

PacT Series

EvoPacT SF

Medium Voltage Distribution

Catalog 2025

SF₆ Circuit Breaker up to 40.5 kV



Same technology, same offer, simpler names

We're making it easier for you to navigate across the wide range of our world-class digital products and select the offers that are right for you and your needs with confidence.

EcoStruxure Architecture

To enable brand consistency, relevance and impact, we are reinforcing our EcoStruxure™ architecture and digital customer lifecycle tools to help ensure a seamless experience from the CAPEX to OPEX phases of each project, bridging our entire ecosystem of partners, services providers and end users.

EcoStruxure is our IoT-enabled open and interoperable system architecture and platform. EcoStruxure delivers enhanced values around safety, reliability, efficiency, sustainability and connectivity for our customers. EcoStruxure leverages advancements in IoT, mobility, sensing, cloud, analytics, and cybersecurity technologies to deliver Innovation At Every Level from Connected Products, Edge Control, Apps, and Analytics and Services: our IoT technology Levels.

| Old names | New names |
|--|------------------------------|
| Ecodial | EcoStruxure Power Design |
| Ecoreal | EcoStruxure Power Build |
| Ecoreach | EcoStruxure Power Commission |
| MasterPact MTZ mobile App/Easergy mobile App | EcoStruxure Power Device App |

PacT and SeT Series

Featuring outstanding medium-voltage (MV) and low-voltage (LV) switchboards, motor control centers and power distribution solutions for high-performance power applications, Schneider Electric's PacT and SeT Series provides optimized solutions based on high levels of safety and an optimized footprint. Built on a modular architecture and incorporating smart connected devices for increase safety, reliability, performance and energy efficiency, the SeT Series is delivered to customers directly from our Schneider Electric plants or via a global network of licensed partner panel builders, who are trained and audited to provide quality equipment and support.

| Old names | New names |
|--------------|--------------|
| HVX | EvoPacT HVX |
| LF | EvoPacT LF |
| SF | EvoPacT SF |
| Premset | PremSeT |
| Compact | ComPacT |
| Masterpact | MasterPacT |
| Transferpact | TransferPacT |
| Fupact | FuPacT |

Your Concerns



Continuity of Service

- Low level of SF₆ pressure
- A safety membrane which, in very rare cases of an internal arc, will open in order to let the gas flow to the back of the circuit breaker
- Keeping at 0 bar of SF₆:
 - The nominal performance
 - The capacity to break once at least 80% of the full breaking capacity
 - The capacity to withstand at least 80% of the insulating level
- Breaking all types of current without overvoltages



Proven Technology

- Long experience of Schneider Electric in manufacturing MV circuit breakers in SF₆ technology
- 800,000 EvoPacT SF Circuit Breakers installed with over 25 years of experience



Ease of Installation

- Comprehensive range with a large choice of versions
- Cradle versions: retrofit and new panels integration

A full-page background image showing a worker from behind, wearing a white hard hat with a green chin strap and a high-visibility yellow safety jacket with reflective silver stripes. The worker is standing on a metal walkway or platform, leaning on a yellow handrail. In the background, there is a complex industrial structure with various pipes, valves, and metal frames, likely part of an electrical substation or power plant. The lighting is bright, suggesting daylight.

The advantages of a proven technology

A new path for achieving
your electrical installations

GENERAL CONTENT

General Presentation

6

EvoPacT SF1 and SFSeT

16

EvoPacT SF2

32

EvoPacT SF F400

42

Services

56

Order Forms

66



Find more information [here](#) 

All pictures of the catalogue illustrate the product in an environment close to reality. They were taken off-line. For live operation the PPE. (personal protective equipment) must be used in accordance with the regulations of the place of installation.

General Presentation

Content

| | |
|---|-----------|
| The Advantages of a Proven Technology | 8 |
| Breaking Principle | 9 |
| Scope of Application and Some References | 10 |
| Operating Conditions and Standards | 12 |
| EvoPacT SF Circuit Breakers Range | 13 |
| EvoPacT SF Circuit Breakers Panorama | 14 |

The Advantages of a Proven Technology

Schneider Electric has developed a wide range of high performance and reliable devices operating faultlessly on all 5 continents.

Continuously increasing its performance, the company maintains a very high level of innovation in its offer.

Key Benefits

- Compact and simple design
- No overvoltage during breaking
- Field proven experience

Enhanced Safety

The breaking medium is sulfur hexafluoride (SF₆) used at low pressure.

The insulating enclosure containing the circuit breaker pole(s) is equipped with a safety membrane.

In addition, the rated characteristics, breaking the rated current under the rated voltage, are generally maintained at zero relative bars of SF₆.

Enhanced Reliability

The motor-charged spring stored energy operating mechanism is a key factor of device reliability: Schneider Electric cumulates 45 years experience with this type of mechanism, 1,200,000 of which are already in operation.

Schneider Electric's mastery of design and the testing of sealed systems guarantees sustained device performance for at least 30 years.

Increased Endurance

The mechanical and electrical endurance of Schneider Electric SF₆ breaking devices are in conformity with the most demanding specifications recommended by the IEC.

These devices therefore meet requirements for even the most exposed of networks.

Sustainable

Schneider Electric devices have been designed to ensure protection of the environment:

- The materials used, both insulating and conductive, are identified and easy to separate and recycle.
- The SF₆ gas is under control from production through to the circuit breakers end of life. In particular it can be recovered at the end of the circuit breakers life and re-used after treatment in line with the new European directive.
- An end of life manual for the product details procedures for dismantling and recycling components.

Quality Assurance

During production, each circuit breaker undergoes systematic routine tests in order to check quality and conformity:

- Pole sealing check.
- Checking the correct mechanical operation of the device, plus its associated locking mechanisms.
- Checking simultaneous closing of contacts.
- Checking power frequency insulation level.
- Checking main circuit resistance.
- Checking auxiliary circuit insulation.
- Checking switching speeds.
- Checking the switching cycle.
- Measuring the switching times.

The results are recorded on the test certificate for each device which is initiated by the quality control department.

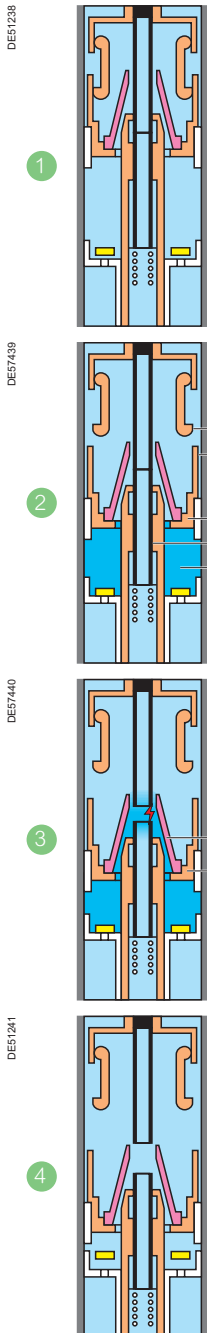
Certification

The quality system for the design and production of EvoPacT SF range is certified in conformity with ISO 9001: 2008 quality assurance standard requirements.

The environmental management system adopted by Schneider Electric production sites for the production of EvoPacT SF range has been assessed and judged to be in conformity with requirements in standard ISO 14001.



Breaking Principle



Breaking Principle: Puffer Type

EvoPacT SF circuit breakers use the puffer principle with SF₆ gas.

This method cools and extinguishes the electrical arc as it passes through zero current by puffing a gas compressed by a piston attached to the moving contact. The gas is channeled by an insulating nozzle towards the tubular arcing contacts that are used as an exhaust.

This breaking technique is used for high-performance breaking applications (40.5 kV-31.5 kA) and has been used for the past 45 years.

The operating sequence in a puffer-type breaking chamber with the moving part actuated by a control mechanism is as follows:

1

The circuit breaker is closed.

2

Following an opening order the main contacts separate (a) and the current is directed into the breaking circuit (b).

When the main contacts start to open the piston (c) slightly compresses the SF₆ gas in the compression chamber (d).

3

An electrical arc appears on separation of the arcing contacts. The piston (c) continues its travel downwards.

A small quantity of the gas channeled by the insulating nozzle (e) is injected towards the arc.

For low current breaking, the arc is cooled by forced ventilation.

However, for high currents the thermal expansion moves the hot gases towards cooler parts in the breaking unit.

The distance between arcing contacts becomes sufficient to allow breaking of the current when it passes through zero due to the dielectric properties of the SF₆ gas.

4

The moving parts finish their movement and injection of cold gas continues until the contacts are fully open.

The circuit breaker is open.

Scope of Application and Some References

Our EvoPacT SF circuit breaker adapts to all electrical power distribution requirements up to 40.5 kV.

Applications

EvoPacT SF circuit breakers are 3-pole MV circuit breakers for indoor installation. They are mainly used for switching and protection of networks up to 40.5 kV in primary and secondary power distribution.

The autocompression breaking technique used in these circuit breakers means that making or breaking all types of capacitive or inductive currents can be achieved without dangerous overvoltages for the switchgear connected to the network.

The EvoPacT SF circuit breaker is therefore well suited to operating capacitor banks.

An EvoPacT SF₆ circuit breaker is an essential component of an indoor metal-enclosed device intended for the MV section of HV/MV substations and high power MV/MV substations.

- EvoPacT SF₆ circuit breaker offers you:
 - Pre-engineered and adaptable solutions tailored to your specific requirements.
 - Significantly reduced maintenance.
 - Local support centres throughout the world.
- EvoPacT SF circuit breaker gives you the advantages of:
 - Continuity of service for your networks.
 - Enhanced safety for your staff and operations.
 - Optimised investment throughout the life of your installation.
 - The possibility of integrating your medium voltage switchboard in a monitoring and control system.

EvoPacT SF circuit breaker is present in all power distribution markets

Energy

- Electric power stations (thermal)
- Auxiliary substations
- Source substations

Industry

- Oil and gas
- Chemical industry
- Paper mills
- Metallurgy
- Car industry
- Mining
- Cement plants

Infrastructure

- Airports
- Ports
- Hospitals
- Water treatment

Scope of Application and Some References

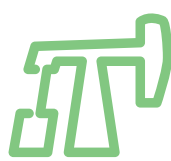


PE66579



Power generation

| | |
|--|----------------|
| Sonelgas SEC | Algeria KSA |
| Costa Nera SA power station | Argentina |
| Union Electrica | Cuba |
| Canal Electrical Distribution Company | Egypt |
| CEA Cadarache | France |
| EDF | France |
| Wind Turbines | France |
| Sarlux power station | Italy |
| Ivory Electricity Company | Ivory Coast |
| PowerCo | New Zealand |
| NIPP JEPCO | Nigeria Jordan |
| Skagerak Nett AS | Norway |
| OETC | Oman |
| Wind farm | Turkey |
| Renovation of the Tchernobyl nuclear power station | Ukraine |
| EVN thermal power station | Vietnam |

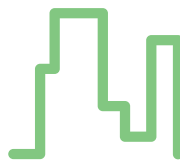


PE66582



Oil and Gas

| | |
|-------------------------------|----------------------|
| Oil, Girassol Mpg-Elf | Angola |
| Oil, Repsol, Santander | Spain |
| Oil, Sincor (Total) | Venezuela |
| Raffinerie PetroVietnam | Vietnam |
| Petro Amazona | Ecuador |
| Sonatrach QuatarPetroleum | Algeria Qatar |
| Exxon Mobil | Netherland |
| OMSK refinery NURLAT refinery | Russia |
| TADCO, BABOIL developmen | United Arab Emirates |



PM104631



PE66548

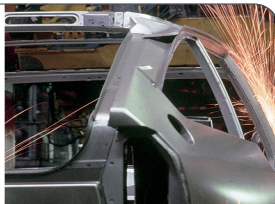


Infrastructure

| | |
|----------------------------------|----------------|
| New Islands Project | Abu Dhabi |
| Hamilton Hotels | Australia |
| Zaventem Airport | Belgium |
| Hospital Oswaldo Cruz, São Paulo | Brazil |
| Karoua Airport | Cameroon |
| Sanya Airport | China |
| Bank of China, Beijing, Jv Yanta | China |
| Santafe de Bogota Airport | Colombia |
| Libreville Airport | Gabon |
| Plaza Hotel, Jakarta | Indonesia |
| Bali Airport | Indonesia |
| Grand Indonesia Project | Indonesia |
| Milan Metro | Italy |
| Ivarto Hospital, CORIF | Madagascar |
| Slim River Hospital | Malaysia |
| Lamentin Airport, CCIM | Martinique |
| Metro of Mexico | Mexico |
| Central Bank of Abuja, ADEFEM | Nigeria |
| Alicante Airport | Spain |
| Girona Airport | Spain |
| Port of Laem Chabang | Thailand |
| Industrial Zone | Turkey |
| Danang and Quinhon Airport | Vanad, Vietnam |



PE66553



Industry

| | |
|----------------------------|-----------|
| Water treatment, Degremont | Argentina |
| Agri-food, Mastellone | Argentina |
| Alcoa Aluminium | Australia |
| General Motors Holden | Australia |
| Rio Tinto (Mining) | Australia |
| Automotive, Volvo | Belgium |
| Water treatment, (SIAAP), | France |
| Cement production, Lafarge | France |
| Automotive, Ford | Germany |
| Bridgestone | Hungary |
| Pharmaceutical, Merck | Singapore |
| BD Medical | Singapore |
| General Motors | Thailand |

Operating Conditions and Standards

PE50251



Operating Conditions

Normal operating conditions, according to the IEC International Standards listed below, for indoor switchgear.

Ambient Air Temperature

- Less than or equal to 40 °C.
- Less than or equal to 35 °C on average over 24 hours.
- Greater than or equal to -25 °C.

Altitude

- Less than or equal to 1000 m.
- Above 1000 m, a derating coefficient is applied (contact Schneider Electric).

Atmosphere

- No dust, smoke, or corrosive or flammable gas and vapor, or salt.

Humidity

- Average relative humidity over a 24 hour period $\leq 95\%$.
- Average relative humidity over a 1 month period $\leq 90\%$.
- Average vapor pressure over a 24 hour period ≤ 2.2 kPa.
- Average vapor pressure over a 1 month period ≤ 1.8 kPa.

Storage Conditions

In order to retain all of the functional units qualities when stored for prolonged periods, we recommend that the equipment is stored in its original packaging, in dry conditions, and sheltered from the sun and rain at a temperature ranging from -40 °C up to +70 °C.

Standards

The EvoPacT SF range meets the following international standards:

- IEC 62271-100: High-voltage switchgear and controlgear - Alternating current circuit breakers.
- IEC 62271-1: High-voltage switchgear and controlgear: common specifications.



EvoPacT SF Circuit Breakers Range

One range of comprehensive and proven three-pole circuit breaker units for indoor installation using SF₆ technology.

Both compact and dependable, it is ideally suited to the most demanding applications.

EvoPacT SF1 and SFSeT Circuit Breakers Fixed Versions



EvoPacT SF2 Circuit Breakers Fixed Version



EvoPacT SF F400 Circuit Breakers Withdrawable Version



EvoPacT SF Circuit Breakers Panorama

Circuit Breakers

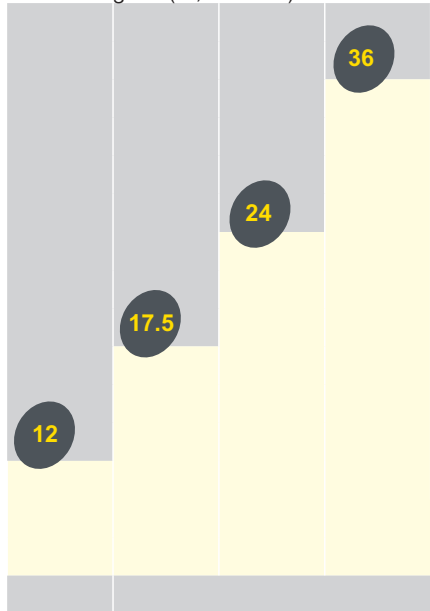
EvoPacT SF Range Circuit Breakers - FIXED version



EvoPacT SF1 fixed

Side or front operating
mechanism

Rated voltage U_r (kV, 50/60 Hz)



Rated short-circuit breaking current (I_{sc})

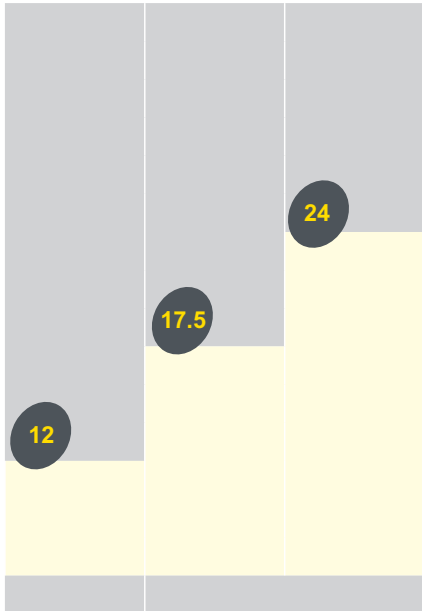
25 kA from 12.5 to 25 kA

Rated current (I_r)

630 A from 400 to 1250 A

EvoPacT SFSeT fixed

Side or front operating
mechanism with integrated VIP

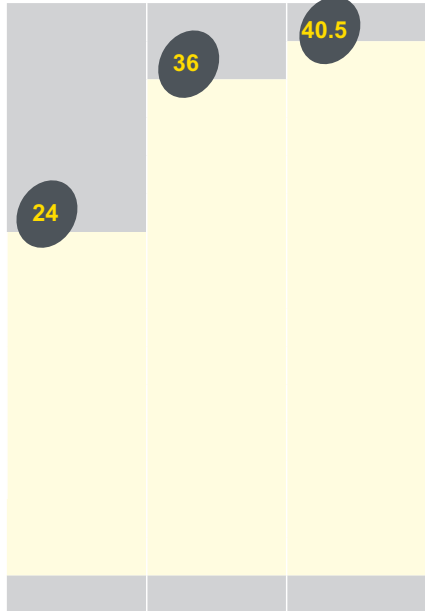


25 kA from 12.5 to 25 kA

630 A 630 A

EvoPacT SF2 fixed

Front operating mechanism



from 12.5 to 40 kA from 25 to 40 kA 31.5 kA

from 630 to 3150 A 2500 A

EvoPacT SF Circuit Breakers Panorama

Circuit Breakers

Protection, Monitoring, and Control

EvoPacT SF Range Circuit Breakers - WITHDRAWABLE version



EvoPacT SFSeT circuit breakers

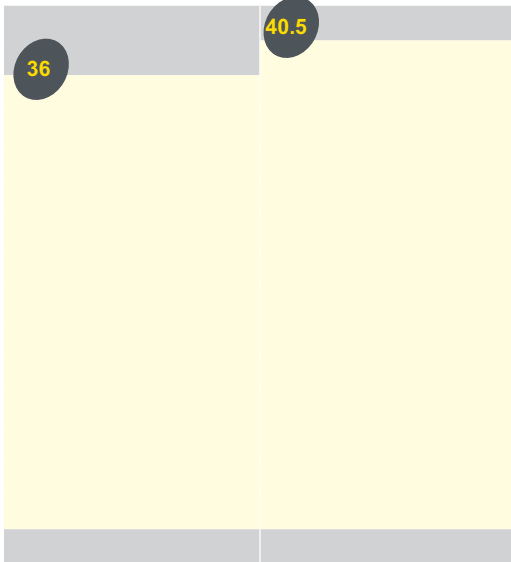


EvoPacT SF1/SF2/SF F400 circuit breakers



EvoPacT SF F400 withdrawable

Front operating mechanism



| | |
|------------------|---------|
| from 25 to 40 kA | 31.5 kA |
| 1250 and 2500 A | 1250 A |

VIP 400/410

- MV distribution substation incomer, feeder, and bus riser protection relay
- MV/LV transformer protection

PowerLogic P1

Simple, reliable, and effective protection relays

PowerLogic Easergy P3

The perfect fit for standard MV applications

PowerLogic P5

Enhanced safety and security for demanding MV applications

EvoPacT SF1 and SFSeT Circuit Breakers Fixed Version

Contents

| | |
|--|-----------|
| Presentation | 18 |
| General Characteristics | 19 |
| Description of Functions | 21 |
| RI Stored Energy Operating Mechanism Wiring diagram | 21 |
| Opening Circuit | 22 |
| Remote Control | 23 |
| Indication and Locking/Interlocking | 24 |
| Protection, Monitoring, and Control | 25 |
| VIP 400/410 Protection Relays | 25 |
| Trip Curves for VIP 400 and VIP 410 | 27 |
| Current Sensors and Test Unit for VIP 400/410 | 28 |
| Dimensions | 29 |

Presentation

EvoPacT SF1 and SFSeT Circuit Breakers Fixed Version

PM110000



EvoPacT SF1 circuit breakers with a B1 side operating mechanism

PE56504



EvoPacT SFSeT circuit breakers with a B1 side operating mechanism

Description of the Device

The basic withdrawable version of the EvoPacT SF circuit breaker comprises:

- 3 main independent poles, that are mechanically linked and each comprising.
- A sealed pressure system type insulating enclosure. The sealed enclosure is filled with low pressure SF₆ gas.
- A stored energy operating mechanism of manual RI type (that can be electrically operated as an option). This gives the device an opening and closing speed that is independent of the operator, for both electrical and manual orders. When equipped with an electrical operating mechanism, the circuit breaker can be remotely controlled and it is possible to carry out reclosing cycles.
- A front panel housing the manual operating mechanism and status indicators.
- Upstream and downstream terminals for the power circuit connection.
- A terminal block for connection of external auxiliary circuits.

According to its characteristics, the EvoPacT SF circuit breaker is available either in frontal version or in lateral version.

Each device can be optionally equipped with:

- An electrical operating mechanism.
- A support frame fitted with rollers and floor securing brackets for a fixed installation.
- Locking of the circuit breaker in the open position by a keylock installed on the control panel.
- A pressure switch for the high performance versions.
- A Harting 42-pin type LV connector.

The EvoPacT SFSeT includes an independent protection chain

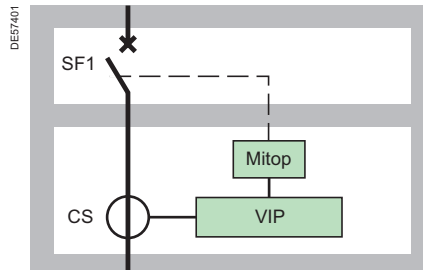
The EvoPacT SFSeT is provided with a fully autonomous integrated protection chain (with a VIP type control unit) operating without an auxiliary power source. The VIP protection unit exists in two models: VIP 400 and VIP 410.

Depending on the model, the unit provides protection against phase over-currents and earthing faults.

VIP protection units are associated with functional current sensors.

Two interchangeable sensors, CSa4 and CSb4, are sufficient to cover all requirements from 0 to 630 A.

EvoPacT SFSeT is delivered equipped and cabled with its protection chain, this simplifies panel builders installation work.



EvoPacT SFSeT schematic diagram

General Characteristics

EvoPacT SF1 and SFSeT

Circuit Breakers Fixed Version

EvoPacT SF1

PM110000



Electrical characteristics according to IEC 62271-100

| | | | | | | |
|--------------------------------------|--------------------------------|--------------------------------|-------------|------|------|-----|
| Rated voltage | Ur | kV 50/60 Hz | 12 | 17.5 | 24 | 36 |
| Insulation voltage | | | | | | |
| - Power frequency withstand | Ud | kV 50 Hz 1min | 28 | 38 | 50 | 70 |
| - Lightning impulse withstand | Up | kV peak | 75 | 95 | 125 | 170 |
| Rated current | Ir | A | 400 | 630 | 1250 | |
| | | | – | ■ | ■ | ■ |
| | | | ■ | ■ | ■ | ■ |
| | | | – | ■ | ■ | ■ |
| Short circuit current | Isc | kA | 25 | 12.5 | 20 | 25 |
| Short time withstand current | I _k /t _k | kA/3 s | 25 | 12.5 | 20 | 25 |
| Short-circuit making current | I _p | kA peak | 50 Hz | 62.5 | 31.3 | 50 |
| | | | 60 Hz | 65 | 32.5 | 52 |
| Rated switching sequence | | O-3 min-CO-3 min-CO | ■ | ■ | ■ | ■ |
| | | O-0.3 s-CO-3 min-CO | ■ | ■ | ■ | ■ |
| | | O-0.3 s-CO-15 s-CO | ■ | ■ | ■ | ■ |
| Phase to phase | mm | 220 | – | ■ | ■ | ■ |
| | | 250 | ■ | ■ | ■ | ■ |
| | | 280 | – | – | – | – |
| | | 350 | – | – | – | – |
| | | 380 | – | – | – | – |
| Operating mechanism | | A1 lateral* | – | ■ | ■ | ■ |
| | | B1 lateral* | – | ■ | ■ | ■ |
| | | C1 frontal* | – | ■ | ■ | ■ |
| | | For SM6 switchgear | ■ | – | ■ | – |
| Operating times | | Opening (ms) | < 60 | | | |
| | | Breaking (ms) | < 75 | | | |
| | | Closing (ms) | < 100 | | | |
| Service temperature | T | °C | -5 to +40** | | | |
| Mechanical endurance | | Class | M2 | | | |
| | | Number of switching operations | 10,000 | | | |
| Electrical endurance | | Class | E2 | | | |
| Capacitive current breaking capacity | | Class | C2 | | | |

* See chapter Dimensions.

** For a temperature lower than -5 °C, contact Schneider Electric.

■ Available

– Not available

Specific applications

Switching and protection of capacitor banks

EvoPacT SF range circuit breakers are particularly well suited to switching and protection of capacitor banks; they are classed C2 according to standard IEC 62271-100.

Tests carried out according to the standard for breaking at 400 A with making and breaking cycles in case of a capacitor bank with a making current of 20 kA.

General Characteristics

EvoPacT SF1 and SFSeT Circuit Breakers Fixed Version

EvoPacT SFSeT



Electrical characteristics according to IEC 62271-100

| | | | | | | | | | | | |
|--------------------------------------|--------------------------------|---------------|-------------|------|------|----|------|------|------|----|------|
| Rated voltage | Ur | kV 50/60 Hz | 12 | 17.5 | | | | 24 | | | |
| Insulation voltage | | | | | | | | | | | |
| - Power frequency withstand | Ud | kV 50 Hz 1min | 28 | 38 | | | | 50 | | | |
| - Lightning impulse withstand | Up | kV peak | 75 | 95 | | | | 125 | | | |
| Rated current | Ir | A | 400 | – | – | ■ | – | ■ | ■ | – | – |
| | | | 630 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | | 1250 | – | – | – | – | – | – | – | – |
| Short circuit current | Isc | kA | | 25 | 12.5 | 20 | 25 | 12.5 | 16 | 20 | 25 |
| Short time withstand current | I _k /t _k | kA/3 s | | 25 | 12.5 | 20 | 25 | 12.5 | 16 | 20 | 25 |
| Short-circuit making current | I _p | kA peak | 50 Hz | 62.5 | 31.3 | 50 | 62.5 | 31.3 | 40 | 50 | 62.5 |
| | | | 60 Hz | 65 | 32.5 | 52 | 65 | 32.5 | 41.6 | 52 | 65 |
| Rated switching sequence | O-3 min-CO-3 min-CO | | ■ | ■ | | | | ■ | | | |
| | O-0.3 s-CO-3 min-CO | | ■ | ■ | | | | ■ | | | |
| | O-0.3 s-CO-15 s-CO | | ■ | ■ | | | | ■ | | | |
| Phase to phase | mm | 220 | – | ■ | ■ | ■ | ■ | – | – | – | – |
| | | 250 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | 280 | – | – | – | – | – | ■ | ■ | ■ | ■ |
| | | 350 | – | – | – | – | – | – | – | – | – |
| | | 380 | – | – | – | – | – | – | – | – | – |
| Operating mechanism | A1 lateral* | | – | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | B1 lateral* | | – | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | C1 frontal* | | – | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | For SM6 switchgear | | ■ | – | ■ | – | – | ■ | ■ | ■ | – |
| Operating times | Opening (ms) | | < 60 | | | | | | | | |
| | Breaking (ms) | | < 75 | | | | | | | | |
| | Closing (ms) | | < 100 | | | | | | | | |
| Service temperature | T | °C | -5 to +40** | | | | | | | | |
| Mechanical endurance | Class | | M2 | | | | | | | | |
| | Number of switching operations | | 10,000 | | | | | | | | |
| Electrical endurance | Class | | E2 | | | | | | | | |
| Capacitive current breaking capacity | Class | | C2 | | | | | | | | |

* See chapter Dimensions.

** For a temperature lower than -5 °C, contact Schneider Electric.

■ Available

– Not available

Specific applications

Switching and protection of capacitor banks

EvoPacT SF range circuit breakers are particularly well suited to switching and protection of capacitor banks; they are classed C2 according to standard IEC 62271-100.

Tests carried out according to the standard for breaking at 400 A with making and breaking cycles in case of a capacitor bank with a making current of 20 kA.

Description of Functions

RI Stored Energy Operating Mechanism Wiring diagram

PM105955



Manual or Electrical Operation of the RI Stored Energy Operating Mechanism

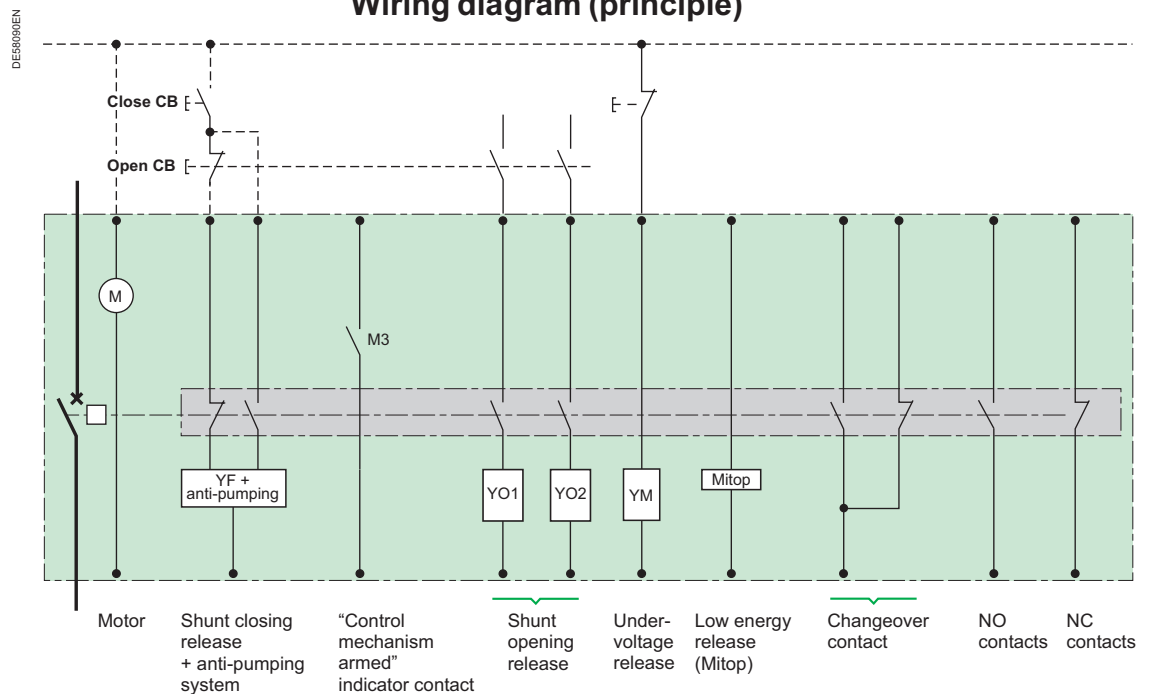
This gives the device an opening and closing speed that is independent of the operator whether the order is electrical or manual.

The electrical control mechanism carries out reclosing cycles and it is automatically recharged by a geared motor each time after closing.

It consists of:

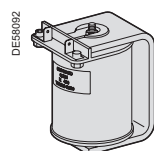
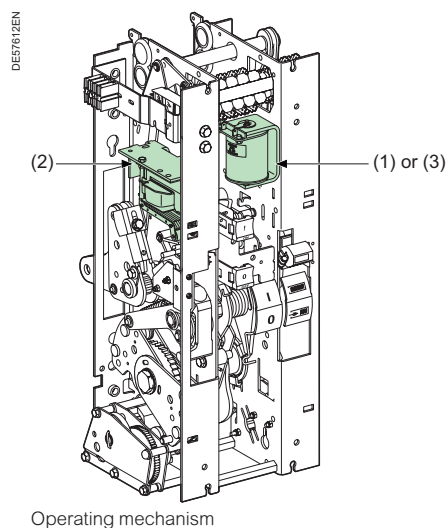
- The stored energy operating mechanism which stores in springs the energy required to open and close the device.
- A manual lever-operated spring arming device.
- A geared electrical arming device which automatically re-arms the control mechanism as soon as the circuit breaker is closed (optional).
- Manual order devices by push buttons on the front panel of the device.
- An electrical remote closing device containing a release with an antipumping relay.
- An electrical opening order device comprising one or several release units which can be of the following type:
 - Shunt opening
 - Undervoltage
 - Mitop, a low consumption release, used only with the self protection relay.
- An operation counter.
- An open/closed position indicator device with a mechanical indicator.
- A device for indicating charged operating mechanism status by mechanical indicator and electrical contact (optional).
- A module of 14 auxiliary contacts whose availability varies according to the diagram used.

Wiring diagram (principle)

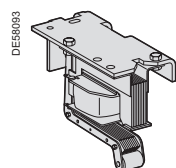


Description of Functions

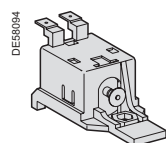
Opening Circuit



Shunt opening release (1)



Undervoltage release (2)



Low energy release (3)

Composition

The opening circuit can be produced using the following components:

- Shunt opening release (on energizing) (YO1).
- Second shunt opening release (on energizing) (YO2).
- Undervoltage release (YM).
- Low energy release (Mitop).

Note: See the table of the releases combinations Order Forms page.

Shunt Opening Release (YO1 and YO2)

Energizing this unit causes instant opening of the circuit breaker.

Characteristics

| | | |
|--------------|----------------------|----------------|
| Power supply | See Order Forms page | |
| Threshold | Vac | 0.85 to 1.1 Ur |
| | Vdc | 0.7 to 1.1 Ur |
| Consumption | Vac | 160 VA |
| | Vdc | 50 W |

As an option, the tripping circuit monitoring (supervision) enables to ensure that the circuit breaker is ready to open.

Undervoltage Release (YM)

This release unit causes the systematic opening of the circuit breaker when its supply voltage drops below a value less than 35% of the rated voltage, even if this drop is slow and gradual. It can open the circuit breaker between 35% and 70% of its rated voltage. If the release unit is not supplied power, manual or electrical closing of the circuit breaker is impossible. Closing of the circuit breaker is compulsory when the supply voltage of the release unit reaches 85% of its rated voltage.

Characteristics

| | | | |
|--------------|------------|----------------------|----------------|
| Power supply | | See Order Forms page | |
| Threshold | | Opening | 0.35 to 0.7 Ur |
| | | Closing | 0.85 Ur |
| Consumption | Triggering | Vac | 400 VA |
| | | Vdc | 100 W |
| | Latched | Vac | 100 VA |
| | | Vdc | 10 W |

Low Energy Release (Mitop)

This specific release unit comprises a low consumption unit and is specifically used with self-powered relays.

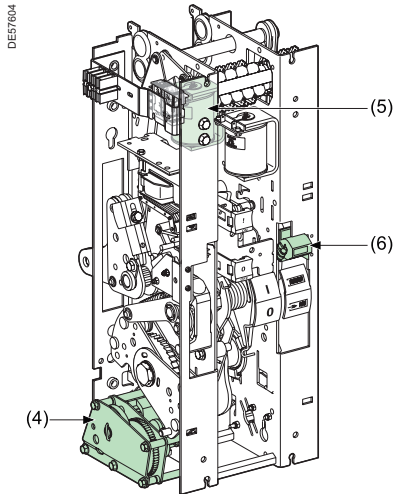
Characteristics

| | |
|--------------|-----------------|
| Power supply | Direct current |
| Threshold | 0.6 A < I < 3 A |

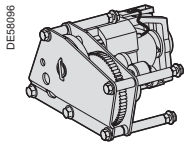
Any tripping due to the Mitop release unit is momentarily indicated by an SDE type changeover contact.

Description of Functions

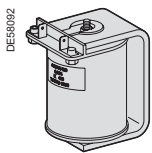
Remote Control



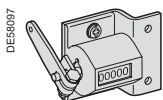
Operating mechanism



Electrical motor with gearing (4)



Shunt closing release (5)



Operation counter (6)

Function

Remote control enables the remote opening and closing of the circuit breaker.

Composition

The remote control mechanism comprises:

- An electrical motor with gearing.
- A shunt closing release combined with an anti-pumping device.
- An operation counter.

Electrical Motor with Gearing (M)

The electrical motor arms and re-arms the stored energy unit as soon as the circuit breaker is closed. This allows the instant closing of the device after opening.

The arming lever is only used as a back-up operating mechanism in the case of any auxiliary power supply.

The M3 contact indicates the end of arming operations.

Characteristics

| | | |
|--------------|----------------------|----------------|
| Power supply | See Order Forms page | |
| Threshold | Vac/Vdc | 0.85 to 1.1 Ur |
| Consumption | Vac | 380 VA |
| | Vdc | 380 W |

Shunt Closing Release (YF)

This allows the remote closing of the circuit breaker when the operating mechanism is armed.

Characteristics

| | | |
|--------------|----------------------|----------------|
| Power supply | See Order Forms page | |
| Threshold | Vac | 0.85 to 1.1 Ur |
| | Vdc | 0.85 to 1.1 Ur |
| Consumption | Vac | 160 VA |
| | Vdc | 50 W |

The anti-pumping relay enables the guaranteeing of opening priority in the case of a permanent closing order. This therefore avoids the device being caught in a uncontrolled opening-closing loop.

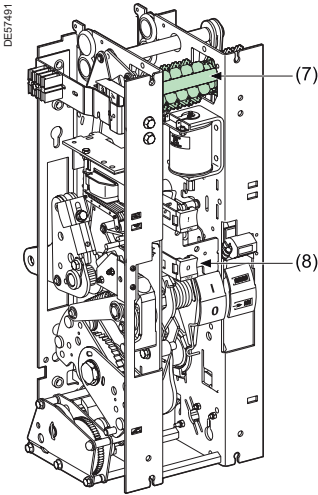
Operation Counter

The operation counter is visible on the front panel.

It displays the number of switching cycles (CO) that the device has carried out.

Description of Functions

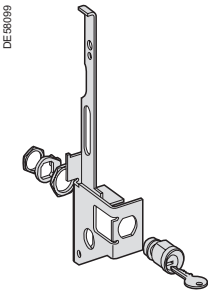
Indication and Locking/Interlocking



Operating mechanism



Auxiliary contacts (7)



Keylocking kit (8)

Open/Closed Auxiliary Contacts

The number of contacts available depends on the options chosen on the operating mechanism.

In the basic configuration, the circuit breakers operating mechanism comprises a total of:

- 7 normally closed contacts (NC)
- 7 normally open contacts (NO)
- 1 changeover contact (CHG).

The usage procedure for auxiliary contacts is given in the following table:

| Options | | |
|--|------------|------------|
| | NC contact | NO contact |
| Remote control | 1 | 1 |
| Shunt opening release (each one) YO1/YO2 | 0 | 1 |
| Undervoltage release YM | 0 | 0 |
| Low energy release (Mitop) | 0 | 0 |

In order to know the final number of available contacts, you must deduct the total number of contacts included in the circuit breaker (7 NC + 7 NO + 1 CHG), the number of contacts used given in the table above.

For example: a circuit breaker equipped with a remote control and a shunt trip unit has the following available contacts:

6 NC + 5 NO + 1 CHG.

With a undervoltage release instead of the shunt trip, this circuit breaker would have the following available contacts:

6 NC + 6 NO + 1 CHG.

| Shunt opening release combination | | | |
|-----------------------------------|---------------------------|-------------------------|------------------|
| 1st release | Shunt opening release YO1 | Undervoltage release YM | Mitop |
| 2nd release | | | |
| Without | 6NC + 5NO + 1CHG | 6NC + 6NO + 1CHG | 6NC + 6NO + 1CHG |
| Shunt opening release YO2 | 6NC + 4NO + 1CHG | | |
| Undervoltage release YM | 6NC + 5NO + 1CHG | | |
| Mitop | 6NC + 5NO + 1CHG | 6NC + 6NO + 1CHG | |

Locking the Circuit Breaker in the Open Position

This key-operated device allows the circuit breaker to be locked in the open position.

The circuit breaker is locked in the open position by blocking the opening push button in the engaged position.

Locking is achieved using a flat or tubular captive key type keylock.

EvoPacT SF1 and SFSeT Circuit Breakers Fixed Version

Protection, Monitoring, and Control

VIP 400 and VIP 410 Protection Relays

PE56504



EvoPacT SFSeT with a VIP protection unit installed on the front panel

The EvoPacT SFSeT circuit breaker has an integrated and independent protection system

The EvoPacT SFSeT circuit breaker comprises an EvoPacT SF1 into which is integrated a protection system comprising:

- A set of current sensors installed on the lower current terminals of the pole units.
- Two interchangeable sensors, CSa4 and CSb4, sufficient to cover all requirements from 0 A to 630 A.
- A VIP type protection relay mounted on the control unit.
- A Mitop low consumption, release unit installed on the switching device.
- The unit is fully independent and functions without an auxiliary power supply.

The protection system is supplied power by sensors which supply:

- The current information, processed by the protection unit.
- The electrical power required for the whole protection system to operate.

VIP unit and Mitop release.

All settings are visible and accessible from the front of the device.

Introduction

VIP 400 and VIP 410 protection relays are designed for the protection and operation of MV/LV utility substations and electrical distribution networks in industrial installations.

They are suitable for typical protection applications that require current metering, phase overcurrent and earth fault protection, and thermal overload protection.

The VIP 400 is a relay with a self-powered supply. It is powered by its current sensors and operates without an auxiliary power supply.

The VIP 410 is a relay with a dual power supply. It is powered both by its current sensors, just like the VIP 400, and also by an auxiliary power supply. The protection functions work autonomously, like those on the VIP 400.

With the VIP 410, the auxiliary power supply is needed for the communication, the output relays and the very sensitive earth fault protection to work. The VIP 410 protection functions work even if the auxiliary power supply fails.

Applications

- MV distribution substation incomer, feeder, and bus riser protection relay.
- MV/LV transformer protection.

- VIP 400 is a self-powered relay energised by the CTs; it does not require an auxiliary power supply to operate.
- VIP 410 is a dual powered relay offering self-powered functions and additional functions powered by an AC or DC auxiliary supply.

PM100576



PM100580



VIP 410: Ready for Smart Grids

VIP 410 includes a dual supply for communication with:

- Remote communication with DMS and RTUs.
- Remote alarming.
- Time stamped events recorded.
- Measurement of current, load history, over-current and breaking profile.

VIP 410 is dedicated for intelligent MV loops with automation:

- Remote configuration.
- Setting groups selectable according to the configuration of the MV loop.
- Remote asset management.
- Plug and play system with Easergy RTUs (R200) to integrate all the protocols (IEC60870-104, DNP3, IEC61850), and remote WEB pages.

Protection, Monitoring, and Control

VIP 400 and VIP 410 Protection Relays

Easy to Use

Front panel keypad and display

- Used to set the protections and the operating parameters.
- Displays the network currents and the fault messages.
- The settings are protected by a password and by a sealable cover.
- The setting does not require a PC.
- The LCD is backlit if the VIP 410 auxiliary power is present.
- 4 fault indicators: OC, EF, thermal, external.
- 3 status led: watch dog, aux power supply, communication.

Time tagged events records

Each time VIP 400, 410 trips the circuit breaker, it records the origin of the event, the tripping currents, the date and the time. These data can be read on the front panel or by communication. It provides the operator with an help to analyze a fault on the network.

Main Features

VIP 400: Self-Powered Protection Relay

This version is energized by the current transformers (CTs). It does not require an auxiliary power supply to operate.

- Overcurrent and earth fault protections.
- Thermal overload protection.
- Current measurement functions.

VIP 410: Dual Powered Protection Relay

- Offers the same self-powered functions as the VIP 400.
- In addition, the VIP 410 has an AC or DC auxiliary supply to power certain additional functions that cannot be self-powered.
- Sensitive earth fault protection convenient to all earthing systems.
- External tripping input.
- Cold load pick-up.
- 2 setting groups selectable by communication.
- Communication (Modbus RS485 port).
- Signalling relays.
- If the auxiliary power fails during an MV short-circuit, the protection functions are maintained operational.

Other Features

- Designed for circuit breakers up to 630 A.
- Complete pre-tested solution that eliminates complicated CT selection.
- Complies with MV protection relay standard IEC 60255.
- No PC or specific tool required for setting or commissioning.
- Self-powered by dual core CTs: CSa4/CSb4.
- Temperature: -40 °C/+70 °C.

Primary Injection Test

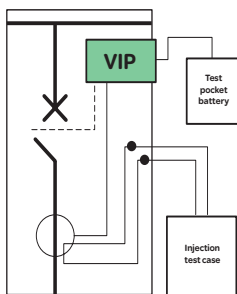
A primary injection circuit may be permanently installed (optional) through the CTs, inside the cubicle, to test the physical integrity of the complete protection system including the CTs

- The test is carried out without disconnecting the CTs and the VIP relay displays the injected current during testing.
- If required, a temporary VIP test mode can be activated to test the tripping of the circuit breaker by pressing a test pushbutton.

Test with the Pocket Battery Module

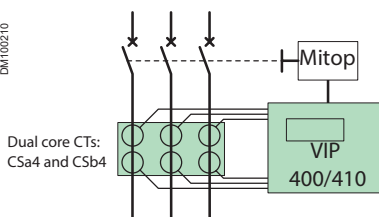
- This accessory can be connected on the VIP relay front plate to energize the relay to carry out a quick test even though the relay is not powered.
- This test allows testing the circuit breaker.

DM100208



Tests of protection system and circuit breaker

DM100210

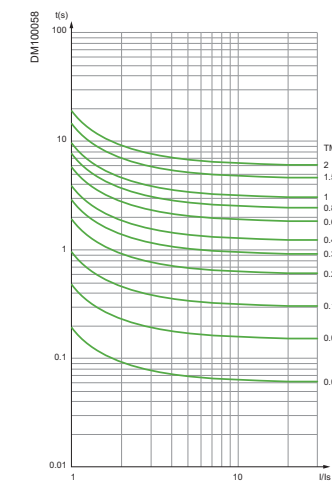
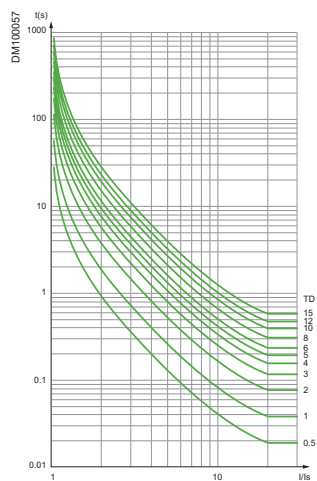
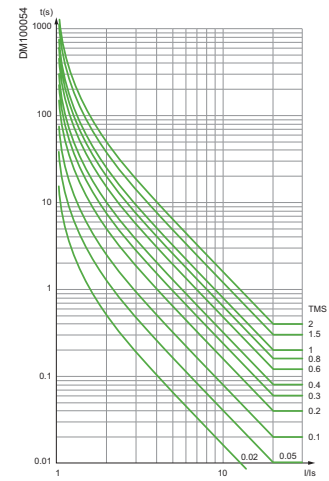
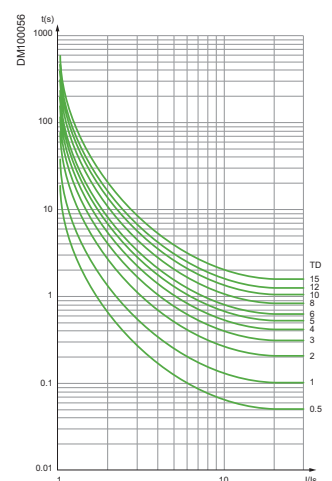
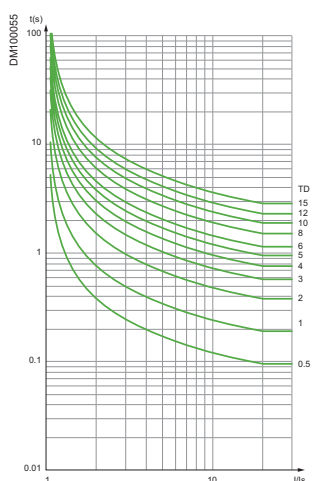
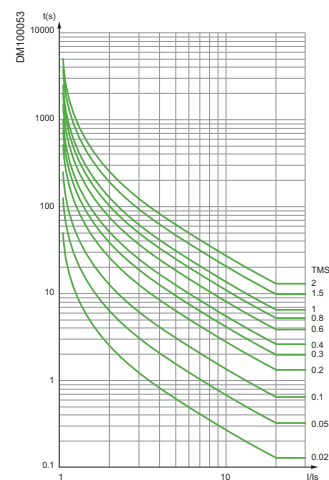
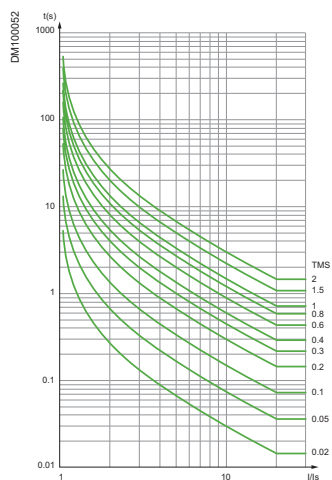
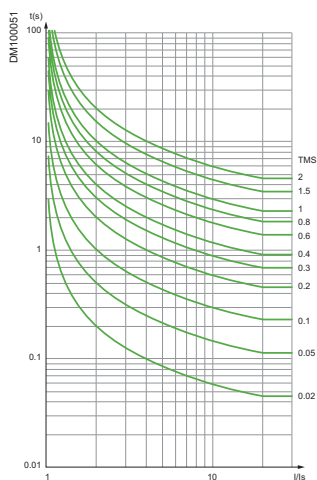


Dual core CTs: for power and measurement

Protection, Monitoring, and Control

VIP 400 and VIP 410 Tripping Curves

VIP 400 and VIP 410



EvoPacT SF1 and SFSeT Circuit Breakers Fixed Version

Protection, Monitoring, and Control

Current Sensors for VIP 400 and VIP 410

PE55773



Cs type current sensors

CSa4 and CSb4 Current Sensors for the VIP 400 and VIP 410

In order to achieve the specified performance levels, the VIP 400 and 410 protection unit must be used with the specified sensors. The combination of the unit/sensor is essential in order to comply with characteristics and in particular with:

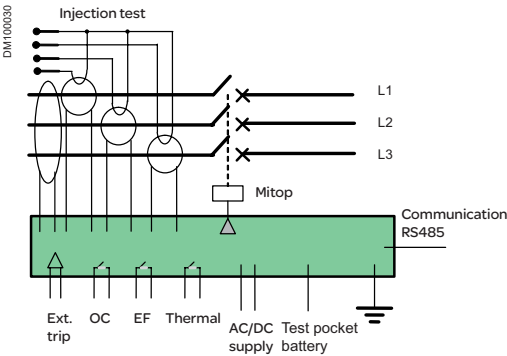
- Operation throughout the whole range.
- Response time.
- Accuracy.
- Short circuit thermal withstand.

Two interchangeable sensors, CSa4 and CSb4, suffice to cover all requirements from up to 630 A.

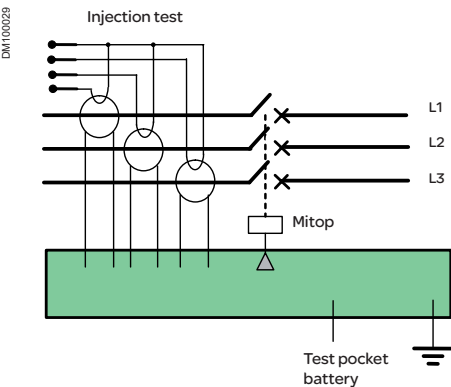
Connection

Connection diagrams

VIP 410



VIP 400



High Sensitivity Sensors

VIP Integrated Protection System

The VIP integrated protection system is composed of sensors, a processing unit and an actuator, designed together to provide the highest level of reliability and sensitivity from 0.2 A to 20 In for VIP 400/410.

Sensors

The sensors are made up of three single phase CTs, providing both measurement and power outputs.

- The measurement sensor is based on Low Power Current Transformer (LPCT) technology, ensuring excellent accuracy:
 - 5P30 for protection.
 - class 1 for measurement.
- The power supply sensor ensures calibrated self-powering of the relay even for currents of just a few Amperes.
- The protection sensors are located on the lower EvoPacT SFSeT connections. The connection between all these elements, sensors, and relay, is prefabricated and protected against external aggression, providing a higher level of reliability.

Actuators

- The actuator is a dedicated low power tripping coil (Mitop) specifically designed to operate with the sensors and the processing unit with a minimum energy.
- The integrity of the Mitop circuit is continuously supervised (Trip Circuit Supervision function).

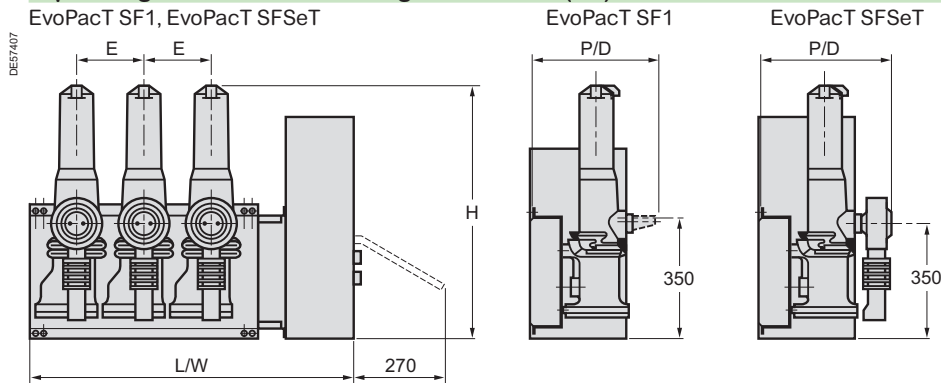
Dimensions

EvoPacT SF1 and SFSeT

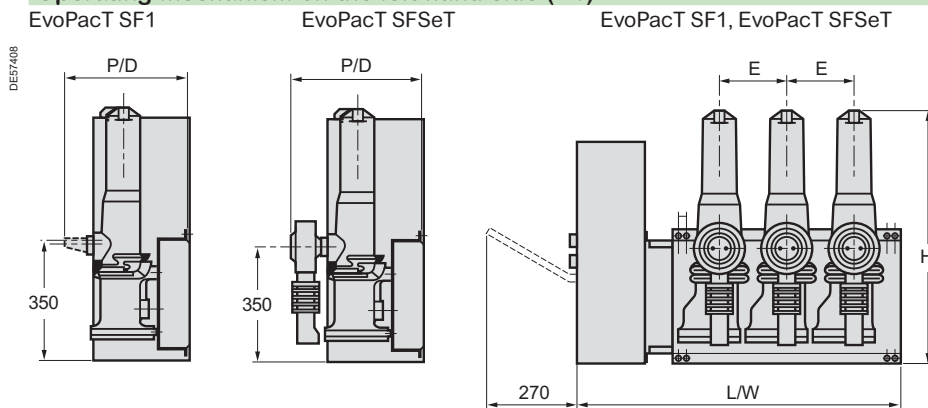
Circuit Breakers Fixed Version

Basic fixed unit

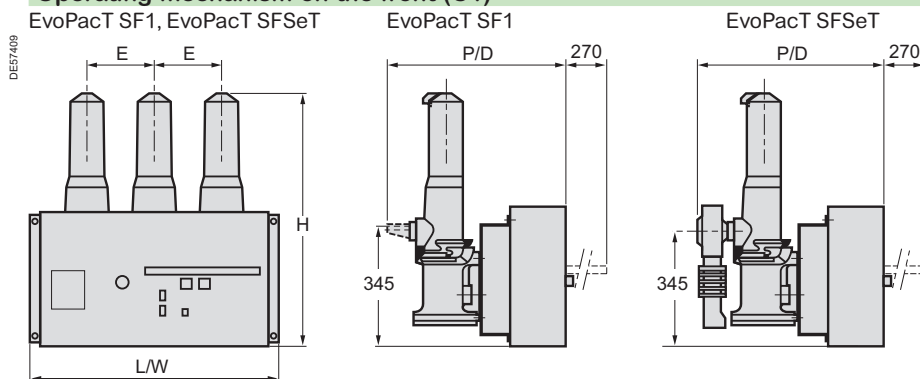
Operating mechanism on the right hand side (A1)



Operating mechanism on the left hand side (B1)



Operating mechanism on the front (C1)



Dimensions and weights

| Rated voltage (kV) | EvoPacT SF1 | | | | | EvoPacT SFSeT | | | | |
|---|-------------|------|-----|-----|-------------|---------------|------|-----|-----|-------------|
| | H | W | D | E | Weight (Kg) | H | W | D | E | Weight (Kg) |
| Operating mechanism on the right or left | | | | | | | | | | |
| 17.5 | 750 | 993 | 290 | 220 | 78 | 750 | 993 | 420 | 220 | 88 |
| 24 | 750 | 1143 | 290 | 280 | 80 | 750 | 1143 | 420 | 280 | 90 |
| 36 | 750 | 1560 | 365 | 380 | 88 | | | | | |
| Operating mechanism on the front | | | | | | | | | | |
| 17.5 | 745 | 766 | 490 | 220 | 78 | 745 | 766 | 620 | 220 | 88 |
| 24 | 745 | 886 | 490 | 280 | 80 | 745 | 886 | 620 | 280 | 90 |
| 36 | 745 | 927 | 559 | 350 | 85 | | | | | |
| 36 | 745 | 1260 | 565 | 380 | 88 | | | | | |

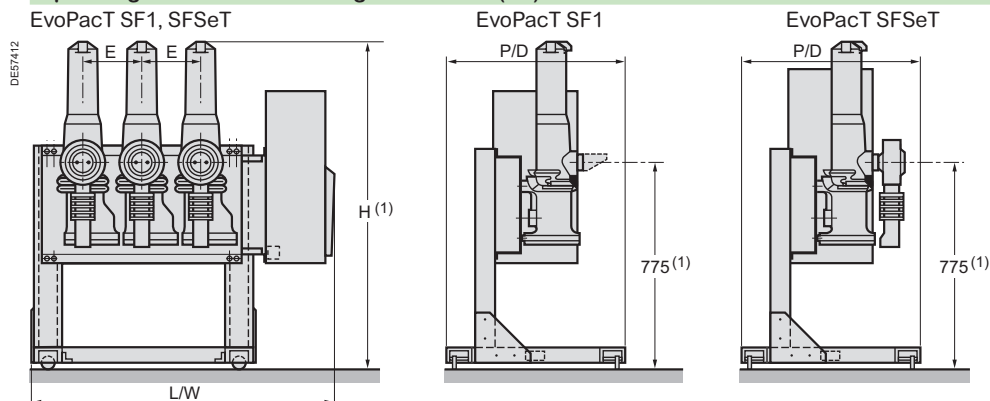
For EvoPacT SF circuit breakers with SM6, contact Schneider Electric.

Dimensions

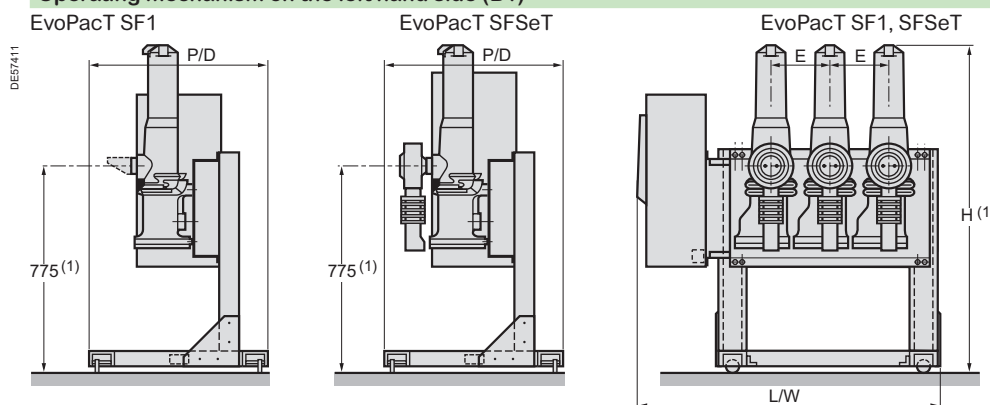
EvoPacT SF1 and SFSeT Circuit Breakers Fixed Version

Fixed unit with support frame

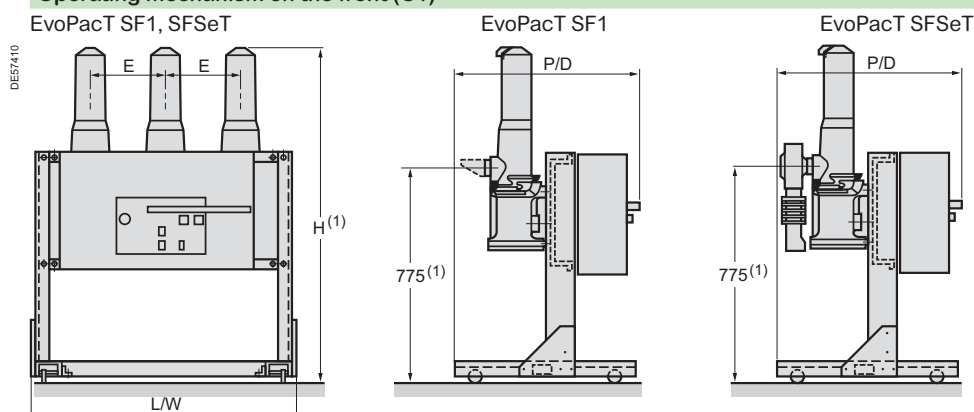
Operating mechanism on the right hand side (A1)



Operating mechanism on the left hand side (B1)



Operating mechanism on the front (C1)



Dimensions and weights

| Rated voltage (kV) | EvoPacT SF1 | | | | | EvoPacT SFSeT | | | | |
|---|-------------|------|-----|-----|-------------|---------------|------|-----|-----|-------------|
| | H | W | D | E | Weight (Kg) | H | W | D | E | Weight (Kg) |
| Operating mechanism on the right or left hand side | | | | | | | | | | |
| 17.5 | 1175 | 1065 | 600 | 220 | 103 | 1175 | 1065 | 600 | 220 | 103 |
| 24 | 1175 | 1215 | 600 | 280 | 105 | 1175 | 1215 | 600 | 280 | 105 |
| 36 | 1175 | 632 | 600 | 380 | 113 | | | | | |
| Operating mechanism on the front | | | | | | | | | | |
| 17.5 | 1175 | 853 | 600 | 220 | 103 | 1175 | 853 | 649 | 220 | 103 |
| 24 | 1175 | 973 | 600 | 280 | 105 | 1175 | 973 | 649 | 280 | 105 |
| 36 | 1175 | 1347 | 600 | 380 | 113 | | | | | |

⁽¹⁾ Additional holes, provided on the fixed support frame allow the device to be positioned 215 mm lower.

Dimensions

EvoPacT SF1 and SFSeT

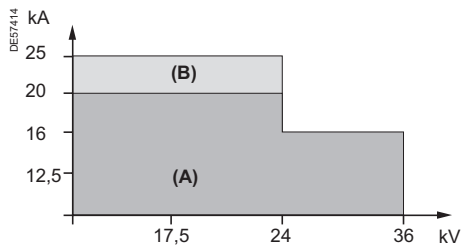
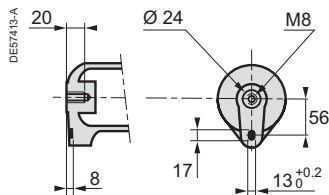
Circuit Breakers Fixed Version

Connection

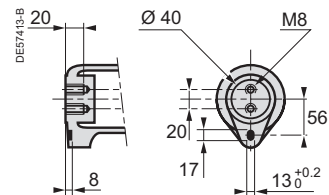
Top

$I_r \leq 630 \text{ A}$

EvoPacT SF1, SFSeT (A)

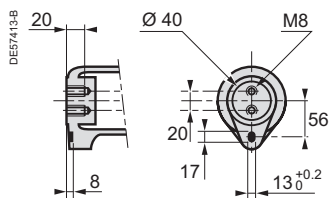


EvoPacT SF1, SFSeT (B)



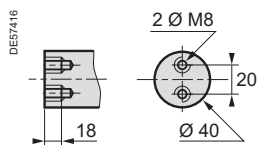
$I_r = 1250 \text{ A}$

EvoPacT SF1

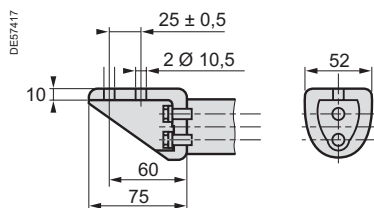


Bottom

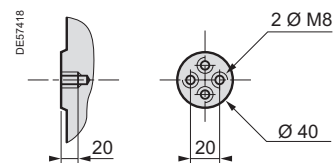
EvoPacT SF1, insulation $\leq 125 \text{ kV}$ impulse



EvoPacT SF1, insulation $\leq 170 \text{ kV}$ impulse



EvoPacT SFSeT



Note: Recommended connection screw M8 class 8.8.
Tightening torque: 28 N•m with contact washer.

EvoPacT SF2 Circuit Breakers Fixed Version

Contents

| | |
|---|-----------|
| Presentation | 34 |
| General Characteristics | 35 |
| Description of Functions | 36 |
| GMH Stored Energy Operating Mechanism - Wiring diagram | 36 |
| Opening Circuit | 37 |
| Remote Control | 38 |
| Indication and Locking/Interlocking | 39 |
| Dimensions | 40 |

Presentation

EvoPacT SF2 Circuit Breaker Fixed Version

PE66501



Description of the Device

The basic fixed version of the EvoPacT SF circuit breaker comprises:

- 3 main independent poles, that are mechanically linked and each comprising.
- A sealed pressure system type insulating enclosure. The sealed enclosure is filled with low pressure SF₆ gas.
- A GMH stored energy electrical operating mechanism. This gives the device an opening and closing speed that is independent of the operator, for both electrical and manual orders.

The circuit breaker can be remotely controlled and it is possible to carry out reclosing cycles.

- A front panel housing the manual operating mechanism and status indicators.
- Upstream and downstream terminals for the power circuit connection.
- A terminal block for connection of external auxiliary circuits.

The EvoPacT SF circuit breaker is only available with a frontal operating mechanism.

Each device can be optionally equipped with:

- A support frame fitted with rollers and floor securing brackets for a fixed installation.
- Locking of the circuit breaker in the open position by a keylock installed on the control panel.
- A pressure switch for the high performance versions.
- A Harting 42-pin type LV connector.

General Characteristics

EvoPacT SF2 Circuit Breaker

Fixed Version

| Electrical characteristics according to IEC 62271-100 | | | | | | | | | | | |
|---|-------|--------------------------------|-------|-------------|----|------|-----|------|------|-----|------|
| | | | | EvoPacT SF2 | | | | | | | |
| Rated voltage | Ur | kV 50/60 Hz | | 24 | | | | 36 | | | 40.5 |
| Insulation voltage | | | | | | | | | | | |
| - Power frequency withstand | Ud | kV 50 Hz 1min | | 50 | | | | 70 | | | 85 |
| - Lightning impulse withstand | Up | kV peak | | 125 | | | | 170 | | | 185 |
| Rated current | Ir | A | 630 | – | – | ■ | ■ | – | ■ | ■ | – |
| | | | 1250 | – | – | ■ | ■ | – | ■ | ■ | – |
| | | | 2500 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | | 3150 | – | – | – | ■ | – | – | ■ | – |
| Short circuit current | Isc | kA | | 12.5 | 25 | 31.5 | 40 | 25 | 31.5 | 40 | 31.5 |
| Short time withstand current | Ik/tk | kA/3 s | | 12.5 | 25 | 31.5 | 40 | 25 | 31.5 | 40 | 31.5 |
| Short-circuit making current | Ip | kA peak | 50 Hz | 31.3 | 63 | 79 | 100 | 62.5 | 79 | 100 | 78.8 |
| | | | 60 Hz | 32.5 | 65 | 82 | 104 | 65 | 82 | 104 | 81.9 |
| Rated switching sequence | | O-3 min-CO-3 min-CO | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | O-0.3 s-CO-3 min-CO | | ■ | ■ | ■ | – | ■ | ■ | – | ■ |
| | | O-0.3 s-CO-15 s-CO | | ■ | ■ | ■ | – | ■ | – | – | – |
| Phase to phase | | mm | 300 | ■ | ■ | ■ | ■ | | – | – | – |
| | | | 400 | – | – | – | – | ■ | ■ | ■ | – |
| | | | 457 | – | – | – | – | – | – | – | ■ |
| Operating mechanism | | Frontal | | ■ | | | | ■ | | | ■ |
| Operating times | | Opening (ms) | | < 70 | | | | | | | |
| | | Breaking (ms) | | < 85 | | | | | | | |
| | | Closing (ms) | | < 90 | | | | | | | |
| Service temperature | T | °C | | -25 to +40 | | | | | | | |
| Mechanical endurance | | Class | | M2 | | | | | | | |
| | | Number of switching operations | | 10,000 | | | | | | | |
| Electrical endurance | | Class | | E2 | | | | | | | |
| Capacitive current breaking capacity | | Class | | C2 | | | | | | | |

■ Available
– Not available

Specific applications

Switching and protection of capacitor banks

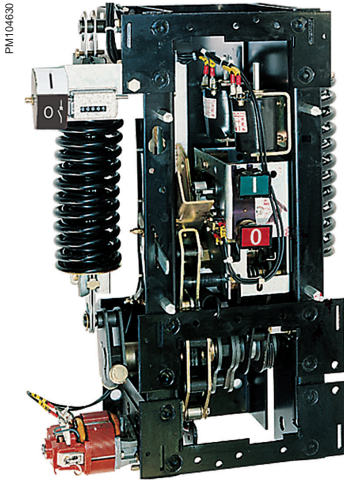
EvoPacT SF range circuit breakers are particularly well suited to switching and protection of capacitor banks; they are classed C2 according to standard IEC 62271-100.

Tests carried out according to the standard for breaking at 400 A with making and breaking cycles in case of a capacitor bank with a making current of 20 kA.

EvoPacT SF2 Circuit Breaker Fixed Version

Description of Functions

GMH Stored Energy Operating Mechanism - Wiring diagram



Operation of the Electrical GMH Stored Energy Mechanism

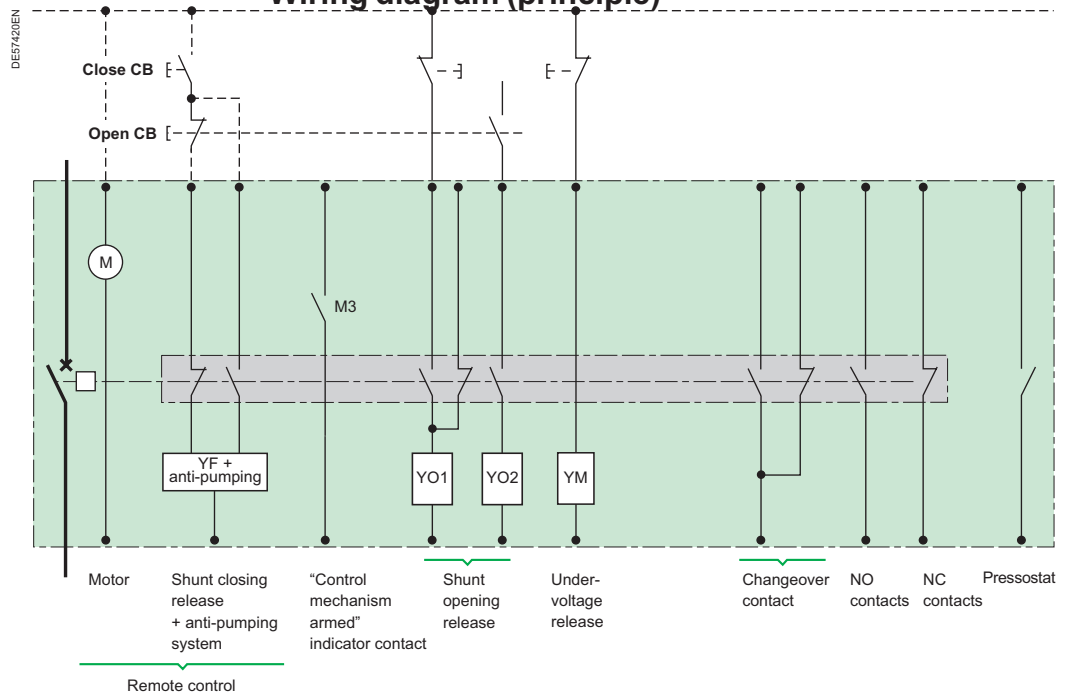
This gives the device an opening and closing speed that is independent of the operator whether the order is electrical or manual.

The electrical control mechanism carries out reclosing cycles and is automatically recharged by a geared motor each time after closing.

It consists of:

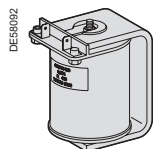
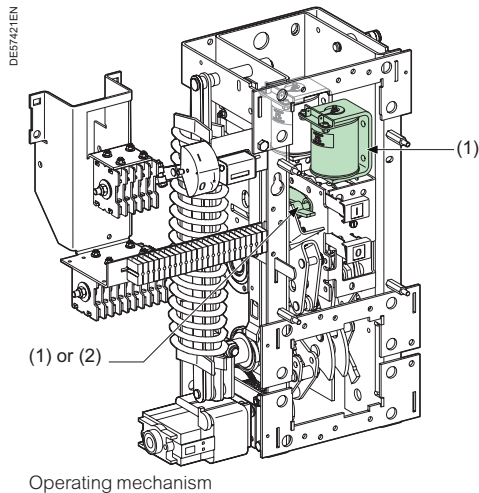
- The stored energy operating mechanism which stores in springs the energy required to open and close the device.
- A manual lever arming device for the springs.
- An electrical arming device with a motor to automatically rearm the control mechanism as soon as the circuit breaker is closed (optional).
- Manual push-button controls on the front face of the circuit breaker (red and black).
- An electrical remote-closing device comprising a release and an anti-pumping relay.
- An electrical opening device comprising one or several releases of the following type:
 - shunt opening
 - undervoltage.
- An operation counter.
- An open/closed position indicator with a mechanical indicator (black and white).
- An armed control mechanism status indicator with a mechanical indicator and an electrical contact (optional).
- A block of 14 auxiliary contacts, available according to the wiring layout used.
- A pressure switch contact activated by a drop in gas pressure (optional: single or double threshold pressure switch).

Wiring diagram (principle)

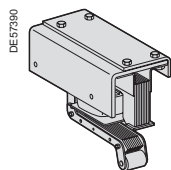


Description of Functions

Opening Circuit



Shunt opening release (1)



Undervoltage release (2)

Composition

The opening circuit can be produced using the following components:

- A shunt opening release (on energizing) (YO1).
- A second shunt opening release (on energizing) (YO2).
- Undervoltage release (YM).

Note: See the table of the releases combinations page Order Forms.

Shunt Opening Release (YO1 and YO2)

Energizing this unit causes instant opening of the circuit breaker.

Characteristics

| | | |
|--------------|----------------------|----------------|
| Power supply | See Order Forms page | |
| Threshold | Vac | 0.85 to 1.1 Ur |
| | Vdc | 0.7 to 1.1 Ur |
| Consumption | Vac | 160 VA |
| | Vdc | 50 W |

Undervoltage Release (YM)

This release unit causes the systematic opening of the circuit breaker when its supply voltage drops below a value less than 35% of the rated voltage, even if this drop is slow and gradual. It can open the circuit breaker between 35% and 70% of its rated voltage. If the release unit is not supplied power, manual or electrical closing of the circuit breaker is impossible. Closing of the circuit breaker is compulsory when the supply voltage of the release unit reaches 85% of its rated voltage.

Characteristics

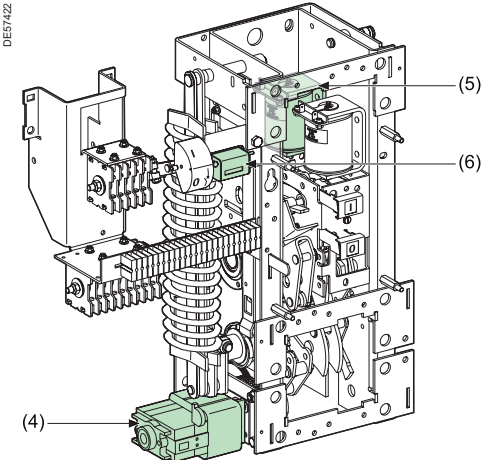
| | | | |
|--------------|------------|----------------------|----------------|
| Power supply | | See Order Forms page | |
| Threshold | | Opening | 0.35 to 0.7 Ur |
| | | Closing | 0.85 Ur |
| Consumption | Triggering | Vac | 400 VA |
| | | Vdc | 100 W |
| | Latched | Vac | 100 VA |
| | | Vdc | 10 W |

EvoPacT SF2 Circuit Breaker

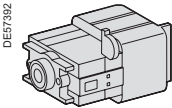
Fixed Version

Description of Functions

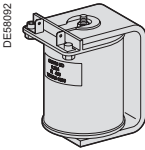
Remote control



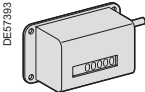
Operating mechanism



Electrical motor (4)



Shunt closing release (5)



Operation counter (6)

Function

Remote control enables the remote opening and closing of the circuit breaker.

Composition

The remote control mechanism comprises:

- An electrical motor with gearing.
- A shunt closing release combined with an anti-pumping device.
- An operation counter.

Electrical Motor (M)

The electrical motor carries out the automatic rearming of the stored energy unit as soon as the circuit breaker is closed. This allows the instant reclosing of the device after opening. The arming lever is only used as a backup operating mechanism in the case of the absence of the auxiliary power supply.

The M3 contact indicates the end of arming operations.

| Characteristics | | |
|-----------------|----------------------|----------------|
| Power supply | See Order Forms page | |
| Threshold | Vac/Vdc | 0.85 to 1.1 Ur |
| Consumption | Vac | 380 VA |
| | Vdc | 380 W |

Shunt Closing Release (YF)

This release allows the remote closing of the circuit breaker when the operating mechanism is armed.

| Characteristics | | |
|-----------------|----------------------|----------------|
| Power supply | See Order Forms page | |
| Threshold | Vac | 0.85 to 1.1 Ur |
| | Vdc | 0.85 to 1.1 Ur |
| Consumption | Vac | 160 VA |
| | Vdc | 50 W |

The shunt closing release is combined with an anti-pumping relay that enables priority to be given to opening in the case of a permanent closing order. This thus avoids the device being caught in an uncontrolled opening-closing cycle.

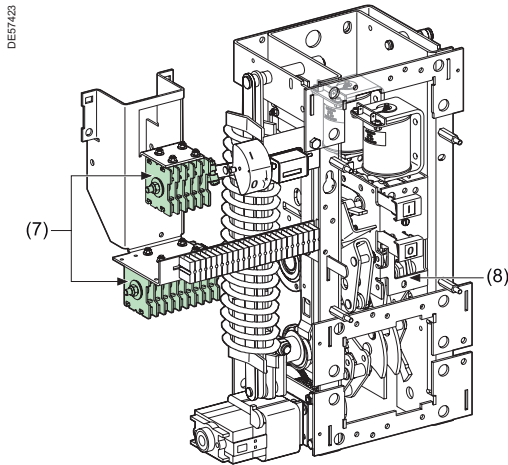
Operation Counter

The operation counter is visible on the front panel. It displays the number of switching cycles (CO) that the device has carried out.

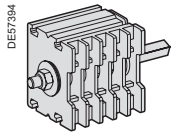
EvoPacT SF2 Circuit Breaker Fixed Version

Description of Functions

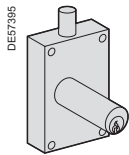
Indication and locking/interlocking



Operating mechanism



Auxiliary contacts (7)



Keylocking kit (8)

Open/Closed Auxiliary Contacts

The number of contacts available depends on the options chosen on the operating mechanism.

In the basic configuration, the circuit breakers operating mechanism comprises a total of:

- 5 normally closed contacts (NC).
- 5 normally open contacts (NO).
- 1 changeover contact (CHG).

The usage procedure for auxiliary contacts is given in the following table:

| Options | NC contact | NO contact |
|----------------------------------|------------|------------|
| Shunt opening release (each one) | 0 | 1 |
| Undervoltage release | 0 | 0 |

In order to know the final number of available contacts, you must deduct the total number of contacts included in the circuit breaker (5 NC + 5 NO + 1 CHG), the number of contacts used given in the table above.

For example: a circuit breaker equipped with a remote control and a shunt trip unit has the following available contacts:

5 NC + 4 NO + 1 CHG.

With a undervoltage release instead of the shunt trip, this circuit breaker would have the following available contacts:

5 NC + 5 NO + 1 CHG.

| Shunt opening release combination | | | |
|-----------------------------------|---------------------------|-------------------------|------------------|
| 1st release | Shunt opening release YO1 | Undervoltage release YM | Mitop |
| 2nd release | | | |
| Without | 5NC + 4NO + 1CHG | 5NC + 5NO + 1CHG | 5NC + 5NO + 1CHG |
| Shunt opening release YO2 | 5NC + 3NO + 1CHG | 5NC + 4NO + 1CHG | 5NC + 4NO + 1CHG |
| Undervoltage release YM | 5NC + 4NO + 1CHG | | 5NC + 5NO + 1CHG |

Locking the Circuit Breaker in the Open Position

This key-operated device allows the circuit breaker to be locked in the open position.

The circuit breaker is locked in the open position by blocking the opening push button in the engaged position.

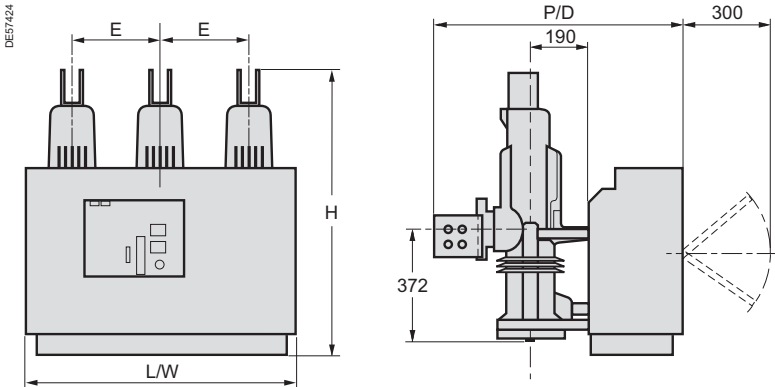
Locking is achieved using a flat or tubular captive key type keylock.

Dimensions

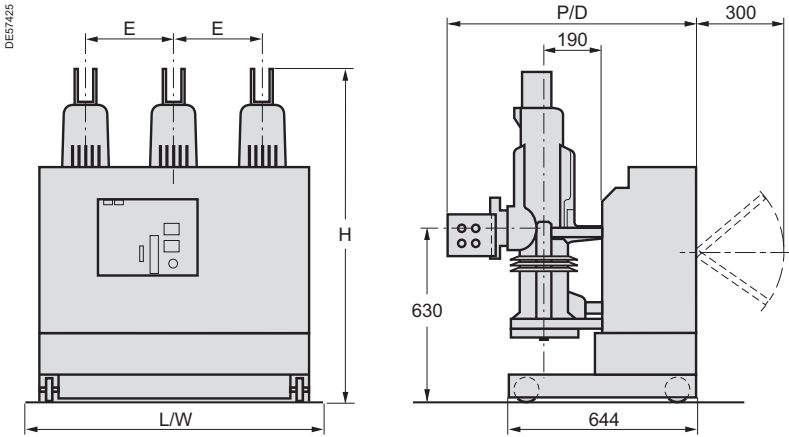
EvoPacT SF2 Circuit Breaker

Fixed Version

Basic fixed unit

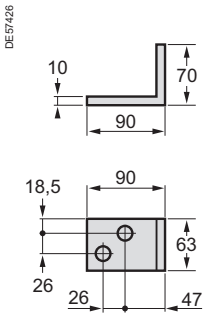


Fixed unit with a support frame

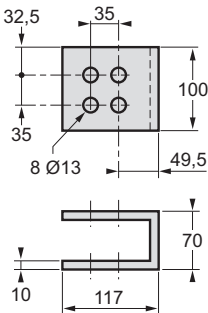


Connection

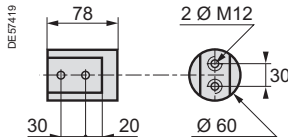
630, 1250 A (24-36 kV)



2500, 3150 A (24-36 kV)



2000, 2500 A (40.5 kV)



Dimensions and weights

| Rated current (A) | Rated voltage (kV) | Basic fixed unit | | | | | Fixed unit with support frame | | | | |
|----------------------|-----------------------|------------------|------|-----|-----|----------------|-------------------------------|------|-----|-----|----------------|
| | | Dimensions (mm) | | | | Weight (Kg) | Dimensions (mm) | | | | Weight (Kg) |
| 630, 1250 | 24 | 825 | 910 | 750 | 300 | 159 | 1030 | 910 | 750 | 300 | 179 |
| | 36 | 825 | 1110 | 750 | 400 | 212 | 1030 | 1110 | 750 | 400 | 239 |
| | 40.5 | 825 | 1224 | 750 | 457 | 242 | 1030 | 1224 | 750 | 457 | 272 |
| 2500, 3150 | 24 | 942 | 910 | 777 | 300 | 174 | 1147 | 910 | 777 | 300 | 194 |
| | 36 | 942 | 1110 | 777 | 400 | 227 | 1147 | 1110 | 777 | 400 | 254 |
| | 40.5 | 942 | 1224 | 777 | 457 | 242 | 1147 | 1224 | 777 | 457 | 272 |

EvoPacT SF F400 Circuit Breakers Withdrawable Version

Contents

| | |
|--|-----------|
| Presentation | 44 |
| General Characteristics | 45 |
| Description of Functions | 46 |
| Racking-in | 46 |
| MV and LV Connection | 48 |
| GMH Stored Energy Operating Mechanism - Wiring diagram | 49 |
| Opening Circuit | 50 |
| Remote Control | 51 |
| Indication and Locking/Interlocking | 52 |
| Safety Functions | 53 |
| Dimensions | 54 |

EvoPacT SF F400

Circuit Breaker

Withdrawable Version

Presentation

PE66502



Device Description

The basic withdrawable version of the EvoPacT SF circuit breaker comprises:

- The circuit breaker unit with its control mechanism:
 - 3 main independent poles, that are mechanically linked and each comprising.
 - A sealed pressure system type insulating enclosure. The sealed enclosure is filled with low pressure SF₆ gas.
 - A GMH stored energy electrical operating mechanism.
 - This gives the device an closing and opening speed that is independent of the operator, whether the control order is electrical or manual. When remotely controlled, the circuit breaker allows reclosing cycles to be performed.
 - A front face with status indicators.
- Racking components:
 - The circuit breaker is equipped with racking arms and clusters. It is mounted on a racking/unracking unit with a threaded shaft actuated by a crank which includes all of the safety interlocking systems.
 - A Harting type male LV connector for external auxiliary circuits.
 - A circuit breaker control mechanism spring discharge system.
 - A circuit breaker racking-in blocking mechanism.

The EvoPacT SF circuit breaker is only available with front controls.

Each device can be fitted with the following options:

- Position locking of the circuit breaker:
 - Open, by a keylock installed on the control panel.
 - Racked out, by a keylock installed on the racking device.
- The M1 and M2 basic cradles comprising:
 - A metal structure and one guide rail.
 - Fixed connector fingers insulated by bushings.
 - Metal insulating shutters for the MV part.
 - Safety interlocking systems.
 - Harting type female LV connector.
 - Indicator contacts for circuit breaker racked-in or racked-out positions (4 NO + 4 NC).
 - An equipped door.
 - A foolproofing system for the circuit breaker rating.

General Characteristics

| Electrical characteristics according to IEC 62271-100 | | | | | | | | |
|---|-------|--------------------------------|-------|-----------------|------|-----|------|------|
| | | | | EvoPacT SF F400 | | | | |
| Rated voltage | Ur | kV 50/60 Hz | | 36 | | | 40,5 | |
| Insulation voltage | | | | | | | | |
| - Power frequency withstand | Ud | kV 50 Hz 1min | | 70 | | | 85 | 85 |
| - Lightning impulse withstand | Up | kV peak | | 170 | | | 185 | 185 |
| Rated current | Ir | A | 1250 | ■ | ■ | ■ | ■ | ■ |
| | | | 2500 | – | ■ | ■ | – | – |
| Short circuit current | Isc | kA | | 25 | 31.5 | 40 | 25 | 31.5 |
| Short time withstand current | Ik/tk | kA/3 s | | 25 | 31.5 | 40 | 25 | 31.5 |
| Short-circuit making current | Ip | kA peak | 50 Hz | 62.5 | 79 | 100 | 62.5 | 79 |
| | | | 60 Hz | 65 | 82 | 104 | 65 | 82 |
| Rated switching sequence | | O-3 min-CO-3 min-CO | | ■ | ■ | ■ | ■ | ■ |
| | | O-0.3 s-CO-3 min-CO | | ■ | ■ | – | ■ | ■ |
| | | O-0.3 s-CO-15 s-CO | | ■ | – | – | – | – |
| Phase to phase | | mm | 300 | ■ | ■ | ■ | ■ | ■ |
| Operating mechanism | | Frontal | | ■ | ■ | ■ | ■ | ■ |
| Operating times | | Opening (ms) | | < 70 | | | | |
| | | Breaking (ms) | | < 85 | | | | |
| | | Closing (ms) | | < 90 | | | | |
| Service temperature | T | °C | | -25 to +40 | | | | |
| Mechanical endurance | | Class | | M2 | | | | |
| | | Number of switching operations | | 10,000 | | | | |
| Electrical endurance | | Class | | E2 | | | | |
| Capacitive current breaking capacity | | Class | | C2 | | | | |

■ Available
– Not available

Specific applications

Switching and protection of capacitor banks

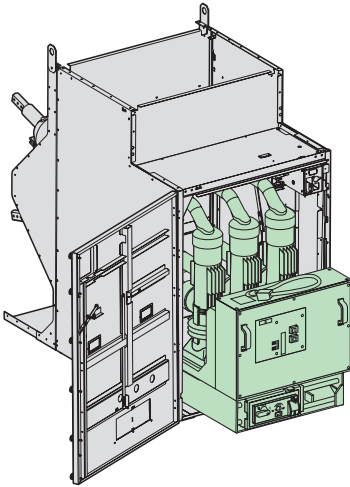
EvoPacT SF range circuit breakers are particularly well suited to switching and protection of capacitor banks; they are classed C2 according to standard IEC 62271-100.

Tests carried out according to the standard for breaking at 400 A with making and breaking cycles in case of a capacitor bank with a making current of 20 kA.

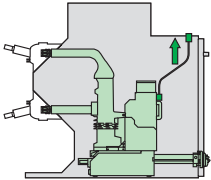
Description of Functions

Racking-in

DES7386

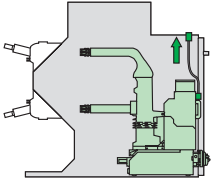


DES7430



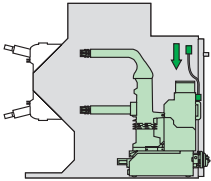
Service position

DES7429



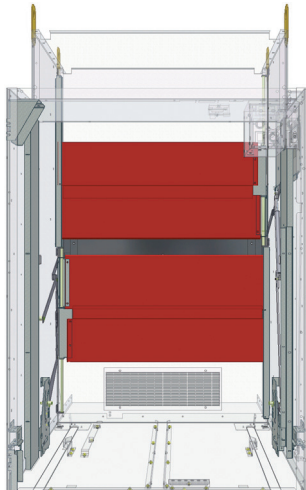
Test position

DES7428



Disconnected position

PE50198



Protective shutters

Overall Composition

The racking-in/racking-out function is achieved by:

- The EvoPacT SF F400 withdrawable circuit breaker with its LV connector (moving part).
- The M1 or M2 cradles with their bushings (fixed part).

Switching the Circuit Breaker

The withdrawable circuit breaker can be moved between three stable positions:

- **Service position:** the circuit breaker racked-in and locked in position, the LV connector is connected.
- **Test position:** the circuit breaker is racked-out and locked in position, the LV connector is connected.
- **Disconnected position:** the circuit breaker is racked-out and locked in position, the LV connector is disconnected.

EvoPacT SF F400 Circuit Breaker Safety Functions

A racking system with a threaded shaft makes it easier to rack-in and rack-out.

Test position contact

This is activated when the circuit breaker is in the test or service positions.

Earthing is achieved throughout the operation through the racking carriage wheels.

Interlocking

In conformity with standards IEC 62271-100 and 62271-200, the following interlocks are available:

- Prohibiting racking-in or racking-out if the circuit breaker is not in the open position.
- Prohibiting racking-in of the circuit breaker if the LV connector is not connected.
- Prohibiting disconnecting of the LV connector if the circuit breaker is not racked-out.

Interlocking with the cubicle door

The racking base is equipped with a device that allows interlocking between racking-out of the circuit breaker and the cubicle door.

- Only possible to rack-in the circuit breaker if the door is closed.
- Only possible to open the door if the circuit breaker is racked-out.

This device must be disabled if this interlocking function is not present.

M1 and M2 Cradles Safety Features

The M1 or M2 cradles are fitted with the EvoPacT SF F400 circuit breaker and comprise the following safety features for racking-in.

A metal structure with one guide rail.

The rail guides the circuit breaker during racking-in/racking-out operations.

Fixed connector bushings, insulated by bushings

The three ends of the circuit breaker, with their racking clusters, make the contact with these three fingers.

Metal insulating shutters for the MV part

Protective shutters mounted on the structure stop fingers from accessing the racking mechanism when the circuit breaker is extracted (protection index: IP2X).

Safety interlocking systems

When carrying out maintenance operations it is possible to:

- Padlock the shutters in the locked position
- Unlock the fixed contact access mechanism.

A control spring discharge system

The springs of the circuit breaker mechanism are automatically discharged when it is extracted from the cradle. This function avoids any risk of nuisance closing of the circuit breaker.

Foolproofing system

This allows the circuit breaker rating to be matched to the cradle rating. This system is mounted on the cradle side. The panel builder must ensure that the right circuit breaker rating is being used.

Description of Functions

Racking-in

Locking/Interlocking Functions

Possibilities for padlocking

For further operator safety it is possible to use a padlock:

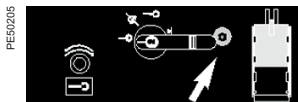
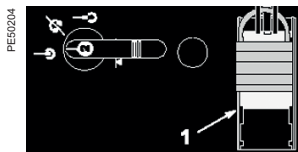
- On the connector to lock the selector.
- On the shutter protecting the mechanical opening pushbutton.
- On the shutter opening mechanism in the circuit breaker compartment.
- On the rotary voltage transformer switching mechanism.



A mechanism to prohibit racking-in of the moving part

A mechanism associated with a padlock or a keylock prohibits the racking-in of the moving part. Locking is either achieved via:

- 1 to 3 padlocks, not supplied.
- 1 keylock (optional).



A blocking system for the circuit breaker opening order, when it is closed

This device can also be used as an additional way of prohibiting racking-in and racking-out. A transparent shutter blocks access to the opening and closing pushbutton.

The device allows independent locking of the opening or closing button. It is often associated with an electrical motor (M). Locking is achieved by a padlock (not supplied) mounted on the shutter protecting the mechanical opening pushbutton.

A system to prohibit disconnection of the moving part

This keylocking system prohibits disconnection of the moving part. It may be used for a circuit breaker or for a racking base.

Optional Accessories

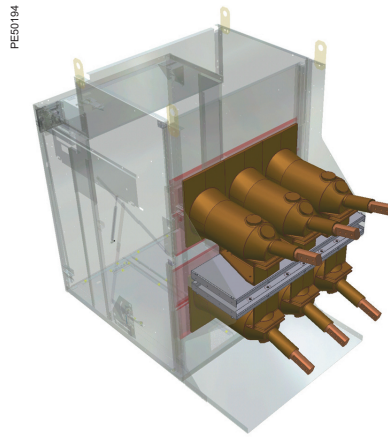
- A self-adhesive front plate shows circuit breaker racking-in and racking-out operations. It is systematically delivered when the circuit breaker is ordered with the cassette or can be ordered separately.
- 4 racked-in/racked-out position contacts.
- 1 position contact for the cassette locked in the racked-in/racked-out position.
- A keylocking system (flat or tubular) for the circuit breaker in the racked-in or racked-out position.

Description of Functions

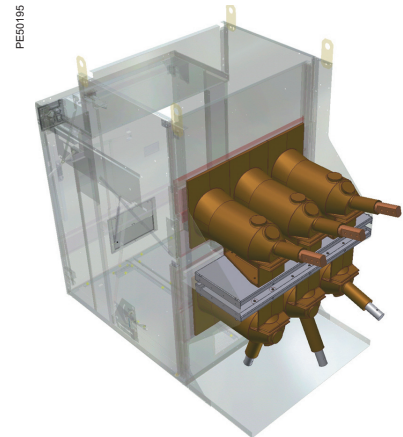
MV and LV Connection

MV Connection

The customer connection is easily carried out from the back of M1 and M2 cradles using the upper and lower bushings.



MV connection with M1 cradle



MV connection with M2 cradle

LV Connection

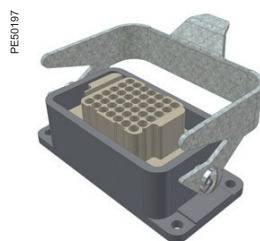
With the withdrawable circuit breaker, LV wiring uses an LV connector with:

- The moving part (male Harting socket) at the end of a flexible cable, entirely connected to the control mechanism terminal via a bellow.
- The fixed part (female Harting socket) compatible with the male part mounted on the top inside part of the cassette.

Interlocking Function

In conformity with standard IEC 62271-200, an interlocking function prohibits:

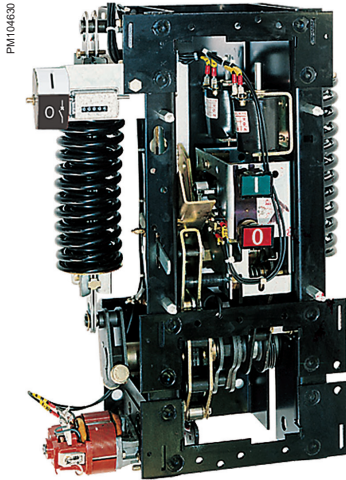
- Racking-in when the LV connector is not connected.
- Disconnection of the LV connector if the circuit breaker is in the racked-in position.



LV plug connection

Description of Functions

GMH stored energy operating mechanism Wiring diagram



Operation of the Electrical GMH Stored Energy Mechanism

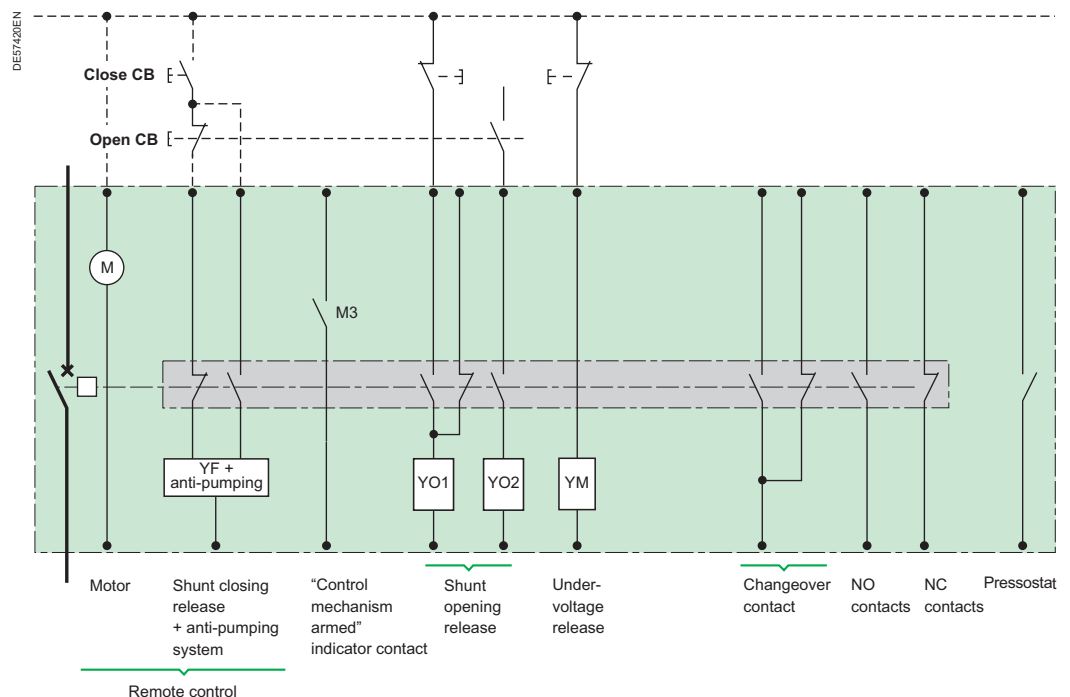
This gives the device an opening and closing speed that is independent of the operator whether the order is electrical or manual.

The electrical control mechanism carries out reclosing cycles and is automatically recharged by a geared motor each time after closing.

It consists of:

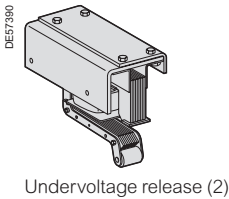
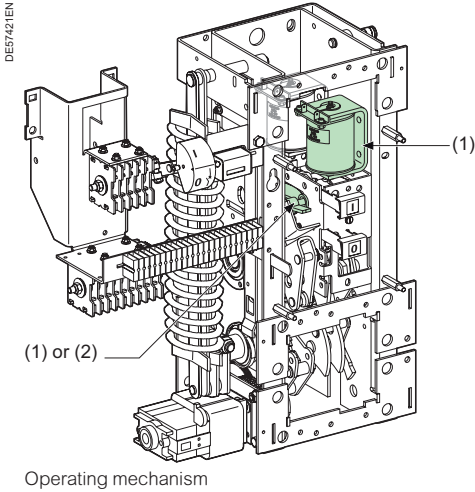
- The stored energy operating mechanism which stores in springs the energy required to open and close the device.
- A manual lever arming device for the springs.
- An electrical arming device with a motor to automatically rearm the control mechanism as soon as the circuit breaker is closed (optional).
- Manual push-button controls on the front face of the circuit breaker (red and black).
- An electrical remote-closing device comprising a release and an anti-pumping relay.
- An electrical opening device comprising one or several releases of the following type:
 - Shunt opening.
 - Undervoltage.
- An operation counter.
- An open/closed position indicator with a mechanical indicator (black and white).
- An armed control mechanism status indicator with a mechanical indicator and an electrical contact (optional).
- A block of 14 auxiliary contacts, available according to the wiring layout used.
- A pressure switch contact activated by a drop in gas pressure (optional: single or double threshold pressure switch).

Wiring diagram (principle)



Description of Functions

Opening Circuit



Composition

The opening circuit can be produced using the following components:

- A shunt opening release (on energizing) (YO1).
- A second shunt opening release (on energizing) (YO2).
- Undervoltage release (YM).

Note: See the table of the releases combinations page Oder form.

Shunt Opening Release (YO1 and YO2)

Energizing this unit causes instant opening of the circuit breaker.

| Characteristics | | |
|-----------------|----------------------|----------------|
| Power supply | See Order Forms page | |
| Threshold | Vac | 0.85 to 1.1 Ur |
| | Vdc | 0.7 to 1.1 Ur |
| Consumption | Vac | 160 VA |
| | Vdc | 50 W |

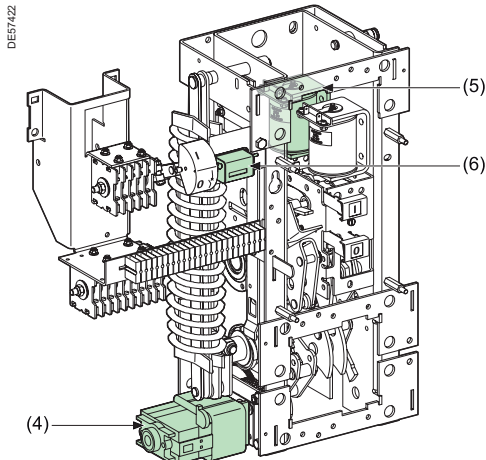
Undervoltage Release (YM)

This release unit causes the systematic opening of the circuit breaker when its supply voltage drops below a value less than 35% of the rated voltage, even if this drop is slow and gradual. It can open the circuit breaker between 35% and 70% of its rated voltage. If the release unit is not supplied power, manual or electrical closing of the circuit breaker is impossible. Closing of the circuit breaker is compulsory when the supply voltage of the release unit reaches 85% of its rated voltage.

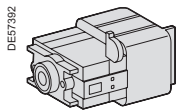
| Characteristics | | | |
|-----------------|----------------------|---------|----------------|
| Power supply | See Order Forms page | | |
| Threshold | | Opening | 0.35 to 0.7 Ur |
| | | Closing | 0.85 Ur |
| Consumption | Triggering | Vac | 400 VA |
| | | Vdc | 100 W |
| | Latched | Vac | 100 VA |
| | | Vdc | 10 W |

Description of Functions

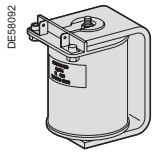
Remote control



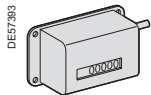
Operating mechanism



Electrical motor (4)



Shunt closing release (5)



Operation counter (6)

Function

Remote control enables the remote opening and closing of the circuit breaker.

Composition

The remote control mechanism comprises:

- An electrical motor with gearing.
- A shunt closing release combined with an anti-pumping device.
- An operation counter.

Electrical Motor (M)

The electrical motor carries out the automatic rearming of the stored energy unit as soon as the circuit breaker is closed. This allows the instant reclosing of the device after opening. The arming lever is only used as a backup operating mechanism in the case of the absence of the auxiliary power supply.

The M3 contact indicates the end of arming operations.

Characteristics

| | | |
|--------------|----------------------|----------------|
| Power supply | See Order Forms page | |
| Threshold | Vac/Vdc | 0.85 to 1.1 Ur |
| Consumption | Vac | 380 VA |
| | Vdc | 380 W |

Shunt Closing Release (YF)

This release allows the remote closing of the circuit breaker when the operating mechanism is armed.

Characteristics

| | | |
|--------------|----------------------|----------------|
| Power supply | See Order Forms page | |
| Threshold | Vac | 0.85 to 1.1 Ur |
| | Vdc | 0.85 to 1.1 Ur |
| Consumption | Vac | 160 VA |
| | Vdc | 50 W |

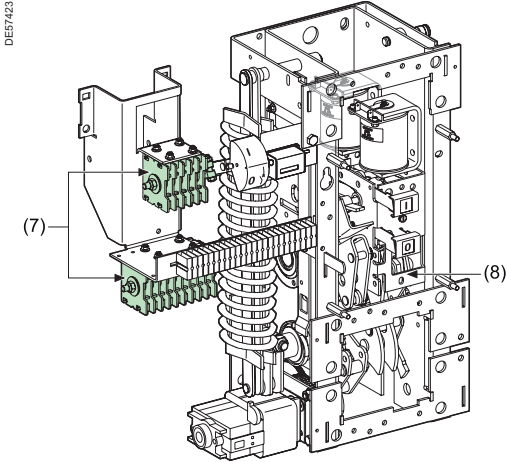
The shunt closing release is combined with an anti-pumping relay that enables priority to be given to opening in the case of a permanent closing order. This thus avoids the device being caught in an uncontrolled opening-closing cycle.

Operation Counter

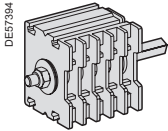
The operation counter is visible on the front panel. It displays the number of switching cycles (CO) that the device has carried out.

Description of Functions

Indication and Locking/Interlocking



Operating mechanism



Auxiliary contacts (7)

Open/Closed auxiliary contacts

The number of contacts available depends on the options chosen on the operating mechanism.

In the basic configuration, the circuit breakers operating mechanism comprises a total of:

- 5 normally closed contacts (NC).
- 5 normally open contacts (NO).
- 1 changeover contact (CHG).

The usage procedure for auxiliary contacts is given in the following table:

| Options | NC contact | NO contact |
|----------------------------------|------------|------------|
| Shunt opening release (each one) | 0 | 1 |
| Undervoltage release | 0 | 0 |
| Low energy release (Mitop) | 0 | 0 |

In order to know the final number of available contacts, you must deduct the total number of contacts included in the circuit breaker (5 NC + 5 NO + 1 CHG), the number of contacts used given in the table above.

For example: a circuit breaker equipped with a remote control and a shunt trip unit has the following available contacts:
5 NC + 4 NO + 1 CHG.

With a undervoltage release instead of the shunt trip, this circuit breaker would have the following available contacts:
5 NC + 5 NO + 1 CHG.

| Shunt opening release combination | | | |
|-----------------------------------|---------------------------|-------------------------|------------------|
| 1st release | Shunt opening release YO1 | Undervoltage release YM | Mitop |
| 2nd release | | | |
| Without | 5NC + 4NO + 1CHG | 5NC + 5NO + 1CHG | |
| Shunt opening release YO2 | 5NC + 3NO + 1CHG | 5NC + 4NO + 1CHG | 5NC + 4NO + 1CHG |
| Undervoltage release YM | 5NC + 4NO + 1CHG | | 5NC + 5NO + 1CHG |
| Mitop | 5NC + 4NO + 1CHG | 5NC + 5NO + 1CHG | |

Description of Functions


Safety Functions

This table describes the safety functions available on the EvoPacT SF circuit breaker withdrawable version.


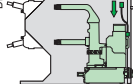

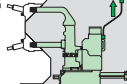
How to use the table

Each of the boxes describes the functional status of each circuit breaker position and the associated parts:

 Possible status

 Possible status, impossible operation

 Impossible status

| Parts | | Circuit breaker positions | | | | |
|----------------------|--------------|--|---|--|--|--|
| | | <div>DE574ZT</div>  | <div>Insertion</div>  <div>Extraction</div> | <div>DE574ZT</div>  | <div>DE574ZT</div>  | |
| | | Removed | Disconnected | Test position | Service | |
| 1 - Cassette | | | Fool-proof protection ⁽¹⁾ | | | |
| | | No opening shutters | | | | |
| | | Shutters padlocking possible | | | | |
| 2 - LV plug | Disconnected | | | No door closing | | |
| | Connected | | | No unplugging ⁽⁴⁾ | | |
| 3 - Circuit breaker | Closed | | Auto-discharge function ⁽²⁾ | No racking-in | No racking-out | |
| | Open | | | | No closing | |
| | | Open position circuit breaker locking available ⁽²⁾ | | | | |
| 4 - Switchboard door | Open | | | No racking-in | | |
| | Closed | | | No door opening ⁽³⁾ | | |

⁽¹⁾ This protection mechanism ensures that the performance levels of the circuit breaker correspond with those of the cradle.

⁽²⁾ Optional.

⁽³⁾ Interlocking device to be fitted to the cubicle door.

⁽⁴⁾ Because the door is closed.

EvoPacT SF F400

Circuit Breaker

Withdrawable Version

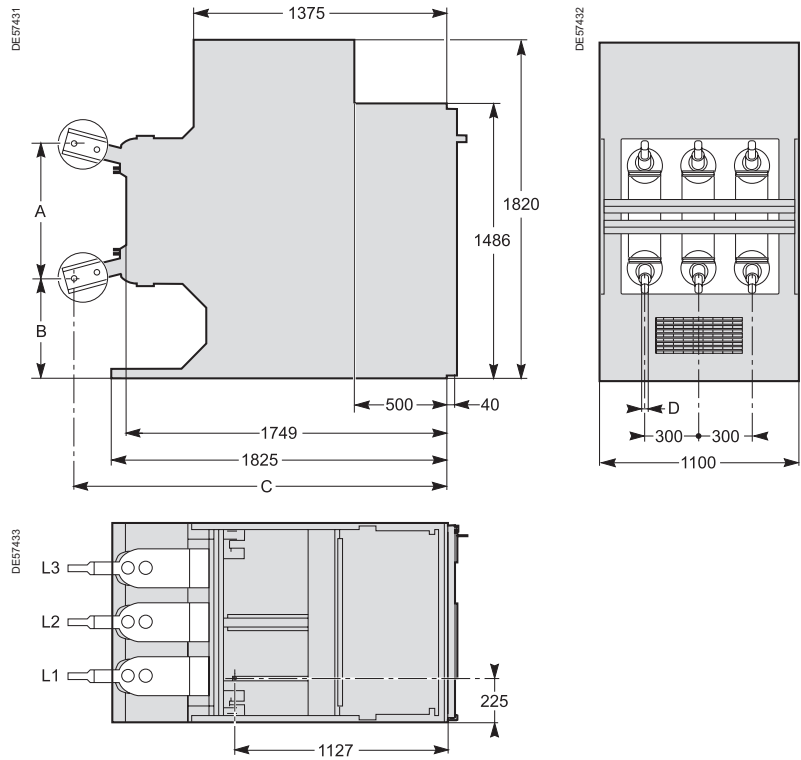
Dimensions

Basic withdrawable unit

EvoPacT SF F400/M1

Dimensions and weights

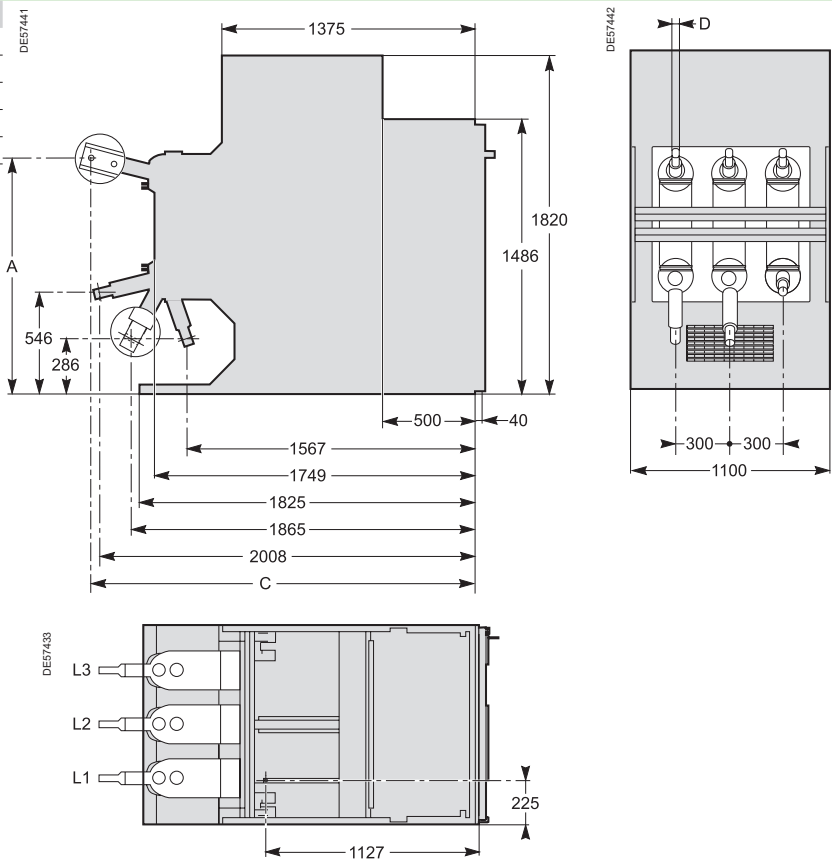
| | | < 31.5 kA | ≥ 31.5 kA |
|-----------------|---|-----------|-----------|
| Dimensions (mm) | A | 738 | 752 |
| | B | 540 | 533 |
| | C | 2030 | 2030 |
| | D | 36 | 40 |
| Weight (Kg) | | 750 | 850 |



EvoPacT SF F400/M2

Dimensions and weights

| | | < 31.5 kA | ≥ 31.5 kA |
|-----------------|---|-----------|-----------|
| Dimensions (mm) | A | 1278 | 1285 |
| | C | 2030 | 2030 |
| | D | 36 | 40 |
| Weight (Kg) | | 750 | 850 |



EvoPacT SF F400

Circuit Breaker

Withdrawable Version

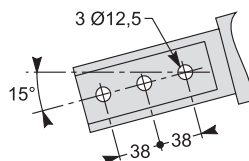
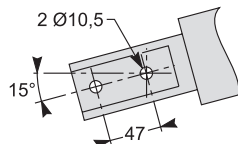
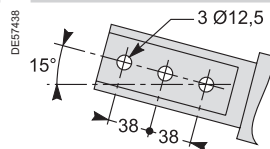
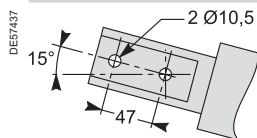
Dimensions

Connection

EvoPacT SF F400/M1

1250 A

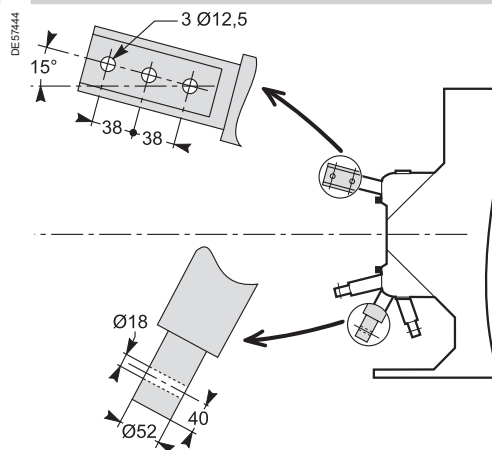
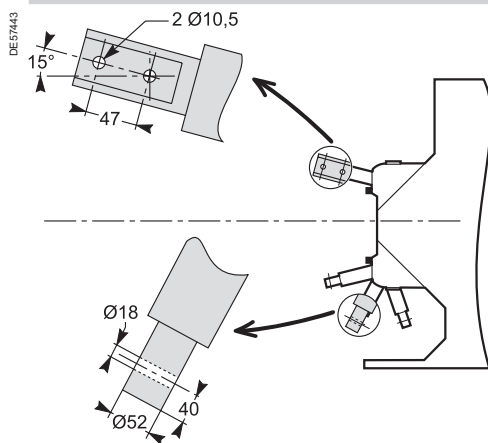
2500 A



EvoPacT SF F400/M2

1250 A

2500 A



Services

Contents

| | |
|------------------------------------|-----------|
| Schneider Electric Services | 58 |
| ProDiag Breaker | 59 |
| Separated Components | 60 |

Schneider Electric Services

Peace of mind throughout your installation life cycle

Understanding and managing the complexities of your operations

Service Lifecycle Management

Connected switchgear is a foundational element of EcoStruxure, Schneider Electric, open, and interoperable system architecture.

Connectivity offers customers greater visibility of their facilities and more control over operational health.

How to improve site safety

Electrical Safety Training



- Detect any knowledge gaps and attend appropriate e-learning, practical and hands-on electrical safety training courses.

Electrical Distribution Consulting Services



- Our consulting services portfolio offers asset health analysis for your site and recommends preventive actions.

How to improve protection your new installation

Service Plans



- Knowing your installation with the right service plan.

Maintenance Services



- A complete solution to maintain your equipment. Helping ensure service continuity and peace of mind at every step.

How to modernize aging infrastructure

Digitized Modernization



- Modernize your electrical distribution switchgear with pre-engineered retrofit service solutions.

SF₆ Recovery Services



- Peace-of-mind for your transition to SF₆-free medium voltage switchgear.

Spare Parts Management



- Spare part availability and reduced downtime.

All pictures of the catalogue illustrate the product in an environment close to reality. They were taken off-line. For live operation the PPE (Personal Protective Equipment) must be used in accordance with the regulations of the place of installation.

Find more information [here](#)

ProDiag Breaker

Diagnosis of MV and LV Circuit Breakers



What is ProDiag Breaker?

ProDiag Breaker is a Schneider Electric diagnosis tool.

ProDiag Breaker compares the mechanical and electrical parameters measured during the full operation of circuit breakers with the data collected from our production facilities. This allows detecting possible failure in advance. It measures, records and displays on a screen the key electrical parameters in MV and LV circuit breakers, relating to opening, closing and springloading operations.

All this data is automatically compared with the criteria for the circuit breaker designated in the software, which indicates which values are within the acceptable range, which are on the limit and which are outside it.

Two tests are always performed on each circuit breakers, one at minimum voltage and one at nominal voltage. A written report is generated and provided by Schneider Electric so that the customer can use it as a tool to define the necessary corrective action (maintenance, repair or replacement).

ProDiag Breaker is part of ProDiag preventive maintenance plan

Evaluation of circuit breakers using ProDiag Breaker includes:

- Evaluation of the operating mechanism.
- Measurement and comparison of the actual contact resistance with that specified by the manufacturer.
- Measurement and comparison of the insulation resistance.
- Evaluation of the general circuit breaker conditions based on the captured data.

Moreover, analysis of the ProDiag Breaker time/travel curve combined with the current curve of the coil and phase contact detects possible faults, such as:

- Worn out latches and operating mechanisms.
- Faulty coils.
- Mechanical wear and tear and hardening of lubricating grease.
- Defective shock absorbers.
- Defective simultaneous contact operation (opening/closing).

Some maintenance programmes involve dismantling the circuit breaker mechanism to check its condition. ProDiag Breaker using signals captured from the circuit breaker operation, reduces maintenance costs compared with programs which check the circuit breakers manually.

Where can ProDiag Breaker reduce costs?

- ProDiag Breaker significantly reduces the time taken to identify potential faults in a circuit breaker, using operational analysis rather than inspection and mechanical re-sets.
- The software analyses the captured data and identifies the specific problem area.
- A devices normal operating life is increased by timely diagnostics of when and what repairs are necessary.
- The tool comprises both hardware and software, resulting in a highly efficient predictive maintenance program.

ProDiag Breaker Objectives

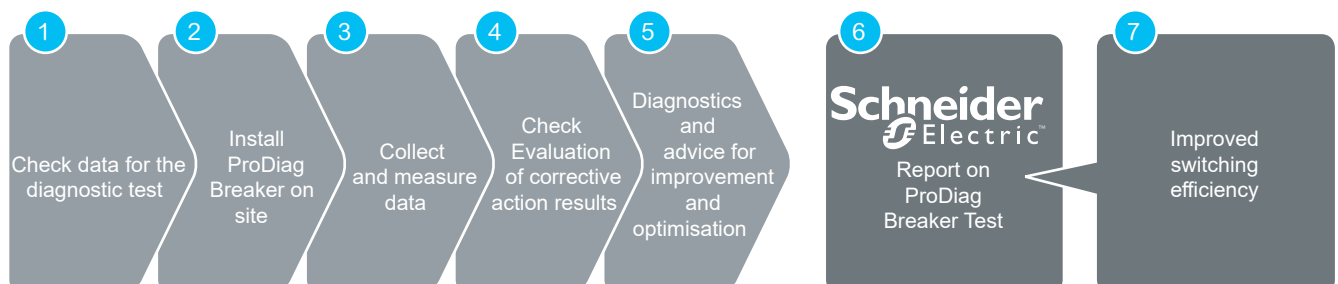
Your priority is to enhance the reliability of your installation:

- To ensure its continuity of service.
- To minimize the time for maintenance and repair.
- To perform maintenance.
- Only on the equipment requiring it and only when necessary (conditional preventive maintenance).

Results

ProDiag Breaker provides a report of the complete nature of the circuit breaker, detailing: closing/opening time, contact simultaneity, bounce and resistance, mechanical closing and opening forces.

This report enables any required maintenance to be targeted and time in order to optimize the customers maintenance plan.



Separated Components

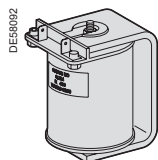
For EvoPacT SF1-SFSeT Ranges with RI Arrangement

The following components can be ordered separately and can be adapted or replaced by the customer.

These references are available through SPEED intranet site

Auxiliaries

| Shunt opening release | | | Y01 and Y02 | |
|-----------------------|-------|--|------------------------------|------------|
| 24 Vdc | | | type 1 arrangement A1 and C1 | SPK0040SF1 |
| | | | type 1 arrangement B1 | SPK0039SF1 |
| | | | type 2 | 887191HM |
| 30 Vdc | | | type 1 arrangement A1 and C1 | SPK0039SF1 |
| | | | type 1 arrangement B1 | 889705BL |
| | | | type 2 | SPK0003SFS |
| 32 Vdc | | | type 1 arrangement A1 and C1 | SPK0039SF1 |
| | | | type 1 arrangement B1 | 889705BL |
| | | | type 2 | SPK0003SFS |
| 48 Vdc | | | type 1 arrangement A1 and C1 | 889705BK |
| | | | type 1 arrangement B1 | 889705BJ |
| | | | type 2 | SPK0002SFS |
| 60 Vdc | | | type 1 arrangement A1 and C1 | 889705BJ |
| | | | type 1 arrangement B1 | 889705BH |
| | | | type 2 | SPK0001SFS |
| 110 Vdc | | | type 1 arrangement A1 and C1 | SPK0034SF1 |
| | | | type 1 arrangement B1 | SPK0034SF1 |
| | | | type 2 | 887191HF |
| 120 Vdc | | | type 1 arrangement A1 and C1 | SPK0034SF1 |
| | | | type 1 arrangement B1 | 889705BE |
| | | | type 2 | 887191HE |
| 125 Vdc | | | type 1 arrangement A1 and C1 | SPK0034SF1 |
| | | | type 1 arrangement B1 | 889705BE |
| | | | type 2 | 887191HE |
| 220 Vdc | | | arrangement A1 and C1 | SPK0032SF1 |
| | | | arrangement B1 | SPK0032SF1 |
| | | | type 2 | 887191HC |
| 48 Vac | 50 Hz | | type 1 arrangement A1 and C1 | SPK0042SF1 |
| | | | type 1 arrangement B1 | SPK0041SF1 |
| | | | type 2 | 887191HP |
| 110 Vac | 50 Hz | | type 1 arrangement A1 and C1 | SPK0039SF1 |
| | | | type 1 arrangement B1 | 889705BL |
| | | | type 2 | SPK0003SFS |
| 120 Vac | 50 Hz | | type 1 arrangement A1 and C1 | 889705BL |
| | | | type 1 arrangement B1 | 889705BL |
| | | | type 2 | 887191HK |
| 220 Vac | 50 Hz | | type 1 arrangement A1 and C1 | 889705BJ |
| | | | type 1 arrangement B1 | 889705BH |
| | | | type 2 | SPK0001SFS |
| 230 Vac | 50 Hz | | type 1 arrangement A1 and C1 | 889705BH |
| | | | type 1 arrangement B1 | 889705BH |
| | | | type 2 | SPK0001SFS |
| 120 Vac | 60 Hz | | type 1 arrangement A1 and C1 | SPK0040SF1 |
| | | | type 1 arrangement B1 | 889705BL |
| | | | type 2 | SPK0003SFS |
| 230 Vac | 60 Hz | | type 1 arrangement A1 and C1 | 889705BK |
| | | | type 1 arrangement B1 | 889705BH |
| | | | type 2 | SPK0001SFS |
| 240 Vac | 60 Hz | | type 1 arrangement A1 and C1 | 889705BK |
| | | | type 1 arrangement B1 | 889705BH |
| | | | type 2 | SPK0001SFS |

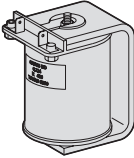


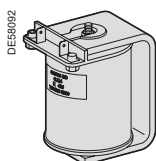
Separated Components

For EvoPacT SF1-SFSeT Ranges with RI Arrangement

| Shunt closing release | | | YF | |
|---|-------|--|-------------------------------|------------|
| 24 Vdc | | | Anti pumping Relay | MV261207 |
| | | | type 1 arrangement A1, B1, C1 | SPK0030SF1 |
| | | | type 2 | 887191HM |
| 30 Vdc | | | Anti pumping Relay | MV261208 |
| | | | type 1 arrangement A1, B1, C1 | 889705AL |
| | | | type 2 | SPK0003SFS |
| 32 Vdc | | | Anti pumping Relay | MV261209 |
| | | | type 1 arrangement A1, B1, C1 | 889705AL |
| | | | type 2 | SPK0003SFS |
| 48 Vdc | | | Anti pumping Relay | MV261209 |
| | | | type 1 arrangement A1, B1, C1 | SPK0028SF1 |
| | | | type 2 | SPK0002SFS |
| 60 Vdc | | | Anti pumping Relay | MV261210 |
| | | | type 1 arrangement A1, B1, C1 | 889705AH |
| | | | type 2 | SPK0001SFS |
| 110 Vdc | | | Anti pumping Relay | MV261211 |
| | | | type 1 arrangement A1, B1, C1 | SPK0026SF1 |
| | | | type 2 | 887191HF |
| 125 Vdc | | | Anti pumping Relay | MV261212 |
| | | | type 1 arrangement A1, B1, C1 | SPK0025SF1 |
| | | | type 2 | 887191HE |
| 220 Vdc | | | Anti pumping Relay | MV261213 |
| | | | type 1 arrangement A1, B1, C1 | SPK0012SF1 |
| | | | type 2 | 887191HC |
| 48 Vac | 50 Hz | | Anti pumping Relay | MV261215 |
| | | | type 1 arrangement A1 and C1 | 889705AQ |
| | | | type 1 arrangement B1 | 889705AP |
| | | | type 2 | 887191HP |
| 110 Vac | 50 Hz | | Anti pumping Relay | MV261216 |
| | | | type 1 arrangement A1 and C1 | SPK0030SF1 |
| | | | type 1 arrangement B1 | 889705AL |
| | | | type 2 | SPK0003SFS |
| 120 Vac | 50 Hz | | Anti pumping Relay | MV261216 |
| | | | type 1 arrangement A1 and C1 | SPK0030SF1 |
| | | | type 1 arrangement B1 | 889705AL |
| | | | type 2 | 887191HK |
| 220 Vac | 50 Hz | | Anti pumping Relay | MV261218 |
| | | | type 1 arrangement A1 and C1 | SPK0028SF1 |
| | | | type 1 arrangement B1 | 889705AH |
| | | | type 2 | SPK0001SFS |
| 230 Vac | 50 Hz | | Anti pumping Relay | MV261218 |
| | | | type 1 arrangement A1 and C1 | SPK0028SF1 |
| | | | type 1 arrangement B1 | 889705AH |
| | | | type 2 | SPK0001SFS |
| 120 Vac | 60 Hz | | Anti pumping Relay | MV261216 |
| | | | type 1 arrangement A1 and C1 | SPK0030SF1 |
| | | | type 1 arrangement B1 | 889705AL |
| | | | type 2 | SPK0003SFS |
| 230 Vac | 60 Hz | | Anti pumping Relay | MV261218 |
| | | | type 1 arrangement A1 and C1 | SPK0028SF1 |
| | | | type 1 arrangement B1 | SPK0028SF1 |
| | | | type 2 | SPK0001SFS |
| 240 Vac | 60 Hz | | Anti pumping Relay | MV261218 |
| | | | type 1 arrangement A1 and C1 | SPK0028SF1 |
| | | | type 1 arrangement B1 | SPK0028SF1 |
| | | | type 2 | SPK0001SFS |
| Zelio (RXM) relay adaptation kit for RI | | | | MV261246 |

DE56002

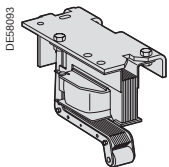


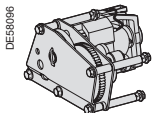


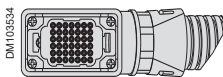
Separated Components

For EvoPacT SF1-SFSeT Ranges

with RI Arrangement

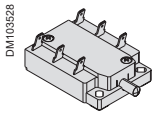
| Undervoltage release | | | YM | |
|---|---------|-------|-------------------|------------|
|  | 24 Vdc | | arrangement B1/C1 | 889772AB |
| | | | arrangement A1 | SPK0007SFS |
| | 30 Vdc | | arrangement B1/C1 | 889772AC |
| | | | arrangement A1 | SPK0008SFS |
| | 48 Vdc | | arrangement B1/C1 | 889772AE |
| | | | arrangement A1 | SPK0009SFS |
| | 60 Vdc | | arrangement B1/C1 | 889772AF |
| | | | arrangement A1 | SPK0019SF1 |
| | 110 Vdc | | arrangement B1/C1 | 889772AH |
| | | | arrangement A1 | SPK0010SFS |
| | 125 Vdc | | arrangement B1/C1 | 889772AJ |
| | | | arrangement A1 | SPK0011SFS |
| | 220 Vdc | | arrangement B1/C1 | 889772AM |
| | | | arrangement A1 | 889772CM |
| | 48 Vac | 50 Hz | arrangement B1/C1 | 889773AQ |
| | 110 Vac | 50 Hz | positon B1/C1 | 889773AU |

| Electrical motor and Gear reducer | | | |
|---|-------------------|--|------------|
|  | 24 to 32 Vdc | | 51072122A1 |
| | 48 to 60 Vac/dc | | 51072122B1 |
| | 110 to 127 Vac/dc | | 51072122C1 |
| | 220 to 250 Vac/dc | | 51072122D1 |

| LV connection | | | |
|---|--------------------|----------------|----------|
|  | Male plug and lead | arrangement A1 | MV261073 |
| | | arrangement B1 | MV261069 |
| | | arrangement C1 | MV261075 |

Contacts

| Auxiliary contacts | | |
|---|-----------|--|
|  | 8NO + 8NC | |
| | MV261239 | |

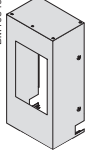
| End of charging | | |
|---|--------------------|--|
|  | contact M1, M2, M3 | |
| | AAV85908 | |

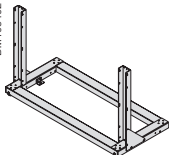

| Micro switch SE and SQ | | |
|---|-------------------|--|
|  | contact SE and SQ | |
| | 730734A | |

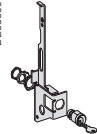
Separated Components

For EvoPacT SF1-SFSeT Ranges with RI Arrangement

Accessories

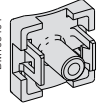
| Cover | | |
|---|----------------------|---------|
|  | arrangement A1/B1 | 888559D |
| | arrangement C1 | 888559A |
| | arrangement C1 PP350 | 889973A |
| | arrangement SFSeT A1 | 888559C |
| | arrangement SFSeT B1 | 888559B |

| Circuit breaker support frame | | |
|---|------------------------------------|---------|
|  | PP220 arrangement A1/B1 - H 550 mm | 888613A |
| | PP220 arrangement C1 - H 550 mm | 888613G |
| | PP220 arrangement A1/B1 - H 775 mm | 888613B |
| | PP220 arrangement C1 - H 775 mm | 888613H |
| | PP280 arrangement A1/B1 - H 550 mm | 888613C |
| | PP280 arrangement C1 - H 550 mm | 888613J |
| | PP280 arrangement A1/B1 - H 775 mm | 888613D |
| | PP280 arrangement C1 - H 775 mm | 888613K |
| | PP380 arrangement A1/B1 - H 550 mm | 888613E |
| | PP380 arrangement C1 - H 550 mm | 888613L |
| | PP380 arrangement A1/B1 - H 775 mm | 888613F |
| | PP380 arrangement C1 - H 775 mm | 888613M |
|  | Wheel | 879585 |

| Locking and interlocking | | |
|---|---|----------|
|  | Open arrangement circuit-breaker locking (without lock) | 888516A |
| | Flat key type | AAV86887 |
| | Tubular key type | AAV86892 |

| Accessories for protection relay | | |
|----------------------------------|--|------------|
| | Test VAP 6 (for VIP 300 series) | 03143843FA |
| | Pocket battery module (for VIP 400 series) | LV434206 |

Indicator

| Pushbuttons (open/closed) | | | |
|---|------|---------------|----------|
|  | IEC | Red | 888408 |
| | | Black | 888407 |
| | ANSI | Green-red O/C | 0732826B |
| | | | |

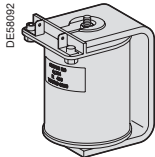
Separated Components

For EvoPacT SF1-SF2 Ranges with GMH Mechanism

The following components can be ordered separately and can be adapted or replaced by the customer.

These references are available through SPEED intranet site

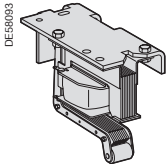
Auxiliaries


| Shunt opening release | | | Y01 and Y02 |
|---|---------|-------|-------------|
|  | 24 Vdc | | 9015608M1 |
| | 30 Vdc | | 9015608L1 |
| | 48 Vdc | | 9015608J1 |
| | 60 Vdc | | 9015608H1 |
| | 110 Vdc | | 9015608E1 |
| | 125 Vdc | | 9015608E1 |
| | 220 Vdc | | 9015608B1 |
| | 48 Vac | 50 Hz | 9015608N1 |
| | 110 Vac | 50 Hz | 9015608K1 |
| | 220 Vac | 50 Hz | 9015608H1 |
| | 120 Vac | 60 Hz | 9015608L1 |
| | 240 Vac | 60 Hz | 9015608H1 |

| Shunt closing release | | | YF | |
|--|---------|-------|--------------------|-----------|
| | 24 Vdc | | Anti pumping Relay | MV261207 |
| | | | Closing release | 9015616M1 |
| | 30 Vdc | | Anti pumping Relay | MV261208 |
| | | | Closing release | 9015616L1 |
| | 48 Vdc | | Anti pumping Relay | MV261209 |
| | | | Closing release | 9015616J1 |
| | 60 Vdc | | Anti pumping Relay | MV261210 |
| | | | Closing release | 9015616H1 |
| | 110 Vdc | | Anti pumping Relay | MV261211 |
| | | | Closing release | 9015616F1 |
| | 125 Vdc | | Anti pumping Relay | MV261212 |
| | | | Closing release | 9015616E1 |
| | 220 Vdc | | Anti pumping Relay | MV261213 |
| | | | Closing release | 9015616B1 |
| | 110 Vac | 50 Hz | Anti pumping Relay | MV261216 |
| | | | Closing release | 9015616L1 |
| | 220 Vac | 50 Hz | Anti pumping Relay | MV261218 |
| | | | Closing release | 9015616H1 |
| | 120 Vac | 60 Hz | Anti pumping Relay | MV261216 |
| | | | Closing release | 9015616M1 |
| | 240 Vac | 60 Hz | Anti pumping Relay | MV261217 |
| | | | Closing release | 9015616J1 |
| Zelio (RXM) relay adaptation kit for GMH | | | | MV261247 |

Separated Components

For EvoPacT SF1-SF2 Ranges with GMH Mechanism

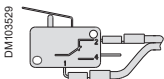
| Undervoltage release | | YM |
|---|---------------|------------|
|  | 24 Vdc | 9015612A1 |
| | 30 Vdc | 889772BC |
| | 48 Vdc | 9015612B1 |
| | 60 Vdc | 9015612C1 |
| | 110 Vdc | 9015612Q1 |
| | 125 Vdc | 9015612D1 |
| | 220 Vdc | 9015612F1 |
| | 48 Vac 50 Hz | SPK0002SF2 |
| | 110 Vac 50 Hz | 9015612J1 |
| | 220 Vac 50 Hz | 9015612L1 |
| | 120 Vac 60 Hz | 9015612J1 |
| | 240 Vac 60 Hz | 9015612L1 |

| Electrical motor and Gear reducer | | |
|---|----------------|-----------|
|  | 24–32 Vdc | 9011042A1 |
| | 48–60 Vac/dc | 9011042B1 |
| | 110–127 Vac/dc | 9011042C1 |
| | 220–250 Vac/dc | 9011042D1 |
| | 380 Vac | 9011042F1 |
| | Gear reducer | 9011147C1 |

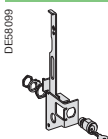
Contacts

| Auxiliary contacts | | |
|---|------------|-----------|
|  | 5 contacts | 0877942K1 |
| | 9 contacts | 0877942C1 |

| End of charging | | |
|---|--------------------|-----------|
|  | contact M1, M2, M3 | 9010107B1 |

| Micro switch SE and SQ | | |
|---|-------------------|---------|
|  | contact SE and SQ | 730734A |

Accessories

| Locking and interlocking | | |
|---|--|----------|
|  | Open position circuit-breaker locking (without lock) | 887647A |
| | Flat key type | AAV86887 |
| | Tubular key type | AAV86892 |

Order Forms

Contents

| | |
|--|-----------|
| EvoPacT SF1 Lateral/Frontal Fixed | 68 |
| EvoPacT SFSeT Lateral/Frontal Fixed | 69 |
| EvoPacT SF2 Fixed | 70 |
| EvoPacT SF F400 Withdrawable | 71 |

EvoPacT SF1

Lateral/Frontal Fixed

Order Forms

Only one of the boxes (ticked ☒ or filled ☐ by the needed value) have to be considered between each horizontal line.
Green box ☒ corresponds to none priced functions.

| | | |
|-------------------------------------|---|---|
| Basic fixed circuit breaker | Quantity | <input type="text"/> |
| Rated voltage Ur | (kV) | <input type="text"/> |
| Impulse voltage Up | (kV/bil) | <input type="text"/> |
| Short-circuit current Isc | (kA) | <input type="text"/> |
| Rated current Ir | (A) | <input type="text"/> |
| Frequency | 50 Hz <input checked="" type="checkbox"/> | 60 Hz <input checked="" type="checkbox"/> |
| Operating mechanism position | A1 <input checked="" type="checkbox"/> | B1 <input checked="" type="checkbox"/> C1 <input checked="" type="checkbox"/> |

Color for push buttons and indicators

Push buttons open/close:

IEC Red/Black ☒ IEC Red/Green ☒ ANSI Red/Green ☒ ANSI Red/Black ☒

Indicator open/close:

IEC Green/White ☒ ANSI Red/Green ☒

Operating mechanism charged/discharged:

IEC White/Yellow ☒ ANSI Charged/Discharged ☒

Circuit breaker options

1st opening release (see possible choices in combination table below)

Shunt opening release YO1

| | | | |
|--|---|---|---|
| 24 Vdc <input checked="" type="checkbox"/> | 60 Vdc <input checked="" type="checkbox"/> | 220 Vdc <input checked="" type="checkbox"/> | 220 Vac (50 Hz) <input checked="" type="checkbox"/> |
| 30 Vdc <input checked="" type="checkbox"/> | 110 Vdc <input checked="" type="checkbox"/> | 48 Vac (50 Hz) <input checked="" type="checkbox"/> | 120 Vac (60 Hz) <input checked="" type="checkbox"/> |
| 48 Vdc <input checked="" type="checkbox"/> | 125 Vdc <input checked="" type="checkbox"/> | 110 Vac (50 Hz) <input checked="" type="checkbox"/> | 240 Vac (60 Hz) <input checked="" type="checkbox"/> |

Undervoltage release YM

| | | | |
|---------------------------------|----------------------------------|--|--|
| 24 Vdc <input type="checkbox"/> | 60 Vdc <input type="checkbox"/> | 220 Vdc <input type="checkbox"/> | 220 Vac (50 Hz) <input type="checkbox"/> |
| 30 Vdc <input type="checkbox"/> | 110 Vdc <input type="checkbox"/> | 48 Vac (50 Hz) <input type="checkbox"/> | 120 Vac (60 Hz) <input type="checkbox"/> |
| 48 Vdc <input type="checkbox"/> | 125 Vdc <input type="checkbox"/> | 110 Vac (50 Hz) <input type="checkbox"/> | 240 Vac (60 Hz) <input type="checkbox"/> |

Mitop ☐ Without contact ☐ With contact ☐

2nd opening release (see possible choices in combination table below)

Shunt opening release YO2

| | | | |
|---------------------------------|----------------------------------|--|--|
| 24 Vdc <input type="checkbox"/> | 60 Vdc <input type="checkbox"/> | 220 Vdc <input type="checkbox"/> | 220 Vac (50 Hz) <input type="checkbox"/> |
| 30 Vdc <input type="checkbox"/> | 110 Vdc <input type="checkbox"/> | 48 Vac (50 Hz) <input type="checkbox"/> | 120 Vac (60 Hz) <input type="checkbox"/> |
| 48 Vdc <input type="checkbox"/> | 125 Vdc <input type="checkbox"/> | 110 Vac (50 Hz) <input type="checkbox"/> | 240 Vac (60 Hz) <input type="checkbox"/> |

Undervoltage release YM

| | | | |
|---------------------------------|----------------------------------|--|--|
| 24 Vdc <input type="checkbox"/> | 60 Vdc <input type="checkbox"/> | 220 Vdc <input type="checkbox"/> | 220 Vac (50 Hz) <input type="checkbox"/> |
| 30 Vdc <input type="checkbox"/> | 110 Vdc <input type="checkbox"/> | 48 Vac (50 Hz) <input type="checkbox"/> | 120 Vac (60 Hz) <input type="checkbox"/> |
| 48 Vdc <input type="checkbox"/> | 125 Vdc <input type="checkbox"/> | 110 Vac (50 Hz) <input type="checkbox"/> | 240 Vac (60 Hz) <input type="checkbox"/> |

Mitop ☐ Without contact ☐ With contact ☐

Remote control

| | | |
|--------------------|---------------------------------------|---|
| Electrical motor M | 24–32 Vdc <input type="checkbox"/> | 110–127 Vdc/ac <input type="checkbox"/> |
| | 48–60 Vdc/ac <input type="checkbox"/> | 220–250 Vdc/ac <input type="checkbox"/> |

Shunt closing release YF

| | | | |
|--|---|---|---|
| 24 Vdc <input checked="" type="checkbox"/> | 60 Vdc <input checked="" type="checkbox"/> | 220 Vdc <input checked="" type="checkbox"/> | 220 Vac (50 Hz) <input checked="" type="checkbox"/> |
| 30 Vdc <input checked="" type="checkbox"/> | 110 Vdc <input checked="" type="checkbox"/> | 48 Vac (50 Hz) <input checked="" type="checkbox"/> | 120 Vac (60 Hz) <input checked="" type="checkbox"/> |
| 48 Vdc <input checked="" type="checkbox"/> | 125 Vdc <input checked="" type="checkbox"/> | 110 Vac (50 Hz) <input checked="" type="checkbox"/> | 240 Vac (60 Hz) <input checked="" type="checkbox"/> |

| | | |
|--------------------------------------|--|--|
| Low voltage wiring connection | Male plug (1.2 m) <input type="checkbox"/> | Female socket (2 m) <input type="checkbox"/> |
| Locking C.B. in open position | Flat <input type="checkbox"/> | Tubular <input type="checkbox"/> |
| Support frame | Low (560 mm) <input type="checkbox"/> | High (775 mm) <input type="checkbox"/> |
| Leaflets language | French <input checked="" type="checkbox"/> | English <input type="checkbox"/> |
| Pressure switch | <input type="checkbox"/> | |

EvoPacT SFSeT

Lateral/Frontal Fixed

Order Forms

Only one of the boxes (ticked ☒ or filled ☐ by the needed value) have to be considered between each horizontal line.
Green box ☒ corresponds to none priced functions.

| | | |
|--|---|---|
| Basic fixed circuit breaker | Quantity | <input type="text"/> |
| Rated voltage U_r | (kV) | <input type="text"/> |
| Impulse voltage U_p | (kV/bil) | <input type="text"/> |
| Short-circuit current I_{sc} | (kA) | <input type="text"/> |
| Rated current I_r | (A) | <input type="text"/> |
| Frequency | 50 Hz <input checked="" type="checkbox"/> | 60 Hz <input checked="" type="checkbox"/> |
| Operating mechanism position | A1 <input checked="" type="checkbox"/> | B1 <input checked="" type="checkbox"/> C1 <input checked="" type="checkbox"/> |

Color for push buttons and indicators

Push buttons open/close:

IEC Red/Black ☒ IEC Red/Green ☒ ANSI Red/Green ☒ ANSI Red/Black ☒

Indicator open/close:

IEC Green/White ☒ ANSI Red/Green ☒

Operating mechanism charged/discharged:

IEC White/Yellow ☒ ANSI Charged/Discharged ☒

Control unit and sensors

VIP 400 (not available for all electrical characteristics)

CSa4 200A ☐
CSb4 630A ☐

VIP 410A

CSa4 200A ☐

VIP 410E

CSb4 630A ☐

Circuit breaker options

2nd opening release (see possible choices in combination table below)

Shunt opening release YO2

| | | | |
|---------------------------------|----------------------------------|--|--|
| 24 Vdc <input type="checkbox"/> | 60 Vdc <input type="checkbox"/> | 220 Vdc <input type="checkbox"/> | 220 Vac (50 Hz) <input type="checkbox"/> |
| 30 Vdc <input type="checkbox"/> | 110 Vdc <input type="checkbox"/> | 48 Vac (50 Hz) <input type="checkbox"/> | 120 Vac (60 Hz) <input type="checkbox"/> |
| 48 Vdc <input type="checkbox"/> | 125 Vdc <input type="checkbox"/> | 110 Vac (50 Hz) <input type="checkbox"/> | 240 Vac (60 Hz) <input type="checkbox"/> |

Undervoltage release YM

| | | | |
|---------------------------------|----------------------------------|--|--|
| 24 Vdc <input type="checkbox"/> | 60 Vdc <input type="checkbox"/> | 220 Vdc <input type="checkbox"/> | 220 Vac (50 Hz) <input type="checkbox"/> |
| 30 Vdc <input type="checkbox"/> | 110 Vdc <input type="checkbox"/> | 48 Vac (50 Hz) <input type="checkbox"/> | 120 Vac (60 Hz) <input type="checkbox"/> |
| 48 Vdc <input type="checkbox"/> | 125 Vdc <input type="checkbox"/> | 110 Vac (50 Hz) <input type="checkbox"/> | 240 Vac (60 Hz) <input type="checkbox"/> |

Remote control

Electrical motor M

24–32 Vdc ☐ 110–127 Vdc/ac ☐
48–60 Vdc/ac ☐ 220–250 Vdc/ac ☐

Shunt closing release YF

| | | | |
|--|---|---|---|
| 24 Vdc <input checked="" type="checkbox"/> | 60 Vdc <input checked="" type="checkbox"/> | 220 Vdc <input checked="" type="checkbox"/> | 220 Vac (50 Hz) <input checked="" type="checkbox"/> |
| 30 Vdc <input checked="" type="checkbox"/> | 110 Vdc <input checked="" type="checkbox"/> | 48 Vac (50 Hz) <input checked="" type="checkbox"/> | 120 Vac (60 Hz) <input checked="" type="checkbox"/> |
| 48 Vdc <input checked="" type="checkbox"/> | 125 Vdc <input checked="" type="checkbox"/> | 110 Vac (50 Hz) <input checked="" type="checkbox"/> | 240 Vac (60 Hz) <input checked="" type="checkbox"/> |

| | | |
|--------------------------------------|--|--|
| Low voltage wiring connection | Male plug (1.2 m) <input type="checkbox"/> | Female socket (2 m) <input type="checkbox"/> |
| Locking C.B. in open position | Flat <input type="checkbox"/> | Tubular <input type="checkbox"/> |
| Support frame | Low (560 mm) <input type="checkbox"/> | High (775 mm) <input type="checkbox"/> |
| Pocket battery | <input type="checkbox"/> | |
| Leaflets language | French <input checked="" type="checkbox"/> | English <input checked="" type="checkbox"/> |
| Pressure switch | <input type="checkbox"/> | |

EvoPacT SF2

Fixed

Order Forms

Only one of the boxes (ticked ☒ or filled ☐ by the needed value) have to be considered between each horizontal line.
Green box ☒ corresponds to none priced functions.

| | | |
|------------------------------------|---|--------------------------------|
| Basic fixed circuit breaker | | Quantity <input type="text"/> |
| Rated voltage U_r | (kV) | <input type="text"/> |
| Impulse voltage U_p | (kVbil) | <input type="text"/> |
| Short-circuit current I_{sc} | (kA) | <input type="text"/> |
| Rated current I_r | (A) | <input type="text"/> |
| Frequency | 50 Hz <input checked="" type="checkbox"/> | 60 Hz <input type="checkbox"/> |

Color for push buttons and indicators

Push buttons open/close:

IEC Red/Black ☐

IEC Red/Green ☐

ANSI Red/Green ☐

Indicator open/close:

IEC Green/White ☐

ANSI Red/Green ☐

Operating mechanism charged/discharged:

IEC White/Yellow ☐

IEC Black/White ☐

ANSI Charged/Discharged ☐

Circuit breaker options

1st opening release (see possible choices in combination table below)

Shunt opening release YO1

24 Vdc ☒

60 Vdc ☒

220 Vdc ☒

250 Vac (50 Hz) ☒

32 Vdc ☒

100–109 Vdc ☒

110 Vac (50 Hz) ☒

120 Vac (60 Hz) ☒

48 Vdc ☒

100–127 Vdc ☒

220 Vac (50 Hz) ☒

240 Vac (60 Hz) ☒

Undervoltage release YM

24 Vdc ☐

60 Vdc ☐

220 Vdc ☐

220 Vac (50 Hz) ☐

32 Vdc ☐

110 Vdc ☐

48 Vac (50 Hz) ☐

120 Vac (60 Hz) ☐

48 Vdc ☐

125 Vdc ☐

110 Vac (50 Hz) ☐

240 Vac (60 Hz) ☐

Mitop

Without contact ☐

With contact ☐

2nd opening release (see possible choices in combination table below)

Shunt opening release YO2

24 Vdc ☐

60 Vdc ☐

220 Vdc ☐

250 Vac (50 Hz) ☐

32 Vdc ☐

100–109 Vdc ☐

110 Vac (50 Hz) ☐

120 Vac (60 Hz) ☐

48 Vdc ☐

100–127 Vdc ☐

220 Vac (50 Hz) ☐

240 Vac (60 Hz) ☐

Undervoltage release YM

24 Vdc ☐

60 Vdc ☐

220 Vdc ☐

220 Vac (50 Hz) ☐

32 Vdc ☐

110 Vdc ☐

48 Vac (50 Hz) ☐

120 Vac (60 Hz) ☐

48 Vdc ☐

125 Vdc ☐

110 Vac (50 Hz) ☐

240 Vac (60 Hz) ☐

Mitop

Without contact ☐

With contact ☐

Remote control

Electrical motor M

24–32 Vdc ☐

110–127 Vdc/ac ☐

48–60 Vdc/ac ☐

220–250 Vdc/ac ☐

Shunt closing release YF

24 Vdc ☒

60 Vdc ☒

220 Vdc ☒

220 Vac (50 Hz) ☒

32 Vdc ☒

110 Vdc ☒

48 Vac (50 Hz) ☒

120 Vac (60 Hz) ☒

48 Vdc ☒

125 Vdc ☒

110 Vac (50 Hz) ☒

240 Vac (60 Hz) ☒

| | | |
|--------------------------------------|--|--|
| Low voltage wiring connection | Male plug (1.2 m) <input type="checkbox"/> | Female socket (2 m) <input type="checkbox"/> |
| Locking C.B. in open position | Flat <input type="checkbox"/> | Tubular <input type="checkbox"/> |
| Pressure switch | <input type="checkbox"/> | |
| Support frame | <input type="checkbox"/> | |
| Leaflets language | French <input checked="" type="checkbox"/> | English <input type="checkbox"/> |
| Pressure switch | <input type="checkbox"/> | |

Releases combinations table

| | | | | | | |
|--------------------------------|---|---|---|---|---|---|
| Shunt opening releases YO1/YO2 | 1 | | | 2 | 1 | 1 |
| Undervoltage release YM | | 1 | | | 1 | |
| Mitop | | | 1 | | | 1 |

EvoPacT SF F400

Withdrawable

Order Forms

Only one of the boxes (ticked ☒ or filled ☐ by the needed value) have to be considered between each horizontal line.
Green box ☒ corresponds to none priced functions.

| | | |
|---|---|---|
| Basic withdrawable circuit breaker | Quantity | <input type="text"/> |
| Rated voltage U_r | (kV) | <input type="text"/> |
| Impulse voltage U_p | (kVbil) | <input type="text"/> |
| Short-circuit current I_{sc} | (kA) | <input type="text"/> |
| Rated current I_r | (A) | <input type="text"/> |
| Frequency | 50 Hz <input checked="" type="checkbox"/> | 60 Hz <input checked="" type="checkbox"/> |
| Pressure switch | | <input checked="" type="checkbox"/> |

Color for push buttons and indicators

Push buttons open/close:

IEC Red/Black ☒ IEC Red/Green ☒ ANSI Red/Green ☒

Indicator open/close:

IEC Green/White ☒ ANSI Red/Green ☒

Operating mechanism charged/discharged:

IEC White/Yellow ☒ IEC Black/White ☒ ANSI Charged/Discharged ☒

Circuit breaker options

1st opening release (see possible choices in combination table below)

Shunt opening release YO1

| | | | |
|--|---|---|---|
| 24 Vdc <input checked="" type="checkbox"/> | 60 Vdc <input checked="" type="checkbox"/> | 220 Vdc <input checked="" type="checkbox"/> | 220 Vac (50 Hz) <input checked="" type="checkbox"/> |
| 30 Vdc <input checked="" type="checkbox"/> | 110 Vdc <input checked="" type="checkbox"/> | 48 Vac (50 Hz) <input checked="" type="checkbox"/> | 120 Vac (60 Hz) <input checked="" type="checkbox"/> |
| 48 Vdc <input checked="" type="checkbox"/> | 125 Vdc <input checked="" type="checkbox"/> | 110 Vac (50 Hz) <input checked="" type="checkbox"/> | 240 Vac (60 Hz) <input checked="" type="checkbox"/> |

2nd opening release (see possible choices in combination table below)

Shunt opening release YO2

| | | | |
|---------------------------------|----------------------------------|--|--|
| 24 Vdc <input type="checkbox"/> | 60 Vdc <input type="checkbox"/> | 220 Vdc <input type="checkbox"/> | 220 Vac (50 Hz) <input type="checkbox"/> |
| 30 Vdc <input type="checkbox"/> | 110 Vdc <input type="checkbox"/> | 48 Vac (50 Hz) <input type="checkbox"/> | 120 Vac (60 Hz) <input type="checkbox"/> |
| 48 Vdc <input type="checkbox"/> | 125 Vdc <input type="checkbox"/> | 110 Vac (50 Hz) <input type="checkbox"/> | 240 Vac (60 Hz) <input type="checkbox"/> |

Undervoltage release YM

| | | | |
|---------------------------------|----------------------------------|--|--|
| 24 Vdc <input type="checkbox"/> | 60 Vdc <input type="checkbox"/> | 220 Vdc <input type="checkbox"/> | 220 Vac (50 Hz) <input type="checkbox"/> |
| 30 Vdc <input type="checkbox"/> | 110 Vdc <input type="checkbox"/> | 48 Vac (50 Hz) <input type="checkbox"/> | 120 Vac (60 Hz) <input type="checkbox"/> |
| 48 Vdc <input type="checkbox"/> | 125 Vdc <input type="checkbox"/> | 110 Vac (50 Hz) <input type="checkbox"/> | 240 Vac (60 Hz) <input type="checkbox"/> |

Mitop (not available with seismic version)

Without contact ☐ With contact ☐

Remote control

| | | |
|--------------------|--|--|
| Electrical motor M | 24–32 Vdc <input checked="" type="checkbox"/> | 110–127 Vdc/ac <input checked="" type="checkbox"/> |
| | 48–60 Vdc/ac <input checked="" type="checkbox"/> | 220–250 Vdc/ac <input checked="" type="checkbox"/> |

Shunt closing release YF

| | | | |
|--|---|---|---|
| 24 Vdc <input checked="" type="checkbox"/> | 60 Vdc <input checked="" type="checkbox"/> | 220 Vdc <input checked="" type="checkbox"/> | 220 Vac (50 Hz) <input checked="" type="checkbox"/> |
| 30 Vdc <input checked="" type="checkbox"/> | 110 Vdc <input checked="" type="checkbox"/> | 48 Vac (50 Hz) <input checked="" type="checkbox"/> | 120 Vac (60 Hz) <input checked="" type="checkbox"/> |
| 48 Vdc <input checked="" type="checkbox"/> | 125 Vdc <input checked="" type="checkbox"/> | 110 Vac (50 Hz) <input checked="" type="checkbox"/> | 240 Vac (60 Hz) <input checked="" type="checkbox"/> |

Leaflets language French ☒ English ☐

M1/M2 cradles

| | | |
|--------------------------------------|---------------------------------|---------------------------------|
| Cradle type | M1 <input type="checkbox"/> | M2 <input type="checkbox"/> |
| Rated short-circuit current I_{sc} | | ≤ 40 kA |
| Rated current I_r | 1250 A <input type="checkbox"/> | 2500 A <input type="checkbox"/> |

M1/M2 cradles accessories

| | |
|--------------------------------|-------------------------------------|
| Racked-in/out position contact | 4 NO, 4 NC <input type="checkbox"/> |
| Extra handle | Quantity <input type="text"/> |

Releases combinations table

| | | | | | |
|--------------------------------|---|---|---|---|---|
| Shunt opening releases YO1/YO2 | 1 | 2 | 1 | 1 | 2 |
| Undervoltage release YM | 1 | | 1 | 1 | 1 |
| Mitop | | | 1 | 1 | |

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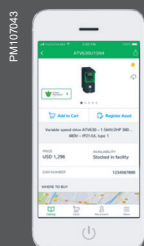
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- Trainings

Get Support anytime



- Access 24/7 self-service, mobile catalog and access to expert help
- Offline and online catalog
- Get trainings, Advanced support



Collaborate, find solution and make business



- Get to Schneider Electric Exchange find solution develop business
- Schneider Electric Exchange is an online community where individuals can do business
- Whether you're seeking find Solutions or have products, services, and advice to share
- We'll help you connect with peers, technology partners, and experts to gain a competitive edge

Select and Design

Advanced WEB functionalities that help to:

- Select and compare components
- Build easily your technical documentation with ready to use tools (CAD, export files...)



Configure and Quote

Simplified and validated configuration

- Always updated technical content
- Ready to use data and documentation for your projects
- Last minute changes
- Manage and track your orders



Manage your installed base

Digital Logbook, where you can find all of the documents you'll need during your circuit breaker's manufacturing, installation, operation, and maintenance from anywhere, in a single, well secured paperless environment.

- User manuals
- Design drawings
- Single-line drawings
- Factory and site acceptance tests
- Spare parts lists
- Maintenance records, schedules, and more



Notes



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