

Fusing Equipment

Electrical Apparatus-
240-48

Dual Element Bay-O-Net Fuse Link

GENERAL

The Cooper Power Systems Dual Element Bay-O-Net Fuse Link is used in Bay-O-Net fuse assemblies (see Section 240-40) to protect distribution apparatus from damaging currents and to protect distribution systems from failed apparatus.

Dual element links sense not only secondary faults, excessive load currents and transformer faults, but also transformer fluid temperature. They will limit long-term transformer heating caused by overloads and high temperature environments.

APPLICATION

Bay-O-Net fuses can be used on single-phase conventional and self-protected distribution transformers and on three-phase equipment.

Its ideal use is in a two-fuse protection scheme with a current-limiting backup fuse. In this arrangement, secondary faults and overload currents are cleared by the Bay-O-Net fuse, and high level faults are cleared by the current-limiting fuse. The two fuses are connected in series, and are coordinated so that the current-limiting fuse operates only upon internal equipment failure. (See Section 240-50 to order an ELSP Current-limiting Backup Fuse). If the Bay-O-Net fuse will not be used in series with a current-limiting fuse, an isolation link is required. (See Section 240-47).

Bay-O-Net fuses are comparable in cost to internal cartridge fuses but have the advantages of being field-replaceable. Bay-O-Net fuses can easily be coordinated with upstream devices.

INSTALLATION

No special tools are required. A hotstick is used to remove the Bay-O-Net fuse cartridge holder from non-pressurized apparatus. The fuse cartridge is then replaced, and the holder reinserted using a hotstick. Refer to Installation Instruction Sheet S240-40-3 (5000023080) for re-fusing details.



Figure 1.
Dual Element Bay-O-Net Fuse Link.

TABLE 1
Electrical Ratings and Characteristics

| Voltage (kV) | Catalog Number | Maximum Single-Phase Interrupting Rating* for Sidewall Mount Assembly** (rms symmetrical) | |
|--------------|----------------|---|---|
| | | Sidewall Mount Assembly (rms symmetrical) in Mineral Oil | Sidewall Mount Assembly (rms symmetrical) in Envirotemp® FR3™ Fluid |
| 8.3 | 4038108C03-C14 | 3500 A | 3500 A |
| 15.5 | 4038108C03-C14 | 2500 A | 2500 A **** |
| 23.0 | 4038108C03-C07 | 1000 A | 1000 A |
| | 4038108C09-C14 | *** | *** |

* In Cooper Power Systems Bay-O-Net assemblies only. Where available fault current exceeds rated value, coordinated current-limiting fusing such as an ELSP (Section 240-50) or approved equivalent must be provided.

** For Cover Mount Assembly ratings, contact your Cooper Power Systems representative.

*** Not rated for 23 kV.

**** With the exception of 4038108C14 which has a maximum single-phase interruption rating of 2000 A.

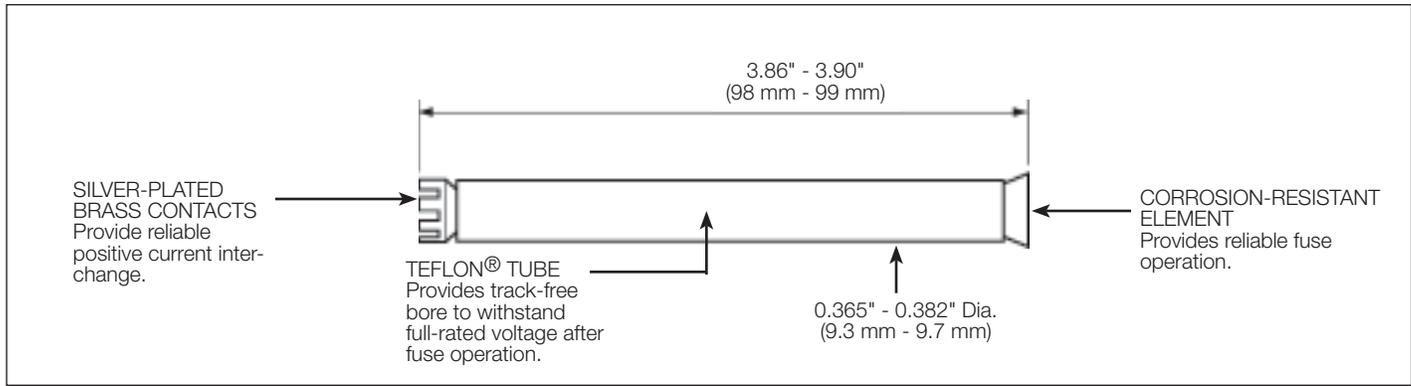


Figure 2.
Dimensional and feature information.

Note: Dimensions given are for reference only.

ORDERING INFORMATION

To order a Dual Element Bay-O-Net Fuse Link, determine the requirements of the application from Tables 3 and 4 and specify the fuse required from Table 2.

TABLE 2
Bay-O-Net Fuse Link

| Continuous Current Rating (A) | Catalog Number* |
|-------------------------------|-----------------|
| 5 | 4038108C03 |
| 6 | 4038108C04 |
| 8 | 4038108C05 |
| 12 | 4038108C06 |
| 15 | 4038108C07 |
| 25 | 4038108C09 |
| 40 | 4038108C11 |
| 50 | 4038108C12 |
| 65 | 4038108C14 |

* Add suffix "B" to order individual fuse; add "M" to order bag of 50.

METHOD A

Using the Correlation Tables

Use the following correlation information (Tables 3 and 4) to complete Catalog Number 4038108__.

For 19.9 kV single-phase and 34.5 kV three-phase applications, an ELSP Current-limiting Backup Fuse is recommended. (See Section 240-50 for more information).

If the Bay-O-Net link is not used with a current-limiting fuse, an isolation link is required. (See Section 240-47).

Correlation is based on **IEEE Standard C57.92™** Loading Guide and **IEEE Standard C57.109™** Through-Fault Guide, and Fusing Application Guide CP7662A.

METHOD B

Using Time Current Curves

To determine or confirm the Dual Element Bay-O-Net Fuse that will coordinate with upstream and downstream system requirements, use time-current characteristic curves and specify the fuse indicated from Table 2.

Long term overload curves for selected transformer ratings are also available.

For full size TCC curves R240-91-57, long term overload curves and further information regarding either of these ordering methods, contact your Cooper Power Systems representative.

TABLE 3
Correlation Information
Single-Phase Transformer (Phase-to-Ground) Applications

| Transformer kVA | Transformer Primary Voltage (kV) | | | | | | | | | | |
|--------------------|----------------------------------|------|-----|-----|------|------|------|-------|------|------|------|
| | 2.4 | 4.16 | 4.8 | 7.2 | 7.62 | 8.32 | 12.0 | 12.47 | 13.2 | 13.8 | 14.4 |
| 5 | C03 | C03 | C03 | C03 | C03 | C03 | C03 | C03 | C03 | C03 | C03 |
| 10 | C05 | C04 | C04 | C03 | C03 | C03 | C03 | C03 | C03 | C03 | C03 |
| 15 | C07 | C05 | C05 | C03 | C03 | C03 | C03 | C03 | C03 | C03 | C03 |
| 25 | C09 | C06 | C06 | C04 | C04 | C04 | C03 | C03 | C03 | C03 | C03 |
| 37.5 | C11 | C09 | C08 | C06 | C06 | C06 | C05 | C05 | C04 | C04 | C04 |
| 50 | C12 | C09 | C09 | C07 | C07 | C07 | C06 | C06 | C05 | C05 | C05 |
| 75 | C14 | C12 | C11 | C09 | C09 | C09 | C07 | C06 | C06 | C06 | C06 |
| 100 | – | C12 | C12 | C09 | C09 | C09 | C09 | C09 | C07 | C07 | C07 |
| 167 | – | – | – | C12 | C12 | C12 | C11 | C11 | C09 | C09 | C09 |
| 250 | – | – | – | C14 | C14 | C14 | C12 | C12 | C11 | C11 | C11 |
| 333 | – | – | – | – | – | – | C12 | C12 | C12 | C12 | C12 |

TABLE 4
Correlation Information
Three-Phase Transformer (Phase-to-Phase) Applications

| Transformer kVA | Transformer Primary Voltage (kV) | | | | | | | | | |
|--------------------|----------------------------------|------|-----|------|----------------|------|---------------|---------|---------|-------|
| | 2.4 | 4.16 | 4.8 | 8.32 | 12.0, 12.47 | 13.2 | 13.8, 14.4 | 20.8a,b | 22.9a,b | 24.9a |
| 45 | C09 | C07 | C07 | C04 | C03 | C03 | C03 | C03 | C03 | C03 |
| 75 | C12 | C09 | C09 | C06 | C04 | C04 | C04 | C03 | C03 | C03 |
| 112.5 | C14 | C11 | C09 | C07 | C06 | C06 | C06 | C05 | C04 | C04 |
| 150 | – | C12 | C12 | C09 | C07 | C07 | C07 | C06 | C05 | C05 |
| 225 | – | C14 | C14 | C11 | C09 | C09 | C09 | C07 | C06 | C06 |
| 300 | – | – | – | C12 | C09 | C09 | C09 | C09 | C07 | C07 |
| 500 | – | – | – | C14 | C12 | C12 | C12 | C11 | C09 | C09 |
| 750 | – | – | – | – | C14 | C14 | C14 | C12 | C11 | C11 |
| 1000 | – | – | – | – | – | – | – | C14 | C12 | C12 |

NOTE: Recommendations are based on 200% transformer loading for 2 hours, 160% loading for 7 hours and thermal characteristics of typical Cooper Power Systems transformers. Recommended fuses meet inrush requirement of 12 times transformer full load current for 0.1 second. Bay-O-Net Fuse Links 4038108C09-C12 should not be used at voltages greater than 15500 V for delta configurations. Bay-O-Net Fuse Links 4038108C03-C07 alone should not be used at voltages greater than 17100 V for delta configurations or 24940 gnd Y/14400. For applications through 23 kV delta or 34500 gnd Y/19920, a 23 kV rated ELSP fuse (Section 240-50) is recommended in series with the Bay-O-Net link.

a. Recommended fuse limited to gnd Y/gnd Y transformer with less than 50% delta loading.

b. For voltages greater than 17100 V for delta configurations or 24940 gnd Y/14400 and through 23 kV delta or 34500 gnd Y/19920, an ELSP 23 kV rated Current-limiting Backup Fuse (Section 240-50) in series with the Bay-O-Net Fuse Link is recommended.

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