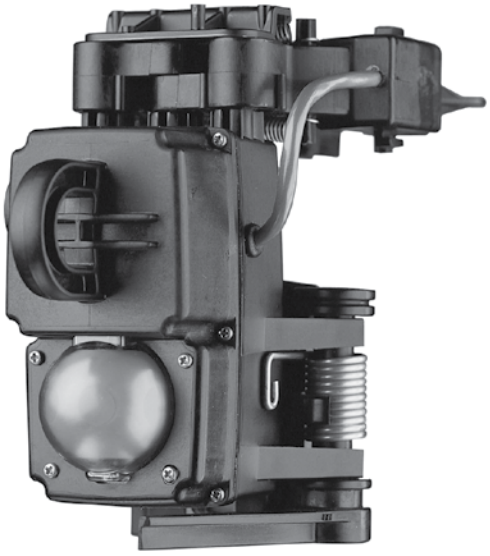
Faulted Circuit Indicators
Catalog Data
CA320008EN

Effective February 2015
Supersedes 320-75 October 2001

COOPER POWER SERIES

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



Description

Eaton designs its Cooper Power™ series S.T.A.R.™ current reset (CR) faulted circuit indicators to quickly and easily locate faulted sections of cable systems. These faulted circuit indicators (FCIs) can be installed on pad-mounted distribution transformers, sector cabinets, switchgear and overhead bare conductors. The closed core current transformer (CT) senses the fault current and provides power to operate the FCI. The unit automatically resets back to the normal position when the continuous current exceeds the 2.4 A reset value. CR 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. Installation can be achieved on a wide range of cable diameters with a single hotstick.

Construction

S.T.A.R. current reset fault indicators consist of a sensor unit with an integral Eaton's Cooper Power series FISHEYE™ target display. The closed core CT is used for both sensing the fault current and providing power to operate the FCI. The FISHEYE display provides 180° visual indication. 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 and unique spring action CT design that allows easy snap-on connection to the live conductor with the use of a single hotstick.

Powering Business Worldwide

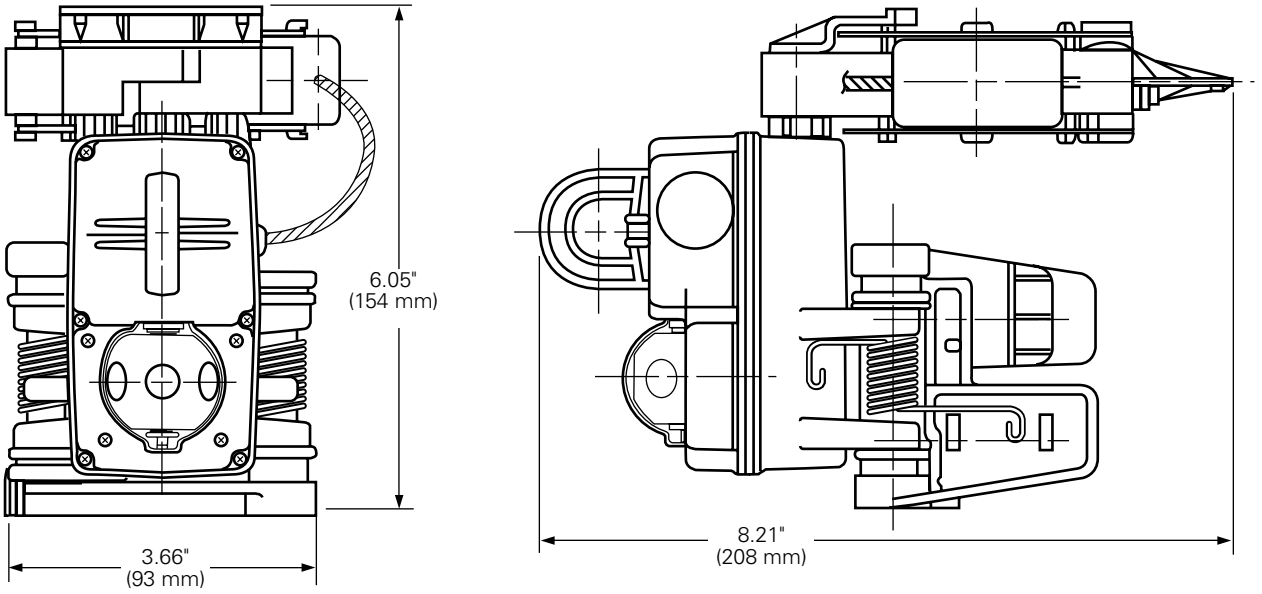


Figure 1. Features and dimensions of a CR faulted circuit indicator (shown in the "armed" position).

Trip rating

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

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.

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

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

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

All units are shipped to the customer in the tripped condition. The status of the display cannot be changed mechanically in handling. After the unit is installed, the energized system will reset the FISHEYE target display from the tripped position to the normal position.

Installation is quick and easy. No special tools are required. The patented clamping mechanism and the unique spring action CT 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 S320-75-1 S.T.A.R. CR Faulted Circuit Indicator Installation Instructions* for more information.

Table 1. Electrical Ratings and Characteristics

Description	Ratings and Characteristics
Power Requirements	Min. 2.4 A Continuous
Max. Operating Voltage	45 kV L-L
Reset Time	5 Minutes at 2.4 A Max.
Trip Current	Factory Preset (High or Low)
Trip Accuracy	+/- 10%
Trip Response Speed	Response Curve, Figure 4
Fault Withstand Capability	25 kA for 10 Cycles per ANSI/IEEE 495™-1986 standard
Temperature Range	-40 °C to +85 °C
Materials	Corrosion-resistant & submersible per ANSI/IEEE 495™-1986 standard
Weight	27.2 ounces (0.77 kg)
Conductor Size	0.25" through 2.0"

Options

Remote FISHEYE™ display

The remote FISHEYE display provides 180° visual indication of FCI operation. This unique orange reflective target fits a standard remote indicator window that exists in many pad-mounted transformer specifications.

Small remote display

The current reset faulted circuit indicator is also available with a small remote display. The remote flip target display easily retrofits to pad-mounted cabinets with a single hole installation.

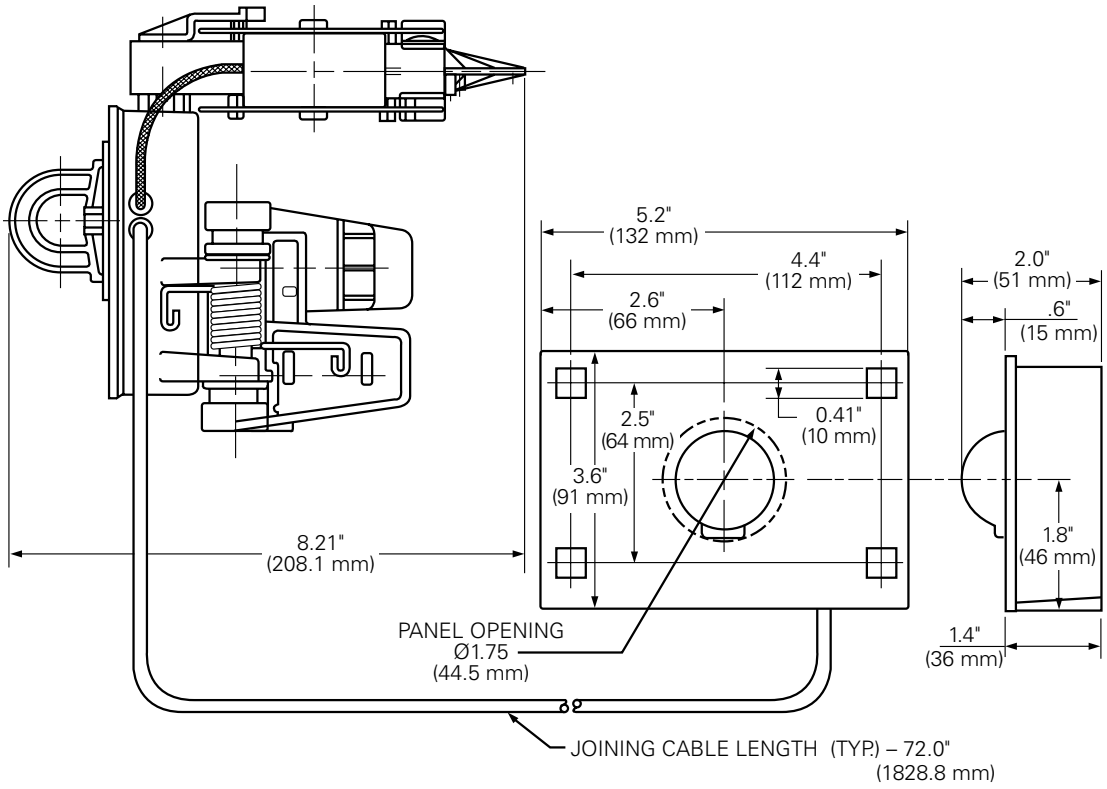


Figure 2. Features and dimensions of the CR faulted circuit indicator with remote FISHEYE display.

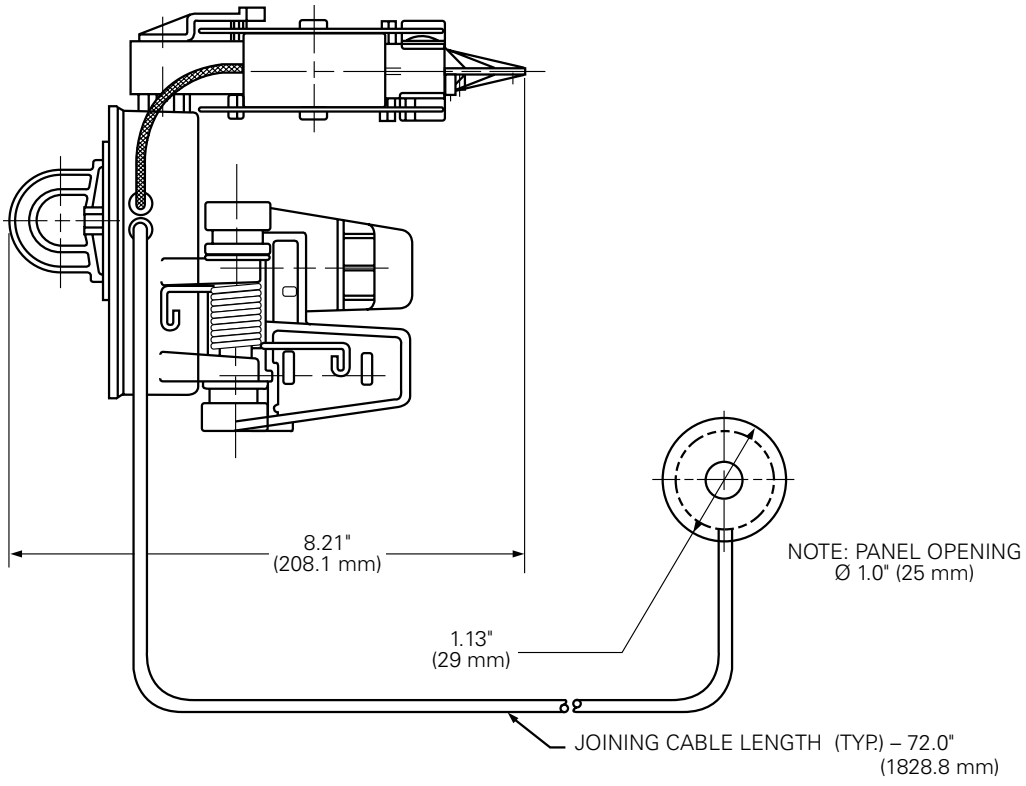


Figure 3. Features and dimensions of the CR faulted circuit indicator with small remote display.

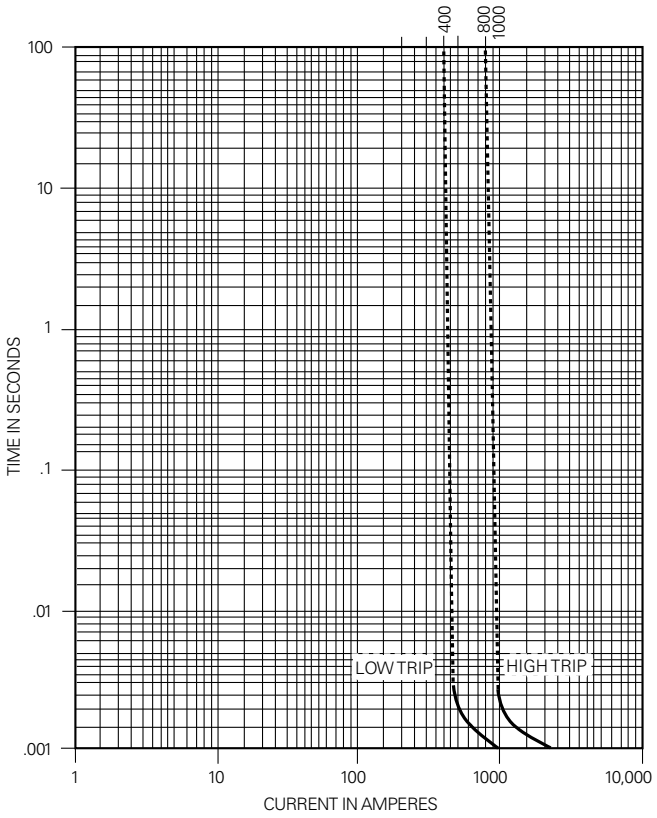


Figure 4. CR faulted circuit indicator response curve.

Figure 5. Remote FISHEYE display.

Figure 6. Small remote display.

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

S.T.A.R. Current Reset Type FCI Ordering Information

Example: A Current Reset FCI with a high trip rating would have a catalog number SCHI (as shown below).

	Standard				Options		
Digits:	**1**	**2**	**3**	**4**	**5**	**6**	**7**
	S	**C**	**H**	**I**			

S.T.A.R. FCI Line

FCI Type

Digit 2	Type
C	Current Reset

Trip Rating

Digits		
3	4	Trip Rating
L	O	Low
H	I	High

Options

Digits			
5	6	7	Descriptions
R			*Standard indicator with remote FISHEYE Display
S			*Standard indicator with small remote display

* Standard indicator with remote FISHEYE Display provided with 6 ft. cable lengths as standard.

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 by adding the appropriate design code to digits 5, 6, and/or 7.

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

Eaton's Cooper Power Systems Division
2300 Badger Drive
Waukesha, WI 53188
United States
Cooperpower.com

Printed in USA
Publication No. CA320008EN

Powering Business Worldwide

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