



Technology
Partner

SIMOPRIME

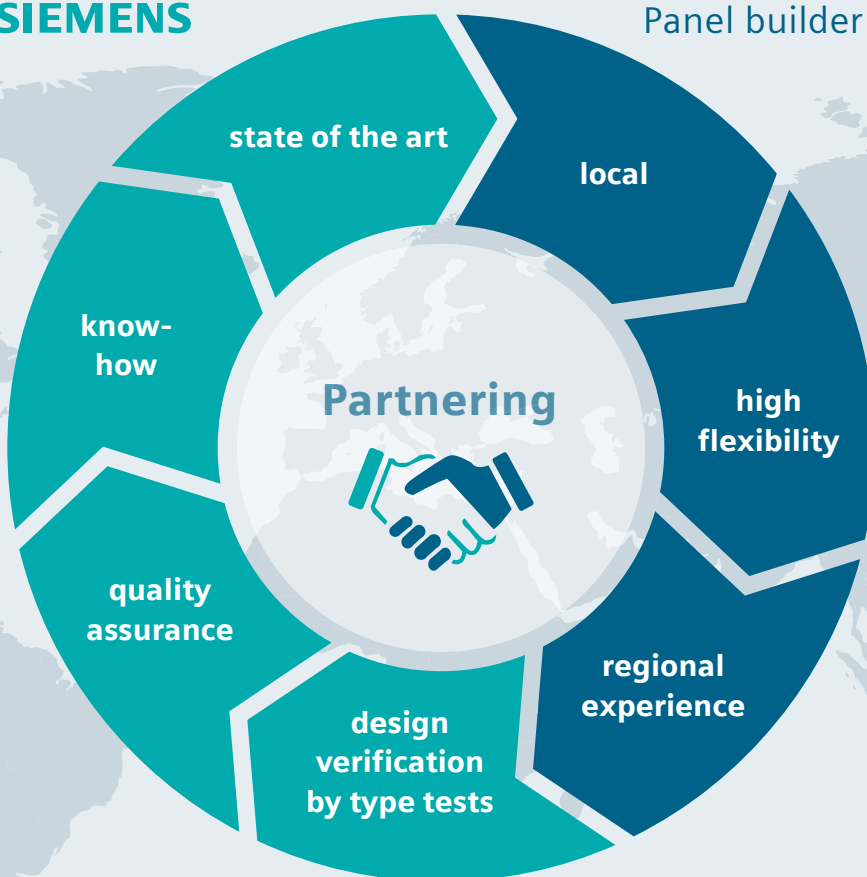
SIMOPRIME reliable medium-voltage switchgear for fail-safe operation

SIMOPRIME Technology Partner – gateway to success for panel builders

SIEMENS

SIEMENS

Panel builder



Technology Partnering SIMOPRIME – Concept for success

Technology Partnering for SIMOPRIME opens the gateway to success for panel builders through partnership with well-known and respected Siemens brand.



The Technology Partnering concept

We would like to invite you to join us in a strategic technology partnership. With a global brand in your area, we can work together to capture new markets and increase the profitability, volume and market share by our combined business.

SIMOPRIME is based on an air insulated medium voltage switchgear technology featuring a modular design. A SIMOPRIME Technology Partnership is part of the grid+ Partner Program which is tailored around Electrification, Automation and Medium Voltage Products as well as a wide offering of MV Switchgear licenses. The grid+ Partner community gets access to a wide range of further benefits and the unique offering out of one hand enables SIMOPRIME Technology Partners to make full use of the cutting-edge SIEMENS technology.

SIMOPRIME portfolio is continuously maintained and updated with latest vacuum circuit breakers and vacuum contactors to meet latest standards and requirements arising from the market. Usage of state-of-the-art makes SIMOPRIME portfolio future proof and highly sustainable.

Simplistic design of SIMOPRIME switchgear makes it easier to produce without high financing demands and the return of the investment phase is short for the investors.

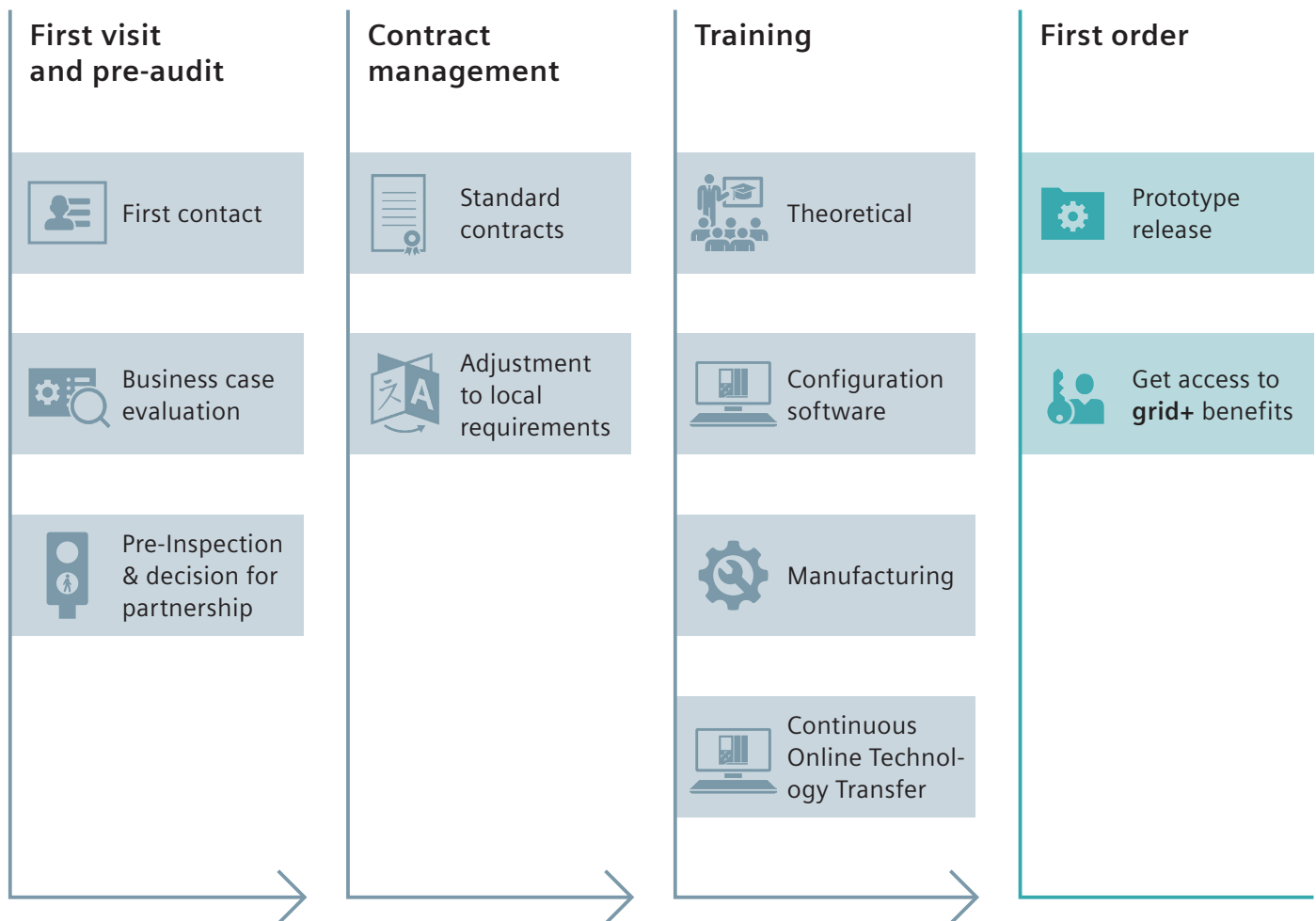
The partnering concept has its own Technology Partnering concept label. This label stands for high potential, success and diversification. SIMOPRIME is produced exclusively by our partners thereby using must buy parts from Siemens which ensures the fail safe operation of the switchgear and ideally can be perfected by using Siemens' Siprotec relays as protection.

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SIMOPRIME Technology Partner – How to become one, steps and benefits



SIMOPRIME switchgear, up to 17.5 kV and up to 24 kV

- Factory assembled, type tested switchgear according to IEC 62271 200
- Use of high quality, world-wide available components
- Design based on global best practice and 50 years of experience

Technical benefits

- Interlockings between high voltage door and switching devices
- Rack in, rack out operations of the circuit breaker truck with high voltage door closed
- Metallic, earthed shutters and partitions, partition class: PM (metallic partition)
- Use of metallic, earthed shutters and partitions between the compartments
- Highest loss of service continuity of the switchgear (LSC2B according to IEC 62271 200) during maintenance
- Internal arc tested design according to IEC 62271 200, 17.5 kV up to 40 kA, 1 s
- Internal arc tested design according to IEC 62271 200, 24 kV, up to 25 kA, 1 s
- Use of maintenance free vacuum circuit breakers and vacuum contactors
- Flexibility due to two types of withdrawable unit design
 - Withdrawable (cassette) type*
 - Truck type
- Easy production of SIMOPRIME switchgear due to basic design without need of complex jigs and fixtures
- Safe operation due to high-voltage door closed during all switching operations, including emergency manual operations

* Available up to 17.5 kV and soon up to 24kV



SIMOPRIME switchgear, 17.5 kV version

Benefits for your customer

- Saves lives
- Fast return of investment
- Peace of mind due to fail-safe operation
- Siemens product DNA
- Tens of thousands air-insulated, medium-voltage SIMOPRIME switchgears in operation world-wide prove that technologically sophisticated solutions can be efficiently implemented with the SIMOPRIME switchgear.

2 Training

The right knowledge serves as a good basis

Our training centre in Gebze (Turkey) offers a wide range of training sessions for your employees that can be individually adapted to your demands.

Our training is based on many years of experience in the production of medium voltage switchgears. Profound knowledge is the base for a successful start up.



Additional training options

- Power engineering and SIMOPRIME switchgear applications for medium-voltage networks
- Selection criterias for medium-voltage components
- CT and VT selection criterias
- Assembly and installation course (supervisor course)

Online Training

- Track your progress and develop professional skills on different levels through online courses.
- Track SIMOPRIME updates with Newsletters
- Take surveys to measure your knowledge
- Access general documentation of SIMOPRIME
- Assembly animation and videos for different cases.
- Instructional Videos on different scenarios of switchgear operation



Product training

- General characteristics and applications
- Features and components

Software training

- Offer, order and project structure, basic parameters of the switchgear design
- Switchgear and component selection
- Technical product documentation

Quality assurance

- Basic knowledge for production quality
- Best practice examples
- Information about type tests and routine testing

Assembly training

- Panel assembly with documentation
- Supporting tools and equipments
- Application examples

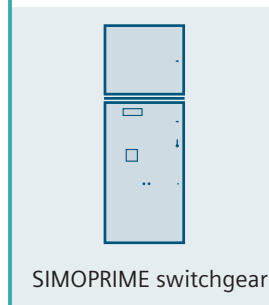
3 Configuration software

Standalone configuration software to create, configure and keep your projects

Engineering
process along
the entire
planning process

1

Project data



SIMOPRIME switchgear



The configuration tool supports you in project phase – from offer to order stage with automatically generated assembly and technical documentation.

2

NXTools+ and partnering configuration software



Technical
specification



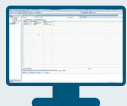
Define the
typicals



Select MV
components
and
accessories



Automatical
error check



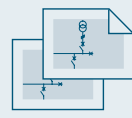
Switchgear
arrangement

3

Documentation



Printouts of
parts lists



Single line
diagrams



Technical
description



Time saving and error free configuration

The Siemens tools for SIMOPRIME air insulated medium-voltage switchgear engineering are suitable for intuitive and error proof primary part engineering.

Background algorithm avoids failures. The tools can be used during the quotation and order stages. The related documentation can be generated automatically, and manual modifications are only necessary with nonstandard designs.

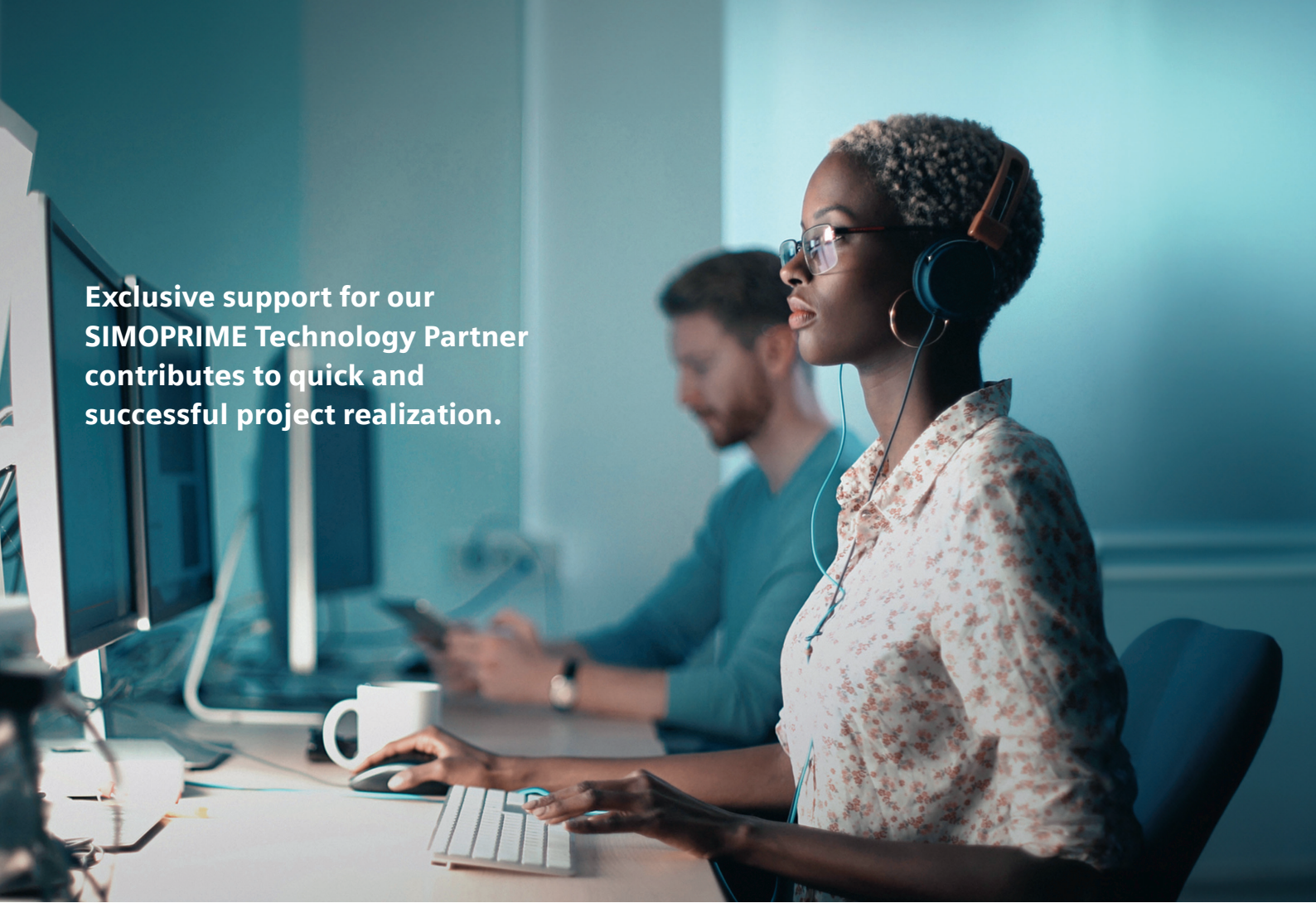
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Technical support

Global support service

- User protected extranet for the partners to share the information such as test certificates, technical documents, datasheets and CAx data.
- Exclusive marketing support such as brochures, presentations, text modules, pictures for your catalogue or internet presence, etc.
- Regular Email newsletters and webinars provide you with the latest information about our products, systems and tools.
- Our internet website highlights the concept and benefits of being a SIMOPRIME Technology Partner:

[siemens.com/simoprime-partner](https://www.siemens.com/simoprime-partner)



Exclusive support for our
SIMOPRIME Technology Partner
contributes to quick and
successful project realization.

Priority technical support

We provide full scale technical assistance for configuration and manufacturing stages as well as in your first planning stage.

Contact our Partnering Support Team by email:

mv-partnering-support.de@siemens.com

5

SIMOPRIME switchgear – Solutions for all industries





Contents



Power generation and supply

- Power stations
- Offshore installations
- Diesel power plants
- Emergency power supply installations
- Traction power supplies



Infrastructure

- Power distribution
- Smart grids



Oil and gas

- Petroleum industry
- Gas industry



Process industry

- Cement industry
- Iron and steel works
- Mining industry
- Textile, paper and food industry
- Rolling mills



Factory automation

- Automobile industry
- Shipbuilding industry



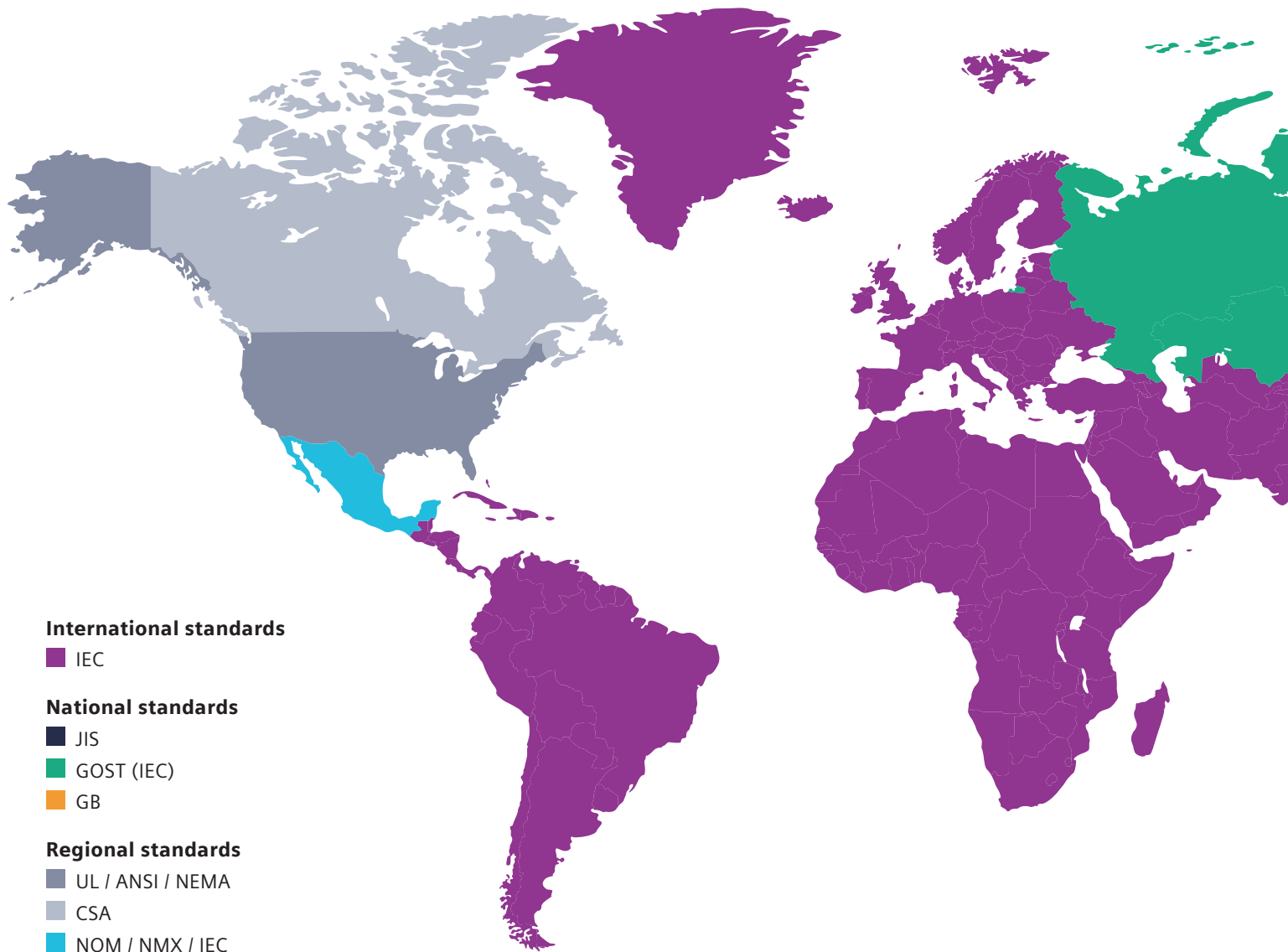
Chemical industry

- Electrochemical plants
- Petrochemical plants

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5.1

Ratings and classifications





SIMOPRIME switchgears are fully type-tested to comply with IEC standards as well as DIN and GOST standards.



Internal arc withstand acceptance criteria

Criterion 1

Correctly secured doors and covers do not open.
Limited deformations are accepted.

Criterion 2

No fragmentation of the enclosure.
Projection of small parts up to an individual mass of 60 g are accepted.

Criterion 3

Arcing does not cause holes in the accessible sides up to a height of 2 m.

Criterion 4

Horizontal and vertical indicators do not ignite due to the effect of hot gases.

Criterion 5

The enclosure remains connected to its earthing point.

Internal arc classification according to IEC

IAC	Internal arc classification
A	300 mm distance of indicators for test (installation in closed electrical service location)
F	Front arrangement of indicators for test
L	Lateral arrangement of indicators for test
R	Rear arrangement of indicators for test
Isc	Test current for SIMOPRIME ≤ 17.5 kV up to 40 kA, ≤ 24 kV up to 25 kA
t	Arc duration 1 s, optionally 0.1 s

	 IEC standard	 VDE standard	 DIN / EN standard
SIMOPRIME switchgear	IEC 62271-1 IEC 62271-200	VDE 0671-1 VDE 0671-200	DIN / EN 62271-1 DIN / EN 62271-200
Internal arcing tests	IEC 62271-200	VDE 0671-200	–
Devices	Circuit breaker	IEC 62271-100	VDE 0671-100 DIN / EN 62271-100
	Circuit breaker, generator switching	IEC / IEEE 62271-37-013	–
	Vacuum contactor	IEC 62271-106	VDE 0670-501 DIN / EN 62271-106
	Disconnecter and earthing switch	IEC 62271-102	VDE 0671-102 DIN / EN 62271-102
	HV HRC fuses	IEC 60282	VDE 0670-4 DIN / EN 62271-103
	Voltage detecting systems	IEC 61243-5	VDE 0682-415 DIN / EN 62271-105
	Internal arc classification	IEC 62271-200	VDE 0671-200 DIN / EN 60282-1
Degree of protection	IEC 60529	VDE 0470-1	DIN / EN 61243-5
	IEC 62271-200	VDE 0671-200	DIN / EN 60529
Current-carrying capacity	IEC 62271-1	VDE 0671-1	DIN / EN 62271-1
	IEC 62271-200 ¹⁾	VDE 0671-200 ¹⁾	DIN / EN 62271-200 ¹⁾
Insulation	IEC 60071	VDE 0111	DIN / EN 60071
Current transformer	IEC 61869-2	VDE 0414-1	DIN / EN 61869-2
Voltage transformer	IEC 61869-3	VDE 0414-2	DIN / EN 61869-3
Installation	IEC 61936-1	VDE 0101	DIN / EN 61936-1
Enclosure	IP 4X ²⁾ (protection against solid foreign bodies)		
	Compartments: IP 2X (protection against solid foreign bodies)		

¹⁾ Ambient air temperatures: Maximum of 24 H mean + 35 °C, Maximum + 40 °C

- The current-carrying capacity of the panels and busbars depends on the ambient air temperature outside the enclosure.
- To attain the maximum rated normal currents, some panel variants are provided with natural or forced ventilation.

²⁾ Higher degree of protection IP 5x for enclosure on request.

Type of service location

The switchgear can be used for indoor installation in accordance with IEC 61936 (power installations exceeding 1 kV AC) and VDE 0101

Inside lockable electrical service locations

A lockable electrical service location is a place outdoors or indoors that is reserved exclusively for housing electrical equipment and which is kept under lock and key. Access is restricted to authorized personnel and persons who have been properly instructed in electrical engineering. Untrained or unskilled persons may only enter under the supervision of authorized personnel or properly instructed persons.

Outside lockable electrical service locations

Outside lockable electrical service locations at places which are not accessible to the public.
Enclosures of switchgear can only be removed with tools.

Loss of service continuity

Category	LSC 2B
Partition class	PM

Accessibility to compartments

Busbar compartment	Tool based
Switching-device compartment	Interlock based
Connection compartment	Interlock and tool based (front access) or tool based (rear access)

5.2

Technical specifications

Dielectric strength	kV	7.2	12	15	17.5	24
<i>Rated short-duration power-frequency withstand voltage (rms value)</i>						
Across isolating distances	kV	23	32	39	45	60
Between phases and to earth	kV	20	28	35	38	50
<i>Rated lightning impulse withstand voltage (peak value)</i>						
Across isolating distances	kV	70	85	105	110	145
Between phases and to earth	kV	60	75	95	95	125

The dielectric strength is verified by testing the switchgear with rated values of short-duration power-frequency withstand voltage and lightning impulse withstand voltage according to IEC 62271-1 / VDE 0671-1 (see table "Dielectric strength").

The rated values are referred to sea level and to normal atmospheric conditions (1,013 hPa, 20 °C, 11 g/m³ humidity in accordance with IEC 60071 / VDE 0111).

The dielectric strength decreases with increasing altitude. For site altitudes above 1,000 m (above sea level) the standards do not provide any guidelines for the insulation rating. Instead, special arrangements apply to these altitudes.

Site altitude:

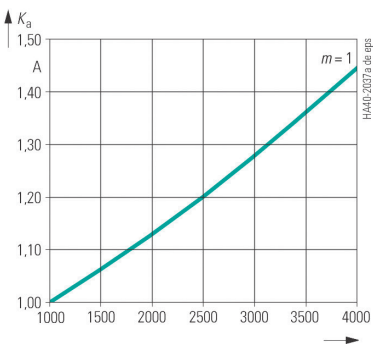
- As the altitude increases, the dielectric strength in air decreases due to the decreasing air density. This reduction is permitted up to a site altitude of 1,000 m according to IEC and VDE.
- For site altitudes above 1,000 m, a higher insulation level must be selected. It results from the multiplication of the rated insulation level for 0 to 1,000 m with the altitude correction factor Ka.

5.3

Technical corrections

Altitude correction factor Ka

For site altitudes above 1,000 m, the altitude correction factor Ka is recommended, depending on the actual site altitude above sea level.



Rated short-duration power-frequency withstand voltage to be selected for site altitudes > 1,000 m
 $\geq$ Rated short-duration power-frequency withstand voltage up to $\leq 1,000\text{ m} \cdot K_a$

Rated lightning impulse withstand voltage to be selected for site altitudes > 1,000 m
 $\geq$ Rated lightning impulse withstand voltage up to $\leq 1,000\text{ m} \cdot K_a$

Example

1,800 m site altitude above sea level 12 kV switchgear rated voltage 75 kV rated lightning impulse withstand voltage, rated lightning impulse withstand voltage to be selected $75\text{ kV} \times 1.10 = 82.5\text{ kV}$

Result

According to the above table, a switchgear for a rated voltage of 17.5 kV is to be selected.

Climate and environmental Influences

The switchgear may be used under the following environmental influences and climate classes:

Environmental influences

- Natural foreign materials ³⁾
- Chemically active pollutants ³⁾
- Small animals

Climate classes

- 3K22
- 3K23

The climate classes are classified according to IEC 60721-3-3.

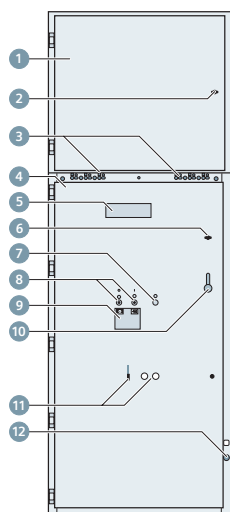
³⁾ Depending on the size of foreign material or active pollutants additional measures may apply

5.4

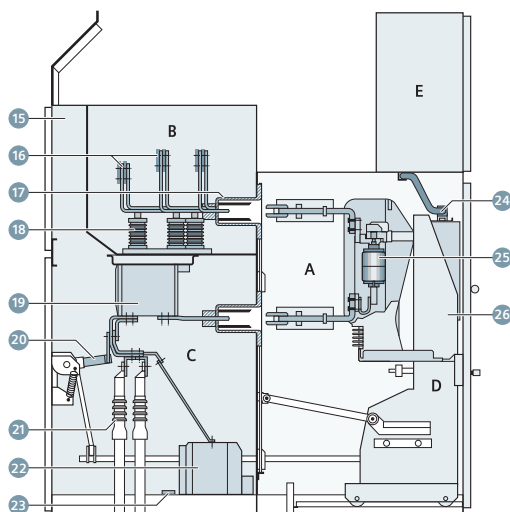
SIMOPRIME 17.5 kV

Basic panel design

Basic panel design (example)



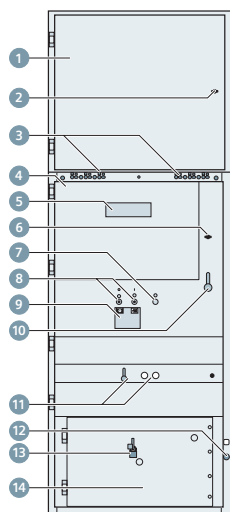
Circuit breaker panel 12 kV, 1,250 A, 40 kA



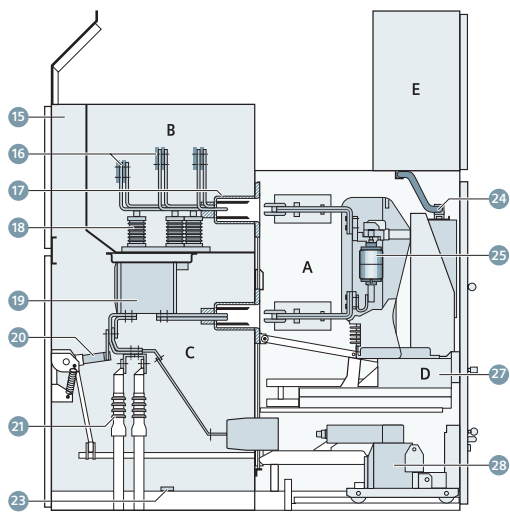
Legend for panel design

- 1 Door of low-voltage compartment
- 2 Opening for locking or unlocking the low-voltage compartment door
- 3 Option: Capacitive voltage detecting system for feeder and busbar
- 4 High-voltage door
- 5 Inspection window for checking the switching device truck
- 6 Opening for locking or unlocking the high-voltage door
- 7 Opening for mechanical charging of circuit breaker closing spring
- 8 Openings for manual operation (ON/OFF) of the circuit breaker
- 9 Inspection window for reading the indicators
- 10 Door handle
- 11 Openings for switching device truck operation
- 12 Opening for earthing-switch operation
- 13 Withdrawable VT operation opening lever
- 14 Withdrawable VT compartment door
- 15 Pressure relief duct
- 16 Busbars
- 17 Bushings
- 18 Post insulators
- 19 Block-type current transformer
- 20 Option: Make-proof earthing switch
- 21 Cable sealing ends
- 22 Option: Voltage transformer
- 23 Earthing busbar
- 24 Low-voltage plug connector
- 25 Vacuum interrupters
- 26 Switching device truck
- 27 Switching device withdrawable element
- 28 Withdrawable VT

Basic panel design (example)



Circuit breaker panel with withdrawable VT feature



- A Switching device compartment
- B Busbar compartment
- C Connection compartment
- D Vacuum circuit breaker truck / withdrawable part
- E Low-voltage compartment

5.4

SIMOPRIME 17.5 kV

Features

SIMOPRIME switchgear	kV	7.2	12	17.5
Rated frequency	Hz	50/60	50/60	50/60
Rated short-duration power-frequency withstand voltage	kV	20 ¹⁾	28 ¹⁾	38
Rated lightning impulse withstand voltage	kV	60	75 ²⁾	95
Rated short-time withstand current in 3 s	kA	40	40	40
Rated peak withstand current at 50/60 Hz	kA	100/104	100/104	100/104
Rated short-circuit breaking current	kA	40	40	40
Rated short-circuit making current at 50/60 Hz	kA	100/104	100/104	100/104
Rated normal current of busbar	A	4,000 ³⁾	4,000 ³⁾	4,000 ³⁾
Rated normal current of feeders	A	4,000 ³⁾ as per fuse	4,000 ³⁾ as per fuse	4,000 ³⁾ –
• with circuit breaker				
• with vacuum contactor				

¹⁾ Option: Higher values acc. to GOST standards

²⁾ 60 kV for vacuum contactor

³⁾ With forced ventilation

Switching device compartment

- All switching operations with high-voltage door closed
- Pressure relief upwards
- Powder-coated panel with epoxy resin transformers
- Shutter operating mechanisms separately for
 - Busbar compartment
 - Connection compartment
- Pressure resistant high voltage door in the event of internal arcs in the panel
- Metallic ducts on the side for laying control cables
- Interlocking between high-voltage door and circuit breaker truck ensures interlock based access
- Optional test:
 - Test sockets for capacitive voltage detecting system

Busbar compartment

- Pressure relief upwards and through rear pressure relief duct
- Busbars made of flat copper, bolted from panel to panel
- Bolted rear and top covers provide tool-based access
- Optional:
 - Coupling electrode for capacitive voltage detecting system
 - Busbar transverse partition between panels

Connection compartment

- Pressure relief upwards through rear pressure relief duct
- Suitable for connection of
 - Single-core XLPE cables up to max. 6 x 500 mm² per phase
 - Three-core XLPE cables up to max. 3 x 300 mm² per panel
 - Bars made of flat copper with bushings
- Earthing busbar
- Connection from front or rear
- Optional: Pressure-resistant floor cover
- Use of block-type current transformers
- Interlock and tool-based access for panels with connection from front
- Tool-based access for panels with connection from rear
- Coupling electrode for capacitive voltage detecting system
- Voltage transformers
 - Cast-resin insulated
 - Max. 3 x 1-pole
 - Fixed-mounted, without primary fuses
- Make-proof earthing switches with manual operating mechanism
- In addition to standard interlocking of earthing switch / circuit breaker truck, optionally lockable or with electromagnetic interlock
- Surge arresters or limiters
 - Surge arresters for protecting the switchgear against external overvoltages
 - Surge limiters for protecting consumers against switching overvoltages

Low-voltage compartment

- For accommodation of all protection, control, measuring and metering equipment
- Partitioned safe-to-touch from the high-voltage part
- Low-voltage compartment can be removed, bus wires and control cables are plugged in
- Optional: Partition between panels

Voltage transformer compartment

- VT compartment to accommodate withdrawable voltage transformers
- VT compartment located under VCB in switching device compartment and has a separate door which has tool based access
- Voltage transformers
 - Cast-resin insulated
 - Max. 3 x 1-pole
 - Fixed-mounted on withdrawable part, with primary fuses

Interlocks

- Interlocking conditions are satisfied according to IEC 62271-200 / VDE 0671-200
- Earthing switch can only be operated with circuit breaker truck in test position. Circuit breaker truck can only be moved with circuit-breaker "OPEN" and earthing switch "OPEN"
- Coding on the LV-plug on circuit breaker. Prevents insertion of similar circuit breakers for lower rated currents into panels with higher rated currents
- Interlocking of high-voltage door against circuit breaker truck
- The high-voltage door can only be opened when the circuit breaker truck is in test position

Low-voltage cables

- Control cables of the panel are flexible and have metallic covers
- Bus wires are pluggable from panel to panel
- Connection of switching device truck and panel wiring to low-voltage compartment via 64-pole coded plug connectors

5.4

SIMOPRIME 17.5 kV

Panel installation options

SIMOPRIME switchgear

up to 31.5 kA up to 40 kA

Width in mm

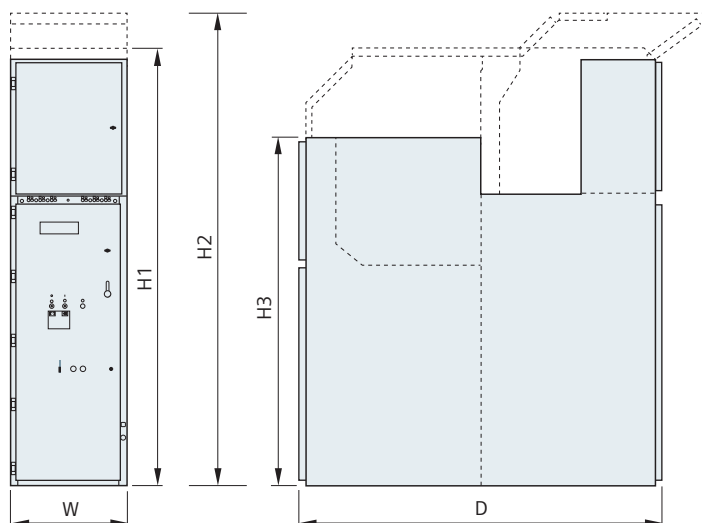
Circuit breaker panel		
< 1250 A	600	800
1250 A, 1800A, 2200 A, 3000 A, 4000 A	800	800
Contactor panel	435 / 600	435
Disconnecting panel		
< 1250 A	600	800
1250 A, 1800A, 2200 A, 3000 A, 4000 A	800	800
Bus sectionalizer / circuitbreaker panel		
< 1250 A	600	800
1250 A, 1800A, 2200 A, 3000 A, 4000 A	800	800
Bus sectionalizer / bus riser panel		
1250 A, 1800A, 2200 A, 3000 A, 4000 A	600	800
Metering panel	600	800

Height in mm

H1 With standard low-voltage compartment and IAC 0.1 s	2,253	2,253
H2 With standard low-voltage compartment and IAC 1.0 s	2,425	2,460
H3	1,780	1,780

Depth in mm

D Standard	1,860	1,860
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Classification according to IEC 62271 200

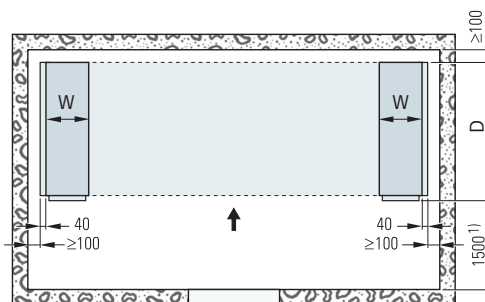
Internal arc classification

Classification	IAC
Accessibility	
• Front	Type A
• Rear	Type A
• Lateral	Type A
Test current	kA 25 / 31.5 / 40
Arc duration	s 0.1 / 1.0

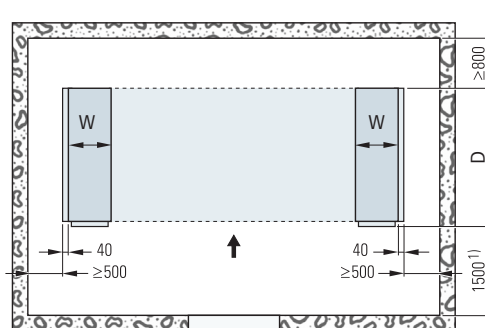
Construction and design

Partition class	PM (metallic partition)
Loss of service continuity category	LSC2B (metal-clad)
Compartment accessibility (standard)	
• Busbar compartment	Tool based
• Switching device compartment	Interlock based
• Low-voltage compartment	Interlock based
• Connection compartment	
– Front access	Interlock and tool based
– Rear access	Tool based

Front connection



Rear connection



¹⁾ Control aisle widths:
 ≤ 31.5 kA and ≤ 3,000 A versions: ≥ 1,500 mm
 40 kA or 4,000 A versions: ≥ 1,700 mm
 For panel replacement: ≥ 2,000 mm

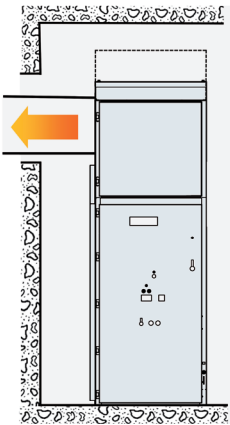
Pressure relief

Type of pressure relief	Rated voltage in kV	Ceiling height D in mm for short-circuit current ³⁾		
		25 kA	31.5 kA	40 kA
Pressure relief out of the switchgear room through a pressure relief channel	12.0 ¹⁾	≥ 2,800	≥ 2,800	≥ 2,800
	17.5 ²⁾	≥ 2,800	≥ 2,800	≥ 2,800
Pressure relief into the switchgear room via flaps	≤ 17.5	≥ 2,800	≥ 2,800	≥ 3,400

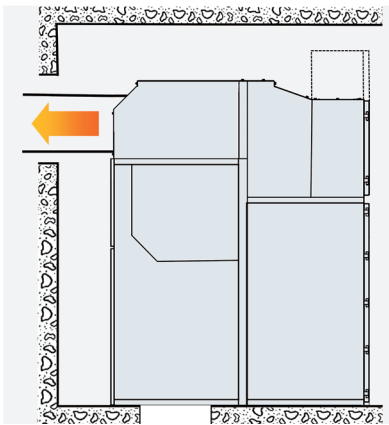
- ¹⁾ with 600 mm panels
- ²⁾ with 800 mm panels
- ³⁾ in case of a lower than minimum ceiling height, please contact your Technical Support

Pressure relief configuration	Arc duration in s
Lateral	1.0
Rear	1.0
Vertical	1.0
Flaps	1.0
No-flaps	0.1

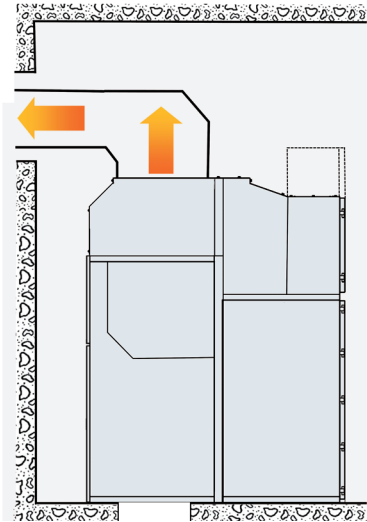
Pressure relief out of the switchgear room through a pressure relief duct



Lateral pressure relief duct

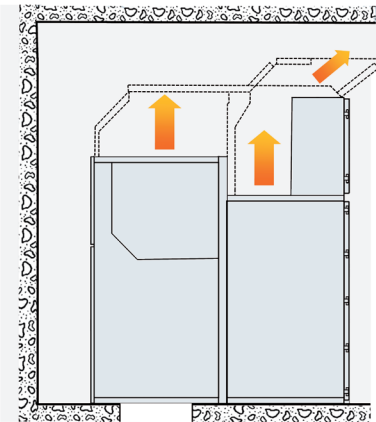
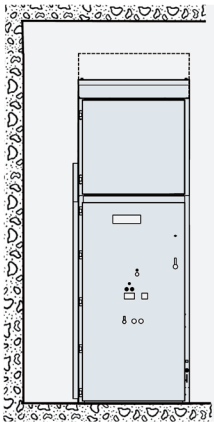


Rear pressure relief duct



Upper pressure relief duct

Pressure relief into the switchgear room with/without flaps

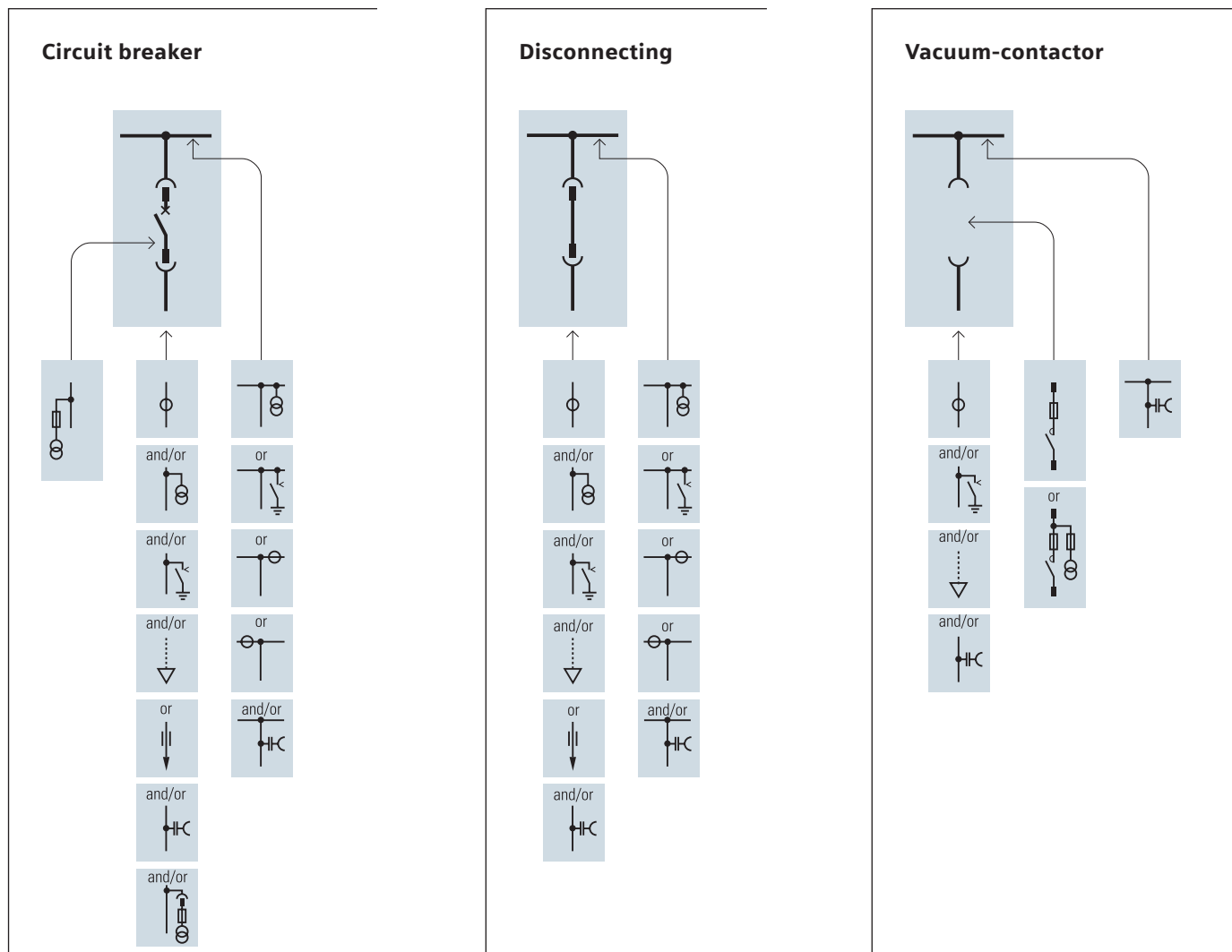


For designs with a closed pressure relief duct to the outside, a distance of ≥ 500 mm is required on the side of exhaustion directed.

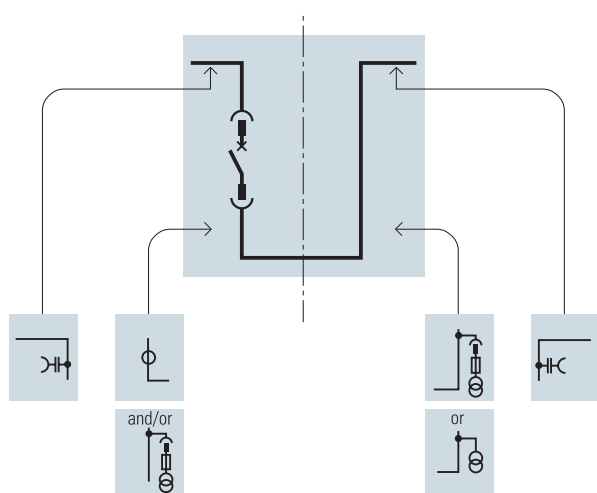
5.4

SIMOPRIME up to 17.5 kV

Panel configuration

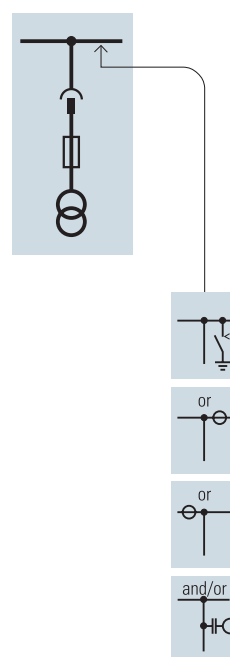


Bus sectionlizer *

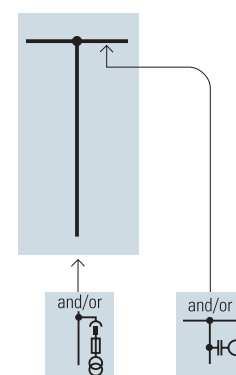


* Mirror image installation also possible

Metering



Busbar connecting



Legend

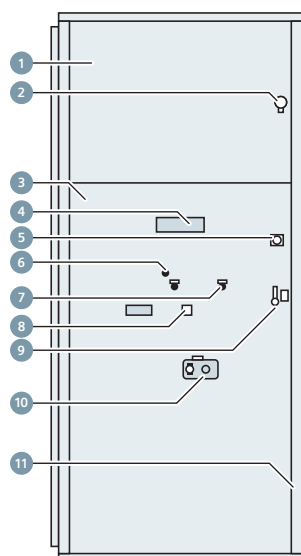
	Current transformer		Vacuum contactor with HV HRC fuses		Vacuum circuit breaker
	Voltage transformer without primary fuses		Vacuum contactor with control transformer and HV HRC fuses		Disconnecter
	Current transformer in run of busbar		Make-proof earthing switch		Withdrawable voltage transformer with primary fuses
	Capacitive voltage detecting system		Cable sealing ends max. 4 x 500 mm² per phase		HV HRC fuses
	Voltage transformer with primary fuses		Bar connection		

5.5

SIMOPRIME 24 kV

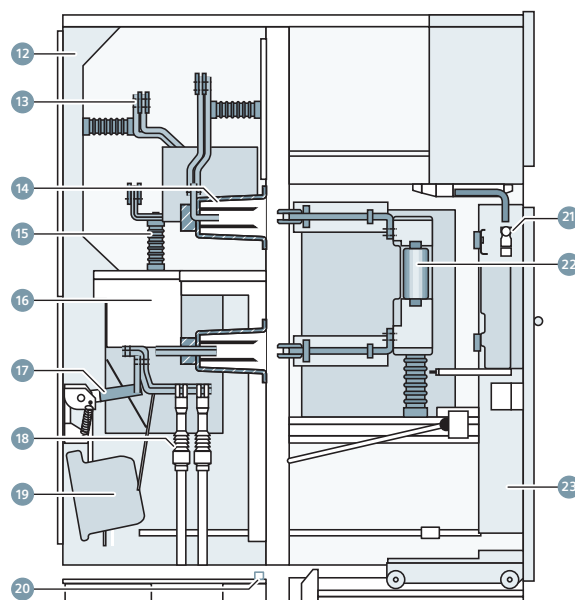
Design & features

Basic panel design (example)



Circuit breaker panel

Design: Connection from front with block current transformer



Legend for panel design

- 1 Door of low-voltage compartment
 - 2 Opening for locking or unlocking the low-voltage compartment door
 - 3 High-voltage door
 - 4 Inspection window for checking the switching device truck
 - 5 Opening for locking or unlocking the high-voltage door
 - 6 Opening for mechanical charging of circuit breaker closing spring
 - 7 Openings for manual operation (ON/OFF) of the circuit breaker
 - 8 Inspection window for reading the indicators
 - 9 Door handle
 - 10 Openings for switching device truck operation
 - 11 Opening for earthing-switch operation
 - 12 Pressure relief duct
 - 13 Busbars
 - 14 Bushings
 - 15 Post insulators
 - 16 Block-type current transformer
 - 17 Option: Make-proof earthing switch
 - 18 Cable sealing ends
 - 19 Option: Voltage transformer
 - 20 Earthing busbar
 - 21 Low-voltage plug connector
 - 22 Vacuum interrupters
 - 23 Switching device truck
-
- A Switching device compartment
 - B Busbar compartment
 - C Connection compartment
 - D Vacuum circuit breaker truck
 - E Low-voltage compartment

SIMOPRIME switchgear 24 kV

Rated frequency	Hz	50/60
Rated short-duration power-frequency withstand voltage	kV	50
Rated lightning impulse withstand voltage	kV	125
Rated short-time withstand current in 3 s	kA	25
Rated peak withstand current at 50/60 Hz	kA	63
Rated short-circuit breaking current	kA	25
Rated short-circuit making current at 50/60 Hz	kA	63
Rated normal current of busbar	A	2,500
Rated normal current of feeders		
• with circuit breaker	A	2,500
• with three position switch disconnecter		as per fuse

Switching device compartment

- All switching operations with high-voltage door closed
- Pressure relief upwards
- Powder-coated panel with epoxy resin transformers
- Shutter operating mechanisms separately for
 - Busbar compartment
 - Connection compartment
- Metallic, earthed shutters and partitions ensure partition class PM
- High-voltage door pressure resistant in the event of internal arcs in the panel
- Metallic ducts on the side for laying control cables
- Interlocking between high-voltage door and circuit breaker truck ensures interlock based access

Busbar compartment

- Pressure relief upwards and through rear pressure relief duct
- Busbars made of flat copper, bolted from panel to panel
- For rated normal currents up to 2,500 A
- Bolted top covers provide tool-based access
- Optional:
 - Coupling electrode for capacitive voltage detecting system
 - Insulated busbars
 - Busbar transverse partition between panels

Connection compartment

- Pressure relief upwards through rear pressure relief duct
- Suitable for connection of
 - Single-core XLPE cables up to max. 4 x 500 mm² per phase
 - Three-core XLPE cables up to max. 3 x 300 mm² per panel
- Shutters to be opened separately to permit cable testing
- Earthing busbar
- Connection from front or rear
- Use of block-type current transformers
- Bolted rear covers of the connection compartment provide tool-based access for panels with connection from rear
- Interlocked high-voltage door and bolted partitions between connection compartment and switching device compartment provide interlock and tool based access for panels with connection from front

- Optional:
 - Coupling electrode for capacitive voltage detecting system
 - Voltage transformers
 - Cast-resin insulated
 - Max. 3 x 1-pole
 - Fixed-mounted, without primary fuses
 - Make-proof earthing switches
 - With manual operating mechanism
 - In addition to standard interlocking of earthing switch/ circuit breaker truck, optionally lockable or with electro-magnetic interlock
 - Surge arresters
 - Surge arresters for protecting the switchgear against external overvoltages

Low-voltage compartment

- For accommodation of all protection, control, measuring and metering equipment
- Partitioned safe-to-touch from the high-voltage part
- Low-voltage compartment can be removed, bus wires and control cables are plugged in

Interlocks

- Interlocking conditions are satisfied according to IEC 62271-200 / VDE 0671-200
- Earthing switch can only be operated with circuit breaker truck in test position
- Circuit breaker truck can only be moved with circuit breaker "OPEN" and earthing switch "OPEN"
- Mechanical coding on the circuit breaker truck prevents insertion of similar circuitbreaker trucks for lower rated normal currents into panels with higher rated normal currents
- Interlocking of high-voltage door against circuit breaker truck
- The high-voltage door can only be opened when the circuit breaker truck is in test position
- Optional:
 - Electromagnetic interlocks

5.5

SIMOPRIME 24 kV

Panel installation & configuration

SIMOPRIME switchgear

25 kA

Width in mm

Circuit-breaker panel	
less than 1250 A	800
for 1250 A	800
for 2500 A	1,000
Load break switch	500

Height in mm

H1 With standard low-voltage compartment and IAC 0.1 s	2,250
H2 With additional pressure relief channel for IAC 1.0 s	2,728

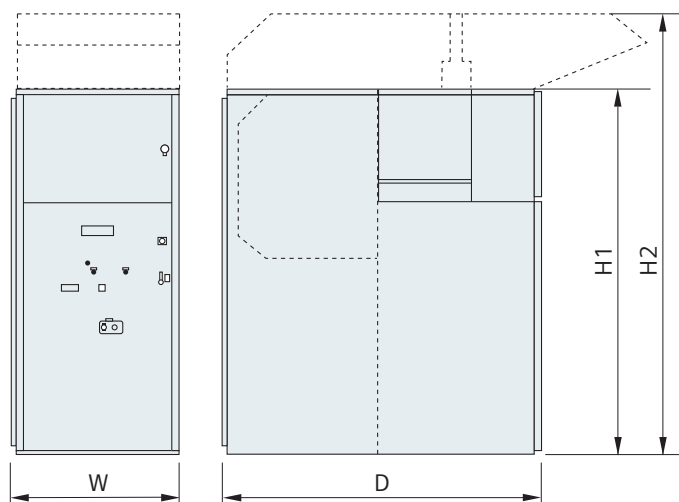
Depth in mm

D Standard	1,900
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Classification according to IEC 62271 200

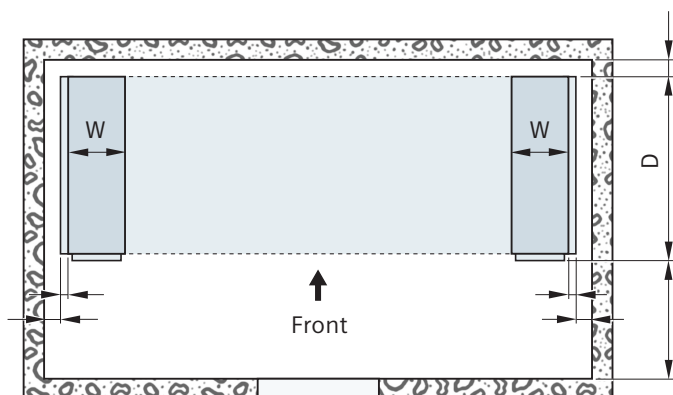
Construction and design

Partition class	PM (metallic partition)
Loss of service continuity category	LSC2B (metal-clad)
Compartment accessibility (standard)	
• Busbar compartment	Tool based
• Switching-device compartment	Interlock based
• Low-voltage compartment	Interlock based
• Connection compartment	
– Front access	Interlock and tool based
– Rear access	Tool based



Room planning (room height $\geq 2,850$ mm)

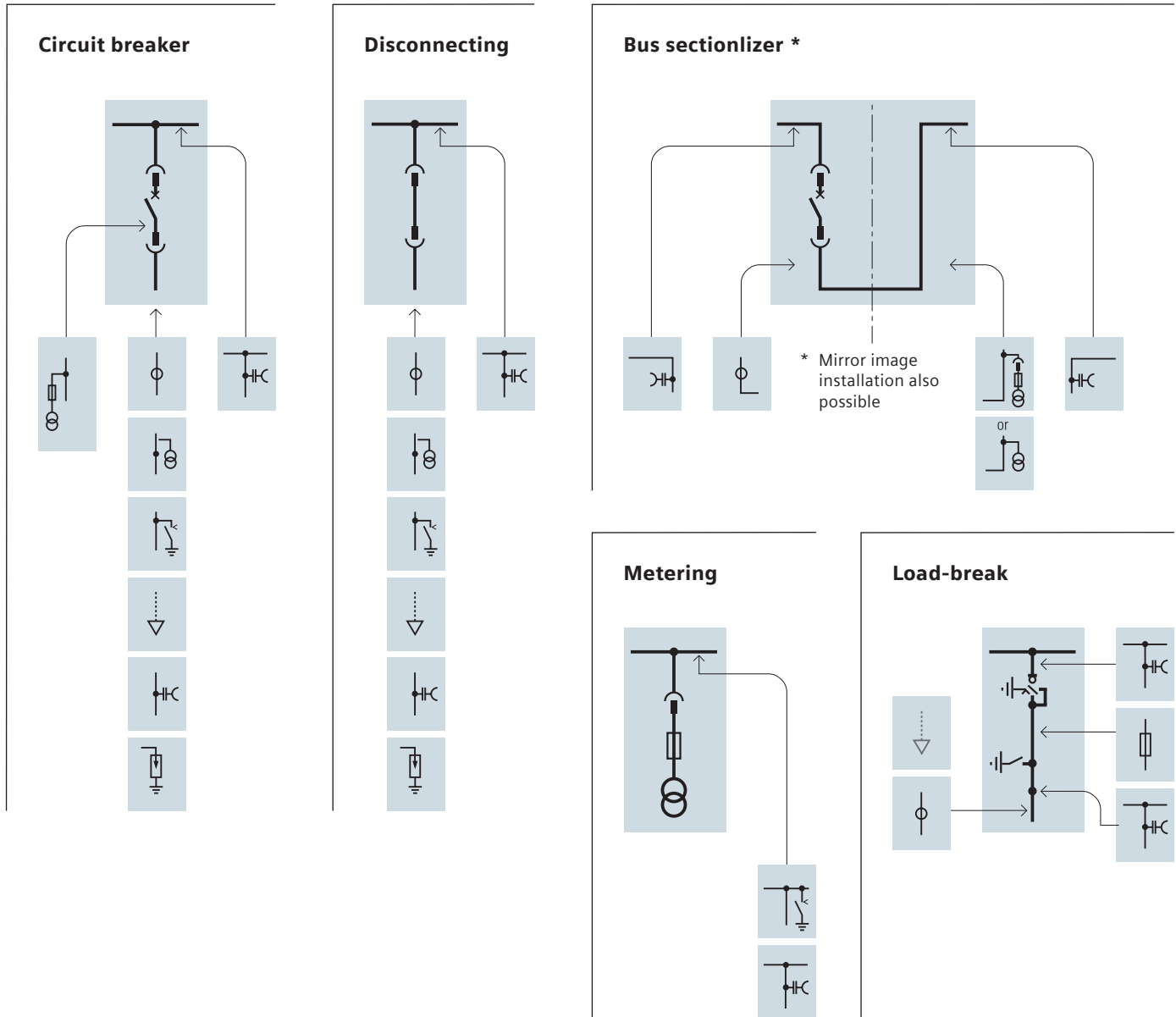
Front connection



Single-row arrangement (plan view)

For dimensions W (width) and D (depth) refer to table on this page

- 1) For panel replacement: Control aisle 2,000 mm
- 2) Minimum distance to wall 150 mm



Legend					
	Current transformer		Withdrawable voltage transformer with primary fuses		HV HRC fuses
	Voltage transformer without primary fuses		Make-proof earthing switch		3AE5 vacuum circuit breaker
	Voltage transformer with primary fuses		Disconnecting link or dummy truck		Three-position switch-disconnector ²⁾
	Capacitive voltage detecting system		Cable sealing ends ¹⁾ max. 4 x 500 mm ² per phase		Surge arrester

¹⁾ The details refer to conventional RXS single-core sealing ends for XLPE cables or other makes with similar dimensions.

²⁾ With SIMOSEC Three Position Switch Disconnecter

5.6

Components of SIMOPRIME switchgear, up to 24 kV

MV components and must buy parts

Portfolio Highlights up to 17.5 kV

- SION 3AE5 vacuum circuit breakers implemented throughout the whole portfolio
- 3TM latest generation of vacuum contactors
- SION 3AE2 available for generator breaker applications

Vacuum circuit breaker



		SION 3AE2	SION 3AE5	SION 3AE5
Rated voltage	kV	17.5	17.5	24
Rated frequency	Hz	50/60	50/60	50/60
Rated short-duration power-frequency withstand voltage	kV	38 (42)	38 (42)	50
Rated lightning impulse withstand voltage	kV	95	95	125
Rated short-time withstand current (3s)	kA	40	40	25
Rated peak withstand current at 50/60 Hz	kA	80/82	100/104	63
Rated short-circuit breaking current	kA	31.5	40	25
Rated short-circuit making current at 50/60 Hz	kA	80/82	100/104	63
Rated normal current of busbar	A	4,000 ¹⁾	4,000 ¹⁾	2,500
Rated normal current of feeders	A	4,000 ¹⁾	4,000 ¹⁾	2,500

¹⁾ with forced ventilation

²⁾ Slim CFC panel with 40 kA

Siemens must buy parts

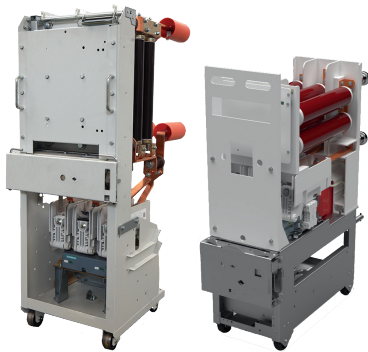
Must buy parts ensure the fail safe operation of the SIMOPRIME switchgear. They are delicate components or parts of the switchgear due to their function.

They are specifically designed for SIMOPRIME switchgears and most of them are documented in type test reports. Even slight changes may create destructive results in the switchgear and moreover invalidate the type tests.

Must buy parts are procured from carefully selected suppliers of the Siemens network. These suppliers are single source for Siemens parts since their quality is always under control of Siemens procurement department.

- Must buy parts are most vital parts of SIMOPRIME switchgear and manufactured by selected suppliers.
- Consistency and quality of those parts are continuously controlled by Siemens.
- For every SIMOPRIME Partnering switchgear, these parts must be ordered by contacting your local Siemens office.

Contactor fuse combination

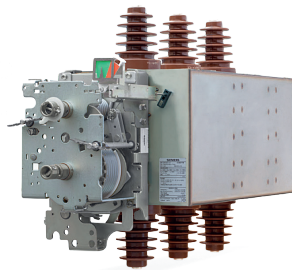


**3TM Classic
600 mm**

**3TM Slim
435 mm**

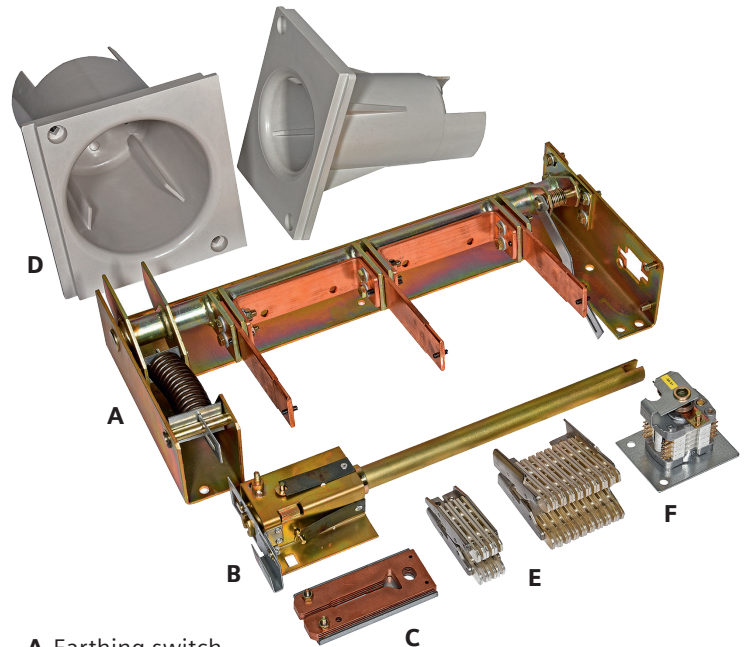
12	12
50/60	50/60
28 (42)	28 (32)
75	75
31.5 ²⁾	40 ²⁾
80/82	100/104
31.5 ²⁾	40 ²⁾
80/82	100/104
4,000 ¹⁾	4,000 ¹⁾
per fuse	per fuse

3 Position switch disconnecter



**SIMOSEC
Fuse Switch T**

24
50/60
50
125
25
63
25
63
2,500
per fuse



A Earthing switch

B Earthing switch drive mechanism

C Earthing lamellas

D Bushings

E Contact fingers

F Auxiliary switch for racking mechanism and earthing switch

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The information in this document contains
general descriptions of the technical options
available, which may not apply in all cases.

The required technical options should therefore
be specified in the contract.

Technology
Partner

SIMOPRIME

SIEMENS