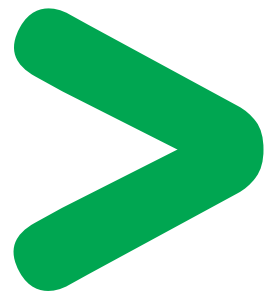


Optimising reliability with air-insulated switchgear

MCset and PIX:

two ranges covering MV applications up to 24 kV





A global partner
you can trust

300 000

functions installed worldwide
through our existing ranges

Bringing improved performance to any MV installation

The experience of a leader in MV distribution

Reliability, safety, simplicity – whether vacuum or SF6 withdrawable circuit breaker is your preferred technology, these are key elements to look for in any MV switchgear.

Air-insulated switchgear 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 potential to integrate your MV switchboard in a monitoring and control system.

Introducing MCset and PIX switchgear

MCset™ (SF6 withdrawable circuit breaker) and PIX™ (vacuum withdrawable circuit breaker) switchgear bring you the best of both worlds, providing enhanced safety, simplicity, and reliability you can depend on.

A TRUSTED PROVIDER OF MV EQUIPMENT

As the Global Specialist in Energy Management™, Schneider Electric™ brings you the benefit of a proven track record of performance and extensive industry experience.

Additionally, for all customer applications, we provide:

- > pre-engineered and adaptable solutions tailored to your specific requirements,
- > significantly reduced maintenance, and
- > local support centres throughout the world.

We also provide both SF6 and vacuum withdrawable circuit breaker options to ensure we meet any and all MV switchgear requests.



We provide air-insulated
switchgear for all electrical
power distribution markets,
including, but not limited to:



Marine and navy applications

Cruisers
Container ships
Tankers
Offshore platforms



Industry

Oil & gas
Metallurgy
Mining
Cement plants



Energy

Electric power stations
(thermal, nuclear)
Auxiliary substations



Infrastructure

Airports
Ports
Hospitals
Water treatment

A comprehensive air-insulated switchgear solution

Introducing the reliable and easy-to-use MCset and PIX MV ranges

Both MCset and PIX switchgear provide exceptional performance and outstanding reliability, helping to ensure service continuity for your networks with proven technology that's both easy to use and to maintain.

Together, these switchgear represent a comprehensive MV solution for all electrical distribution applications up to 24 kV. And, with industry reputations for quality and reliability, they bring added peace of mind to the operator of any installation.

Safety

- > Operations and indications are concentrated on the front of the switchgear
- > Racking in and out is only possible with the door closed
- > The earthing switch has making capacity
- > Internal arc withstand developed for most of the functional units
- > Designed with environmental protection in mind

Simplicity

- > A clear user interface which is easily understood
- > Interlocks and padlocks preventing operator errors
- > Easy on-site control & monitoring
- > Limited and simple maintenance for years
- > Easy installation thanks to compactness and similar design

Reliability

- > The design, manufacturing, and testing are carried out according to ISO 9001 quality standard
- > Design is ensured by advanced computer modeling techniques
- > In accordance with main IEC standards as 62271-200 as well as standards specific to individual countries and applications
- > Type testing is also carried out in accordance with main IEC standards

MCset switchgear – SF6 circuit breaker

Technical characteristics



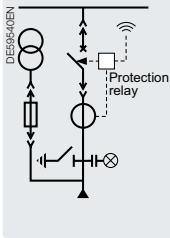
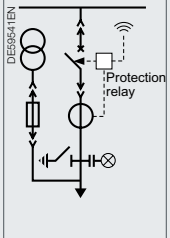
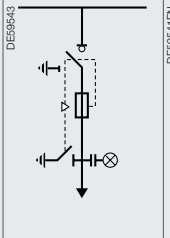
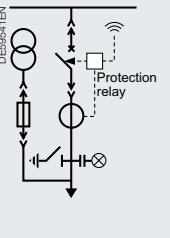
MCset has a comprehensive range of functions to suit all requirements for a lot of applications. The table below can be used to link requirements to functional units and gives basic information on the general composition of each unit.



IAC (internal arc classification):

The metal enclosed switchgear may have different types of accessibility on the various sides of its enclosure. For identification purposes concerning the different sides of the enclosure, the following code shall be used (according to the IEC 62271-200 standard):

- A:** restricted access to authorised personnel only
- F:** access to the front side
- L:** access to the lateral side
- R:** access to the rear side

Function	Incomer ⁽¹⁾			Feeder			
	Line	Transformer	Generator	Line	Transformer	Transformer	Motor
Functional unit	LI-B	TI-B	GI-B	LF-B	TF-B	TF-S	MF-B
Cubicle	AD1-2-3-4	AD1-2-3-4	AD1-2-3-4	AD1-2-3-4	AD1-2-3-4	DI 2 - DI 4	AD1-2-3-4
Device	Circuit breaker	Circuit breaker	Circuit breaker	Circuit breaker	Circuit breaker	Fuse-switch	Circuit breaker
Protection relay Applications	Substation	Transformer	Generator	Substation	Transformer	Transformer	Motor
Single-line diagrams							

1). The direct incomer (functional unit without circuit breaker, equipped with a fixed busbar bridge) is produced using cubicles AD1-2-3 for U up to 17.5 kV. For the 24 kV version, the direct incomer is produced using a specific cubicle: RD4. 2). Transition cubicle for MCC application (Motorpact). For more information on other functional units, please contact us.

Rated voltage

	Ur (kV)	7.2	12	17.5	24
Rated insulation level					
Power frequency withstand voltage 50 Hz - 1 min	Ud (rms kV)	20	28	38	50
Lightning impulse withstand voltage 1.2/50 μs	Up (kV peak)	60	75	95	125

Rated normal current and maximum short time withstand current ⁽¹⁾

Functional unit with circuit breaker

Short time withstand current	I _k max.	I _k /t _k (kA/3 s)	25	25	25	16
			31.5	31.5	31.5	25
			40	40	40	31.5
			50 ⁽⁶⁾	50 ⁽⁶⁾		
Rated current	I _r max. busbar	I _r (A)	4000	4000	4000	2500 ⁽⁷⁾
Rated current	I _r CB	I _r (A)	1250	1250	1250	630
			2500	2500	2500	1250
			3150	3150	3150	2500
			4000 ⁽²⁾	4000 ⁽²⁾	4000 ⁽²⁾	

Functional unit with fuse-contactor ⁽³⁾

Short time withstand current (prospective value) ⁽⁹⁾	I _k max.	(kA)	50 ⁽⁴⁾	50 ^{(4) (5)}		
Rated current	I _r max.	(A)	250	200 ⁽⁵⁾		

Functional unit with switch-fuse combination (DI cubicle) ⁽⁶⁾

Rated current according to the fuses installed, see documentation

Rated current	I _r max. ≤	(A)	200	200	200	200
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Internal arc classification (maximum value I_A and t_A)

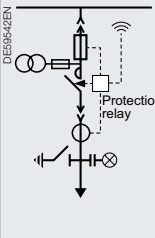
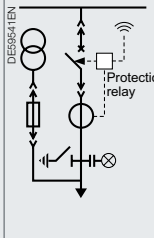
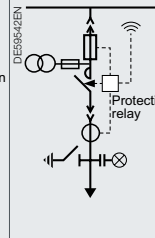
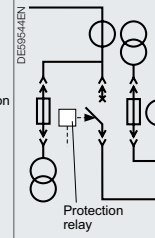
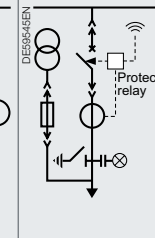
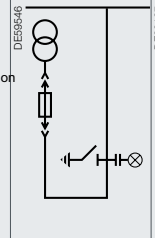

(kA/1 s)	50	50	50	25
(kA/0.15 s)				31.5

Degree of protection

IP3X				IP3X
IP4X ⁽⁷⁾				IP4X
IPX2				IPX1 ⁽⁷⁾

The values above are given for the normal operating conditions as defined in IEC 62271-200 and 62271-1

1). For functional units equipped with circuit breakers or fuse-contactors, the breaking capacity is equal to the short time withstand current. In all cases, the device peak making capacity is equal to 2.5 times the short time withstand current. 2). With fan. 3). Lightning impulse dielectric withstand voltage = 60 kV peak 4). Limited by fuses (prospective value 5). With Rollarc contactor 6). Limited to 1 s for I_r circuit breaker: 1250 A. 7). For higher performance, consult us. 8). According to IEC 62271-105, combinations do not have a rated short time withstand current 9). In accordance with IEC 62271-106. Please consult us for more information on technical characteristics.

Feeder			Bussectioning		Metering and busbar earthing	Motorpact transition ⁽²⁾
Motor	Capacitor	Capacitor	Switchboard	Substation		Motor control
MF-C	CB-B	CB-C	BS-B	SS-B	BB-V	
AD1C	AD1-2-3-4	AD1C	CL1-2-3-4 and GL1-2-3-4	AD1-2-3-4	TT1-2-4	
Fuse contactor	Circuit breaker	Fuse contactor	Circuit breaker	Circuit breaker		
Motor	Capacitor	Capacitor	Busbar	Substation		
						

PIX switchgear – vacuum circuit breaker

Technical characteristics



PIX has a comprehensive range of functions to suit all requirements or a lot of applications.



IAC (internal arc classification):

The metal enclosed switchgear may have different types of accessibility on the various sides of its enclosure. For identification purposes concerning the different sides of the enclosure, the following code shall be used (according to the IEC 62271-200 standard):

- A:** restricted access to authorised personnel only
- F:** access to the front side
- L:** access to the lateral side
- R:** access to the rear side

Function	Incomer / Feeder		
	Line	Transformer	Generator
Cubicle	CB	CB	CB
Device	Circuit breaker	Circuit breaker	Circuit breaker
Protection application	Substation	Transformer	Generator
Single-line diagrams			

Rated voltage

Ur (kV)	12	17.5	24
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Rated insulation level

Power frequency withstand voltage 50 Hz - 1 min	Ud (kV rms)	28	38	50
Lightning impulse withstand voltage 1.2/50 μ s	Up (kV peak)	75	95	125

Rated normal current and maximum short time withstand current ⁽¹⁾

Peak withstand current I_p (kA)	(kA rms)	63/80/100/130	50/63/80
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Functional unit with circuit breaker

Short time withstand current	Ik/ tk	(kA/3 s)	25	25	20
			31.5	31.5	25
			40	40	31.5
			50	50	

Rated current	I_r max. busbar	Ir	(A)	up to 3150 up to 5000 ⁽²⁾	up to 2500
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Rated current	I_r CB	Ir	(A)	1250	1250	1250
				2500	2500	2500
				3150	3150	
				4000 ⁽²⁾	4000 ⁽²⁾	
				5000 ⁽²⁾	5000 ⁽²⁾	

Functional unit with switch disconnector

Rated current	(A)	630	630	630
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Functional unit with switch-fuse combination (T1 cubicle) ⁽³⁾

Rated current	(A)	400	400	400
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Functional unit with fuse contactor

Rated current	(A)	200-400		
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Internal arc classification (maximum value I_A and t_A)

(kA/1 s)	50	50	31.5
IAC	AFLR	AFLR	AFL

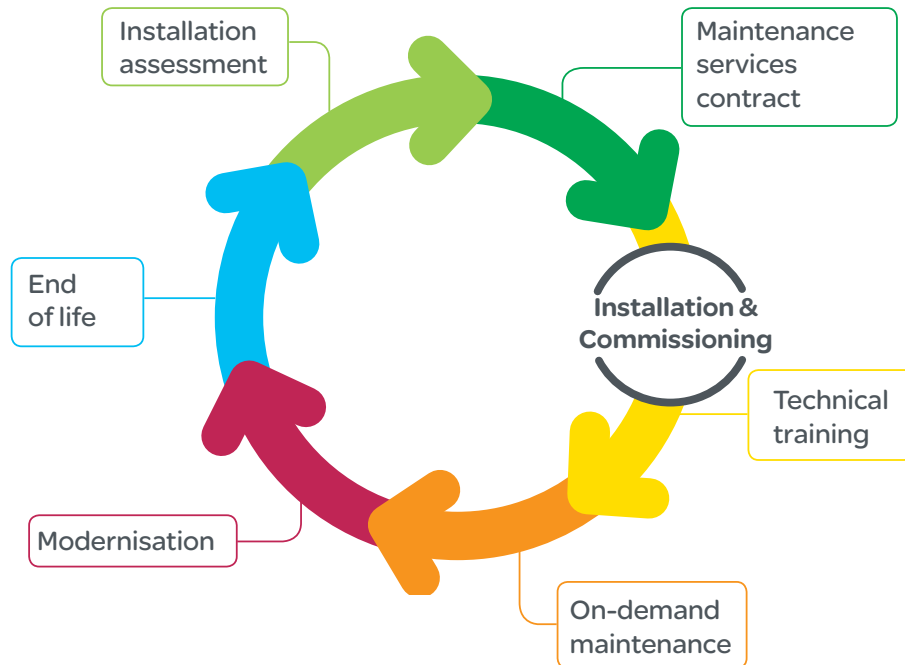
Degree of protection

External enclosure	Standard	IP3X	
	Option	IP4X	

1). For functional units equipped with circuit breakers or fuse-contactors, the breaking capacity is equal to the short time withstand current. In all cases, the device peak making capacity is equal to 2.5 times the short time withstand current. 2). With fan. 3). According to IEC 62271-105, combinations do not have a rated short time withstand current. Please consult us for more information on technical characteristics.

Feeder			Bussectioning		Metering and busbar earthing
Transformer	Motor	Capacitor	Switchboard	Switchboard	
T1	MCC	CB	BC CB	RMT	MT BBE
Fuse-switch	Fuse contactor	Circuit breaker			
Transformer	Motor	Capacitor			
 DM102158	 DM102159	 DM102157	 DM102160	 DM102162	 DM102161

Schneider Electric Services, by your side throughout the life of your installation



10

- > **Installation & commissioning**
Because, without these, you increase the risk of start-up delays and premature equipment failure.
- > **Technical training**
Having well-trained employees is key to the long-term health of your electrical distribution equipment.
- > **On-demand maintenance**
You need to adopt the right best practices and minimise downtime, while working with limited budgetary and maintenance resources.
- > **Modernisation**
Ageing, outdated equipment can be modernised, dramatically improving its performance and lifetime, as well as achieving compliance with current regulations.
- > **End of life**
To dispose of outdated equipment in a way that's both green and transparent.
- > **Installation assessment**
For a comprehensive assessment and a clear analysis of the results.
- > **Maintenance services contracts**
To prevent such issues: by focusing on predictive and preventive maintenance that's tailored specifically to your site and processes.



EXAMPLES OF SERVICES PROVIDED

- > End-of-life recycling
- > Warranty extension
- > Circuit-breaker contactor diagnosis
- > Help with preventive maintenance

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