

MEDIUM-VOLTAGE SWITCHGEAR

Switchgear Type 8DJH for Secondary Distribution Systems up to 24 kV, Gas-Insulated



Technology
Partner
8DJH

SIEMENS



8DJH switchgear is a factory-assembled, type-tested, 3-pole metal-enclosed single-busbar switchgear for indoor installation.

8DJH switchgear is used in public and industrial energy systems of the secondary distribution level, e.g. in

- Secondary transformer substations of power supply system operators
- Utilities transfer substations for business enterprises
- Installations of building supply technologies
- Water and sewage treatment plants
- Underground railway stations, railway stations, airports
- Charging stations for electric vehicles
- Generating plants for renewable energies (biomass, hydro power, wind turbines, solar parks).

Application

Typical uses, ratings, standards

Electrical data (maximum values) and dimensions						
Rated voltage	kV	7.2	12	15	17.5	24
Rated frequency	Hz	50/60	50/60	50/60	50/60	50/60
Rated short-duration power-frequency withstand voltage	kV	20 ¹⁾	28 ²⁾	36	38	50
Rated lightning impulse withstand voltage	kV	60 ¹⁾	75 ²⁾	95	95	125
Rated peak withstand current	kA	63/65	63/65	63/65	63/65	50/55
Rated short-time withstand current 3 s	kA	20/21	20/21	20/21	20/21	20/21
Rated short-time withstand current 1 s	A	25	25	25	25	20/21
Rated continuous current of the busbar	A	630	630	630	630	630
Rated continuous current of feeders	mm	200 / 250 / 400 / 630 ³⁾ →				
Width (feeders)	mm	310 / 430 / 500 ³⁾ →				
Depth						
– without pressure relief duct	mm	775	775	775	775	775
– with pressure relief duct	mm	890	890	890	890	890
Height without low-voltage compartment and pressure relief duct	mm	optionally 1040 / 1200 / 1400 / 1700				

1) 32 kV/60 kV according to some national requirements

2) 42 kV/75 kV according to some national requirements

3) Depending on the feeder function and the selected design options

Standards		
		IEC standard / EN standard
Switchgear		62271-1
		62271-200
Switching devices	Circuit-breakers	62271-100
	Disconnectors and earthing switches	62271-102
	Switch-disconnectors	62271-103
	Switch-fuse combination	62271-105
Voltage detecting systems		62271-213
HV HRC fuses		60282
Surge arresters/surge limiters		60099
Degree of protection		60529
		62262
Insulation		60071
Instrument transformers	General requirements	61869-1
	Current transformers	61869-2
	Inductive voltage transformers	61869-3
	Low-power current transformers	61869-6
		61869-10
	Low-power voltage transformers	61869-6
SF ₆		60376
Installation		61936-1 / EN 50522
Environmental conditions		60721-3-3
Operation		EN 50110

Requirements Features

Environmental independence

Hermetically tight, welded switchgear vessels made of stainless steel as well as single-pole solid insulation make the parts of the primary circuit under high voltage of 8DJH switchgear

- Insensitive to certain aggressive ambient conditions, such as:
 - Saline air
 - Air humidity
 - Dust
 - Condensation
- Tight to ingress of foreign objects, such as:
 - Dust
 - Pollution
 - Small animals
 - Humidity

Compact design

Thanks to the use of SF6 insulation, compact dimensions are possible. Thus:

- Existing switchgear rooms and substation rooms can be used effectively
- New constructions cost little
- Costly city-area space is saved.

Maintenance-free design

Switchgear vessels designed as sealed pressure systems, maintenance-free switching devices and enclosed cable plugs ensure:

- Maximum supply reliability
- Personnel safety
- Sealed-for-life design according to IEC 62271-200 (sealed pressure system)
- Installation, operation, extension and replacement without SF6 gas work
- Reduced operating costs
- Cost-efficient investment
- No maintenance cycles.

Innovation

The use of digital secondary systems and combined protection and control devices ensures:

- Clear integration in process control systems
- Flexible and highly simplified adaptation to new system conditions and thus to cost-efficient operation.

Service life

Under normal service conditions, the expected service life of gas-insulated switchgear 8DJH is at least 35 years, probably 40 to 50 years, taking the tightness of the hermetically welded switchgear vessel into account. The service life is limited by the maximum number of operating cycles of the switchgear devices installed:

- For circuit-breakers, according to the endurance class defined in IEC 62271-100
- For three-position disconnectors and earthing switches, according to the endurance class defined in

IEC 62271-102

- For three-position switch-disconnectors and earthing switches, according to the endurance class defined in IEC 62271-103.

Personal safety

- Safe-to-touch and hermetically sealed primary enclosure
- Standard degree of protection IP65 for all high-voltage parts in the switchgear vessel, at least IP2X for the switchgear enclosure according to IEC 60529
- All high-voltage parts including the cable terminations, busbars and voltage transformers are metal-enclosed and/or provided with earthed layers
- Panels tested for resistance to internal faults up to 21 kA
- Capacitive voltage detecting system to verify safe isolation from supply
- Logical mechanical interlocks prevent maloperation
- HV HRC fuses and cable compartments are only accessible when outgoing feeders are earthed
- Feeder earthing via make-proof earthing switches.

Security of operation

- Hermetically sealed primary enclosure independent of environmental effects (pollution, humidity and small animals)
- Welded switchgear vessels, sealed for life
- Maintenance-free in an indoor environment (IEC 62271-1)
- Operating mechanisms of switching devices and auxiliary switches accessible outside the primary enclosure (switchgear vessel)
- Metal-coated, plug-in inductive voltage transformers mounted outside the switchgear vessel
- Current transformers as ring-core current transformers mounted outside the switchgear vessel
- Complete switchgear interlocking system with logical interlocks
- Mechanical position indicators integrated in the mimic diagram
- Minimum fire load
- Option: Resistance against earthquakes.

Reliability

- Type and routine-tested
- Standardized and manufactured using numerically controlled machines
- Quality assurance in accordance with DIN EN ISO 9001
- More than 1,500,000 switchgear panels of Siemens in operation worldwide for many years.

Requirements Technology

General

- Panels 3-pole metal-enclosed
- High-voltage compartments with metal partitions
- Hermetically tight, welded switchgear vessel made of stainless steel, with welded-in bushings for electrical connections and mechanical components
- Frame made of zinc-coated galvanized sheet steel
- Front covers and doors of low-voltage compartments powder-coated in color RAL 7035 (light gray)
- Functions as individual panels or combined in a panel block with up to four functions in a common switchgear vessel
- Switching devices 3-pole, fixed-mounted, depending on the function
 - Three-position switch-disconnector
 - Three-position switch-disconnector/fuse combination
 - Vacuum circuit-breaker with three-position disconnector
 - Make-proof earthing switch
- Cable connection with outside-cone plug-in system according to DIN EN 50181
 - In ring-main and circuit-breaker feeders with bolted contact (M16)
 - In transformer feeders with plug-in contact or optionally with bolted contact (M16)
- Wall-standing or free-standing arrangement
- Pressure relief downwards, optionally to the rear or upwards via pressure absorber systems.

Interlocks

- According to IEC 62271-200
- Logical mechanical interlocks and the constructive features of the three-position switches prevent maloperation as well as access to the cable connection of the feeders and HV HRC fuses under voltage
- Impermissible and undesired operations can be prevented by means of locking devices provided at the switching devices.

Insulating system

- Switchgear vessel filled with SF₆ gas
- Features of SF₆ gas:
 - Non-toxic
 - Odorless and colorless
 - Non-inflammable
 - Chemically neutral
 - Heavier than air
 - Electronegative (high-quality insulator)
 - Global Warming Potential GWP = 22,800
- Pressure of SF₆ gas in the switchgear vessel (absolute values at 20 °C):
 - Rated filling level: 150 kPa
 - Design pressure: 180 kPa
 - Design temperature of the SF₆ gas: 80 °C
 - Operating pressure of bursting disc: ≥ 300 kPa
 - Bursting pressure: ≥ 550 kPa
 - Gas leakage rate: < 0.1 % per year.

Modular design

- Individual panels and panel blocks can be lined up and optionally extended – without gas work on site
- Option: Low-voltage compartment available in 4 overall heights. Installation and removal possible on site, wiring to the panel via plug connections.

Instrument transformers

- Ring-core current transformers not subjected to dielectric stress
- Metal-coated voltage transformers, plug-in type
- In the air-insulated metering panel: Cast-resin insulated block-type current and voltage transformers (narrow design according to DIN 42600 Part 8 or Part 9)
- Replacement of instrument transformers without gas work, as they are located outside the switchgear vessel.

Sensors

- Current sensor as inductive current transformer in combination with precision shunt (voltage signal)
- Voltage sensor as resistor divider
- In combination with secondary devices such as
 - SICAM FCM
 - 7SJ81

Vacuum circuit-breaker

- Maintenance-free under normal ambient conditions according to IEC 62271-1
- No relubrication or readjustment
- Up to 10,000 operating cycles
- Vacuum-tight for life.

Secondary systems

- Customary protection, measuring and control equipment
- Option: Numerical multifunction protection relay with integrated protection, control, communication, operating and monitoring functions
- Can be integrated in process control systems.

Recycling

The switchgear can be recycled in an ecological manner in compliance with existing legislation. Auxiliary devices such as short-circuit indicators have to be recycled as electronic scrap. Batteries have to be recycled professionally. Insulating gas SF₆ has to be evacuated professionally as a reusable material and recycled (SF₆ must not be released into the environment).

Technical data

Switchgear, switching devices

Electrical data of the switchgear							
Rated insulation level	Rated voltage U_r	kV	7.2	12	15	17.5	24
	Rated short-duration power-frequency withstand voltage U_d :						
	– phase-to-phase, phase-to-earth, open contact gap	kV	20	28/42 ¹⁾	36	38	50
	– across the isolating distance	kV	23	32/48 ¹⁾	39	45	60
	Rated lightning impulse withstand voltage U_p :						
	– phase-to-phase, phase-to-earth, open contact gap	kV	60	75	95	95	125
	– across the isolating distance	kV	70	85	110	110	145
Rated frequency f_r		Hz	50/60				
Rated continuous current I_r ²⁾	for busbar	A	630				
	for ring-main and cable feeders		400 or 630				
	for circuit-breaker feeders	A	250 or 630				
	for transformer feeders	A	Depending on the HV HRC fuse-link				
50 Hz	Rated short-time withstand current I_k	for switchgear with $t_k = 1$ s	up to kA	25	25	25	25
		for switchgear with $t_k = 3$ s ¹⁾	up to kA	20/21 ¹⁾			20/21 ¹⁾
60 Hz	Rated peak withstand current I_p		up to kA	63	63	63	63
		for switchgear with $t_k = 1$ s	up to kA	25	25	25	25
		for switchgear with $t_k = 3$ s ¹⁾	up to kA	20/21 ¹⁾			20/21 ¹⁾
	Rated peak withstand current I_p		up to kA	65	65	65	65
Filling level (pressure values at 20 °C)	Rated filling level p_{re} (absolute)	kPa	150				
	Minimum functional level p_{me} (absolute)	kPa	130				
Ambient air temperature T ³⁾	Operation	standard	°C	–25 to +55			
		on request	°C	–40 to +70			
	Storage/transport	standard	°C	–25 to +55			
		on request	°C	–40 to +70			
Degree of protection	for gas-filled switchgear vessel		IP65				
	for switchgear enclosure		IP2X/IP3X ¹⁾				
	for low-voltage compartment		IP3X/IP4X ¹⁾				
Partition class			PM				
Loss of service continuity category	Feeder panels with (switch-)disconnecter		LSC2				
	Billing metering panel M, cable feeder K		LSC1				
Accessibility to compartments (enclosure)	Busbar compartment		Non-accessible				
	Switching-device compartment		Non-accessible				
	Cable compartment / HV HRC fuse compartment						
	– Feeder panels with switching device		Interlock-controlled				
	– Billing metering panel M, cable feeder K		Tool-based				
Internal arc classification ⁴⁾ (option)	IAC A						
	Accessibility F, FL or FLR						
	Arc test current I_A	up to kA	21				
	Test duration t_A	s	1				

Three-position switch-disconnector							
Rated voltage U_r		kV	7.2	12	15	17.5	24
General-purpose switch function	Rated mainly active load breaking current I_{load}	A	630				
	Rated short-circuit making current I_{ma}	50 Hz	up to kA	63	63	63	63
		60 Hz	up to kA	65	65	65	65
	Electrical endurance	Class	E3				
	Number of electrical operating cycles with I_{load}	n	100				
	Number of short-circuit making operations with I_{ma}	n	5				
	Capacitive switching	Class	C2				
	Mechanical endurance	Class	M1				
	Number of mechanical operating cycles	n	1000				
	Number of mechanical operating cycles	n	1000				

1. Design option
2. The rated continuous currents apply to ambient air temperatures of max. 40 °C. The 24-hour mean value is max. 35 °C (according to IEC 62271-1)
3. Minimum and maximum permissible ambient air temperature depending on the secondary equipment used
4. Description of the design options as of page 34

Technical data

Switching devices

Three-position switch-disconnector (Continued)										
Rated voltage U_r				kV	7.2	12	15	17.5	24	
Make-proof earthing switch function	Rated short-circuit making current I_{ma}		50 Hz	up to kA	63	63	63	63	50/52.5 ¹⁾	
			60 Hz	up to kA	65	65	65	65	52/55 ¹⁾	
	Number of short-circuit making operations with I_{ma}			n	5				→	
	Mechanical endurance			Class	M0					→
	Number of mechanical operating cycles			n	1000					→
Three-position switch-disconnector/fuse combination										
Rated voltage U_r				kV	7.2	12	15	17.5	24	
Switch function	Rated mainly active load breaking current I_{load}		A	200					→	
			Rated short-circuit making current I_{ma}		50 Hz	up to kA	63	63	63	63
	60 Hz	up to kA			65	65	65	65	52/55 ¹⁾	
	Number of operating cycles, electrical with I_{load}			n	100					→
	Number of short-circuit making operations with I_{ma}			n	5					→
	Mechanical endurance			Class	M1					→
	Number of mechanical operating cycles			n	1000					→
Switch-fuse combination function	Rated transfer current $I_{transfer}$		A	1500	1500	1300	1300	1300		
	Maximum permissible rated power S of the transformer ⁵⁾		up to kVA	250 to 800	1250	1250	1250	2000		
Disconnecter function	Mechanical endurance			Class	M0					→
	Number of mechanical operating cycles			n	1000					→
Make-proof earthing switch function	Rated short-circuit making current I_{ma}		50 Hz	up to kA	6.3					→
			60 Hz	up to kA	6.5					→
	Number of short-circuit making operations with I_{ma}			n	5					→
	Mechanical endurance			Class	M1					→
	Number of mechanical operating cycles			n	1000					→
Vacuum circuit-breaker with three-position disconnector										
Rated voltage U_r				kV	7.2	12	15	17.5	24	
Circuit-breaker type 1.1 function	Rated operating sequence		Option		O – 0.3 s – CO – 3 min – CO					→
					O – 0.3 s – CO – 15 s – CO					→
	Rated short-circuit breaking current I_{sc}		up to kA	25	25	25	25	20/21 ¹⁾		
	Electrical endurance			Class	E2					→
	Number of short-circuit breaking operations with I_{sc}			n	25 or 50					→
	Capacitive switching			Class	C2					→
	Switching of cable systems			Class	S1					→
	Mechanical endurance			Class	M2					→
	Number of mechanical operating cycles			n	10000					→
	Circuit-breaker type 2 function (alternatively)	Rated operating sequence				O – 3 min – CO – 3 min – CO				
Rated short-circuit breaking current I_{sc}		up to kA	25	25	25	25	20/21 ¹⁾			
Electrical endurance			Class	E2					→	
Number of short-circuit breaking operations with I_{sc}			n	6 or 20					→	
Capacitive switching			Class	C2					→	
Switching of cable systems			Class	S1					→	
Mechanical endurance			Class	M1					→	
Number of mechanical operating cycles			n	2000					→	
Disconnecter function	Mechanical endurance			Class	M0					→
	Number of mechanical operating cycles			n	1000					→
Make-proof earthing switch function	Rated short-circuit making current I_{ma}		50 Hz	up to kA	63	63	63	63	50/52.5 ¹⁾	
			60 Hz	up to kA	65	65	65	65	52/55 ¹⁾	
	Number of short-circuit making operations with I_{ma}			n	5					→
	Mechanical endurance			Class	M0					→
	Number of mechanical operating cycles			n	1000					→
Make-proof earthing switch										
Rated voltage U_r				kV	7.2	12	15	17.5	24	
	Rated short-circuit making current I_{ma}		50 Hz	up to kA	63	63	63	63	50/52.5 ¹⁾	
			60 Hz	up to kA	65	65	65	65	52/55 ¹⁾	
	Number of short-circuit making operations with I_{ma}			n	5					→
	Mechanical endurance			Class	M0					→
	Number of mechanical operating cycles			n	1000					→

1. Design option

2. Depending on the primary voltage of the transformer and the HV HRC fuses used

Product range

Individual panels Basic
Other Options Available



Three-position
switch-disconnector



Make-proof
earthing switch



HV HRC fuse



Capacitive voltage
detecting system



Cable connection
with outside cone
(not included in the
scope of supply)



Surge arrester
or limiter



Ring-core
current transformer



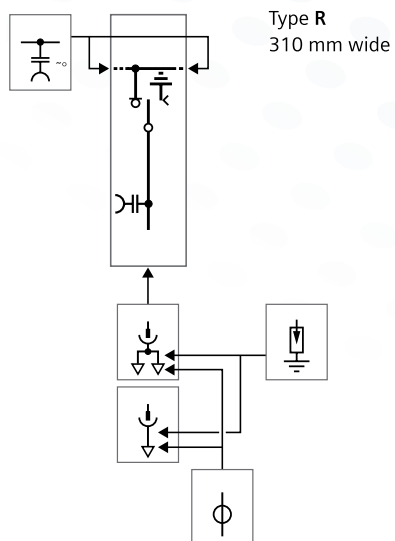
Plug-in
voltage transformer



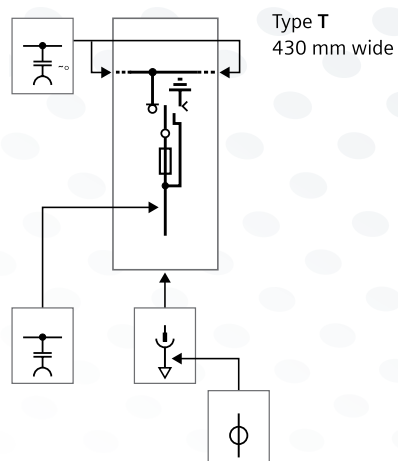
Plug-in
voltage transformer
with earthing device

1) Only for end panel,
on the free
connection side
of the busbar

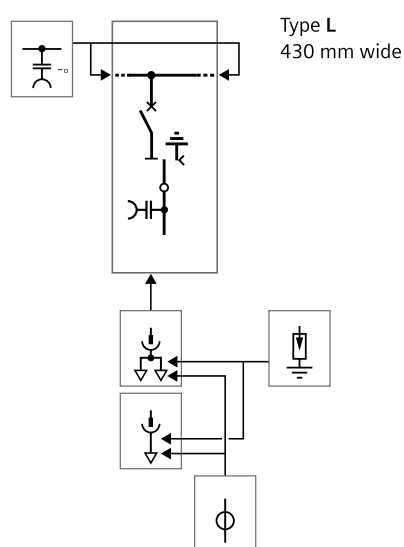
Ring-main feeder



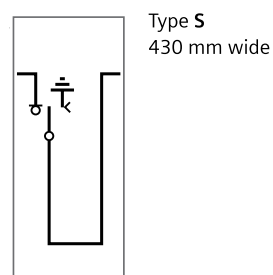
Transformer feeder



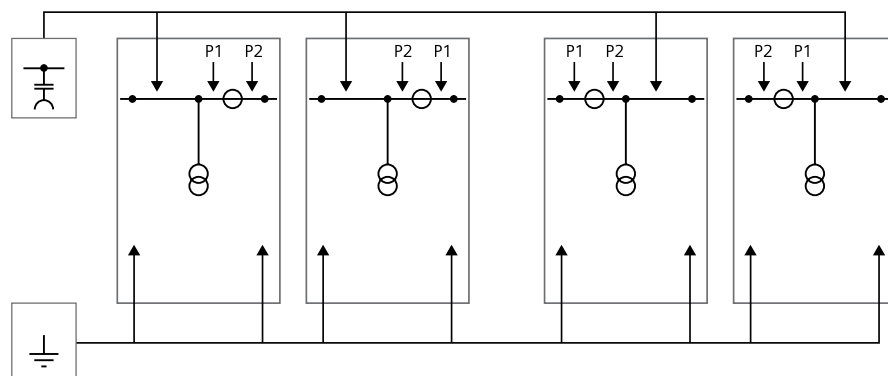
Circuit-breaker feeder



Bus sectionalizer panel



Billing metering panels with busbar connection on both sides



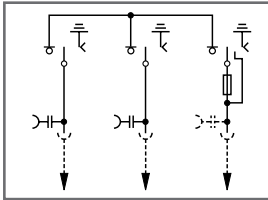
Product Range

Product range overview of panel blocks (excerpt) Basic Other Options Available

3-panel blocks for 8DJH, optionally with busbar extension

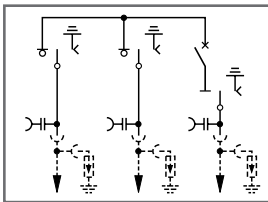
Components shown in dotted lines can be used optionally.

RRT 2 ring-main feeders, 1 transformer feeder



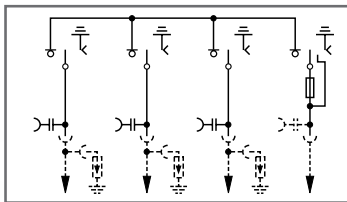
Dimensions in mm		
Width	Depth	Height
1050	775	1040
		1200
		1400
		1700

RRL 2 ring-main feeders, 1 circuit-breaker feeder



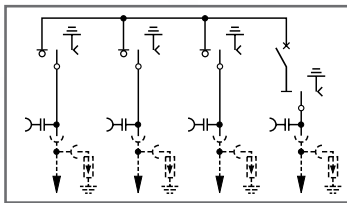
Dimensions in mm		
Width	Depth	Height
1050	775	1200
		1400
		1700

RRRT 3 ring-main feeders, 1 transformer feeder



Dimensions in mm		
Width	Depth	Height
1360	775	1200
		1400
		1700

RRRL 3 ring-main feeders, 1 circuit-breaker feeder

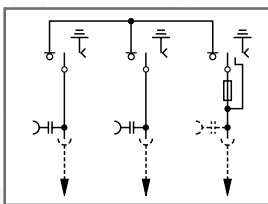


Dimensions in mm		
Width	Depth	Height
1360	775	1200
		1400
		1700

Panel blocks for 8DJH Compact, without busbar extension

Components shown in dotted lines can be used optionally.

RRT 2 ring-main feeders, 1 transformer feeder



Dimensions in mm		
Width ¹⁾	Depth	Height
620	775	1400
		1700
700	775	1400
		1700



Vacuum circuit-breaker



Three-position disconnector



Three-position switch-disconnector



HV HRC fuse



Capacitive voltage detecting system

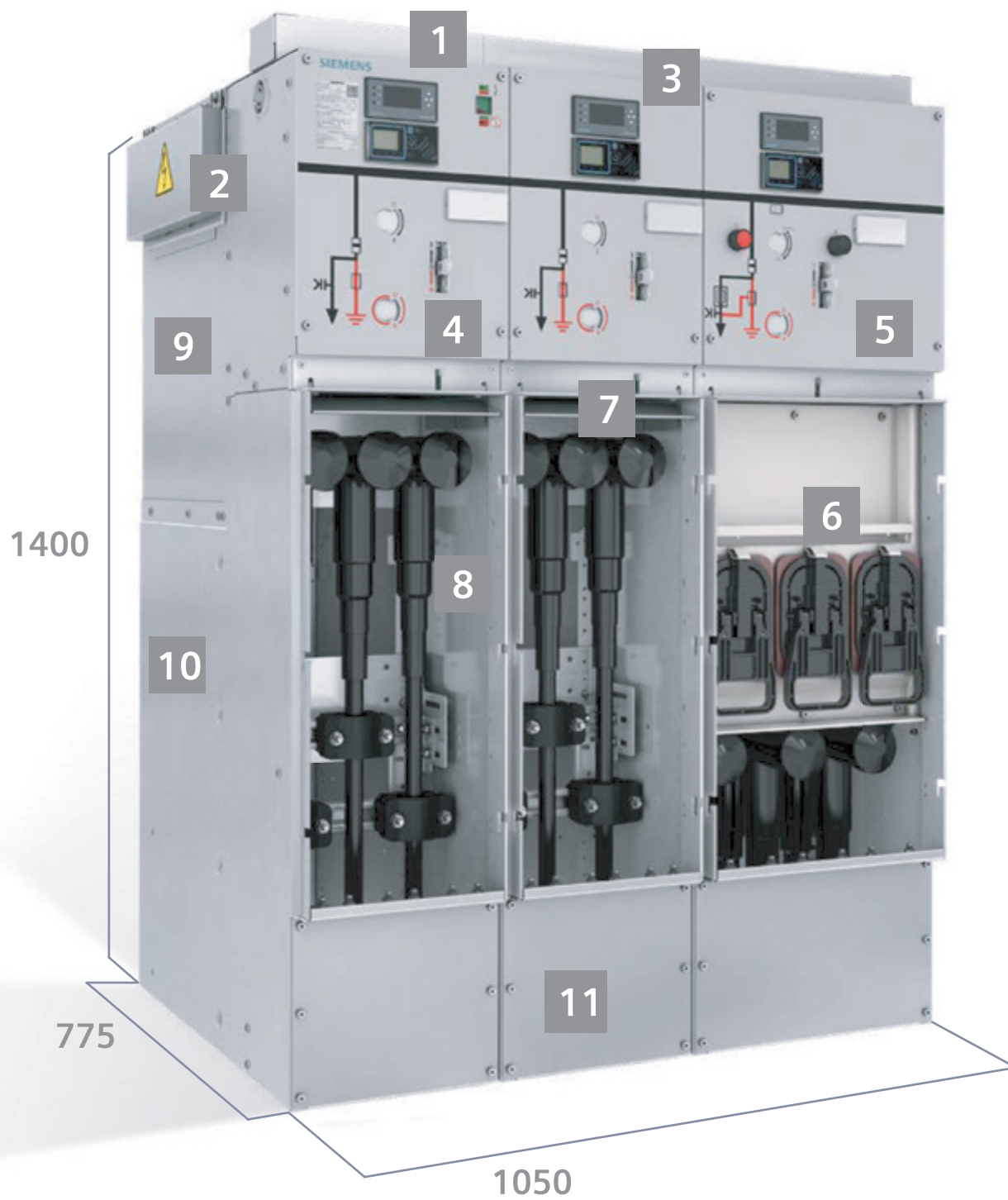


Cable connection with outside cone (not included in the scope of supply)



Surge arrester

RRT BLOCK TYPE CONFIGURATION



Design

Overview

1. Wiring duct, low-voltage compartment

- Metallic wiring duct (option) on the switchgear for panel-overlapping secondary wiring
- Alternatively, low-voltage compartments (option) in different heights of 200 mm, 400 mm, 600 mm, or 900 mm for customer-specific secondary equipment

2. Busbar extension, modularity

- Busbar extension as an ordering option
- Plug-in unit consisting of contact coupling and screened silicone coupling
- Insensitive to pollution and condensation
- Switchgear installation, extension, or panel replacement without gas work

3. Indicators

- Voltage detecting systems, short-circuit/earth-fault indicators and transformer monitors from various manufacturers

4. Ring-main feeder

- Switching functions as general-purpose switch-disconnector according to IEC 62271-103 and IEC 62271-102
- Designed as a three-position switch incorporating the functions of a switch-disconnector and a make-proof earthing switch
- Switch positions: CLOSED – OPEN – EARTHED
- Manual operating mechanism, optionally motor operating mechanism

5. Transformer feeder

- High-voltage switch-fuse combination according to IEC 62271-105
- Designed as a three-position switch
- Switch positions: CLOSED – OPEN – EARTHED
- Manual operating mechanism, optionally motor operating mechanism
- Mechanical “fuse tripped” indicator at the switchgear front

6. HV HRC fuse assembly

- Fuse boxes, 1-pole, below the switchgear vessel
- Fuse slide for easy replacement of HV HRC fuses without tools
- HV HRC fuse-links according to DIN 43625 (main dimensions) with striker in “medium” version according to IEC 60282-1, for short-circuit protection of transformers

7. Si Bushing

- Outside-cone bushing type C with integrated sensors for current, voltage, and temperature measuring (option)

8. Cable compartment

- Bushings according to DIN EN 50181 with outside cone and bolted connection M16 as interface type C (standard in cable, ring-main, and circuit-breaker feeders) or without outside cone and plug-in contact as interface type A (standard in transformer feeders)
- Adjustable cable bracket with C-rail, optionally with plastic cable clamps pre-assembled at the factory
- Connection of:
 - Cable elbow plugs or cable T-plugs
 - Thermoplastic-insulated cables (1- and 3-core cables)
 - Ring-core current transformers according to IEC 61869-1 and -2, around the cables
 - Current sensors according to IEC 61869-10, around the cable plugs or around the cables
 - Voltage sensors (resistor divider) according to IEC 61869-11, mounted on the cable plugs
- Surge arresters

9. Enclosure

- Hermetically tight, welded switchgear vessel made of stainless steel
- Enclosure made of sendzimir-galvanized sheet steel, switchgear front powder-coated

10. Dimension options

- Switchgear height 1400 mm (optionally 1040 mm, 1200 mm or 1700 mm)
- Deep cable compartment cover

11. Pressure relief

- Pressure relief downwards
- For further pressure relief versions, see page 34
- Up to IAC A FL 21 kA / 1 s or IAC A FLR 21 kA / 1 s

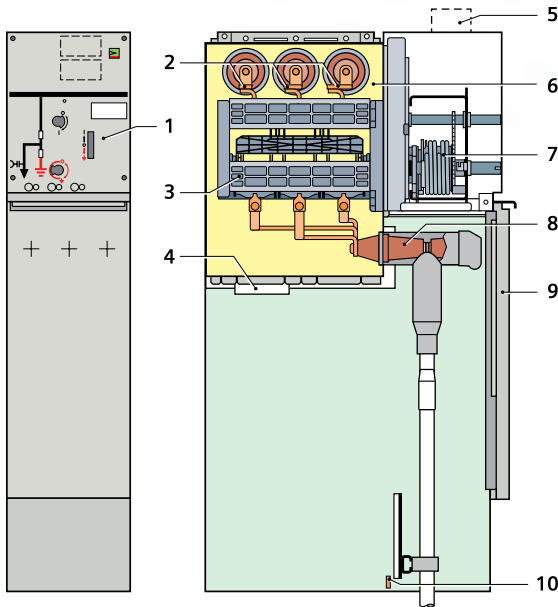
Design

Panel design (examples)

Ring-main feeder

Type R

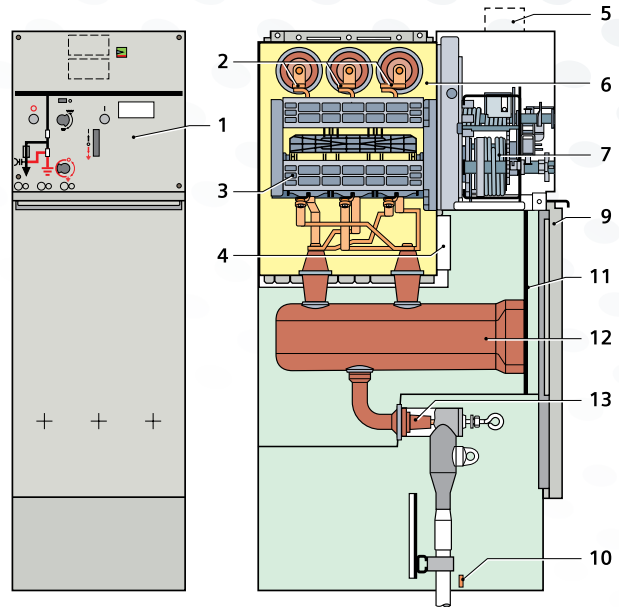
Section



Transformer feeder

Type T

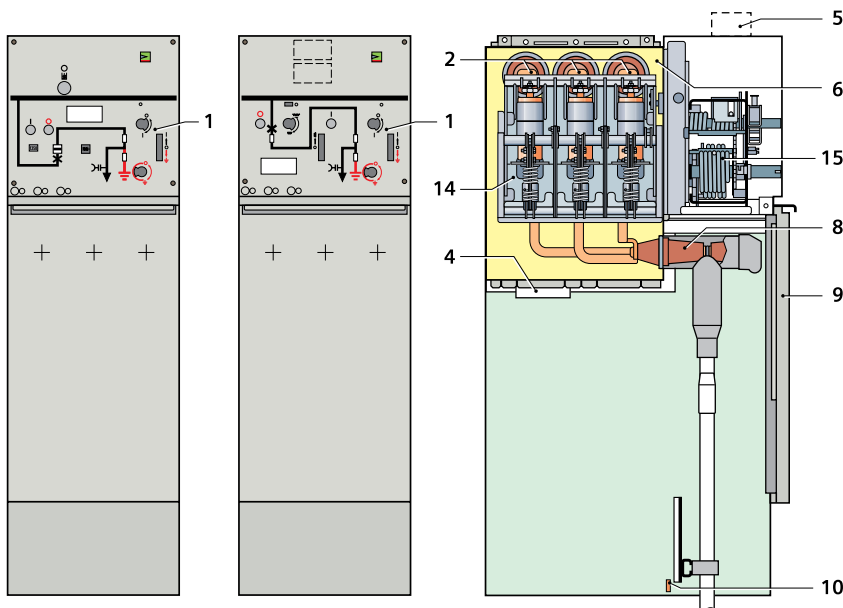
Section



Circuit-breaker feeder

Type L

Section



Type 1.1

Type 2

1. 1 Control board
2. 2 Busbar arrangement
3. 3 Three-position switch-disconnector
4. 4 Pressure relief device
5. 5 Wiring duct, removable, for protection cables and/or bus wires
6. 6 Switchgear vessel, filled with gas
7. 7 Operating mechanism of switching device
8. 8 Bushing for cable plug with bolted contact (M16)
9. 9 Cable compartment cover
10. 10 Earthing busbar with earthing connection (design option)
11. 11 Partition
12. 12 HV HRC fuse assembly
13. 13 Bushing for cable plug with plug-in contact, optionally bolted contact (M16)
14. 14 Vacuum circuit-breaker
15. 15 Circuit-breaker operating mechanism, operating mechanism for three-position disconnector

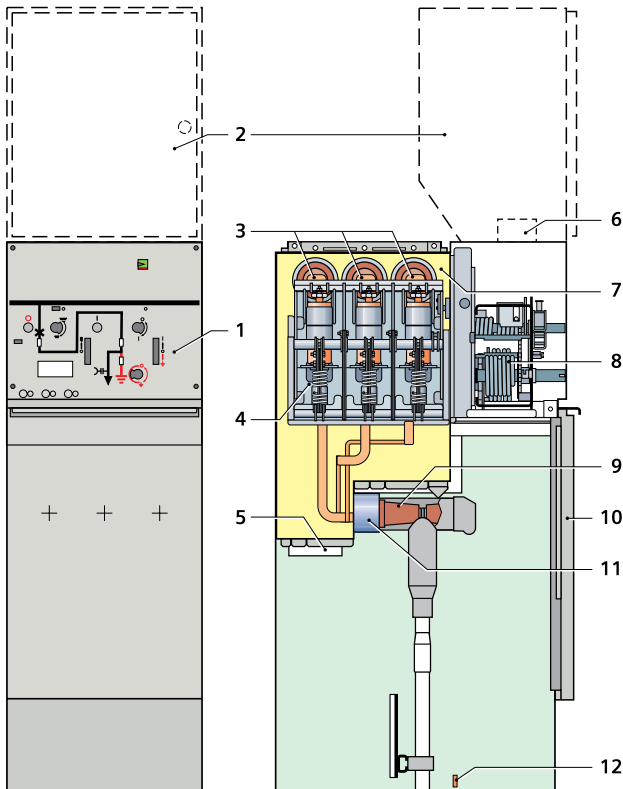
Design

Panel design (examples)

Circuit-breaker feeder

Type L(500)

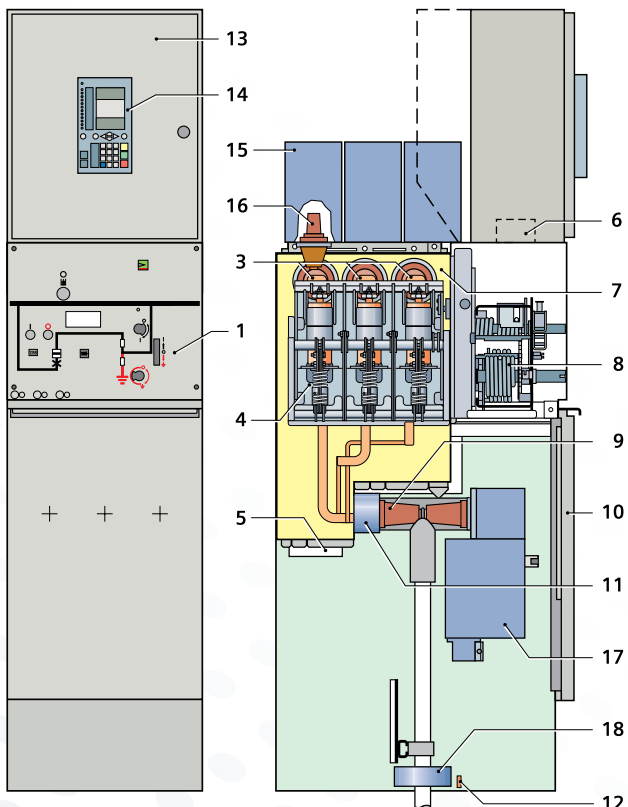
Section



1. Control board
2. Option: Low-voltage compartment
3. Busbar arrangement
4. Vacuum circuit-breaker
5. Pressure relief device
6. Wiring duct, removable, for protection cables and/or bus wires
7. Switchgear vessel, filled with gas
8. Operating mechanism of switching device
9. Bushing for cable plug with bolted contact (M16)
10. Cable compartment cover
11. Option: Three-phase current transformer (protection transformer)
12. Earthing busbar with earthing connection (design option)

Type 2

Section



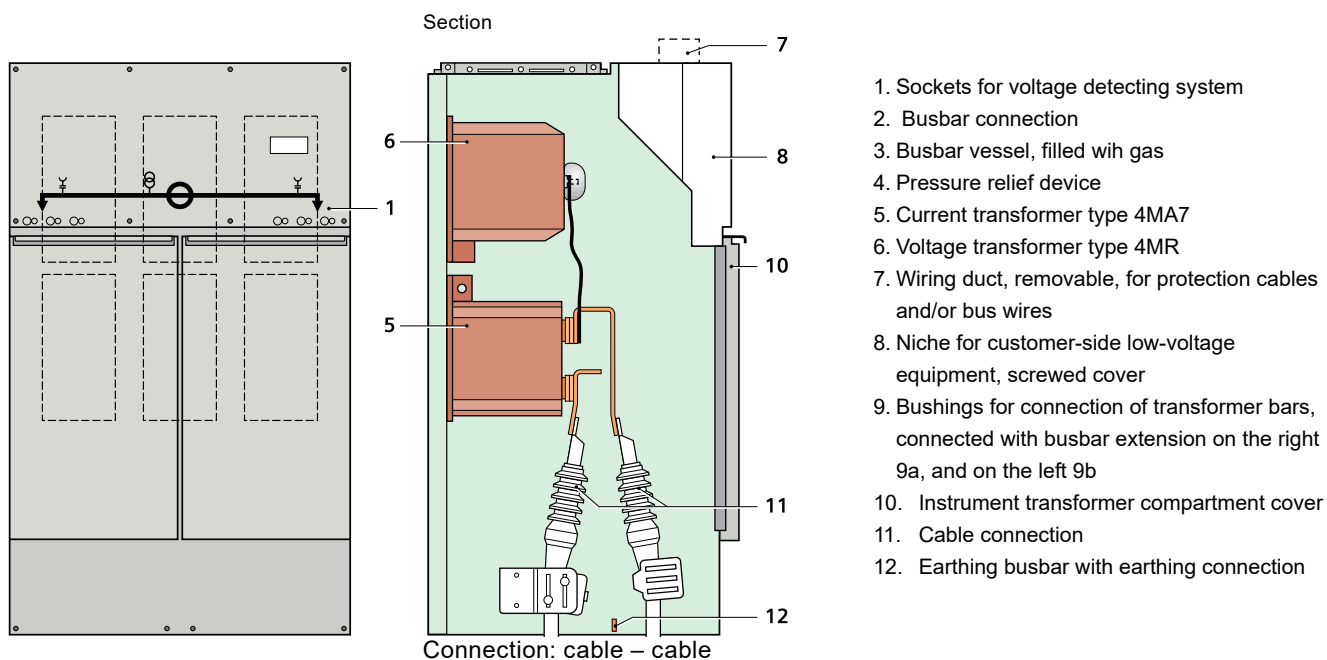
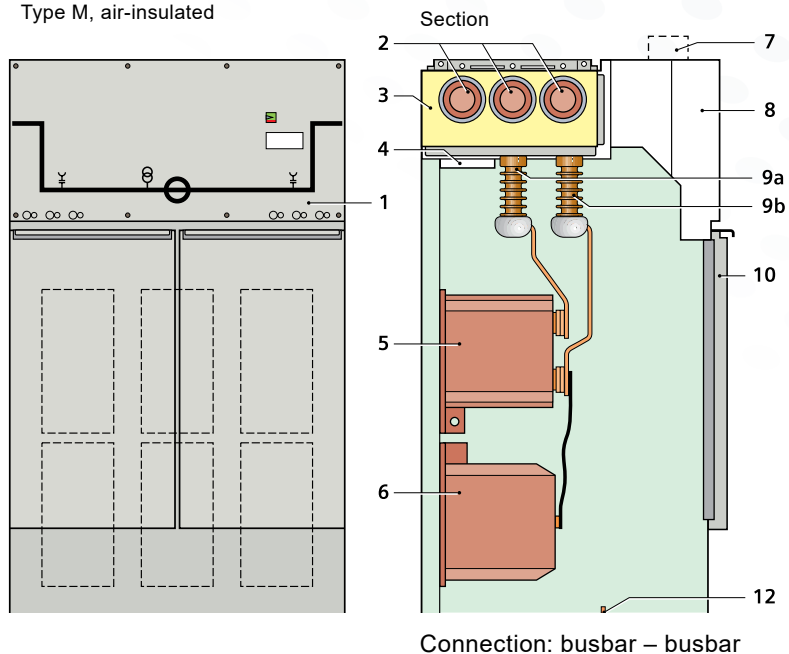
13. Low-voltage compartment (standard) for vacuum circuit-breaker
14. Option: SIPROTEC bay controller
15. Option: Plug-in voltage transformer 4MT3 on the busbar
16. Bushing for connection of plug-in voltage transformers
17. Option: Plug-in voltage transformer 4MT3 at the cable connection and voltage transformer earthing device
18. Cable-type current transformer

Type 1.1

Design

Panel design (examples)

Billing metering panel
Type M, air-insulated



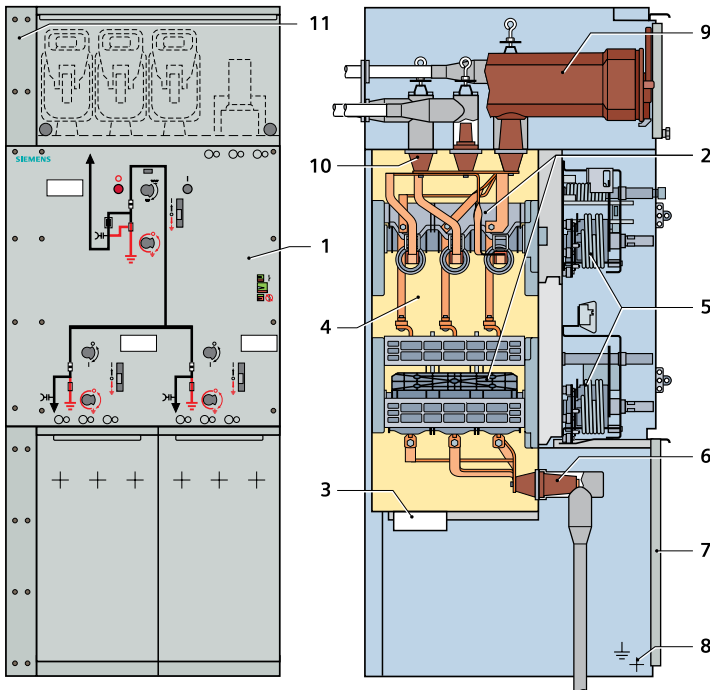
Design

Panel design (examples)

Panel block

Type 8DJH Compact RRT

Section



1. Control board
2. Three-position switch-disconnector
3. Pressure relief device
4. Switchgear vessel, filled with gas
5. Operating mechanism of switching device
6. Bushing for cable plug with bolted contact (M16)
7. Cable compartment cover
8. Earthing connection
9. HV HRC fuse assembly
10. Bushing for cable plug with plug-in contact
11. Pressure relief duct downwards for transformer feeder (option)

Design

Outdoor enclosure

On request, 8DJH switchgear can be provided with an outdoor enclosure with the following features:

- For outdoor applications on company grounds
- Enclosure attached to standard indoor panels
- Enclosure with three different heights, for 1200 mm switchgear height (optionally with low-voltage compartment as a 200 mm, 400 mm or 600 mm high version), or 1400 mm switchgear height (optionally with low-voltage compartment as a 200 mm or 400 mm high version)
- Enclosure with four different widths for freely configurable, non-extendable switchgear rows up to a switchgear width of 2000 mm
- Internal arc classification IAC A FL or FLR to 21 kA / 1 s according to IEC 62271-200
- Degree of protection IP54.



Outdoor enclosure (front closed)



Outdoor enclosure (front open)

Components

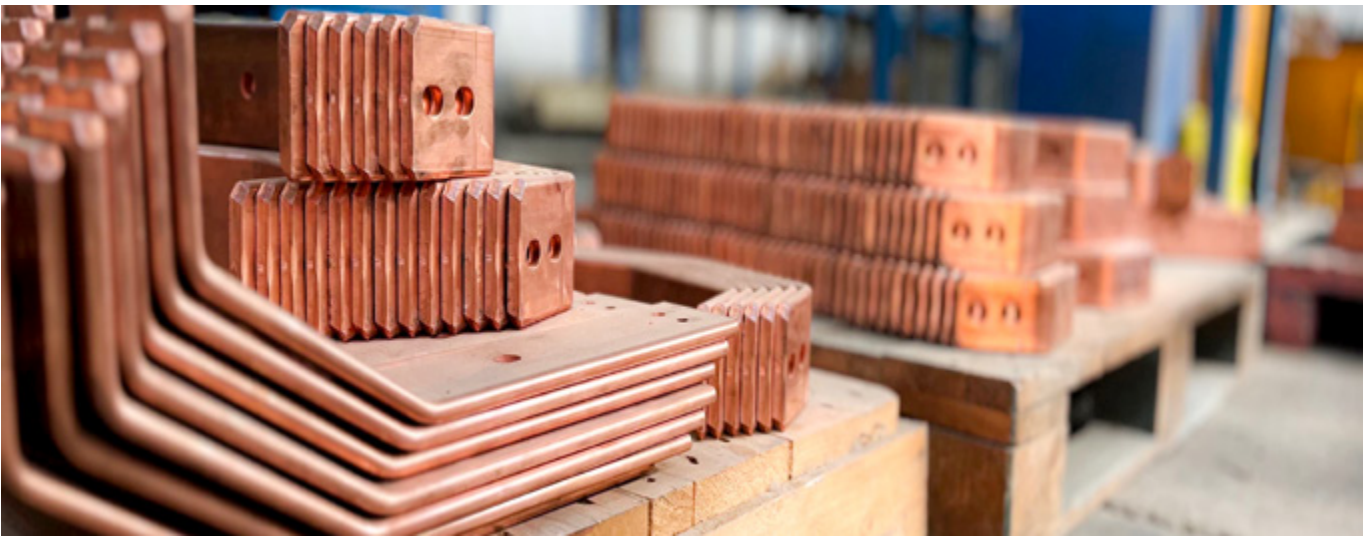
SiBushing

SiBushing

As an alternative to the conventional cable connection bushings, the bushing type SiBushing from Siemens is available for cable, ring-main and circuit-breaker feeders. It delivers current and voltage values in low-signal technology, as well as values for temperature measurement directly from the cable connection to modern protection devices and indicators.



Type		SiBushing
Panel types		K, K(E), R, L
Cable connection		Outside cone type C according to EN 50181, welded into the switchgear vessel
Voltage detecting and indicating systems		Connection for capacitive voltage detecting and indicating systems according to IEC 62271-213
Current measuring	Standard	IEC 61869-10
	Sensor principle	Rogowski coil
	Output signal	22.5 mV (at 50 A / 50 Hz)
	Class	0.5
Voltage measuring	Standard	IEC 61869-11
	Sensor principle	Capacitive divider
	Ratio	10000/1
	Class	0.5
Temperature measuring	Sensor principle	Measuring resistor
	Resistor type	Pt100
Features		Examples for available secondary devices that can be connected: • SICAM FCM (design option for SiBushing) • 7SY82



Dimensions

Room planning

Switchgear installation

Wall-standing arrangement

- 1 row
- 2 rows (for face-to-face arrangement)

Option: Free-standing arrangement.

Pressure relief

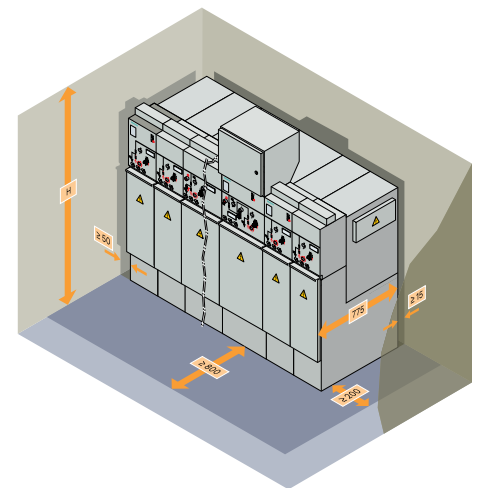
The type of pressure relief selected has an effect on the switchgear depth, and places requirements on the size of the cable basement and/or the room height. In case of pressure relief upwards, the room heights reproduced in the type test are decisive for the internal arc classification according to IEC 62271-200 (see table on page 34).

Switchgear extension or panel replacement

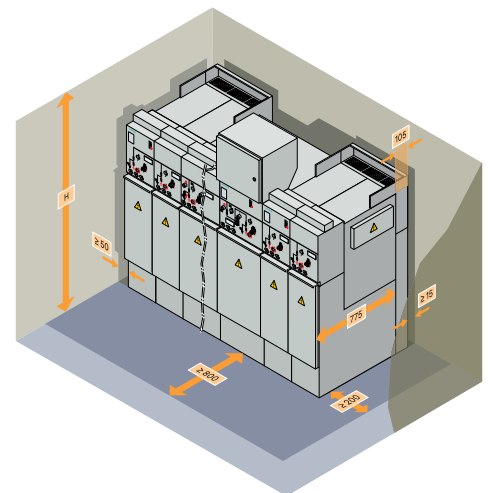
For switchgear extension or for panel replacement, a control aisle of at least 1000 mm is recommended in front of the switchgear. For panel replacement of lined up panels, there must be a wall distance of at least 200 mm on one side.

Control aisle

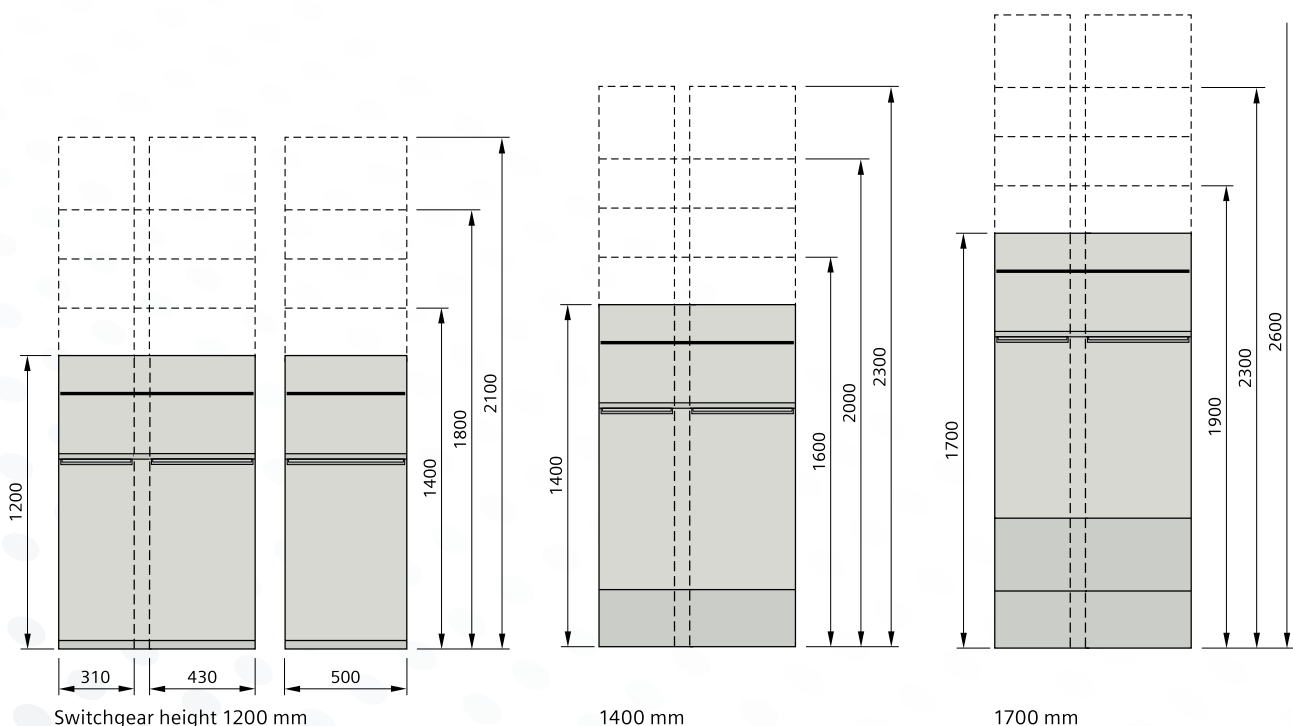
In front of the switchgear, a control aisle of at least 800 mm is required according to IEC 62271-200.



Switchgear without rear pressure relief duct



Switchgear with rear pressure relief duct



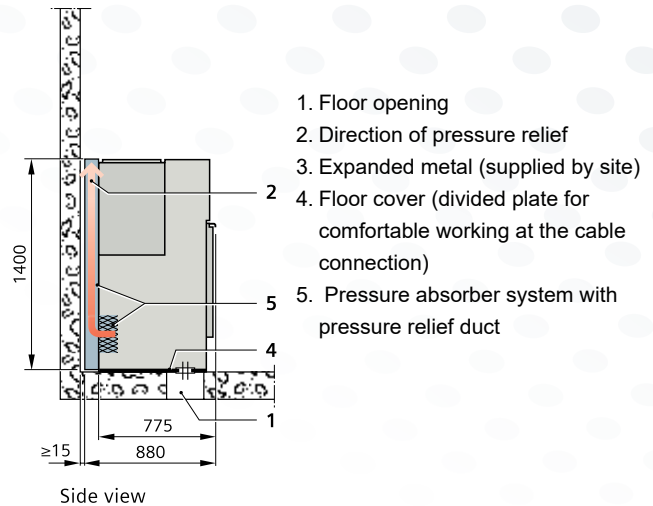
Dimensions

Pressure relief

The following type-tested versions of the pressure relief system are available for 8DJH switchgear:

- Downwards into the cable basement (for individual panels and panel blocks, internal arc classification up to IAC A FL 21 kA / 1 s or IAC A FLR 21 kA / 1 s, minimum cross-section of the cable basement according to the illustration below)
- To the rear (for non-extendable panel blocks with 1400 or 1700 mm switchgear height, internal arc classification up to IAC A FL 21 kA / 1 s, a rear pressure relief outlet with a minimum cross-section of 1 m² is required in the switchgear room and must be supplied by the site)
- Upwards through rear pressure relief duct (for extendable and non-extendable panel blocks, internal arc classification up to IAC A FL 16 kA / 1 s, minimum room heights according to the table below), with pressure absorber system
- Upwards through base frame and rear pressure relief duct (for individual panels and panel blocks, internal arc classification up to IAC A FL 21 kA / 1 s and IAC A FLR 21 kA / 1 s, minimum room heights according to the table below), with pressure absorber system.

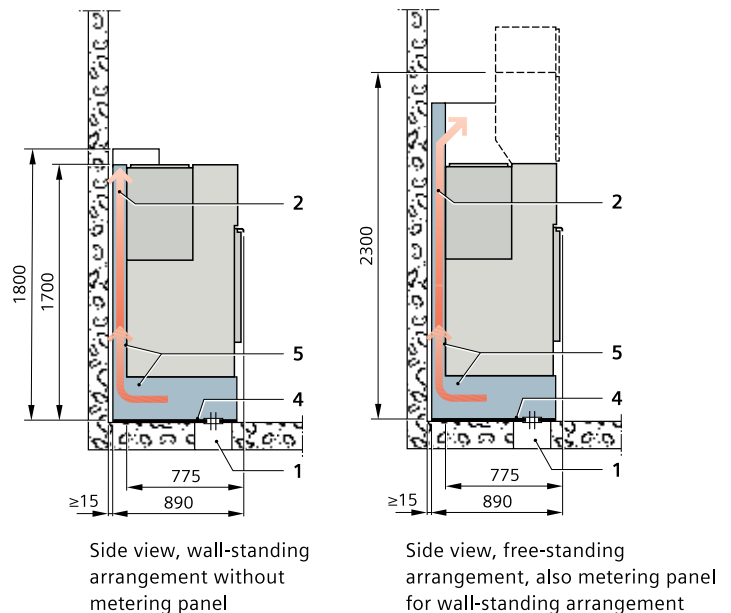
Switchgear installation with rear pressure relief duct (option) for panel blocks with IAC A FL or FLR up to 16 kA / 1 s



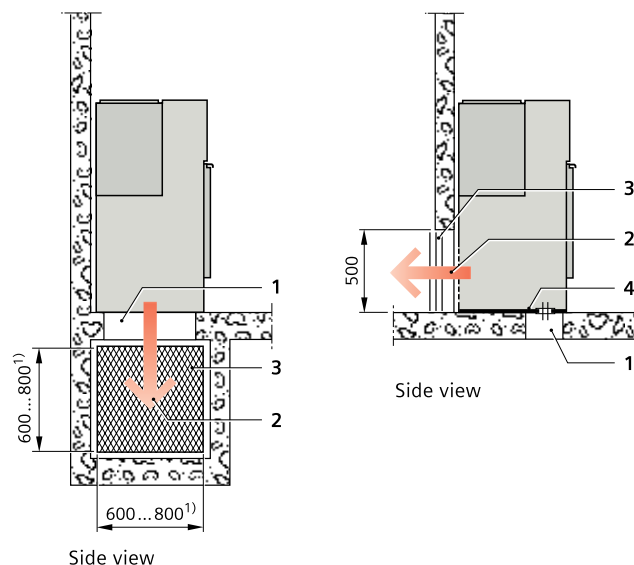
Room heights for switchgear installation with pressure relief duct at the rear (design with or without base frame)

Switchgear height	Room height
1400 mm	≥ 2000 mm
1700, 1800 mm	≥ 2200 mm
2300 mm	≥ 2400 mm
2600 mm	≥ 2700 mm

Switchgear installation with base frame and rear pressure relief duct (option) for panel block with IAC A FL or FLR up to 21 kA / 1 s



Switchgear installation with pressure relief downwards (standard) or to the rear (option)

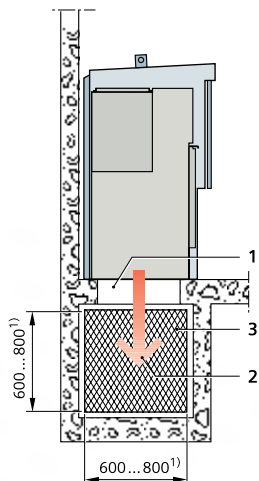


For 8DJH with outdoor enclosure (option), the direction of the pressure relief can be selected as follows:

- Downwards into the cable basement (internal arc classification up to IAC A FL or FLR 21 kA / 1 s, minimum cross-section of the cable basement according to the illustration below)
- To the rear (internal arc classification up to IAC A FL 21 kA / 1 s; for wall-standing arrangement, a rear pressure relief outlet with a minimum cross-section of 1 m² is required and must be supplied by the site)
- Upwards through rear pressure relief duct (internal arc classification up to IAC A FL or FLR 21 kA / 1 s, free space above the switchgear 600 mm as a minimum).

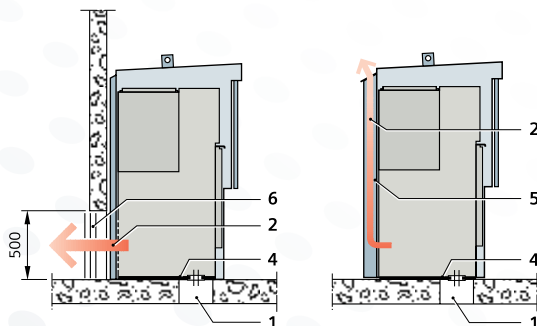
The dimensions for wall distances, control aisles, and cable basements correspond to those of the 8DJH Standard design. The outdoor enclosure is conceived for application on company grounds.

Switchgear installation for outdoor enclosure with pressure relief downwards



Side view

Switchgear installation for outdoor enclosure with pressure relief to the rear or upwards through rear duct



Side view

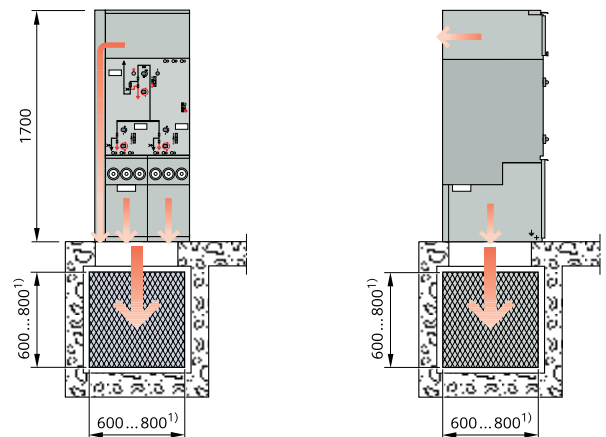
Side view

For 8DJH Compact, the following types of pressure relief can be selected:

- Downwards into the cable basement for all feeders (internal arc classification up to IAC A FL or FLR 21 kA / 1 s)
- Downwards into the cable basement for the ring-main feeders, and to the rear for the transformer feeders (internal arc classification up to IAC A F 21 kA / 1 s)
- Upwards through base frame and rear duct (internal arc classification up to IAC A FL 21 kA / 1 s)
- To the rear through base frame (internal arc classification up to IAC A FL 21 kA / 1 s).

The dimensions for wall distances, control aisles, and cable basements correspond to those of the 8DJH Standard design. The pressure relief to the rear was tested with a rear wall distance of ≥ 3 m. This design is recommended for application in prefabricated substations without control aisle, with internal arcing test according to IEC 62271-202.

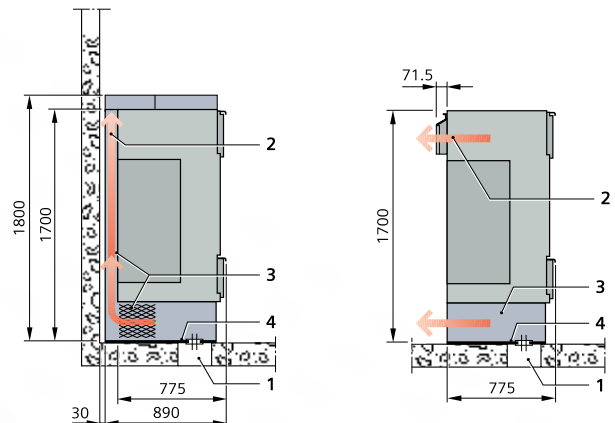
Switchgear installation for 8DJH Compact with pressure relief downwards for all feeders (standard) or downwards for ring-main feeders, and to the rear for transformer feeders (option)



Front view

Side view

Switchgear installation for 8DJH Compact with pressure relief upwards through base frame and rear duct (option) or with pressure relief to the rear through base frame (option)



Side view

Side view

