8.1 Drawout Air Circuit Breaker Design

Network Protectors—CM52 .............................. V3-T8-2
Product Description ........................................... V3-T8-2
Application Description ................................. V3-T8-2
Features, Benefits and Functions ..................... V3-T8-2
Standards and Certifications ............................ V3-T8-3
Technical Data and Specifications ...................... V3-T8-3

8.2 Network Relay

Network Relay—MPCV ........................................ V3-T8-4
Product Description ........................................... V3-T8-4
Application Description ................................. V3-T8-4
Features, Benefits and Functions ..................... V3-T8-4

8.3 Network Protector Aftermarket

Network Protector Rebuild and Parts Program .......... V3-T8-5
Parts ................................................................. V3-T8-5
Rebuild Services ............................................... V3-T8-5
Quick Ship ........................................................ V3-T8-5
Network Protectors—CM52

Product Description
Network protectors are special self-contained air power breaker units having a full complement of current, potential and control transformers, as well as relay functions to protect the integrity of the low voltage network bus. The network protector can be in NEMA® housing, submersible housing, or suitable for mounting within a low voltage switchgear assembly. Several network protector models exist including the CM52, CMD and CM-22. The most recent model, the CM52 network protector, is highlighted in the following paragraphs.

Application Description
Network protectors are mainly used by utilities around the world. They are configured in either a spot or grid network. Most installations of network protectors are in underground vaults and require a submersible enclosure. Commercial applications also exist for customers that require highly reliable, stable power. These applications typically use a NEMA enclosure and are configured in a spot network. Some examples of commercial users are government buildings, hospitals, universities and industrial plants.

Features, Benefits and Functions
Eaton’s Type CM52 is designed for improved safety, higher quality, ease of maintenance and inventory reduction.

- Standardized breaker elements throughout entire electrical ratings allow for the use of common parts and accessories
- Smaller breaker element is less than half the weight of existing network designs
- The CM52 is the first network protector to pass 10 kV BIL, giving an additional measure of safety and performance
- Ratings of 800–6200A, 216–600V, internal or external fuses and NEMA or submersible enclosures, completely cover the needs of the network protector industry
- Deadfront 4-position drawout breaker helps protect the user from accidental contact with live circuits and makes maintenance and troubleshooting easier

Contents

<table>
<thead>
<tr>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Protectors—CM52</td>
<td></td>
</tr>
<tr>
<td>Standards and Certifications</td>
<td>V3-T8-3</td>
</tr>
<tr>
<td>Technical Data and Specifications</td>
<td>V3-T8-3</td>
</tr>
</tbody>
</table>
• Front-mounted test points give easy access and quick test cable connection
• Color-coded Teflon® wiring for easier troubleshooting

<table>
<thead>
<tr>
<th>Breaker Element Width in Inches (mm)</th>
<th>CM52 Interrupting Rating (kA)</th>
<th>CM52 Close and Latch Rating (kA)</th>
<th>IEEE/ANSI Interrupting Rating (kA)</th>
<th>IEEE/ANSI ¹ Close and Latch Rating (kA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.00 (431.8)</td>
<td>42</td>
<td>35</td>
<td>30</td>
<td>25</td>
</tr>
<tr>
<td>17.00 (431.8)</td>
<td>42</td>
<td>35</td>
<td>30</td>
<td>25</td>
</tr>
<tr>
<td>17.00 (431.8)</td>
<td>42</td>
<td>35</td>
<td>30</td>
<td>25</td>
</tr>
<tr>
<td>17.00 (431.8)</td>
<td>42</td>
<td>35</td>
<td>30</td>
<td>25</td>
</tr>
<tr>
<td>22.00 (558.8)</td>
<td>65</td>
<td>45</td>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>22.00 (558.8)</td>
<td>65</td>
<td>45</td>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>35.00 (889.0)</td>
<td>65</td>
<td>65</td>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>35.00 (889.0)</td>
<td>65</td>
<td>65</td>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>65.00 (1651.0)</td>
<td>65</td>
<td>65</td>
<td>Product not defined</td>
<td>Product not defined</td>
</tr>
</tbody>
</table>

Notes
¹ Close and latch ratings apply only to spring close and stored energy mechanisms. The CM22 does not have a close and latch rating.
² Open frame only, tested at 500V.

This device is internal to the Network Protector and can be remotely activated usually through a switch mounted at the vault entrance or through communications. This will enable the “ARMS” device on all CM52s in a spot network. Once activated, the NPARMs places the protectors in a sensitive mode, sensing both forward and reverse current directions. This device will actuate in 3–4 ms and call for all CM52 breakers to trip if a fault is sensed on an adjacent network protector or collector bus. It has been shown that this device limits the total incident energy to less than 8 cal/cm².

Remote Racking System
The CM52 Network Protector is also available with an integral remote racking system. The system remotely racks the breaker off the energized bus work while the door is still closed to the “test” position either through an external pendant or through communications.

Standards and Certifications
• Meets or exceeds the standards in IEEE® C57.12.44
• The CM52 Network Protector is UL labeled and approved in the NEMA housing at all ratings
8.2 Network Protectors

Network Relay

MPCV Communications Relay

Contents

Description
Network Relay—MPCV

Product Description

Type MPCV Network Protector
Communications Relays for
216V and 480V Systems

- Eaton’s programmable
  MPCV network relay brings
  the proven performance
  of microprocessor-based
  technology to new network
  protectors...or those
  already in service
  regardless of age
  or manufacturer
- The MPCV contains
  industry exclusive features
  such as:
  - Gull Wing Trip
    Characteristic
  - Remote Protective
    Close
  - Anti-Pumping Algorithm
- With the MPCV, you can
  select the characteristic
  curves to monitor and
  control the network
  protector through Eaton
  products such as the
  VaultGard, DNPMINT
  and NPView

Application Description

Factory or Field Installation
Eaton can factory mount
MPCV relays on new network
protectors...or personnel can
easily field mount them on
these existing network
protectors:
- Eaton Types CM52, CMD,
  CM-22 or CMR-8
- General Electric® Types
  MG-8, MG-9 or MG-14
Field installation is
accomplished without breaker
modification or any rewiring of
the breaker control harness.
MPCV relays operate on 216V
and 480V systems. Relay
potential transformers are
required for 480V applications.

Features, Benefits and Functions

Communications Capability
Each MPCV relay has the
capability of communicating
information and allowing
control over a shielded twisted
pair communications wire.
Communications can be
provided by a Web-enabled
interface or direct DNP 3.0
to SCADA systems. Eaton
has multiple choices for
communication interfaces
such as VaultGard for total
vault communications,
NPView- simple Web server
or DNPMINT.
For localized access, the
MPCV relay has the capability
of wireless communication,
monitoring and control with
the Eaton wireless products.
- Through auxiliary inputs on
  the MPCV relay, operators
can monitor other vault
  environment parameters
  such as transformer top oil
temperature, water in the
  network vault, fire alarm or
  network enclosure pressure
- Event trending, threshold
  alarms and e-mail
  forwarding
- Multiple MPCVs can
  be connected together
  either as a daisy chain,
  T-configuration or a
  combination.

MPCV Communications Relay
for Eaton Network Protectors

MPCV Communications Relay
for General Electric Network Protectors
Network Protector Rebuild and Parts Program

Parts

- Renewal parts for all network protector models:
  - Eaton, Westinghouse®: CM-22, CMD, CM52 and CMR-8
  - General Electric: MG-8, MG-9 and MG-14
- 24-hour shipment when required for parts in stock

Rebuild Services

Eaton’s Electrical Sector is setting the standard of reliability with a reconditioning process that involves total breaker and enclosure disassembly, material specific component cleaning, detailed inspection and state-of-the-art testing, all done to uniform documented specifications.

Eaton offers a CM52 retrofit breaker for legacy CMD and GE Network Protectors. The breaker can be installed in existing network protector enclosures without having to remove the enclosure from the vault or having to remove the secondary cable connections, saving both time and money.

Quick Ship

Eaton can build and ship brand new CM-22 or CMD network protectors in 4 to 6 weeks.

Contents

Description

Network Protector Rebuild and Parts Program
8.3 Network Protectors

Network Protector Aftermarket