

# GridAdvisor Series II smart sensor

Improving outage management,  
providing distribution intelligence



*Powering Business Worldwide*

# Improving outage management

Eaton's GridAdvisor™ Series II smart sensor helps utilities improve the efficiency in which they operate their distribution systems by improving outage management and capacitor bank maintenance while providing critical system information not previously available. This simple yet sophisticated device can announce directional fault targeting, detect capacitor bank fuse failure and provide real-time line monitoring at nearly any location via DNP3 protocol. The GridAdvisor Series II smart sensor saves both operation and maintenance costs by reducing drive time, and maximizes energy dollars by keeping capacitors online, operating at peak efficiency. These industry-leading sensors are hotstick installable and the easiest way to gain SCADA visibility across the power distribution network. No additional hardware or software is required. The smart sensor meets or exceeds IEEE® Std 495™ -2007 standard, making it suitable for both overhead and underground applications.

## Outage management

Electric utilities continuously look for ways to utilize technology to improve reliability by reducing the frequency and duration of customer outages. For nearly 30 years, electric utilities relied primarily on faulted circuit indicators (FCIs) to assist in locating outages within their system. These FCIs require physical inspection of the device locations to look for a mechanical target or other type of indication.

Eaton's Cooper Power™ series GridAdvisor Series II smart sensor provides a significant advancement in fault detection and location. It incorporates today's flexible communication technologies with traditional FCIs to integrate FCI data into operation systems including SCADA and Outage Management Systems (OMS).

The smart sensor provides electric utilities the ability to achieve greater reliability and reduce operating and maintenance expenses.

The GridAdvisor Series II is designed to quickly and accurately indicate both permanent and momentary faults, find fault locations, shorten response time and improve reliability indices.

## Capacitor bank monitor

The GridAdvisor Series II smart sensor provides feedback as to which capacitor banks may be offline due to fuse operations. Customers can set sensor alarm limits on neutral current to detect potential fuse operations. This reduces the need for physical bank inspections, minimizing operations and maintenance efforts. This solution can be applied to switched or un-switched grounded neutral capacitor banks, without any additional cable preparation.

The smart sensor allows utilities to maximize benefits of capacitor investment by ensuring all banks are in service. Having more var availability results in an increased system capacity and efficiency.



## Key features

- Patented energy harvesting technology to eliminate external power sources
- LTE CAT M1 cellular modem with replaceable SIM card
- Replaceable battery to increase longevity of smart sensor
- Upgradeable over-the-air firmware eliminates costly trips to update sensor
- ProView™ NXG application software standard interface provides common configuration platform for use with other Eaton Cooper Power series products
- DNP3 protocol for simple integration into SCADA, OMS and other smart grid applications
- Accurate demand reporting to provide simple SCADA visibility to remote substations
- Directional fault targeting to better isolate faults on closed loop or paralleled circuits
- GPS radio for reporting location coordinates

## How it works

The GridAdvisor Series II smart sensor is a conductor-mounted line sensor with integrated communications capability. The sensor continuously monitors the line to which it is connected. The GridAdvisor Series II smart sensor is a DNP3 level 2 compliant device. The sensor's line monitoring data can be retrieved directly by SCADA or OMS via DNP3 polls. The sensor can also be configured to report by exception via DNP3 messages when line monitoring data changes outside of a configurable dead band.

In outage management applications, the sensor monitors the power system for a high rate of current change followed by a loss of potential. This waveform characteristic is used to report system disturbances and provide fault targeting to the utility. The variable trip characteristic does not need a static trip threshold programmed into the sensor. This frees a protection or control engineer from having to custom program each sensor for the specific installed location.

As a capacitor bank monitoring sensor, the GridAdvisor Series II measures current levels on the common neutral conductor and uses cellular communications networks to transmit readings.

High neutral current readings may indicate blown capacitor bank fuses or other bank failure. The GridAdvisor Series II smart sensor identifies such unexpected current levels, and issues alerts to operation and maintenance personnel.

The smart sensor uses a penta-band multimode modem, simplifying the deployment strategy for a utility. A single sensor can be installed for long term evolution (LTE) networks, maximizing the coverage of multiple public cellular providers including Verizon®, AT&T® and more. Alternatively, the sensor can be configured to enable real-time DNP3 communications over the embedded Bluetooth radio, allowing integration to any type of network by using a Bluetooth wireless access point. The wide spectrum of supported frequencies gives the sensor a true global footprint.

## End-to-end solution

Eaton has a premium suite of Enterprise software applications that can be leveraged to ease the integration and management of a fleet of smart sensors. GridServer software provides a highly scalable engine for real-time data acquisition and publication, and the IED Manager Suite software is a best-in-class solution for management of non-operational data such as settings, firmware and device security.

GridServer software can concentrate the thousands of sensor connections that exist into a more manageable data connection for SCADA or OMS using DNP3 or inter-control center communications protocol (ICCP). It also provides user administration tools allowing multiple working groups to leverage the same IT infrastructure. The software can also generate email or SMS text messages to user-defined distribution lists when an event is reported from the smart sensors.

Eaton's IED Manager Suite software can greatly reduce the man-hours required for managing the device life cycle of a deployment of sensors.



The software provides a means for change management of device settings and firmware by automatically scanning devices on a scheduled basis and flagging any changes to the appropriate administrators or asset management personnel.

The software also manages bulk firmware and settings file updates to the sensor fleet as a background process with minimal user interaction. IED Manager Suite supports a strong feature set for security management, as it is used for NERC CIP compliance in the substation market for a large variety of IEDs (including non-Eaton devices).

## Proven solutions for the power industry

Eaton implements solutions to enhance the performance of electrical power networks. Eaton's Cooper Power series products have a proven track record of meeting customers' needs with innovative and reliable solutions for integration and automation.

The team behind our products has valuable experience in custom designs and consulting services, and an outstanding reputation for customer support, making Eaton a leader in the field of enterprise automation solutions for the power industry.

For more information about how these smart products can benefit integration, security and communications, contact Eaton for a demonstration.

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For Eaton's Cooper Power series  
product information, visit  
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Printed in USA  
Publication No. BR915001EN / GG  
April 2019

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