Faulted Circuit Indicators
Catalog Data
CA320005EN

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Supersedes 320-60 May 2008

COOPER POWER SERIES

S.T.A.R.™ electrostatic reset faulted circuit indicators

Description

Eaton designs its Cooper Power™ series S.T.A.R.™ electrostatic reset (ER) faulted circuit indicators to quickly and easily locate faulted sections of overhead distribution systems. These faulted circuit indicators (FCIs) can be installed on overhead distribution lines and derive their power from the voltage gradient between the line and the ground plane. This voltage gradient provides a reliable source for operating and resetting the fault indicator when compared to current reset devices which are subject to system loading variations. Electrostatic reset FCIs provide a reliable means of fault location and isolation. In addition, they eliminate fault chasing methods which are costly and time consuming, and very stressful on system components exposed to the fault currents. Electrostatic reset fault indicators have been designed to operate primarily on uninsulated, unshielded cable but may also be used on an unshielded insulated cable such as tree wire.

Construction

Eaton provides a sensor unit with an integral target display for 180° visual indication with its Cooper Power series FISHEYE™ display. This unique orange reflective target designates a faulted condition and a black target designates a normal condition. The FISHEYE display also features a Lexan® cover that provides superior scratch protection for the target window. 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.

Trip rating

S.T.A.R. FCIs are available with either a high or a low trip rating. The very same FCI can be used on cable sizes from 0.25 (6.4 mm) to 2.0 inches (51 mm). Therefore, it is not necessary to specify a cable diameter when placing an order.

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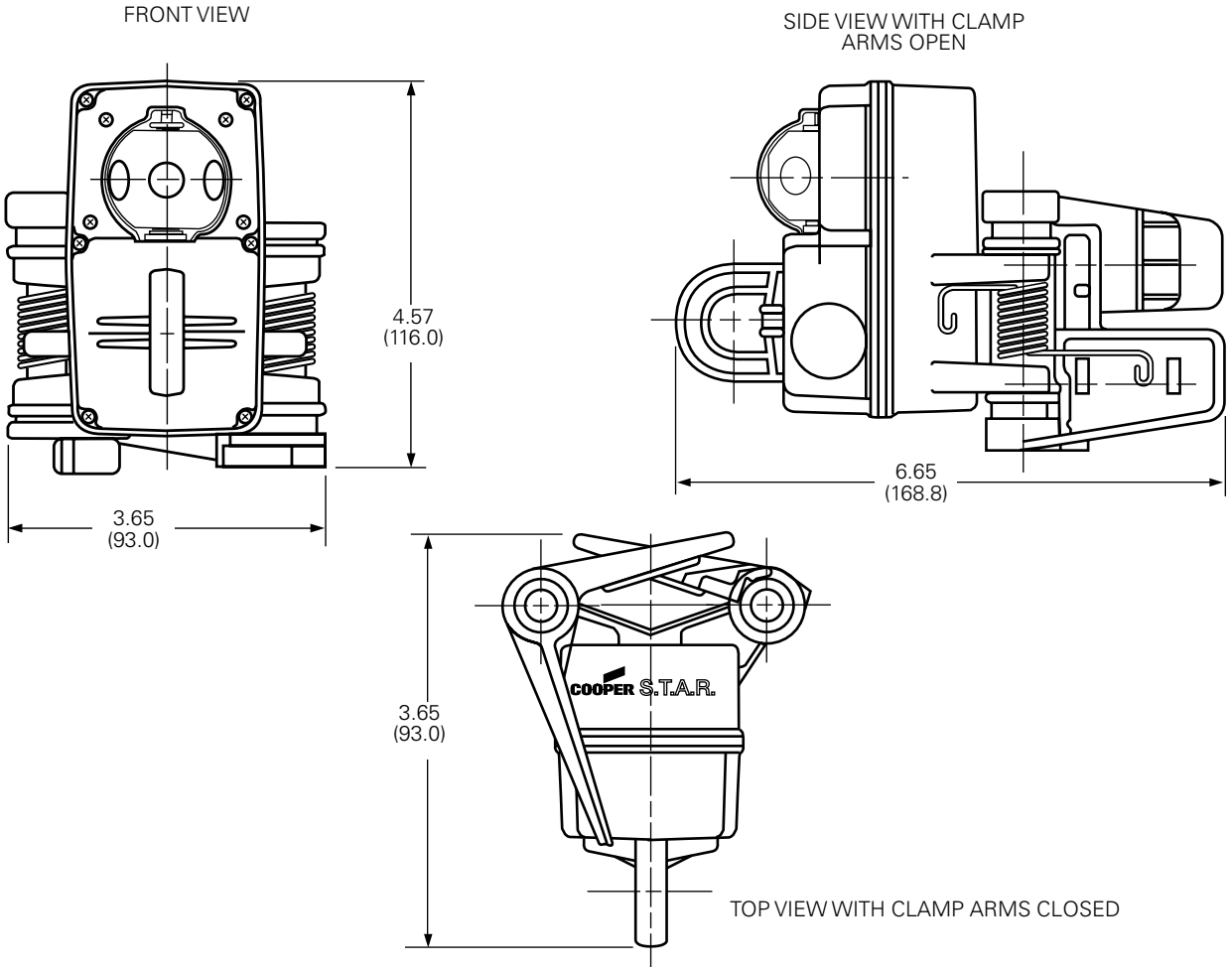


Figure 1. Line illustration of an Electrostatic Reset faulted circuit indicator with features and dimensions (shown in the "armed" position).

Design features

An inrush restraint feature eliminates false tripping and is standard on all units. The S.T.A.R. faulted circuit indicator will ignore inrush currents caused by reclosing operations of protective devices on the system. A dead time of 200 rms will activate the inrush restraint feature.

A low pass filter, also a standard feature, will prevent the S.T.A.R. faulted circuit indicator from tripping on high frequency transients like those caused by capacitive discharges.

In addition, the S.T.A.R. faulted circuit indicator is equipped with temperature compensation circuitry to assure the accurate and reliable performance over the entire specified temperature range.

The quick response time of the S.T.A.R. electrostatic reset faulted circuit indicator provides easy coordination with current-limiting fuses and other protective devices. (See Figure 2).

This unique combination of standard features makes the S.T.A.R. faulted circuit indicator extremely reliable.

Table 1. Electrical Ratings and Characteristics

Description	Ratings and Characteristics
Power Requirements	Min. 6.9 kV L-G
Reset Time	Max. 8 min. at 6.9 kV
LED Flashing Time Battery	1000 hours continuous 2.4 Ah Lithium Ion Battery (Internal, non-replaceable)
Trip Current	Factory Preset (High and Low)
Trip Accuracy	+/- 10%
Trip Response Speed	Response Curve, Figure 3
Fault Withstand Capability	25 kA for 10 cycles per ANSI/IEEE Std 495™-1986 standard
Temperature Range	-40 °C to +85 °C
Materials	Corrosion-resistant & submersible per ANSI/IEEE Std 495™-1986 standard
Cable Size	0.25 (6.4 mm) to 2.0 inches (51 mm)
Weight	13.6 ounces (0.39 kg)

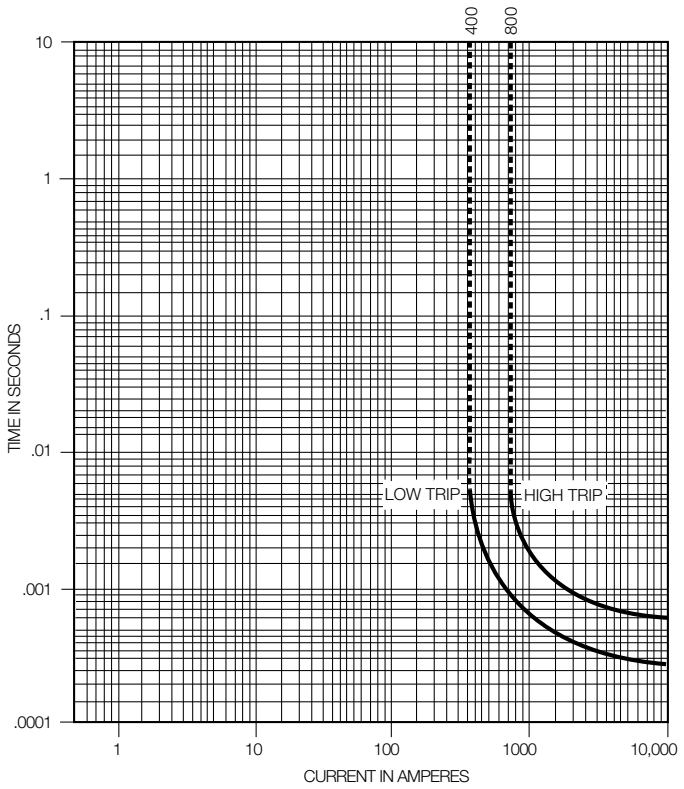


Figure 2. Faulted circuit indicator response curve developed on a 1.0 inch (25.4 mm) cable.

Optional features

The S.T.A.R. faulted circuit indicator can also be equipped with an LED in addition to the FISHEYE display. The LED will blink for up to four (4) hours providing a high intensity output of fault indication from longer distances than the FISHEYE display alone in both daylight and darkness.

Testing

S.T.A.R. faulted circuit indicators are made of corrosion resistant materials and meet or exceed ANSI/IEEE Std 495™-1986 standard "Guide for Testing Faulted Circuit Indicators".

100% automated production testing verifies the trip rating, the reset circuit and the inrush restraint feature.

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

Installation

The only requirement for installation of the S.T.A.R. electrostatic reset FCI is that it must be installed within 3 feet of the ground plane at 6.9 kV. All units are shipped to the customer in the tripped position. The status of the display cannot be changed mechanically in handling. After the unit is installed, the energized system will reset the FISHEYE target from the tripped position to the normal position.

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

Clamp arm pads are used for cable diameters from 0.25" (6.4 mm) to 1.0" (25 mm). For cable sizes from 1.0" (25 mm) to 2.0" (51 mm) the clamp arm pads are removed. Refer to *Service Information S320-60-1 S.T.A.R. ER Faulted Circuit Indicator Installation Instructions* for more information.

ORDERING INFORMATION

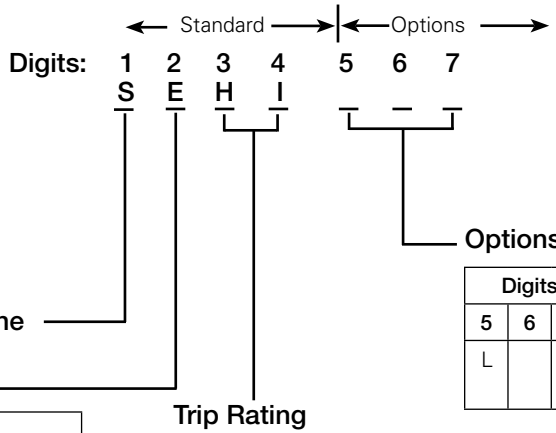
To order a S.T.A.R. electrostatic reset faulted circuit indicator specify the catalog number from Table 2 by selecting the appropriate codes.

Contact your Eaton representative for additional information.

Table 2. S.T.A.R. Faulted Circuit Indicator Ordering Information

Catalog Number

Example: An Electrostatic Reset FCI with a high trip rating would have a catalog number SEHI (as shown below).



Digits			
5	6	7	Description
L			LED Light Indication (max 4-hour blinking)

Digit	
2	Type
E	Electrostatic Reset

Digits		
3	4	Trip Rating
L	O	Low
H	I	High

Notes:
1. The S.T.A.R. FCI catalog number may vary in length from 4 digits to 7 digits.
2. The standard S.T.A.R. FCI catalog number may be truncated after entering digits 1-4. Options may be selected be adding the appropriate design code to digits 5, 6 and/or 7.

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For Eaton's Cooper Power series electrostatic reset faulted circuit indicator product information call 1-877-277-4636 or visit: www.cooperpower.com.

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