

The Smart Navigator 2.0 FCI is a state-of-the-art self-powered overhead line faulted circuit indicator, which simply and securely clips onto overhead phase conductors. It can operate as a stand-alone device on network circuits up to 69kV at 600 Amps of continuous current, or can be integrated into an existing Smart Grid system leveraging various communication environments for OMS and SCADA applications.

The FCIs harvest power from the overhead line which is stored in a rechargeable lithium battery for use during low current (<5Amps) or no load current conditions. A set of three units, at each monitored location, consists of 1 master unit and 2 satellite units. The satellite units communicate to the master via a 2-way 900MHz connection, while the master unit communicates via a cellular network (AT&T or Verizon) to the headend system without the need for a pole-mounted box.

The Load Leveling and Load Memory features of the Smart Navigator 2.0 FCI enable the unit to automatically set the fault trip level in relation to load current. Once the unit detects fault current in excess of its trip rating the unit will provide both a flashing bright LED for local indication, and real-time digital and analog fault information (Event Based Data) to the control room. This enables control engineers (or automated algorithms) to initiate immediate switching and circuit restoration decisions.

During normal network conditions each Smart Navigator 2.0 FCI unit will record and report load and device information (Reporting Data) back to the headend system on a programable reporting window (15 minutes up to 24 hours). The units communicate data using DNP3 protocol and Transport Layer Security. The following details each data type.

Event Based Data:

- ***Fault detection***
- ***Fault Current Magnitude (Amps RMS)***
- ***Fault Duration (msec.)***
- ***Fault Direction (optional)***
- ***Fault Type (Momentary vs. Permanent)***
- ***Last Known Load Current***
- ***Time Stamp***

Reporting Data:

- ***Load Current Data (based on Reporting period)***
⇒ ***Average, Peak, Minimum, Actual***
- ***Routine Call and Health Checks***
- ***Battery Status***
- ***Temperature Data***
⇒ ***Device and Conductor (Optional)***



Meets or Exceeds ANSI/IEEE 495-2007
ISO 9001 Certified Factory

Navigator 2.0 Key Benefits

- **Self-powered device with energy harvesting technology.**
- **Lightweight sensor with extended cable diameter range.**
- **Reduced Installation and Operational cost.**
- **Optional Load Flow and Directional fault detection.**
- **Reliable fault detection.**





SMART NAVIGATOR 2.0

SELF-POWERED OVERHEAD LINE SENSOR

Technical Specifications	
Standards	MEETS OR EXCEEDS ANSI/IEEE STD. 495-2007
Trip current range and criteria	Overcurrent fault threshold: 50 – 1200 A (load tracking) or fixed trip up to 1200 A
Trip factor for load tracking	4 times peak load current
Peak load memory	72 h load memory
Indication	Ultra-bright high power LEDs (1 Red, 1 Green and 1 yellow)
Trip reset	Manual by use of magnet or DNP - Dispatch Wireless via iHost or local via USB dongle Automatic by time and/or current and/or voltage
Current measurement accuracy	$\pm 2\text{ A}$ (0–10 A); $\pm 3\%$ (10–600 A); $\pm 10\%$ (600–10000 A)
Power distribution line voltage	7.2–69 kV (L-L)
Withstand current	600 A continuous at ambient temperatures $\geq +50^\circ\text{C}$; 25 kA/3 s (40 kA/1 s)
Power supply	Power inductively from line current ($>5\text{ A}$); Internal rechargeable backup-battery
Event reporting	Fault detection Loss of current or voltage Fault current magnitude and duration
Remote monitoring	Load current monitoring (peak/min/average) Voltage presence (power ON/OFF)
Conductor temperature	Measurement range: -40°C to $+125^\circ\text{C}$; Accuracy: $\pm 5^\circ\text{C}$
Communication	WAN: 4G cellular modem Local: 900 MHz short range wireless radio (100 m)
Cellular specification	1 SIM card (only for the Master unit) 4G AT&T 4G Verizon Use of VPN connection or TLS secured data transmission
SCADA	DNP3 from Sensor to iHost DNP3 Direct to 3rd Party Applications
Configuration and FW	Remotely (re)configure settings over the air Supports FW updates over the air Remote interface from SCADA/ iHost or with a dongle on site
Housing	Material: Polycarbonate, IP68; Weight: 2.2 lbs. (1 kg) approx.
Dimensions	Height: 9.06" (230 mm) approx.; Diameter: 4.53" (115 mm) approx.
Mounting	Fits conductor diameter from 0.20" to 1.3" (5 mm up to 33 mm) Quick and easy installation via a hot stick or PDP Installation/Removal Tool
Operating temperature	-40 to $+85^\circ\text{C}$ (storage temperature: -40 to $+85^\circ\text{C}$)

Catalog Number Selection					
44	11	Directional Type (X)	2	Communication Type (X)	00
Smart Navigator 2.0 FCI	Standard: Smart Navigator 2.0 Rechargeable Battery Voltage Sensor Load Memory	Select One 4 = Non-Directional 5 = Directional		Select One 0 = Satellite Unit (No Modem) 1 = Master (4G AT&T Modem) 2 = Master (4G Verizon Modem)	

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