

MEVOCO

MEDIUM VOLTAGE COMPONENTS

THE ONE STOP SHOP FOR MEDIUM VOLTAGE COMPONENTS



RP800 Digital Protection Relay

Easy, effortless, and quick programming

Today's network components require maximum reliability, ease of use, and maintenance freedom. Mevoco's protection relay RP800 provides an answer to these requirements.

www.mevoco.be

RP800 Protection Relay

Advanced OC&EF Dual & Self Powered Protection Relay

Overcurrent & Earth Fault Protection Relay

Secondary Distribution Protection for Switchgears

- The RP800 is an OC&EF protection relay with self powered and dual powered (self-powering + auxiliary power) options.
- The relay is self powered using the operating current through three standard current transformers fitted on the lines. These transformers are also used to obtain current measurements. Besides, RP800 can be used with auxiliary power supply (24-230Vac/dc). The relay can be also supplied by a USB cable connected to the laptop or a standard power bank.
- Internal commissioning battery included (Lithium battery: 20 years lifetime).
- Metallic box with high electromagnetic compatibility level (EMC) and wide range of operating temperature.
- Really low start-up levels in self powered mode: 75mA in three phase system /160 mA in single phase system.
- Test menu allows the trip circuit to be tested before the transformation centre is powered up.
- There are 4 configurable LEDs. When the relay is switched off, their previous states can be checked by powering the relay up (by self-powering the relay through USB cable, auxiliary voltage or pressing commissioning battery).
- Self-diagnosis of the relay status (WATCHDOG) through the configurable LEDs and outputs.

SELF POWERED TECHNOLOGY



fig.1. RP800 Protection Relay



fig.2. VA-2RP with RP800 Protection Relay

ANSI CODE PROTECTIONS	
50	Instantaneous phase overcurrent
51	Inverse time phase overcurrent
50G	Instantaneous measured neutral overcurrent
51G	Inverse time measured neutral overcurrent
SHB	Second Harmonic Blocking
49	Thermal overload
52	Breaker wear monitoring
PGC	Programmable logic control

For more information on
RP800 or our other products,
contact our sales team
sales@mevoco.be

- Low power consumption.
- To allow communication, the protection relay is provided with a local micro USB front port and with remote communication RS485 port (Modbus RTU or DNP3.0 protocol, selectable by general settings) on the rear side.
- The RP800 is provided with a trip output for low power coil (24 Vdc – 135 mJ), 3 configurable inputs and 3 configurable outputs.
- The RP800 is fitted with the demand of current (Load Data Profiling) with the following characteristics:
 - Number of records: 168
 - Recording mode circular
 - Sampling rate (interval): configurable through communications 1-60 min
- The RP800 is provided with non-volatile RAM memory in order to store up to 1.024 events and disturbance fault recording (DFR-20 fault reports and 10 oscillographic records in COMTRADE format), maintaining date & time thanks to its internal RTC (Real Time Clock) even without power supply.
- The oscillography is downloaded by communications port. The SICom communications program allows the oscillography record to be downloaded and saved in COMTRADE format (IEEE C37.111-1991).
- The installation and subsequent maintenance of external batteries is eliminated. The operating costs of the centre are reduced.
- Its compact size makes RP800 easy to install (see fig. 5 for dimensions).

⚡ Functions diagram RP800

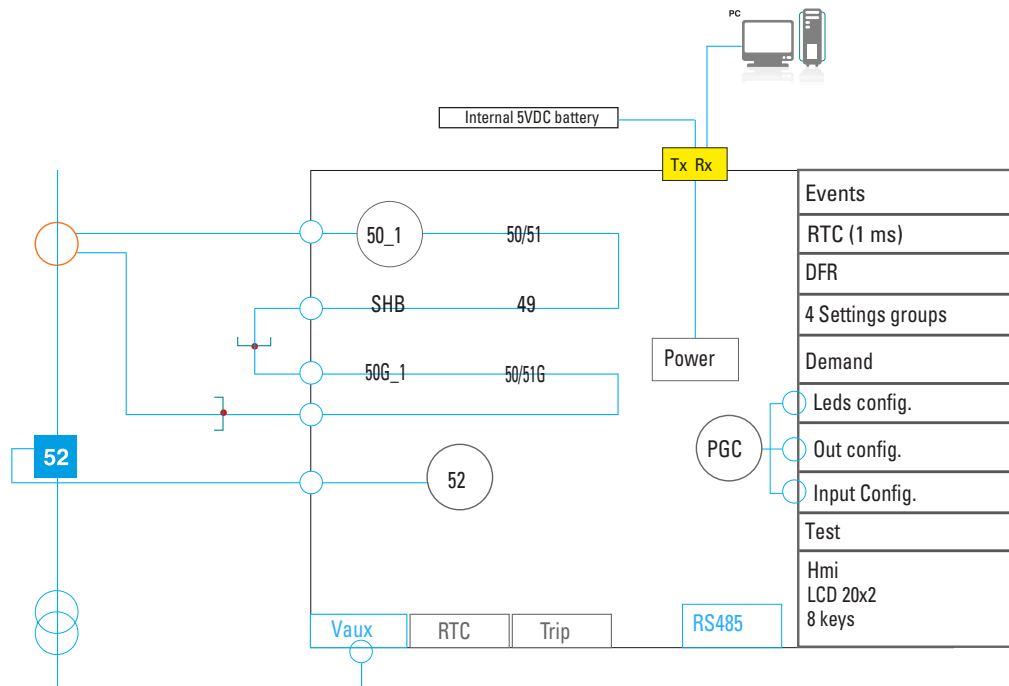


fig.3. Functions diagram

Connections diagram RP800

- 3 CT power supply-measurement
- Rigid neutral

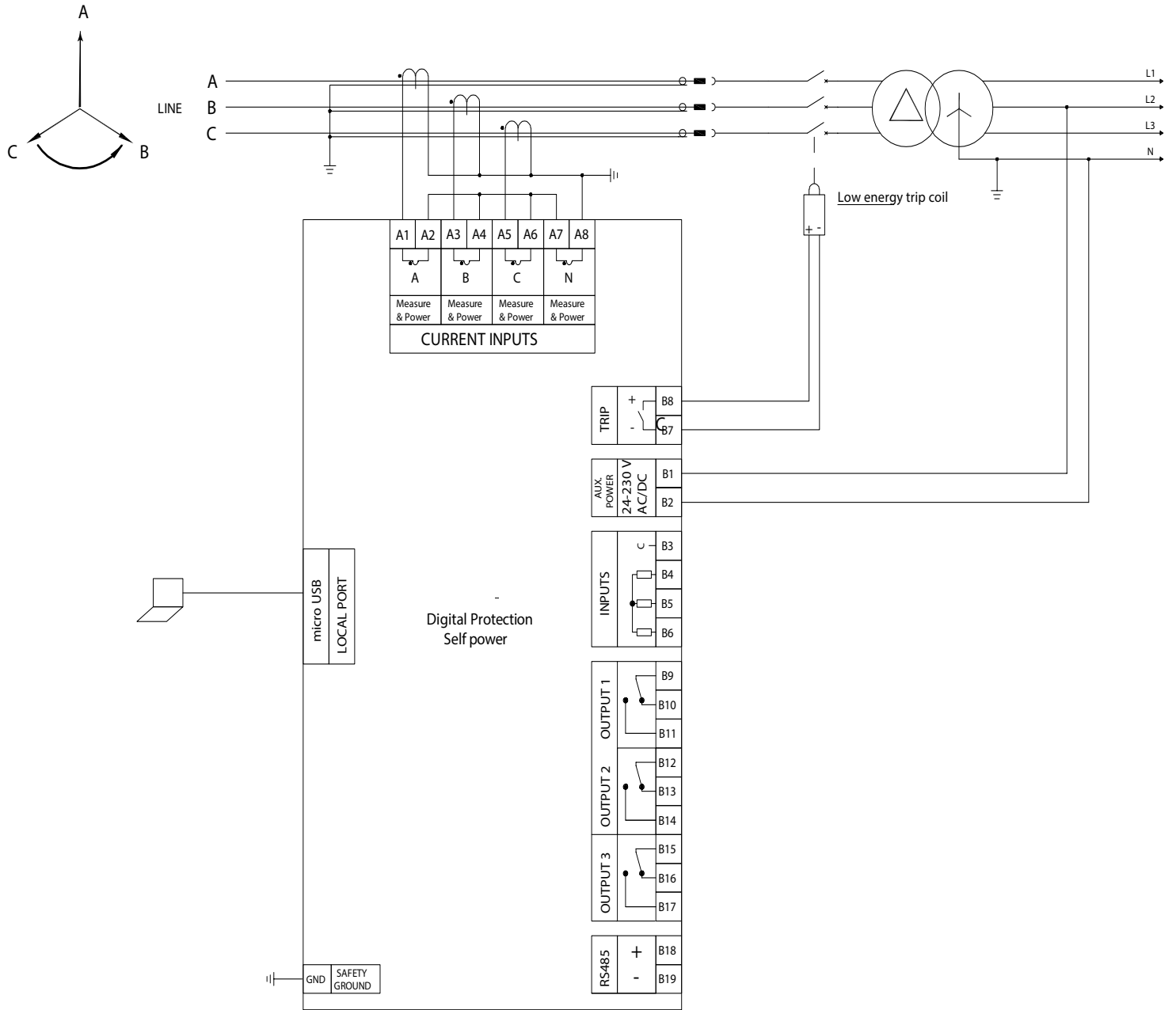


fig.4. Example of connections diagram

⚡ Dimensions and cutout RP800

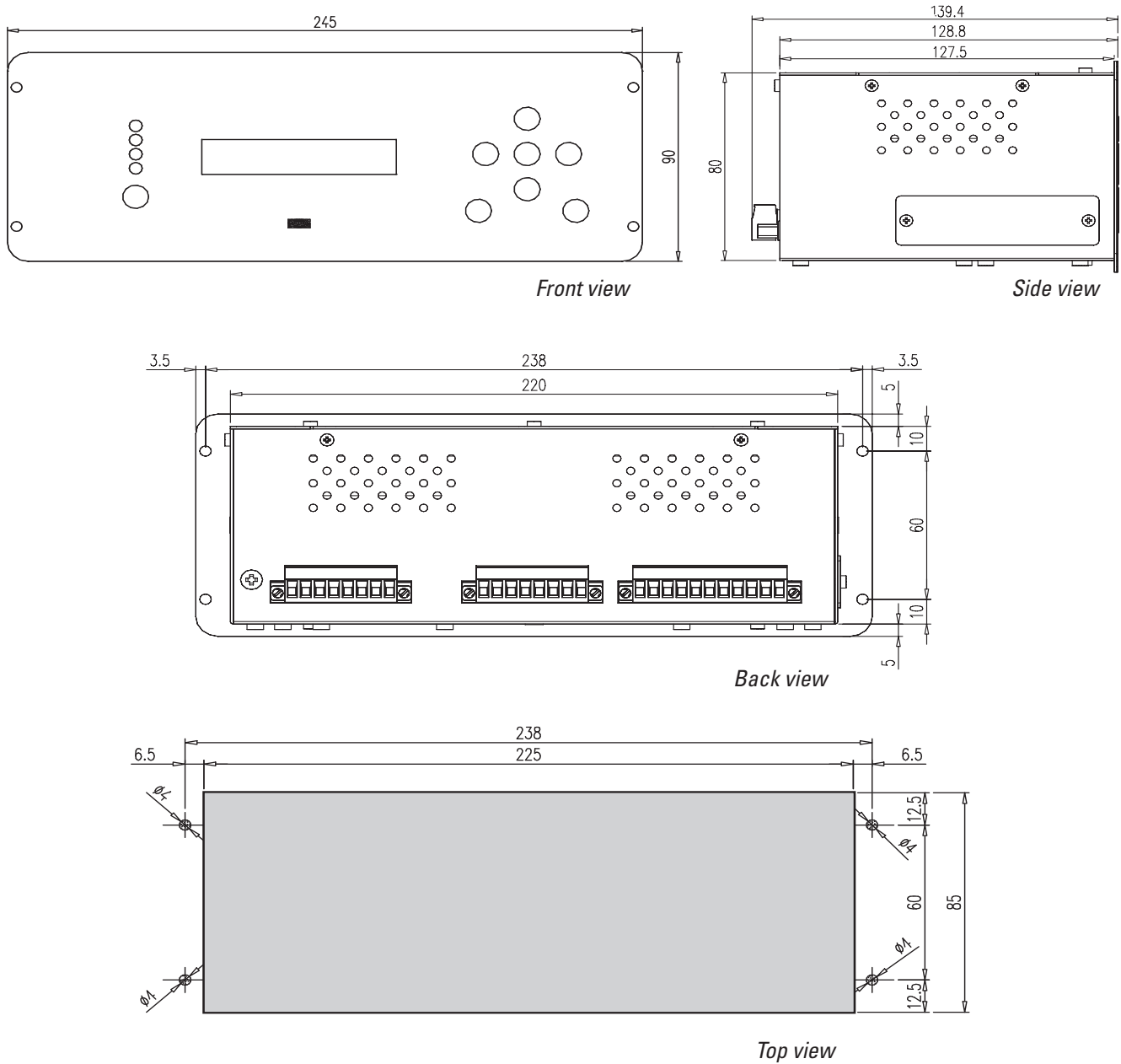


fig.5. Dimensions of RP800 Protection Relay



Technical Specifications

FUNCTION 50-1

Function Enable: No/Yes/SHB
 Current Tap: 0,2 to 20,00 xIn (step 0,01 xIn)
 Time Delay: 0,02 to 2 sec (step 0,01s)
 Activation level: 100%
 Deactivation level: 95%
 Instantaneous deactivation
 Timing accuracy:
 - Without SHB permitted: ± 30 ms or $\pm 0.5\%$ (greater than both).
 - With SHB permitted: ± 50 ms or $\pm 0.5\%$ (greater than both).

FUNCTION 51

Function Enable: No/Yes/SHB
 Curve Type: IEC 60255-151 and IEEE curves.
 IEC (Definite time, standard inverse, very inverse, extremely inverse, long time inverse, short time inverse) and IEEE (Moderately inverse, very inverse, extremely inverse).
 Time delay: 0.02 to 3s (step 0.01 s)
 Time Dial (TMS): 0.01 to 1.50 (step 0.01)
 Current Tap: 0.2 to 7 xIn (step 0.01 xIn)
 Curve, current activation level: 110%
 Curve, current deactivation level: 100%
 Defined time, current activation level: 100%
 Defined time, current deactivation level: 95%
 Instantaneous deactivation
 Timing accuracy for IEC and IEEE curve selection:
 -Without SHB permitted: ± 30 ms or $\pm 5\%$ (greater than both).
 -With SHB permitted: ± 50 ms or $\pm 5\%$ (greater than both).
 Timing accuracy for defined time selection:
 -Without SHB permitted: ± 30 ms or $\pm 0.5\%$ (greater than both).
 -With SHB permitted: ± 50 ms or $\pm 0.5\%$ (greater than both).

FUNCTION SHB

Function Enable: No/Yes
 Current Tap: 5 to 50% (step 1%)
 Reset Time: 0.00 to 300.00 (step 0.01 s)
 Block Threshold: 0.07 to 20.00 xIn (step 0.01 xIn)
 Activation level: 100%
 Deactivation level: 95%
 Temporized deactivation

FUNCTION 52

Maximum number of openings: 1 to 10.000 (step 1)
 Maximum accumulated amperes: 0 to 100.000 (M(A²)) (step 1)
 Opening time: 0.02 to 30.00 s (step 0.01 s)
 Closing time: 0.02 to 30.00 s (step 0.01 s)
 Excessive repeated openings: 1 to 10.000 (step 1)
 Repetitive openings/Time: 1 to 300 min (step 1 min)
 Open circuit breaker activation threshold: 60 mA

FUNCTION 50G-1

Function Enable: No/Yes/SHB
 Current Tap: 0,2 to 20 xIn (step 0,01 xIn)
 Time Delay: 0,02 to 2 sec (step 0,01s)
 Activation level: 100%
 Deactivation level: 95%
 Instantaneous deactivation
 Timing accuracy:
 - Without SHB permitted: ± 30 ms or $\pm 0.5\%$ (greater than both).
 - With SHB permitted: ± 50 ms or $\pm 0.5\%$ (greater than both).

FUNCTION 51G

Function Enable: No/Yes/SHB
 Curve Type: IEC 60255-151 and IEEE curves.
 IEC (Definite time, standard inverse, very inverse, extremely inverse, long time inverse, short time inverse) and IEEE (Moderately inverse, very inverse, extremely inverse).
 Time delay: 0.02 to 3s (step 0.01 s)
 Time Dial (TMS): 0.01 to 1.50 (step 0.01)
 Current Tap: 0.2 to 7 xIn (step 0.01 xIn)
 Curve, current activation level: 110%
 Curve, current deactivation level: 100%
 Defined time, current activation level: 100%
 Defined time, current deactivation level: 95%
 Instantaneous deactivation
 Timing accuracy for IEC and IEEE curve selection:
 - ± 30 ms or $\pm 5\%$ (greater than both).
 Timing accuracy for defined time curve selection:
 - ± 35 ms or $\pm 0.5\%$ (greater than both).

FUNCTION 49T

External trip through configurable inputs. Activated by short circuiting the terminals (without auxiliary voltage)

FUNCTION 68

Available through configurable inputs and outputs thanks to the programmable logic (PGC).

PROGRAMMABLE LOGIC CONTROL (PGC)
 OR4, OR4_LATCH, OR4_PULSES, OR4_TIMERUP, OR4_PULSE, NOR4,
 NOR4_TIMERUP, NOR4_PULSE, NOR4_PULSES, AND4, AND4_PULSES,
 AND4_TIMERUP, AND4_PULSE, AND4_LATCH, NAND4, NAND4_
 TIMERUP, NAND4_PULSE

SETTINGS TABLES
 4 settings groups
 Selectable by input or general setting.

SER
 1024 events

DISTURBANCE FAULT RECORDING (DFR)
 16 samples/cycle
 20 fault reports, 16 events in each.
 10 disturbance records in COMTRADE format (50 cycles each).
 COMTRADE IEEE C37.111-1991 - 4 analog channels and 32 digital chan-
 nels

CURRENT MEASUREMENTS
 Fundamental values (DFT)
 Sampling: 16 samples/cycle
 $\pm 2\%$ in a band of $\pm 20\%$ the nominal current and $\pm 4\%$ or ± 5 mA in the
 rest of the band.

ENVIRONMENTAL CONDITIONS
 Operating temperature: -40 to 70°C
 Relative humidity: 95%

MECHANICAL CHARACTERISTICS
 Metallic box
 Panel mounted
 Height x Width: 90 mm x 245 mm
 Depth: 139.4 mm
 Weight: 3 kg
 IP-54 panel mounted

SELF POWERING FROM CURRENT
 Three phase self-powering level: $I > 75$ mA

POWER SUPPLY
 24-230 Vac/Vdc $-20/+10\%$

BATTERY SUPPLY
 With standard power bank
 Commissioning internal battery

TRANSFORMERS
 Power supply and measurement A CTs/1

LOAD DATA PROFILING (LDP)
 Demand of power with the following characteristics:
 - Number of records: 168
 - Recording mode circular
 - Sampling rate (interval): configurable through communications
 (1-60 min)

TRIP OUTPUT
 Activation of the striker or low powered coil

OUTPUTS
 3 configurable outputs (output 1, output 2 and output 3):
 250 Vac – 8 A
 30 Vdc – 8 A

INPUTS
 3 inputs: they are activated by short-circuiting the terminals without
 external supply.

COMMUNICATIONS
 Local port (micro USB): Modbus RTU
 RS485 rear port: Modbus RTU or DNP3.0 Serial



fig.6. DR-6D RMU with RP800 Protection Relay

MEVOCO

MEDIUM VOLTAGE COMPONENTS

Mevoco spearheads a drive for the development of medium voltage components that excel in quality and safety. Mevoco's range of products includes load break switches, circuit breakers, voltage detectors, protection relay, and arc-killers. Among its innovations, Mevoco created the Arc-killer SV-25, a patented mechanism that dramatically improves safety in medium voltage switchgear. It maximizes not only operator safety, but it reduces material damage as well. The story lies at the heart of a vision for safer medium voltage components. Mevoco is located in Belgium, at the heart of an international transportation network. It ships products worldwide.






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Our products



RV 44
Load break switch



HR-2 / HR-3
(Non-)integrated
voltage detector



FT-2
Phase Comparator



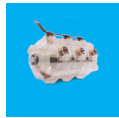
RV 53
Load break switch



VAS-2(RP)
Vacuum circuit
breaker



RP600
Digital Protection Relay



RV 50
Load break switch
for intergration in SF-6 switchgear



VA-2(RP)
Vacuum circuit
breaker



RP800
Digital Protection Relay



RV 54
Load break switch
(submersible)



VA-3
Vacuum circuit
breaker



SV-25
Arc-killer



RV 64
Load break switch
(submersible)



VA-8
Vacuum circuit breaker
for intergration in GIS switchgear



SV-50
Arc-killer

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