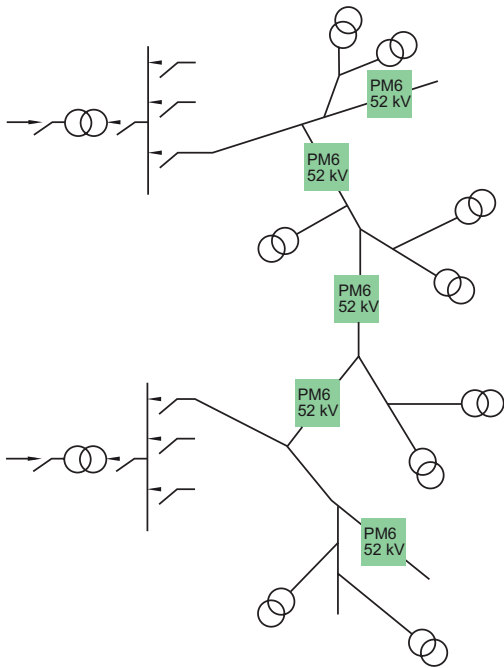

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DES1180



In industrialized countries, where there is a high level of electrification, not only is poor electrical power supply quality not accepted by consumers, but in many countries over recent years, compulsory regulatory standards have been drawn up in order to guarantee the quality of electrical service that is provided.

In response to this situation, electrical utilities companies are requiring new products and a high reliability and easily managed service focused on reducing:

- the number of power outages
- the duration of the outages
- the increase in affected zones.

We can implement a certain number of actions to reduce the above mentioned points, such as:

- using underground power lines
- reducing the length of lines
- good maintenance of networks and their environment
- selecting and applying suitable devices on MV lines.

PM6 is Schneider Electric's best solution: installed on its customers' MV lines, this equipment enables them to achieve their target objectives to improve network management and automation and thus increase the quality of service provided to customers.

Presentation

PM6 52 kV is an SF6 breaking disconnect switch designed for outdoor mounting. It can be installed in rural and semi-urban overhead distribution networks, up to 52 kV.

Although it is specially designed for remote control functions, it can also be controlled locally in manual mode.

PM6 52 kV is a highly competitive solution, world wide exclusive SF6 solution.

PE56941

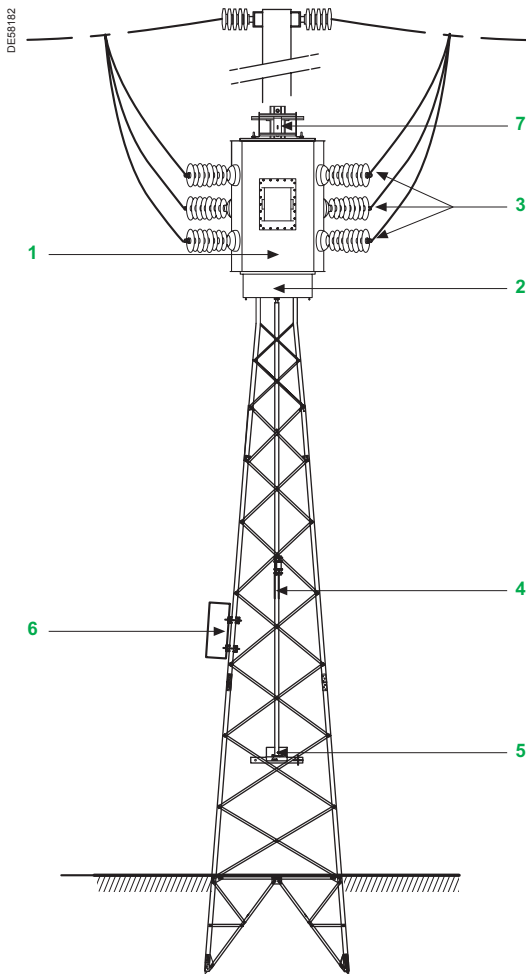


Reference standards

PM6 52 kV is manufactured in conformity with the following international standards:

- European: IEC 60265-2, IEC 62271-102, IEC 62271-200, IEC 60694, IEC 60815, IEC 60529.

Moreover, the equipment production process is carried out in compliance with an ISO 9001 certified quality program.



This is made up of an external stainless steel enclosure, without any additional protective coatings, to give a smooth, clean, self-cleaning and aerated surface that is highly resistant to corrosion.

The disconnector switch breaking chambers and the SF6 gas are inside the enclosure.

The enclosure with the SF6 has very compact dimensions comparing with other technologies and only the parts specifically required for breaking are inside the enclosure to limit the gas volume.

The casing is connected to earth and it is therefore impossible for a dangerous leakage current to pass between the terminals on one side and the terminals on the other when the device is in the open position; in addition, no additional disconnectors are necessary to guarantee the isolation distance. This feature is what gives the equipment its characteristics as a disconnector switch.

All sensitive components, which may need to be fully dismantled in the event of an external incident following transient network disturbances (ferroresonance, circuit breaker, overheating of components, etc.), are placed outside of the SF6 enclosure, e.g. motors, voltage transformer, current sensors, electronic components, etc.

The compact volume and the internal SF6 pressure, considerably reduce the risk of any gas leakage. The enclosure is sealed for life and meets "pressurized sealed system" criteria in conformity with standard IEC 62271-200.

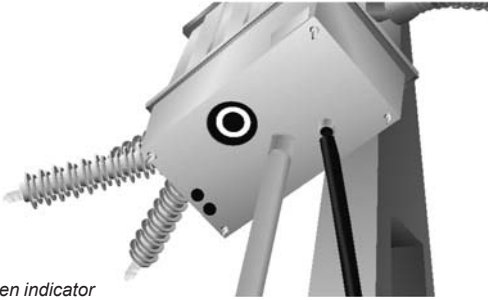
During extinction of the electrical arc, the overpressure is basically confined to the volume between the contacts. This overpressure is low and even if it accidentally increases, it would be limited due to the presence of an overpressure membrane.

There is very little energy dissipated in the arc due to the qualities of the gas, the short arc length and the short arc duration; even in frequent operation, the device is capable of breaking all load currents for 30 years without needing any servicing of the active parts.

Legend:

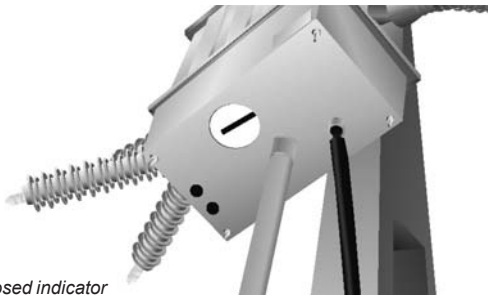
- 1 - SF6 disconnector switch
- 2 - Mechanical control mechanism
- 3 - MV line connections
- 4 - Manual control transmission
- 5 - Manual control mechanism
- 6 - Control unit
- 7 - Support cradle

PE68842



Open indicator

PE68843



Closed indicator

Electrical switching and control mechanism

The electrical switching and control mechanisms are located inside an independent distribution enclosure, combined with the disconnecting switch breaking device. The basic mechanism involves an opening-closing system (passing through a neutral point), activated by a spring for switching operations to take place independently of the operator switching speed (Tumbler system).

As all these parts are inside an enclosure with a high protection index, we can guarantee excellent behaviour of our equipment in bad weather.

The electrical control mechanism comprises a 48 V DC motor for the electrical opening and closing operations, operated either from the control unit situated at the pole base or from a remote control center if appropriate.

A device directly linked to the disconnecting switch contact position ("open" or "closed") makes sure it is in the right position. This device, and the position indicator that is easily visible from the ground, comply with the "fully apparent opening" criterion described in the IEC standard.

MV connections

The PM6 disconnecting switch is equipped with 6 silicone connectors, enabling connection of the MV line using a non-insulated cable.

PE68845EN



Manual control via a transmission system

The manual control system comprises a transmission shaft going to the base of the pole and an operating lever which can be mechanically padlocked in one of the three positions:

LOCKED OPEN - REMOTE CONTROL - LOCKED CLOSED ⁽¹⁾.

Manual operation offers the advantages of being quick and easy to activate in an emergency and of being easier and safer for the operator when carrying out switching operations.

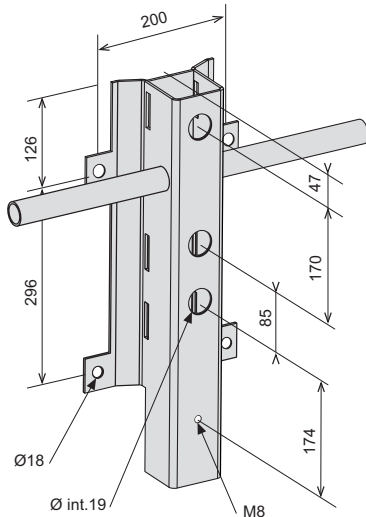
Operating safety

The switch may be in one of two positions: "Closed", "Open" representing a natural interlocking system that prevents incorrect operation.

Moving-contact rotation is driven by a post-acting mechanism that is independent of the action of the operation.

The device combines the breaking and disconnection functions.

DE68181



Support cradle

Support cradle and anchoring system

The disconnecting switch and control mechanism are mounted on the support cradle. This unit is then fixed at the desired height using the anchoring system.

⁽¹⁾ Lock not included.

PEE6044



According to standards IEC 60265-2

Rated voltage	kV rms	52	
Rated current	A	630	
Insulation level	kV rms, 50 Hz/1 min	in the earthing connection	95
		at the isolation distance	110
Impulse wave	kV, 1.2/50 μ s	in the earthing connection	250
		at the isolation distance	290
Breaking capacity	A	mainly active load	630
		ring load	630
		no load transformer	10
		no load line	10
Closing capacity	kA (peak value)	31.5	
Short time withstand current	kA (rms value) - 3 s	12.5	
	kA (peak value)	31.5	

Other characteristics

Temperature	$^{\circ}$ C	maximum	+ 40
		minimum	- 25
Mechanical strength	AC cycles		1000
Electrical endurance	AC cycles	for 400 A	100
		for 630 A	10
Protection index		switch enclosure	IP67
		mechanical part	IP56
		control unit	IP55
Creepage distance	mm/kV		25
Motorgear	Maximum switching time		7

PE58646



Advantages

The PM6 52 kV offers many benefits for your MV lines:

- reduced mass and volume
- efficiency
- safe operation
- reduced maintenance
- no spares
- very long service life.

PE58647



PM6 52 kV double way

Other applications PM6 52 kV

PM6 52 kV double way

It is possible to deliver two PM6 52 kV switch-disconnectors controlled by only one Talus (T200 P), using only one voltage transformer for power supply of the control box.

PM6 for STR

PM6 52 kV has an option to be installed in the substation incoming line structure.

We supply PM6 52 kV with an adapted control box, powered by the auxiliaries services of the same substation and responsible of sending the information required by the Control Center.

For this application, voltage transformer is not required.

PE60848



Easergy T200 P

Control unit

Description

The flexibility of the PM6 52 kV unit allows our disconnecter switch to be adapted to all types of control unit if the equipment is to be used in remote control mode.

However, the PM6 52 kV has a dedicated control unit, the Easergy T200 P, specially designed by Schneider Electric to carry out these functions.

Designed to be pole-mounted outdoors, it is a stainless steel casing, with all components manufactured in conformity with EMC standards.

Components

The unit comprises the following components:

- a cradle for all the electronic modules:
 - switch connection module
 - CPU and the local control indication module
 - RTU communication module
 - battery power supply-charger module
- a battery
- a supply transformer with its protection device
- free space to install a radio or a modem.

Advantages

The main advantages of our control unit are:

- easy to install and in the case of an incident, the components are easy to replace
- local PM6 management from the control unit
- open-ended to all types of protocols and communication systems
- remote controlled and maintenance by integrated web server.

Additional options

Following options can be supplied and installed by the customer.

Voltage transformer

In places where equipment such as PM6 52 kV is normally installed, there is no auxiliary power supply to power the control unit charging device, including the radio, and its electronic circuit boards...

It is therefore necessary to install an outdoor voltage transformer to supply the power needed for independent operation of all the equipment.

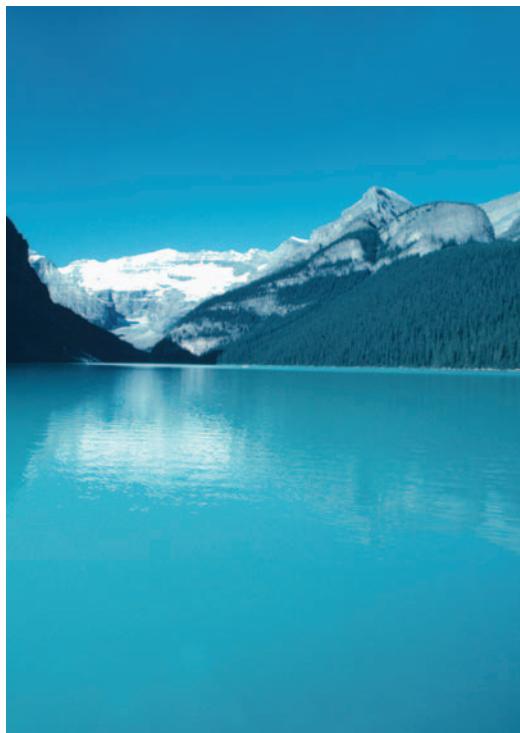
Support is not supplied.

PE60849



Voltage transformer

PE69860



Schneider Electric has a world-wide center of competency for PM6 52kV range in Spain.

The PM6 52 kV is a world wide exclusive product in SF6.

Even if it is quite new, it is already installed in most of the few overhead network where 52 kV is required.

PM6 52 kV range, making a good decision.

DE69183

