

MSCDN Fact Sheet

Capacitor Bank Protection for a Mechanically Switched Capacitor with a Damping Network

Introduction

Capacitor banks require a varied range of protection devices to monitor the system. Traditional solutions use many different relay types most of which were designed for other purposes. The MSCDN-MP has a unique range of purpose-designed functions to cover all of the protection requirements in three multi-functional boxes:

- MSCDN-MP1
- MSCDN-MP2a
- MSCDN-MP2b

MSCDN-MP1

Overall Unit Protection

This function is based on the well understood, high impedance circulating current principle. The protection consists of two DTL over-current elements. 87/50-1 and CT-1, 87/50-1 are set for tripping. The protection is duplicated for dependability, with elements 87/50-2 and CT-2 available for this purpose.

Capacitor out of balance

The **MSCDN-MP1** contains two identical Capacitor out of balance protection units which are primarily designed to protect phase segregated capacitor stacks, with a central 'H' connection, although application to alternative stack arrangements is possible. Thus **MSCDN-MP1** provides complete Capacitor out of balance protection for main and auxiliary capacitor stacks.

Phase Unbalance

The operating quantity for the 50N element, is calculated from the RMS residual of the three phase currents, which is then connected to a DTL over current element.

MSCDN-MP2a

Resistor Thermal Overload

The **MSCDN-MP2a** contains two identical thermal overload characteristics with settings supplied to match the thermal capabilities of the resistors. The relay can measure harmonic frequencies up to and including the 15th harmonic.

Resistor Open Circuit

The current in each resistor bank is balanced while the resistors are healthy. This detector can monitor the resistors and if they go open circuit the unbalance is registered.



MSCDN-MP2b

Reactor Thermal Overload

The **MSCDN-MP2b** has a thermal overload characteristics with settings supplied to match the thermal capabilities of the series reactor. The relay can measure harmonic frequencies up to and including the 15th harmonic.

Excessive RMS Over Current

The Excessive RMS over current element is a standard IDMTL overcurrent function with settings for both Phase & Earth faults. This element can be used as a back up O/C function. If required a separate back up relay can be used.

Capacitor Under/Over Voltage

A standard undervoltage element is available, with a time delay, to monitor the system voltage. The overvoltage function can have a user-defined shaped characteristic.

Common features

The status inputs can be used to give a trip circuit supervision scheme.

Metering

RMS Capacitor Bank currents (primary, secondary and relay)
RMS Overall Differential currents (secondary and relay)
RMS Capacitor Spill currents (primary, secondary and relay)
RMS Phase Unbalance currents (primary, secondary and relay)
System Voltage (primary and secondary)
Digital input status
Output relay status
Time and Date

LED INDICATION

1 Green-protection healthy
32 Red-programmable indication

Waveform records

Four records of one second duration
Two records of two seconds duration
One record of five seconds duration
Event records
Fault records

Time synchronising

IRIG B
IEC60870-5-103

Technical Information

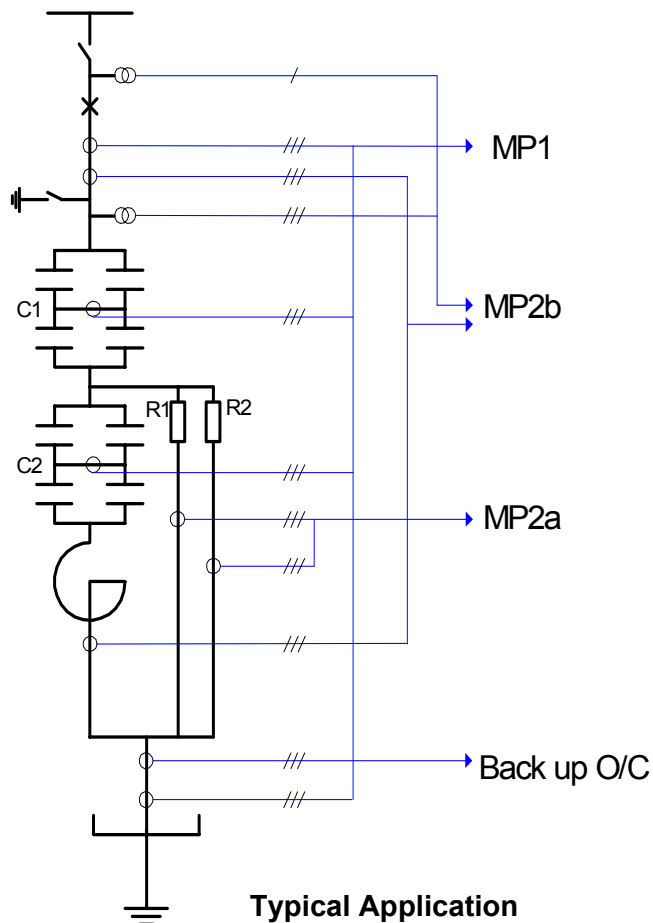
Case dimensions

Height 177mm
Width Size 12 - 311.5 (MP2a)
Size 16 - 415.5 (MP1, MP2b)

Case terminations

4mm screw fixing
Accepting 2 pre-insulated ring tongue terminals.

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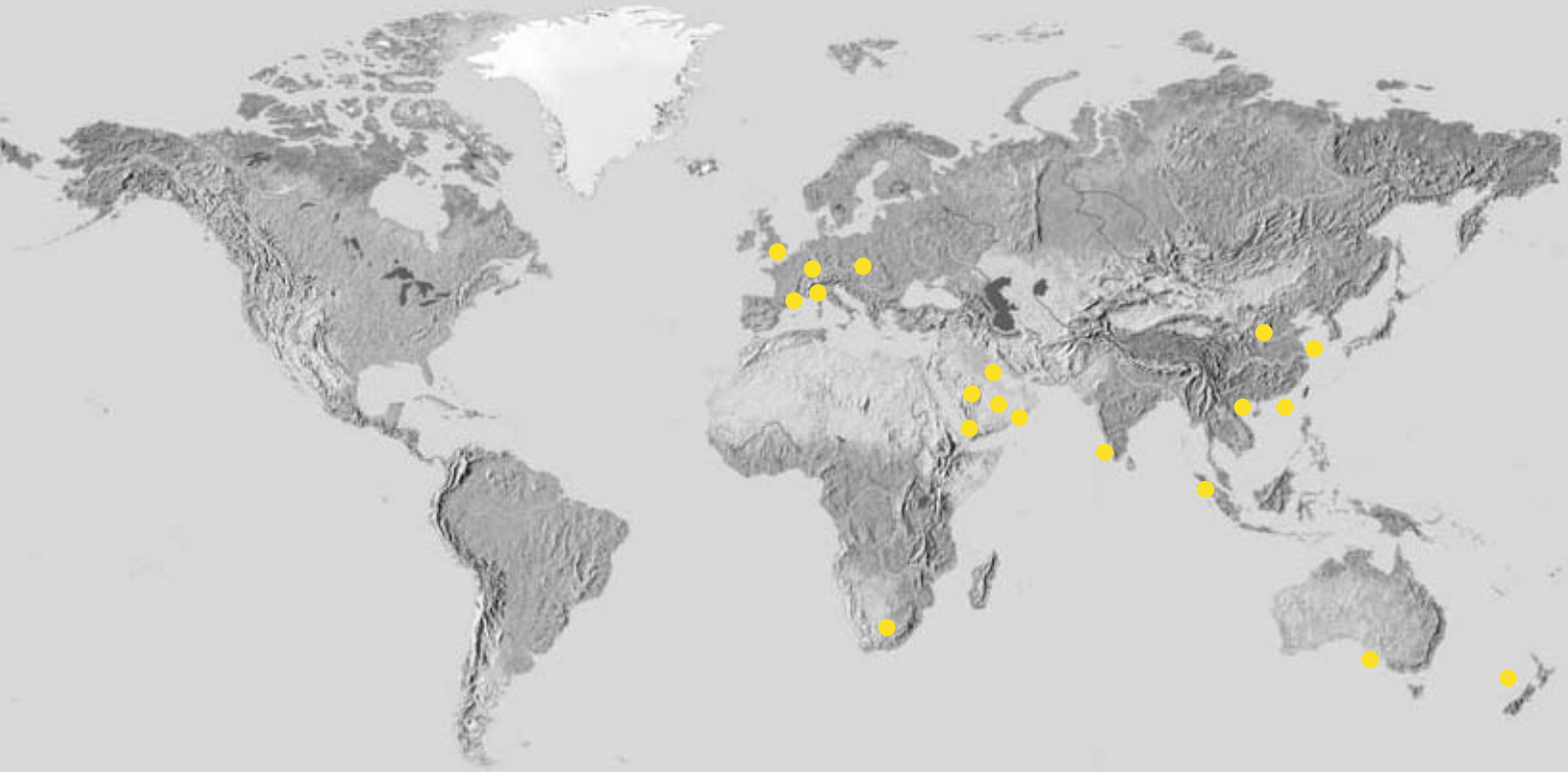


Qualifications

Siemens Protection Devices Limited operate a quality and environmental system accredited to ISO9001:2000 and ISO14001:1996

For all of our overseas office details, please visit our website at:

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