

# S.T.A.R.™ faulted circuit indicators programmable delayed reset type (SDOH)



## Description

Eaton designs its Cooper Power™ series S.T.A.R.™ programmable delayed reset faulted circuit indicators to quickly and easily locate faulted sections of overhead systems. This faulted circuit indicator (FCI) is designed for use on overhead bare conductors. A long-life lithium battery provides power to indicate the faulted conditions using two highly visible LED indicators. The unit is capable of being programmed with any one of five delay times. This FCI can also be quickly reset using the optional manual testing/reset tool (SMRT), and programmed to indicate a temporary fault when required. FCIs provide a reliable means of fault location and isolation. They also eliminate fault chasing methods that are costly and time consuming, and very stressful on system components exposed to fault currents. The S.T.A.R. programmable delayed reset faulted circuit indicator (SDOH FCI) is ideally suited for temporary use as a testing tool or permanent overhead installation. The temporary fault detection feature also allows the unit to be used to detect general fault location in applications where an intermittent fault causes recloser operation.

## Construction

SDOH FCIs consist of a sensor unit with an integral dual LED indicator powered by a lithium battery. Rugged solid-state construction ensures dependability and accuracy. Installation can be achieved on a wide range of cable diameters with a single hotstick. The sensor unit itself features a clamping mechanism design that allows easy snap-on connection to the live conductor with the use of a single hotstick.

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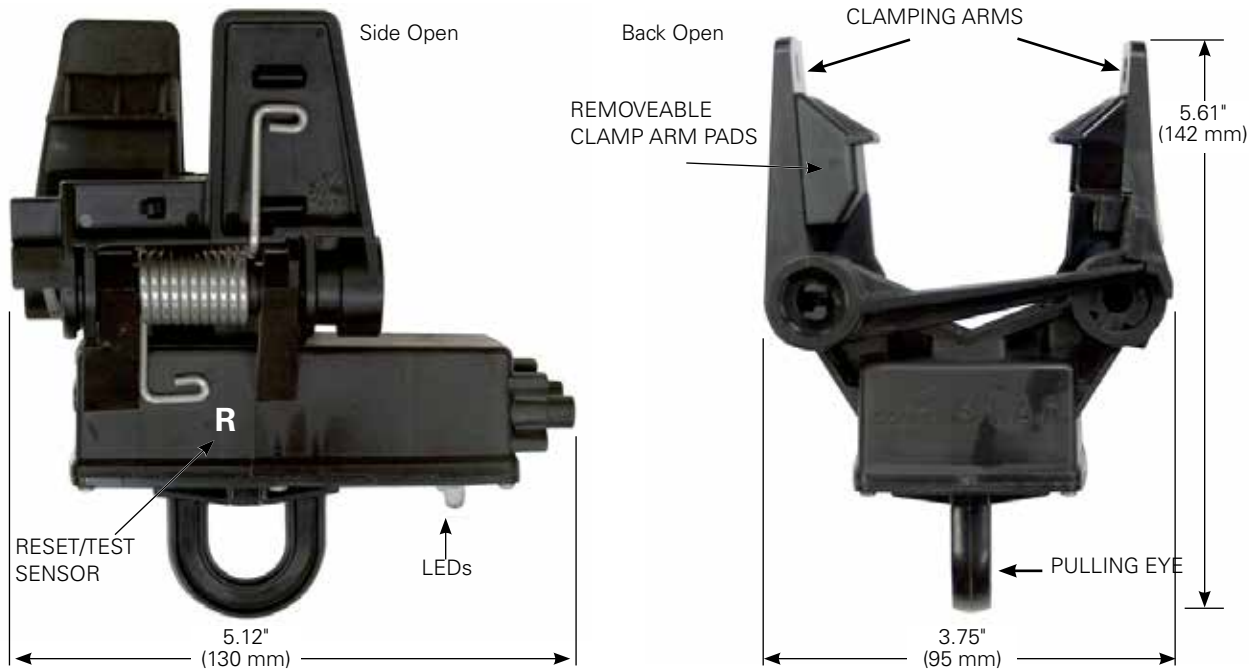


Figure 1. Features and dimensions of a SDOH faulted circuit indicator (shown in the “armed” position).

### Trip rating

The SDOH FCI is equipped with self adjusting trip that features a load sensing design. This FCI automatically adjusts the trip rating based on the average load current it reads at the location.

SDOH FCI defines fault as high current over trip point followed by loss of power for a minimum of 60 seconds. The SDOH FCI has two trip points, 175 and 800 A. The trip point of the SDOH FCI adjusts to the load current at the installation location. The trip point starts at 175 A. When nominal current rises above 53 A, the trip point becomes 800 A. Nominal current must fall below 43 A to change trip point back to 175 A.

### Design features

The SDOH FCI automatically resets back to the normal indication when the programmed reset time has expired. The unit can be field programmed with delay times of 2-hour, 4-hour (factory default), 8-hour, 24-hour or manual reset.

The SDOH FCI is capable of indicating permanent and temporary faults. By default, the SDOH FCI will only indicate a permanent fault. To detect a temporary fault, follow programming instructions in *Service Instructions, MN320001EN S.T.A.R. Faulted Circuit Indicator Programmable Delayed Reset Type SDOH Installation Instructions*.

**Note:** When in temporary fault mode: 1) the red LEDs in the SDOH FCI will also indicate a permanent fault if power is lost for more than 60 seconds, 2) delay reset time will mimic delay time set in permanent mode up to 8 hours.

The SDOH FCI is constructed using tough, durable, corrosion-proof, submersible materials.

The lithium battery has a ten (10) year shelf life and provides a minimum 500 hours of flashing time for the high intensity LED indicator. This is enough for 125 fault events when using 4-hour delay time.

In addition to the self-adjusting trip design, an inrush restraint feature eliminates false tripping and is standard on all units. The SDOH FCI will ignore inrush currents caused by reclosing operations of protective devices on the system.

Table 1. Electrical Ratings and Characteristics

Description	Ratings and Characteristics
Catalog Number	SDOH
Power Requirements	1.2 AH Lithium Battery (non-replaceable)
Reset Time	Field Configurable 2, 4 (default), 8, 24 Hours or manual reset
Trip Current	Self-Adjusting, 175 A Low, 800 A High
Mode of Indication	Dual LEDs
Min Operating Voltage	5.0 kV
Max Operating Voltage	69 kV L-L
Fault Withstand Capability	25 kA for 10 Cycles per IEEE Std 495™-2007 standard
Temperature Range	-40 °C to +85 °C
Materials	Corrosion-resistant & submersible per IEEE Std 495™-2007 standard
Weight	13.3 ounces (.38 kg)
Conductor Sizes Accepted	0.25" (6.4 mm) through 2.0" (51 mm)

## Testing

S.T.A.R. faulted circuit indicators are made of corrosion resistant materials and meet or exceed IEEE Std 495™-2007 standard "Guide for testing Faulted Circuit Indicators".

100% automated production testing verifies the trip rating and the reset time.

The electronic components are completely encapsulated to prevent any environmental damage.

## Installation

Installation is quick and easy. No special tools are required. The patented clamping mechanism of the sensor provides for easy installation on an energized system using a single hotstick.

Testing and setting the SDOH FCI can be done by touching the reset tool (catalog number SMRT) to the side of fault indicator marked by "R". See Table 2 for programming directions.

The unit is manually reset by touching the upper left corner marked "R" with the reset tool for two (2) seconds. Upon manual reset, the unit will "flash back" the number corresponding to reset hours to which the FCI has been set. See Table 2 for how many flashes correspond to each reset time. The reset procedure also provides positive indication of battery operation. In the case of a low battery, upon reset LEDs will flash yellow corresponding to the current reset time.

Refer to *Service Information, MN320001EN S.T.A.R. Faulted Circuit Indicator Programmable Delayed Reset Type SDOH Installation Instructions* for more information.

## Options

### Testing/reset tool

The manual testing/reset tool can be ordered using catalog number SMRT.

### Programming information

To put the SDOH FCI into program mode, hold the SMRT tool near "R" on side of FCI until one yellow flash appears (approximately ten (10) seconds) then remove. The FCI will flash back current reset time corresponding to Table 2.

To change the reset time once the SDOH FCI is in program mode, hold the SMRT tool until the next reset time has flashed then remove. When in program mode, holding the reset tool over "R" will increment the reset time and respond by flashing confirmation corresponding to Table 2.

For complete programming, installation, testing and resetting instructions, please refer to our *Service Information, MN320001EN S.T.A.R. Faulted Circuit Indicator Programmable Delayed Reset Type SDOH Installation Instructions*.

**Table 2. Reset Times**

FCI Reset Time	Program Confirmation (LEDs Flash Back)
2-hour	1 time (green)
4-hour (factory default)	2 times (green)
8-hour	3 times (green)
24-hour	4 times (green)
Manual Reset	2 times (red)

**Note:** Once desired reset time is reached, wait ten (10) seconds, remove the tool and the FCI will flash back the set time confirmation three (3) times, then rapid green /red indicating the unit is ready for installation.

**Table 3. SDOH FCI Ordering Information**

Description	Catalog Number
FCI	SDOH
Reset Tool	SMRT

## Ordering information

To order a S.T.A.R. Faulted Circuit Indicator Programmable Delayed Reset Type SDOH, see Table 3.

## Additional information

Refer to the following literature for more information.

MN320001EN	S.T.A.R. Faulted Circuit Indicator Programmable Delayed Reset Type SDOH Installation Instructions
B320-03014	Overhead Fault Indication Made Easy with S.T.A.R., Programmable Delayed Reset Overhead Type Faulted Circuit Indicators
B320-03013	Cost Effective Tools for Finding the Fault Faster and Reducing Outage Duration

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For Eaton's Cooper Power series SDOH fault circuit indicator product information call 1-877-277-4636 or visit: [www.cooperpower.com](http://www.cooperpower.com).