Energetyka

CBD application

User manual

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smart
energy
management

Safety information

When the device is in operation some of its parts may be connected to a hazardous live voltage.

Improper operation of the device or its application to purposes different from the intended use may pose hazards to operators and /or may lead to the equipment damage.

National and local electrical safety regulations must always be followed.

The user shall be held fully responsible for any safety risk and possible failures of the equipment that may arise due to such an improper operation or misuse.

Exploration of damaged device can result in malfunction of protected object and result in threat to life and health.

Reliable and defect-free operation of the device needs appropriate transportation, handling, storage, installation and commissioning as well as correct operation and maintenance.

The device can be installed and operated solely by accordingly trained personnel.

Attention

We reserve the right to modify the device.

Device is an industrial monitoring and control instrument.

Remaining user documentation can be downloaded from energetyka.itr.org.pl

Contents:

1. Introduction

1.1. Symbols

Electrical warning symbol indicates the presence of hazardous energy circuits or electric shock hazards.

The warning symbol indicates the important information related to the threat to life and health.

The information symbol indicates the clarification of relevant features and parameters of the device.

2. Principle of operation

Circuit Breaker Diagnosis application in MUPASZ 710 plus device determines the MV breaker parameters during tripping operation. The access path to the application is Menu->Applications->CBD->(Operation state, Settings, Sectors, Commands).

The timing parameters associated with tripping operation are determined through the analysis of phase currents. For the criterion for circuit opening in a given phase to occur, two conditions must be met:

- phase current has dropped below threshold value (it is the value of the parameter I operation [In] entered in the Settings window (path: Menu->Applications->Circuit Breaker Diagnosis->Settings),
- phase current stays below threshold value for the next half cycle,
- the moment of circuit opening corresponds to the instant when the phase current has crossed the threshold value.

The algorithm for CB timing parameters determination is activated when, at the moment of tripping operation triggering, at least one phase current has the value above I excitation [In] (this is the value entered in Settings window; path: Menu->Applications->Circuit Breaker Diagnosis->Settings).

The basic CB parameter, tripping time, is determined as the maximum of opening times in three phases. The tripping time is displayed in Sectors window (path: Menu->Applications->Circuit Breaker Diagnosis->Sectors) as Max. tripping time [s]. Sectors-> Max. tripping time [s] is compared with the parameter Settings-> Max. tripping time [s] and if it is greater, the Circuit Breaker failure is signaled. In the Sectors window, the CB parameter called simultaneity between phases - ΔT [s], equal to the difference between minimum and maximum of opening times for three phases is also displayed.

In the case when none of the phase currents falls below I operation for 0.6 s, the CB is considered to be faulty and CB failure is signaled.

3. User interface

3.1. "State of operation" window

Commands 3/3

Block
Unblock
Cancel
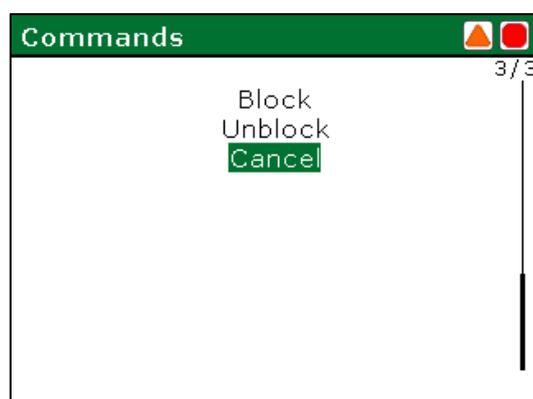
In this window the following statistical parameters, determined by Circuit Breaker Diagnosis Application, are displayed:

- Operation mode
- Number of opening operations
  - the number of opening operations irrespective of the cause and value of the current in the circuit
- Number of AW
  - the number of openings initiated by overcurrent protection
- Mean opening time [s]
  - the mean value of Max opening time [s] (displayed in Sectors window) for the last 10 CB opening events
- Max. opening time [s]
  - the maximum value of Max. opening time [s] (displayed in Sectors window) for the last 10 CB opening events
- Σ I1 [kA]
  - cumulative current at the moment of opening operation in the first phase
- Σ I2 [kA]
  - cumulative current at the moment of opening operation in the second phase
- Σ I3 [kA]
  - cumulative current at the moment of opening operation in the third phase

## 3.2. "Sectors" window

Commands 3/3

Block
Unblock
Cancel
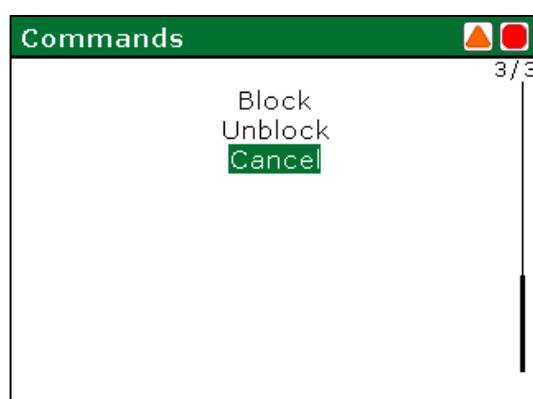
In this window, the CB parameters related to the opening operation for the last 10 events are displayed. For each sector the following parameters are displayed:

- Sector state. Sector state can take the following values:
  - Available – empty – no data,

- Available with data – CB opening operation has terminated with success and the sector contains valid data,
- Unavailable – CB opening operation has failed.
- Triggering time [yyyy-mm-dd   hh-mm-ss]
  - the moment when the opening operation was initialized,
- Max. opening time [s]
  - the maximum value of opening times for three phases
- ΔT [s]
  - this time is computed as the difference between the maximum and minimum values of opening times for three phases,
- Maximum I [In]
  - the greatest value of phase currents at the moment of opening operation initialization

3.3. "Commands" window
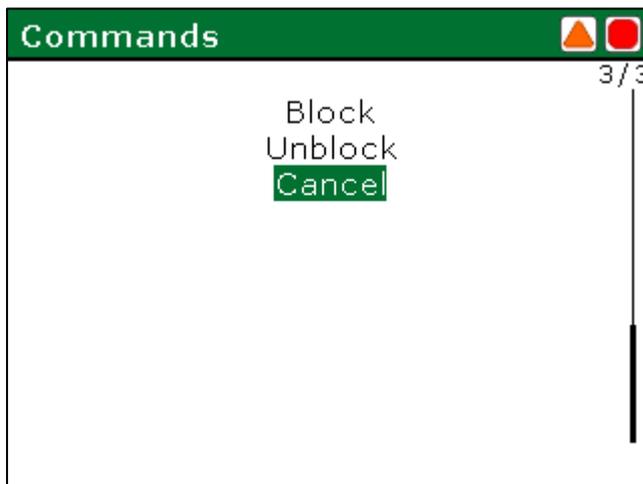
This window has the purpose of blocking or unblocking the Circuit Breaker Diagnostic Application. The window contains the following commands:
- Block
- Unblock
- Cancel

4. Contact

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