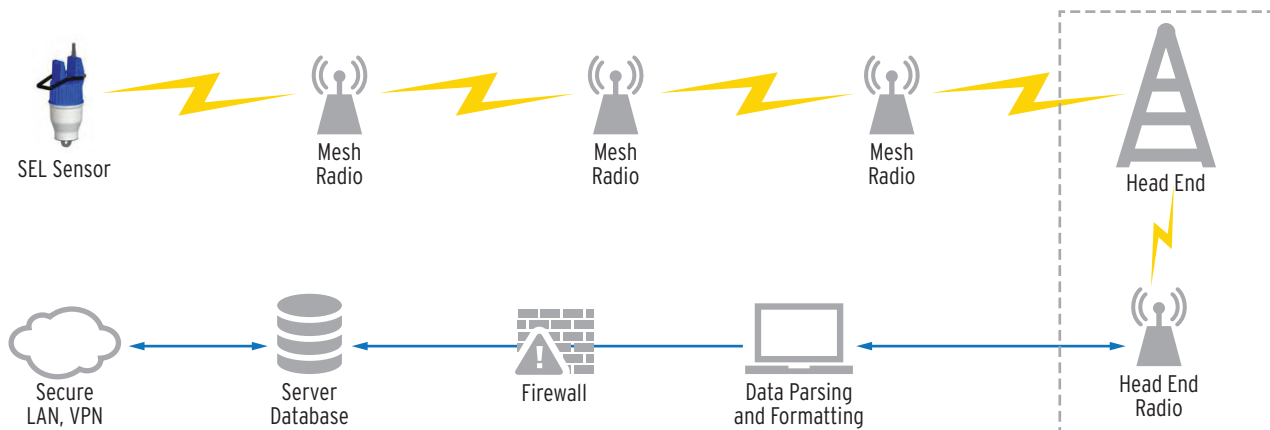


Figure 1 Functional Diagram

The SEL WSO-10, used in conjunction with a Landis+Gyr radio network, communicates collected sensor data and event information from installed locations on an overhead distribution circuit. At scheduled periodic intervals (e.g., once per 24 hours) the WSO-10 reports a status update data packet containing average load data and a summary of collected event statistics. Sustained events that result in outages, such as faults, are reported by exception, along with loss-of-current (LOC). Data is transmitted over the Landis+Gyr radio network and distributed to the customer-defined computer network for parsing and analysis.

Specifically, the sensor can be used as follows:

- Collect system information for data logging and analysis. Information can then be relayed to an outage management system.
- Use in conjunction with distance-to-fault element in the protective relay to determine the location of the fault when multiple distance-to-fault solutions are present.
- Install near remote controlled motor operated switches to provide information for feeder reconfiguration
- Provides fault information so crews can be dispatched directly to the area of the fault.
- Provides a local visual display that can be used in conjunction with non-reporting fault indicators to reduce the patrol time required to locate the fault.

Integration Features

- Communicates DNP3 data packets or simple comma-delimited text packets if preferred
- Greater than a ten-year operational life expected (Ten-year operational life based on assumptions of network coverage, 24-hour periodic reporting, worst-case temperature profiles, and 44 asynchronous [i.e., non-periodic] events reported per year.)

Specifications

General

Trip Threshold:	50–1200 A
Minimum Continuous Load Current Requirements (when installed on a conductor with a 0.75" outer diameter):	5 A
Current Measurement Accuracy (when installed on a conductor with a 0.75" outer diameter)	
5–600 A:	25%
Trip Threshold Accuracy (when installed on a conductor with a 0.75" outer diameter)	
50–1200 A:	30%
Maximum Nominal System Voltage (L-L):	34.5 kV
Nominal Trip Response Time:	24 ms (default)
Nominal Inrush Restraint Response Time:	75 ms
Battery:	3.6 V high-capacity 38 Ah lithium battery with a 20-year shelf life
Temperature Range:	–40° to +85°C (–40° to +185°F)
Approximate Weight:	728 g (1.6 lbs.)

Radio Specifications

Operating Frequency:	900 MHz ISM band
Periodic Report Interval:	Every 24 hours (default)
Network:	Landis+Gyr

Type Tests

Electromagnetic Compatibility Immunity

FCC Emissions (Unintentional Radiators):	CFR 47 Part 15, Class B Digital Devices
Industrial Canada (Unintentional Radiators):	ICES-003, Class B Digital Devices

Environmental

Rain:	MIL 810G 506.5, Procedure 1 Rain and Blowing Rain
Vibration:	IEC 60255-21-1:1988, Class 2 Endurance, Class 2 Response
Shock:	IEC 60255-21-2:1988 Class 1 Withstand, Class 2 Response
Bump:	IEC 60255-21-2:1988 Class 1
Seismic:	IEC 60255-21-3:1993, Class 2 Quake Response

Technical Support

We appreciate your interest in SEL products and services. If you have questions or comments, please contact us at:

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This product is covered by the standard SEL 10-year warranty. For warranty details, visit selinc.com or contact your customer service representative.

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