

SEL RadioRANGER™ Wireless Fault Indication System

The wireless fault indication solution shall provide the ability to gather faulted circuit indicator phase sensor status from subsurface or pad mounted applications via an RF communications link. Its purpose is to reduce the need to access these enclosures, reducing fault locating times and improving crew safety. Specific requirements:

System Architecture. The system shall consist of a scalable central communications hub (Wireless Interface transceiver), which can be interrogated via RF with a handheld device (Remote Fault Reader transceiver) as a means of economically transmitting information from multiple phase sensors in a single installation.

Scalability. The Wireless Interface portion of the system shall be capable of monitoring up to 12 single-phase phase sensors.

Addressability. Multiple Wireless Interface units shall be addressable to allow collocation of multiple units in the same enclosure and/or within the same operational range.

Human Machine Interface (HMI). The system shall utilize a portable handheld Remote Fault Reader that allows an end-user the ability to quickly collect the status of phase sensors installed within RF range.

Level of Protection. The Wireless Interface shall be tested to IP-68 to validate its use in flooded environments. The Remote Fault Reader shall be tested to IP-54.

Antenna Options. The Wireless Interface shall have a remote antenna option for application in flooded environments.

Two-way Communications. The system shall operate via a two-way communications scheme to conserve energy while also allowing a user to collect phase sensor status at any time, not just after a fault. The Wireless Interface shall only transmit FCI status upon receipt of request from a Remote Fault Reader.

Operational Frequency. The system shall communicate via frequency hopping scheme in the 900 MHz ISM band.

Fault Indicator Phase Sensor Compatibility. The system shall be compatible with at least four SEL phase sensor models, including: Underground AutoRANGER, Current Reset, Test Point Voltage Reset, and Timed Reset products.

System Powering. The Wireless Interface shall be powered by a 20-year shelf life lithium cell. The Remote Fault Reader shall be powered by three AA cells (alkaline or rechargeable). Battery health information for both units shall be displayed on the Remote Fault Reader display.

Environment. The system shall be suitable for continuous operation over a temperature range of -40° to $+85^{\circ}\text{C}$.

Warranty. The system shall have a minimum 10-year warranty.

