Catalog
HA 40.2 · 2025

MEDIUM-VOLTAGE SWITCHGEAR

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

siemens.com/8DJH

Solution Partner

Power Distribution

SIEMENS

Application

Typical uses

Application in public and industrial energy systems

MEDIUM-VOLTAGE SWITCHGEAR

Switchgear Type 8DJH

for Secondary Distribution Systems up to 24 kV, Gas-Insulated

Catalog HA 40.2 · 2025
Invalid: Catalog HA 40.2 · 2022

siemens.com/medium-voltage-switchgear

Contents

The products and systems described in this catalog are manufactured and sold according to a certified management system (acc. to ISO 9001, ISO 14001 and BS OHSAS 18001).

Application

Versions

Individual
circuit-breaker panel 500 mm

RRT block

Application

Typical uses, ratings, standards

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).

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	kA	25	25	25	25	20/21
Rated continuous current of the busbar	A	630	630	630	630	630
Rated continuous current of feeders	up to A	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 61869-11
Insulating gas		62271-4
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 SF_6 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 SF_6 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 switching 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, 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 2,000,000 switchgear panels of Siemens in operation worldwide for many years.

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 sendzimir-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 SF_6 gas
- Features of SF_6 gas:
  - Non-toxic
  - Odorless and colorless
  - Non-inflammable
  - Chemically neutral
  - Heavier than air
  - Electronegative (high-quality insulator)
  - Global Warming Potential GWP = 24,300
- Pressure of SF_6 gas in the switchgear vessel (absolute values at 20 °C):
  - Rated filling level: 150 kPa
  - Design pressure: 180 kPa
  - Design temperature of the SF_6 gas: 80 °C
  - Operating pressure of bursting disc: ≥ 300 kPa
  - Bursting pressure: ≥ 550 kPa
  - Gas leakage rate: < 0.1 % pro Jahr.

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 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 SF_6 has to be evacuated professionally as a reusable material and recycled (SF_6 must not be released into the environment).

Digitalization, condition monitoring

Siemens Xcelerator, available monitoring functionalities

Siemens Xcelerator

Siemens Xcelerator is an open digital business platform that enables customers to accelerate their digital transformation more easily, quickly, and at scale.

Addressing key challenges in the energy sector and beyond

Maintaining grid stability – Increasing energy demands often clash with fluctuating generation. Balancing both is crucial for tomorrow's grid stability.

Our smart energy solutions simplify management, align OT and IT, and ensure a resilient, scalable, and adaptable grid.

Maximizing cyber and asset security – Power grids can be a target for cyberattacks, which may cause power outages and unpredictable results.

Our solutions incorporate security measures to remove vulnerabilities in IT components, control devices, as well as transformer substation and switchgear systems.

Reducing expenditures – Our solutions enhance competitiveness through optimized CAPEX and OPEX with asset optimization, digital planning, simulation, and flexible financing options

Integrating distributed energy resources (DERs) – DERs are at the heart of a clean and resilient energy future. Nevertheless, a greater system flexibility is needed to consistently balance supply and demand.

Our solution offering covers the entire spectrum: from consulting through technical applications and services to tailored financing and business models.

Available monitoring functionalities for gas-insulated switchgear

Condition monitoring

Condition monitoring serves to continuously improve the resilience, reliability, and availability of maintenance-free, gas-insulated medium-voltage switchgear with an expected service life of 35 years and more. These values are based on the design and empirical data for switchgear assemblies, as well as on the intended use of the switchgear under normal service conditions according to IEC 62271-1.
To protect the investment (CAPEX) and reduce operational expenditures (OPEX), the extension of switchgear functions with a condition monitoring system is the appropriate way for early indication of irregularities at the switchgear and its peripheral components. This is the premise for condition-based inspection.

Temperature monitoring of the cable connections

Temperature monitoring of the cable connections ensures that the maximum permissible thermal service conditions of the gas-insulated switchgear and the cable connection set are not exceeded during operation. With the help of an intelligent correlation between the ambient air temperature, the cable connection temperature, and the switchgear utilization, anomalies can already be detected and indicated before the limit temperature is reached, based also on low-load scenarios.

Temperature and humidity monitoring of the environment (dew-point monitoring)

Ongoing condensation would lead to corrosion at the switchgear, and reduce its service life. Specific countermeasures after strong humidity at the switchgear assembly, as well as the prevention of further condensation, can remedy the situation.

Partial discharge monitoring

Partial discharges arise if the electrical insulation is damaged or insufficient. Partial discharge monitoring offers a pre-alarming in case of a possibly insufficient electrical insulation. In most cases, partial discharges are a long-term effect of thermal overstressing or of defective or incorrectly installed peripheral components.

Digital gas density monitoring

For perfect operation of a gas-insulated switchgear, the correct gas density inside the switchgear vessel is crucial. To maintain the full scope of functions of the switchgear, immediate action is required if the gas density falls below the necessary values.

Circuit-breaker monitoring

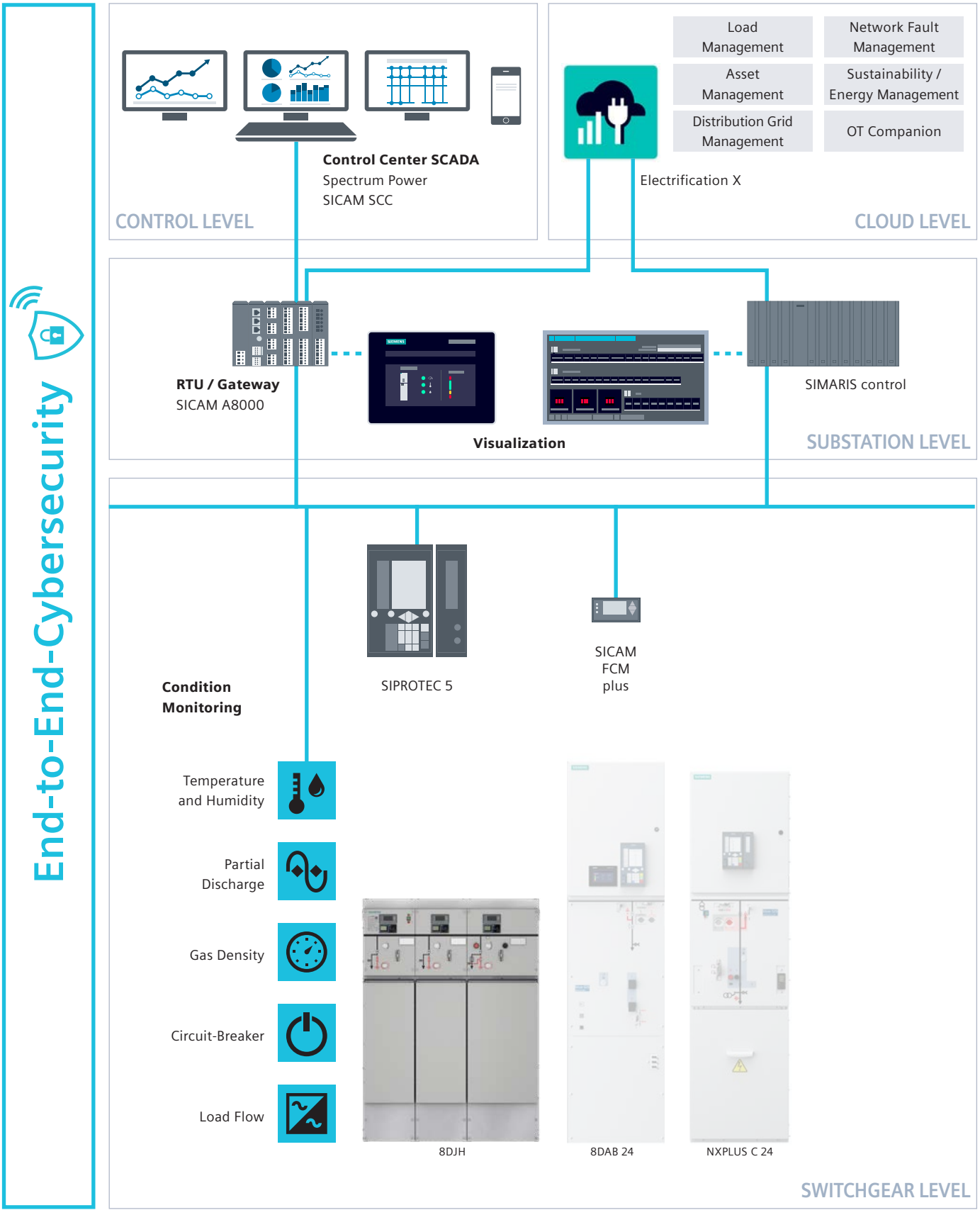
Continuous monitoring of circuit-breaker functions enables an evaluation of the actual health status of the circuit-breaker, based on both mechanical and electrical parameters. The evaluation of performed mechanical and electrical switching operations, as well as the monitoring of other components, allows to indicate at an early stage if servicing work is necessary, or if a suitable replacement switchgear should be procured.

Load flow monitoring

An increasing number of distributed energy resources and the growing share of e-mobility lead to ever more volatile load flows in the distribution grids. Capturing this data is an important element for identifying hotspots in the grid, and it offers planning security for the operator.

Digitalization, condition monitoring

Digitalization solutions from a single source



Sustainability

Our contribution to a sustainable and cleaner planet
At Siemens, sustainability is not just a commitment, but a core strategy deeply ingrained in our operations. Our DEGREE framework, representing **Decarbonization, Ethics, Governance, Resource Efficiency, Equity, and Employability**, guides our journey towards a sustainable future. It constitutes a 360-degree approach for all stakeholders – our customers, our suppliers, our investors, our people, the societies we serve, and our planet.

Siemens aims to limit global warming to 1.5 degrees Celsius and takes action across its operations, targeting various ESG (Environmental, Social, and Governance) topics. We further contribute to decarbonization by helping our customers reduce emissions, and aim to lower our own operational emissions significantly by 2030. Additionally, we promote resource efficiency through recycling and a circular economy, incorporating sustainable design criteria into our products and increasing the use of secondary materials. Siemens focuses on sustainable materials, energy sources, and product service life optimization to minimize resource consumption and waste. Ultimately, we strive to create a better future by achieving sustainability goals and minimizing environmental impacts.

Siemens gas-insulated switchgear (GIS) have played a key role over the last 40 years for a reliable and safe power distribution. Thanks to state-of-the-art manufacturing processes and a reliable switchgear design, the insulating gas remains in closed circuits throughout the entire production and operating phase of the switchgear, with extremely low leakage rates and minimal emissions of CO_2 equivalents throughout the entire life cycle. In addition, our switchgear has numerous advantages that have a positive impact on the ecological footprint of the users.

Space efficiency: Siemens GIS offer very compact solutions that save valuable space and additionally decrease the environmental impact of electrical infrastructure installations.

Material efficiency: Our GIS products are designed to have a very low CO_2 footprint. A prime example is SIBushing, a non-conventional instrument transformer that reduces the use of raw materials, energy consumption, and landfill waste.

Energy efficiency: An optimized main current path with a low ohmic resistance reduces the power loss during operation of the switchgear considerably, and thus increases the energy efficiency.

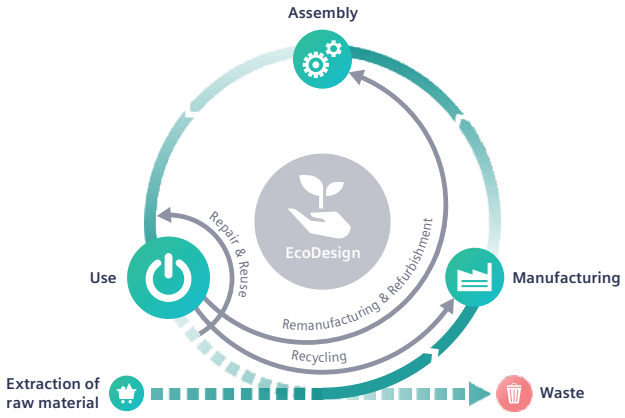
Long service life: With the right material selection and an innovative design, GIS have an expected service life of at least 35 years, thus extending the re-investment cycle and further diminishing the CO_2 footprint.

Maintenance-free design: No additional maintenance is necessary for our gas-insulated switchgear. The CO_2 footprint can be reduced further by avoiding site visits during the operational phase of the switchgear.

Sustainable services: The CO_2 footprint can be diminished thanks to services from predictive maintenance to condition monitoring, remote FAT, CO_2 monitoring via NXpower monitor, the Totally Integrated Power planning tools, and paperless documentation.

The complete life cycle that counts

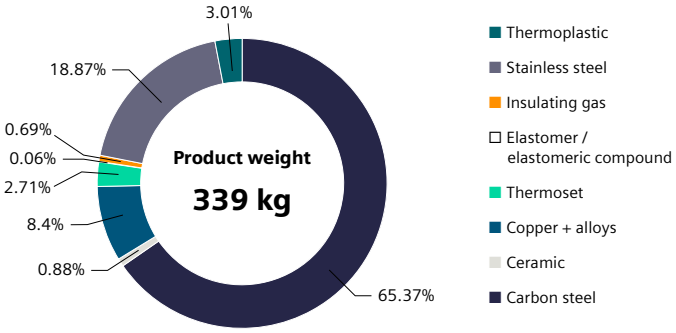
In view of the global climate crisis and the necessity to reduce carbon emissions and preserve natural resources, Siemens aims to decrease the environmental footprint of its own business operations as well as that of its customers and supply chains. With internationally standardized approaches, we provide transparency regarding the environmental impacts of our products, systems, solutions, and services.



The Siemens Environmental Product Declaration (EPD) adheres to ISO 14021 standards for environmental labels and declarations.
It is based on a comprehensive Life Cycle Assessment (LCA) study conducted in accordance with ISO 14040/44, incorporating Product Category Rules (PCR) specified in EN 50693 for electronic and electrotechnical products and systems.

Products	8DJH – secondary distribution gas-insulated switchgear
Represented by the reference product	RRL block
Product description	8DJH is a medium-voltage gas-insulated switchgear for secondary distribution tested according to IEC 62271-200. This switchgear is available for ratings up to U_r = 24 kV, I_k = 20 kA, I_r = 630 A.
Functional Unit	8DJH - GIS block type RRL, without low-voltage compartment, maintenance-free, operating 24 h, 365 days/a for the reference service life of 40 years.

Material composition



Resource efficiency

The end-of-life phase of an 8DJH – RRL block type was modeled with the LCA tool GaBi 9.5 by first dismantling the equipment, followed by a shredding, sorting, and material separation process, resulting in:

- An overall product recyclability of up to 89 % mainly thanks to high metal content
- An energy recoverability of up to 6 % from plastic materials
- A minimum disposal rate of 5 %

The exact final values depend on the used recycling processes.

Use of environmentally safe materials

At Siemens, we are committed to the development and production of environmentally friendly and sustainably produced equipment. This includes avoiding hazardous substances in our products without compromising their benefits for our customers. Please visit the following website* to learn more about how we comply with product-related environmental regulations like RoHS, REACh and others.

* https://www.siemens.com/global/en/products/energy/ecotransparency/ecotransparency-downloads.html

Technical data

Switchgear

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	20/21 [1]
		for switchgear with t_k = 3 s [1]		up to kA	20/21 [1] →				
	Rated peak withstand current I_p			up to kA	63	63	63	63	50/52.5 [1]
60 Hz	Rated short-time withstand current I_k	for switchgear with t_k = 1 s		up to kA	25	25	25	25	20/21 [1]
		for switchgear with t_k = 3 s [1]		up to kA	20/21 [1] →				
	Rated peak withstand current I_p			up to kA	65	65	65	65	52/55 [1]
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-)disconnector			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 →				

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 37

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	50/52.5 [1]
		60 Hz	up to kA	65	65	65	65	52/55 [1]
	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 →				
Disconnector 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]
	Electrical endurance		Class	E2 →				
	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	50/52.5 [1]
		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_r of the transformer [5]		up to kVA	250 to 800	1250	1250	1250	2000
Disconnector 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 →				
	Electrical endurance		Class	E2 →				
	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
5) Depending on the primary voltage of the transformer and the HV HRC fuses used

Technical data

Switching devices

Vacuum circuit-breaker with three-position disconnector

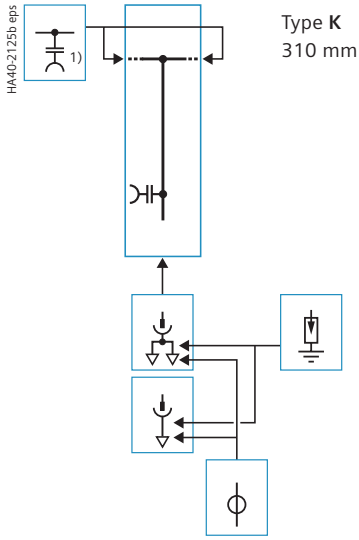
Rated voltage U_r				**kV**	**7.2**	**12**	**15**	**17.5**	**24**
Circuit-breaker type 1.1 function	Rated operating sequence				O – 0.3 s – CO – 3 min – CO →				
		Option			O – 0.3 s – CO – 15 s – CO →				
	Rated short-circuit breaking current I_{sc}			up to kA	25	25	25	25	20/21 [1]
	Electrical endurance			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	10,000 →				
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	C1 →				
	Switching of cable systems			Class	S1 →				
	Mechanical endurance			Class	M1 →				
	Number of mechanical operating cycles			n	2000 →				
Disconnector 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]
	Electrical endurance			Class	E2 →				
	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

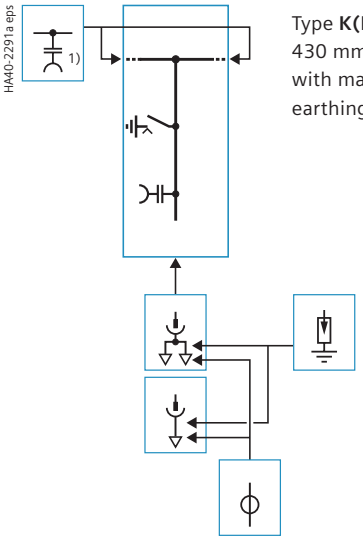
Rated voltage U_r				**kV**	**7.2**	**12**	**15**	**17.5**	**24**
	Rated short-circuit making current I_{ma}	50 Hz		up to kA	63	63	63	63	50/52.5 [1]
		60 Hz		up to kA	65	65	65	65	52/55 [1]
	Electrical endurance			Class	E2 →				
	Number of short-circuit making operations with I_{ma}			n	5 →				
	Mechanical endurance			Class	M0 →				
	Number of mechanical operating cycles			n	1000 →				

1) Design option

Cable feeder

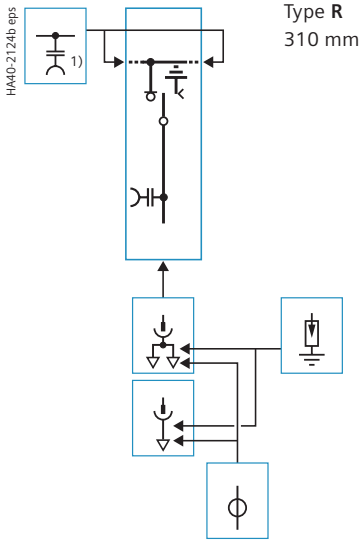


Type **K**
310 mm wide

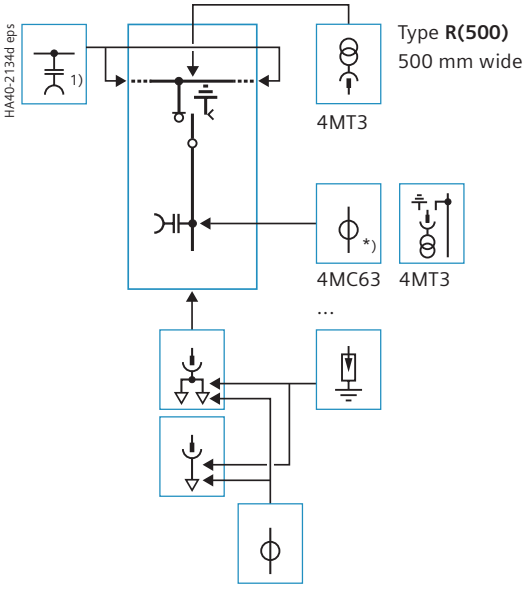


Type **K(E)**
430 mm wide
with make-proof
earthing switch

Ring-main feeder

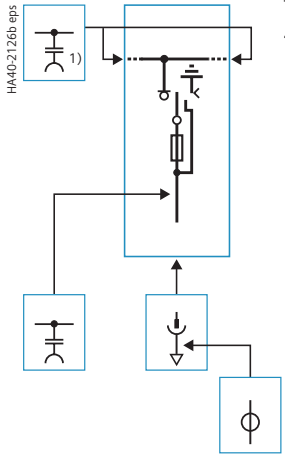


Type **R**
310 mm wide



Type **R(500)**
500 mm wide

Transformer feeder



Type **T**
430 mm wide

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

Product range

Individual panels

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 or limiter

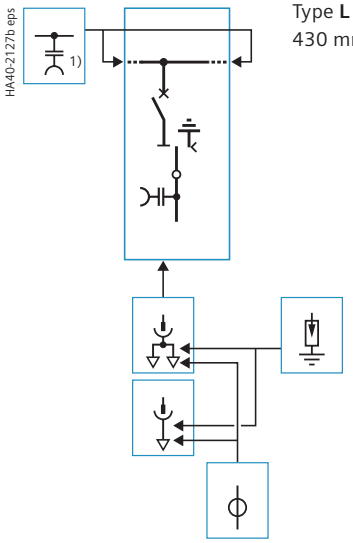
Ring-core current transformer

Plug-in voltage transformer

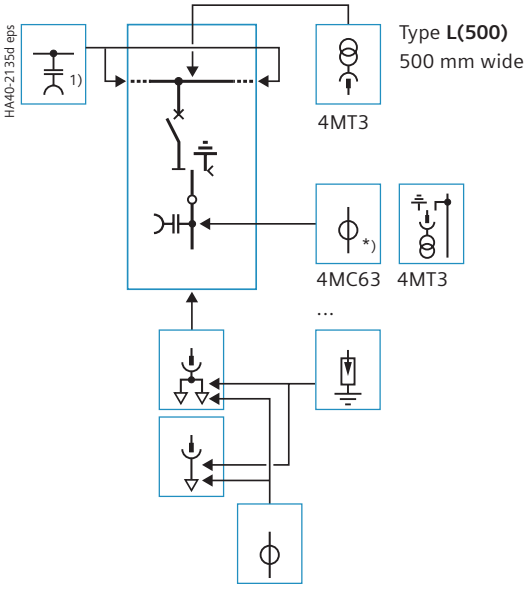
Plug-in voltage transformer with earthing device

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

Circuit-breaker feeder

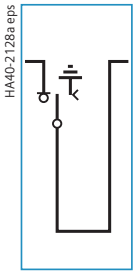


Type **L**
430 mm wide

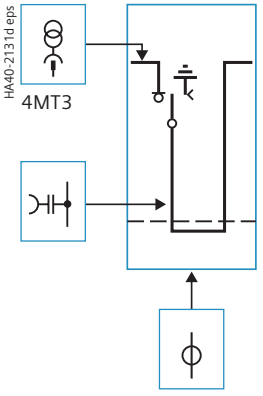


Type **L(500)**
500 mm wide

Bus sectionalizer panel

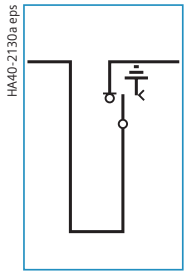


Type **S**
430 mm wide

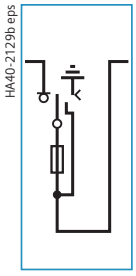


Type **S(500)**
500 mm wide

Bus sectionalizer panel

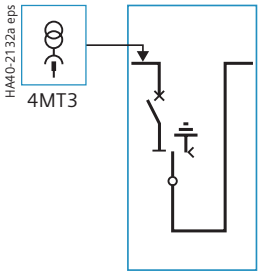


Type **S(620)**
620 mm wide

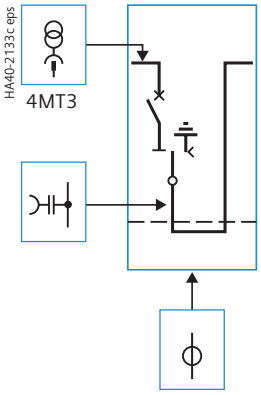


Type **H**
430 mm wide

Bus sectionalizer panel with circuit-breaker

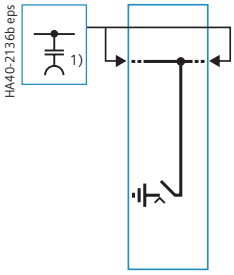


Type **V** (with circuit-breaker 1.1 or 2)
500 mm wide

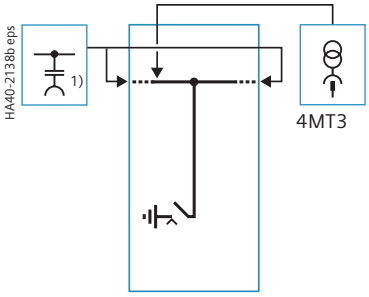


Design option **with current transformer**

Busbar earthing panel

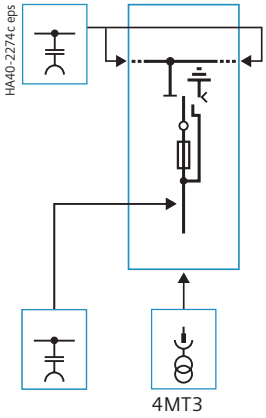


Type **E**
310 mm wide



Type **E(500)**
500 mm wide

Primary fuse-protected busbar voltage metering panel



Type **M(430)**
430 mm wide

Vacuum circuit-breaker

Three-position disconnector

Make-proof earthing switch

HV HRC fuse

Capacitive voltage detecting system

Ring-core current transformer

Plug-in voltage transformer

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

Product range

Air-insulated billing metering panels type M, 840 mm wide

Current transformer, cast-resin insulated

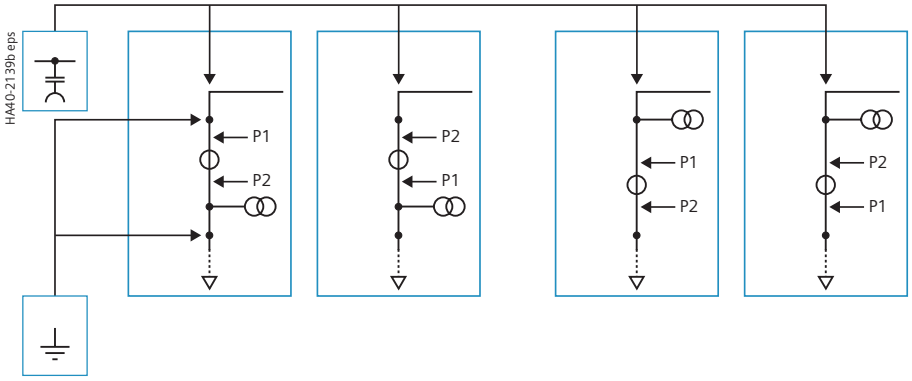
Voltage transformer, cast-resin insulated

Capacitive voltage detecting system

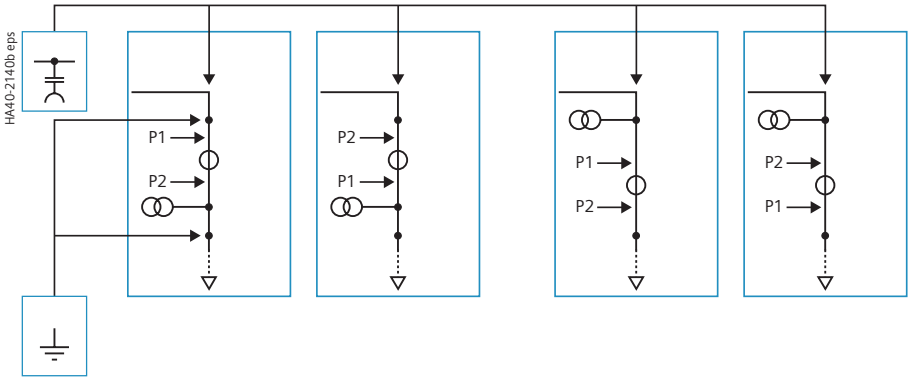
Fixed earthing points for busbar earthing

P1 and P2 are terminal designations of the current transformer

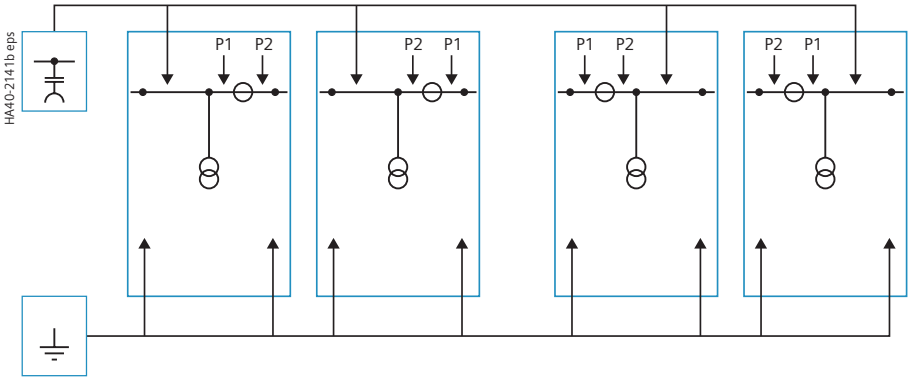
Billing metering panels with cable connection on the left



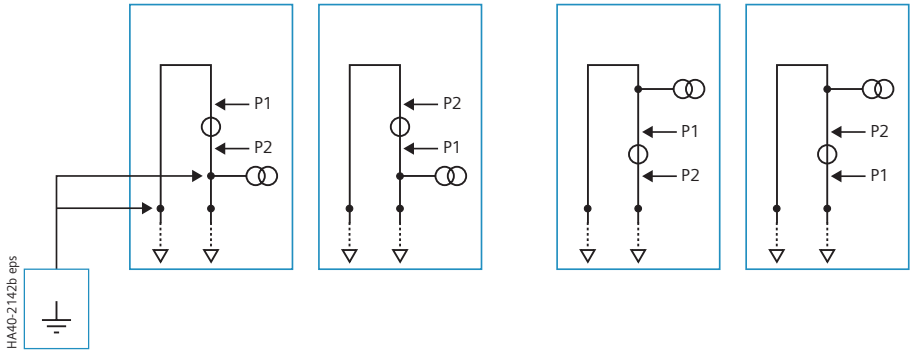
Billing metering panels with cable connection on the right



Billing metering panels with busbar connection on both sides



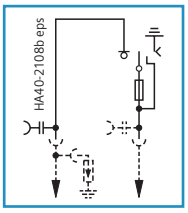
Billing metering panels with cable connection on both sides



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

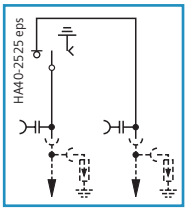
Components shown in dotted lines can be used optionally.

KT 1 transformer feeder, 1 cable feeder



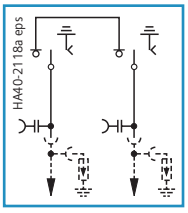
Dimensions in mm		
Width	**Depth**	**Height**
740	775	1200
		1400
		1700

RK 1 ring-main feeder, 1 cable feeder



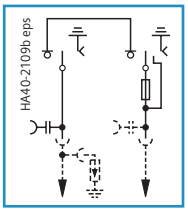
Dimensions in mm		
Width	**Depth**	**Height**
620	775	1200
		1400
		1700

RR 2 ring-main feeders



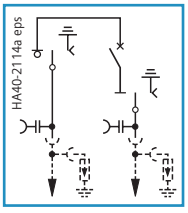
Dimensions in mm		
Width	**Depth**	**Height**
620	775	1040
		1200
		1400
		1700

RT 1 ring-main feeder, 1 transformer feeder



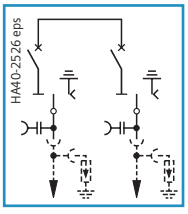
Dimensions in mm		
Width	**Depth**	**Height**
740	775	1040
		1200
		1400
		1700

RL 1 ring-main feeder, 1 circuit-breaker feeder



Dimensions in mm		
Width	**Depth**	**Height**
740	775	1200
		1400
		1700

LL 2 ring-main feeders



Dimensions in mm		
Width	**Depth**	**Height**
860	775	1200
		1400
		1700

Vacuum circuit-breaker

Three-position disconnector

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

Product range

Panel blocks (excerpt)

Vacuum circuit-breaker

Three-position disconnector

Three-position switch-disconnector

HV HRC fuse

Capacitive voltage detecting system

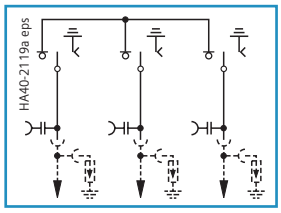
Cable connection with outside cone (not included in the scope of supply)

Surge arrester

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

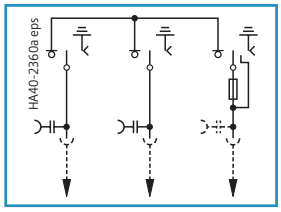
Components shown in dotted lines can be used optionally.

RRR 3 ring-main feeders



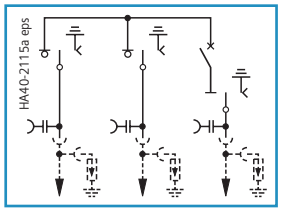
Dimensions in mm		
Width	Depth	Height
930	775	1040
		1200
		1400
		1700

RRT 2 ring-main feeders, 1 transformer feeder



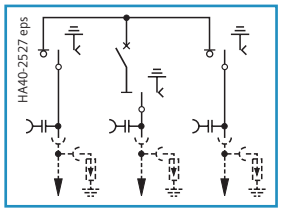
Dimensions in mm		
Width	Depth	Height
1050	775	1040
		1200
		1400
		1700

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



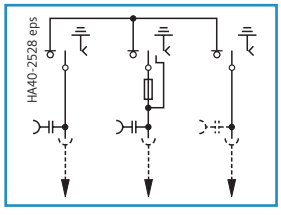
Dimensions in mm		
Width	Depth	Height
1050	775	1200
		1400
		1700

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



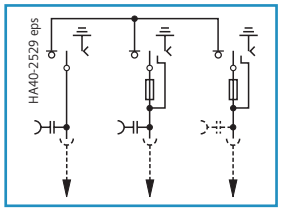
Dimensions in mm		
Width	Depth	Height
1050	775	1200
		1400
		1700

RTR 2 ring-main feeders, 1 transformer feeder



Dimensions in mm		
Width	Depth	Height
1050	775	1200
		1400
		1700

RTT 1 ring-main feeder, 2 transformer feeders

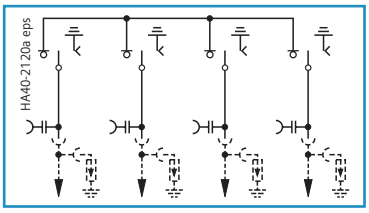


Dimensions in mm		
Width	Depth	Height
1170	775	1200
		1400
		1700

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

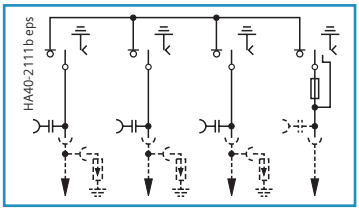
Components shown in dotted lines can be used optionally.

RRRR 4 ring-main feeders



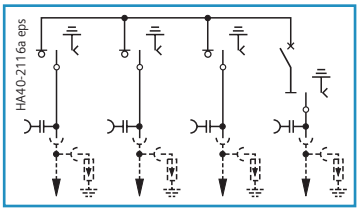
Dimensions in mm		
Width	**Depth**	**Height**
1240	775	1200
		1400
		1700

RRRT 3 ring-main feeders, 1 transformer feeder



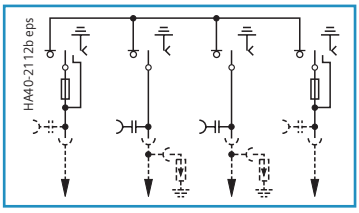
Dimensions in mm		
Width	**Depth**	**Height**
1360	775	1200
		1400
		1700

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



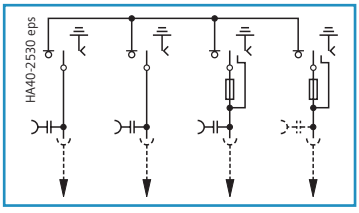
Dimensions in mm		
Width	**Depth**	**Height**
1360	775	1200
		1400
		1700

TRRT 2 ring-main feeders, 2 transformer feeders



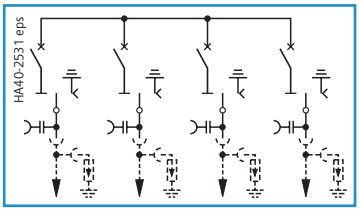
Dimensions in mm		
Width	**Depth**	**Height**
1480	775	1200
		1400
		1700

RRTT 2 ring-main feeders, 2 transformer feeders



Dimensions in mm		
Width	**Depth**	**Height**
1480	775	1200
		1400
		1700

LLLL 4 circuit-breaker feeders



Dimensions in mm		
Width	**Depth**	**Height**
1720	775	1200
		1400
		1700

Vacuum circuit-breaker

Three-position disconnector

Three-position switch-disconnector

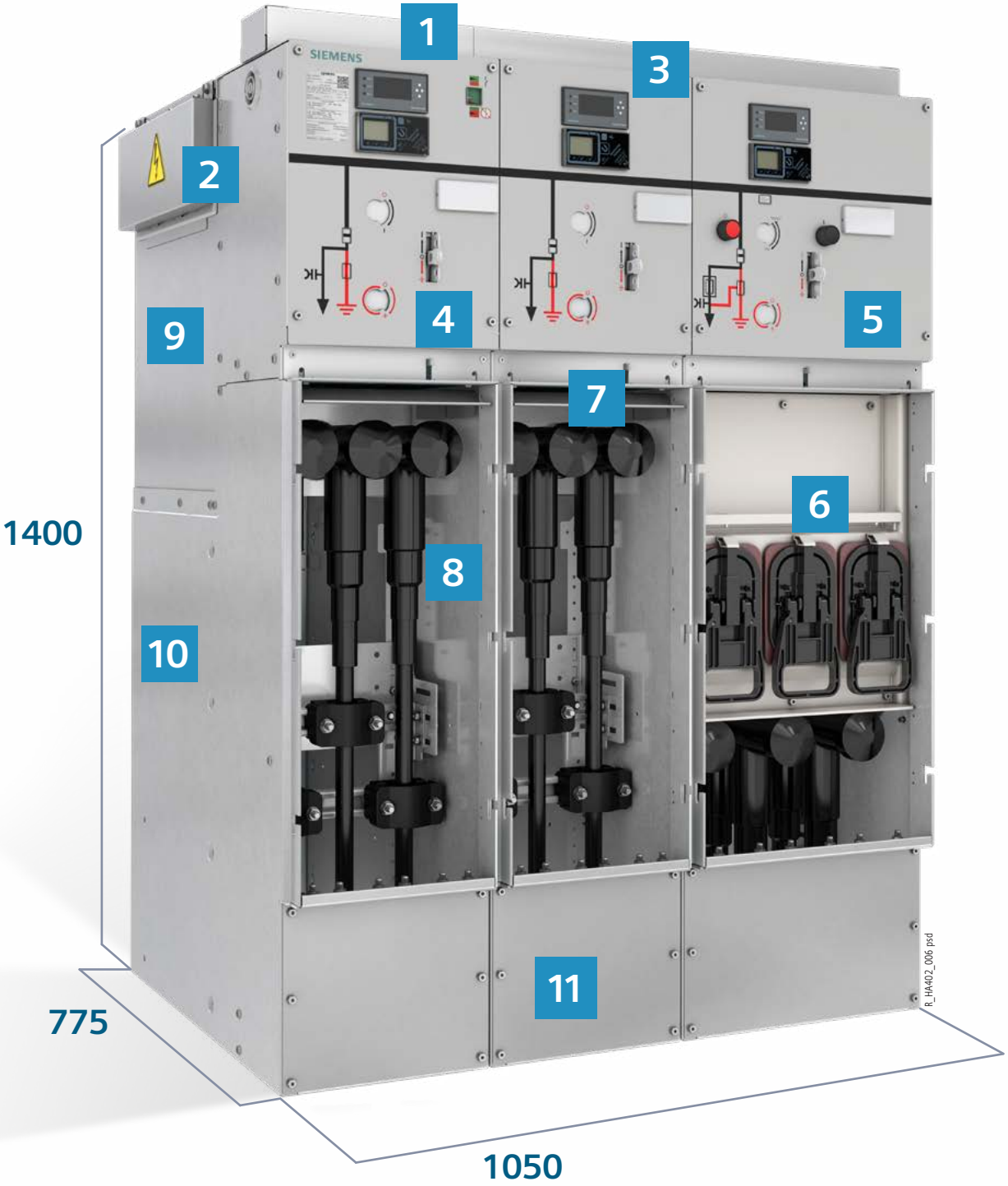
HV HRC fuse

Capacitive voltage detecting system

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

Surge arrester

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 SIBushing
- 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 with 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

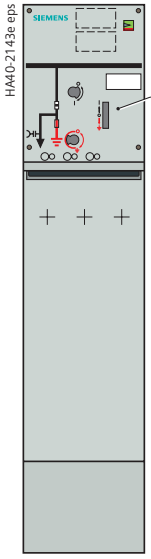
11 Pressure relief
- Pressure relief downwards
- For further pressure relief versions, see page 37
- Up to IAC A FL 21 kA / 1 s or IAC A FLR 21 kA / 1 s

Design

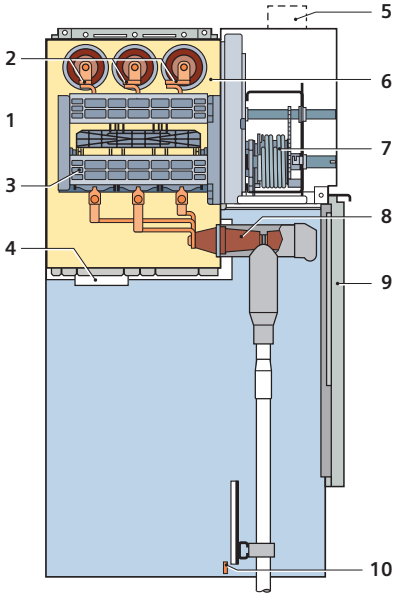
Panel design (examples)

Ring-main feeder

Type **R**

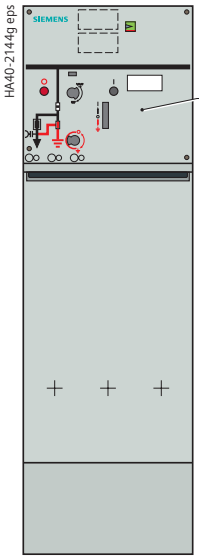


Section

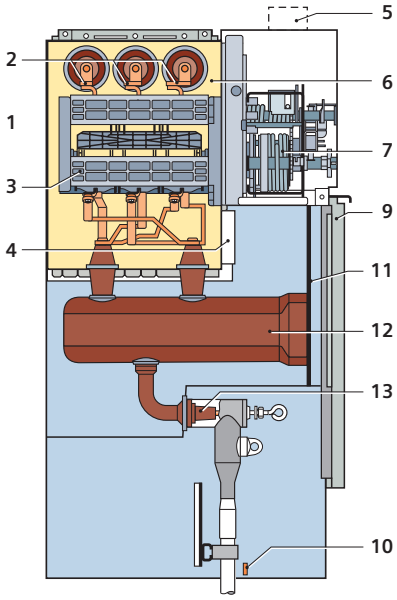


Transformer feeder

Type **T**

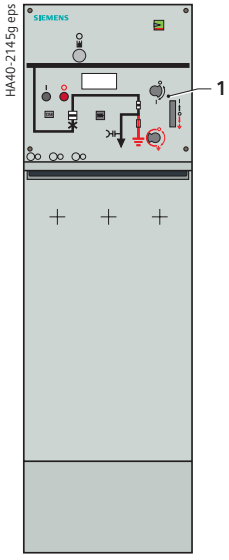


Section

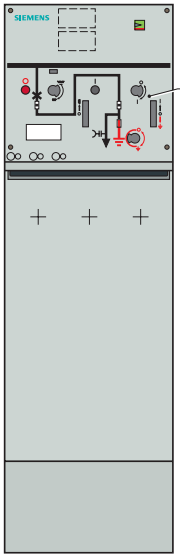


Circuit-breaker feeder

Type **L**

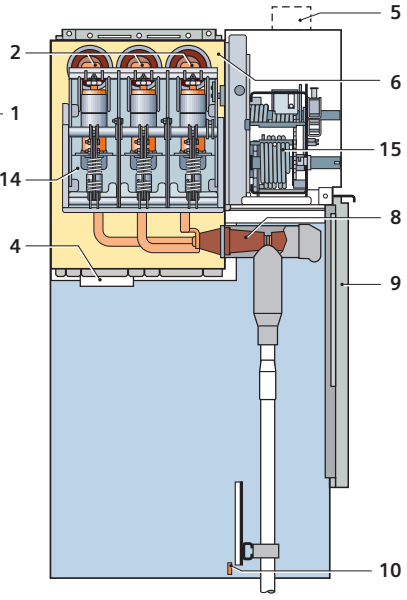


Type **1.1**



Type **2**

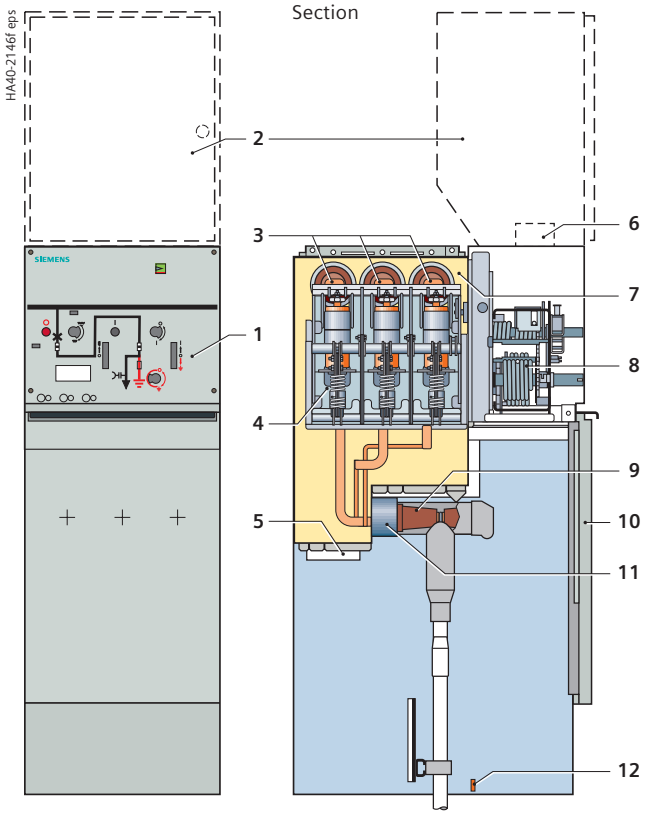
Section



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

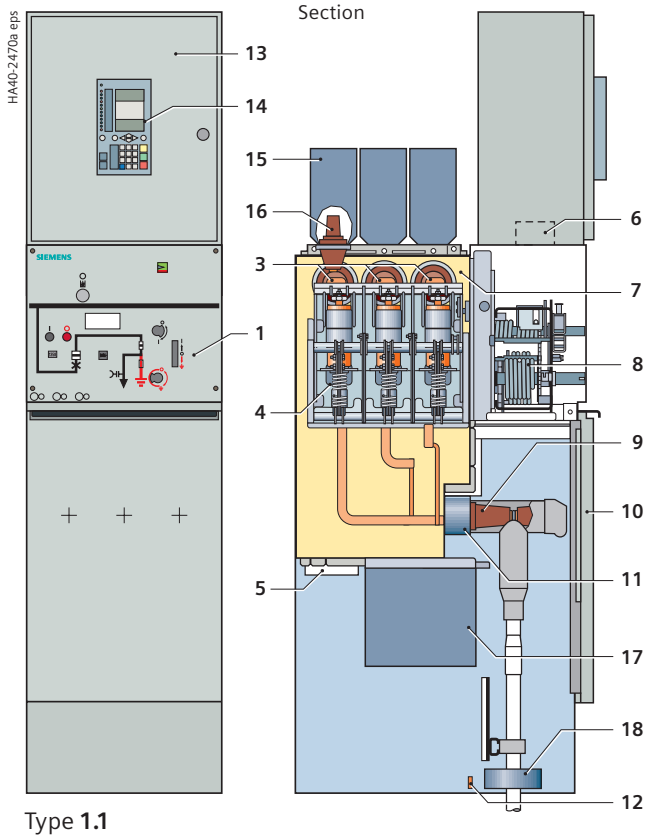
Circuit-breaker feeder

Type **L(500)**



Type **2**

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 **1.1**

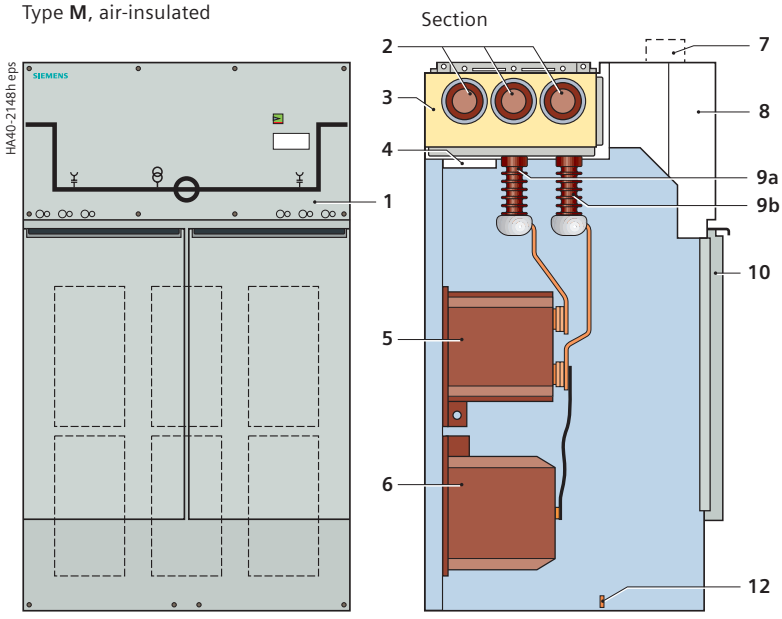
13 Low-voltage compartment (standard) for vacuum circuit-breaker
14 Option: SIPROTEC bay controller
15 Option: Plug-in voltage transformer 4MT3 on the busbar
16 Bushing for connection of plug-in voltage transformers
17 Option: Plug-in voltage transformer 4MT3 at the cable connection and voltage transformer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

Design

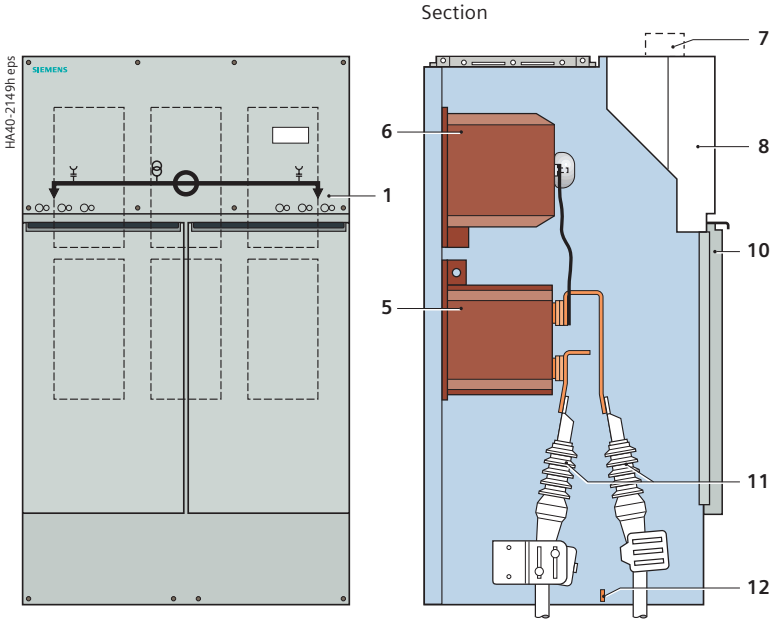
Panel design (examples)

Billing metering panel

Type **M**, air-insulated



Connection: busbar – busbar



Connection: cable – cable

1 Sockets for voltage detecting system

2 Busbar connection

3 Busbar vessel, filled with gas

4 Pressure relief device

5 Current transformer type 4MA7

6 Voltage transformer type 4MR

7 Wiring duct, removable, for protection cables and/or bus wires

8 Niche for customer-side low-voltage equipment, screwed cover

9 Bushings for connection of transformer bars, connected with busbar extension on the right **9a**, and on the left **9b**

10 Instrument transformer compartment cover

11 Cable connection

12 Earthing busbar with earthing connection

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

Busbar extension, modularity

Features

- Busbar extension possible on all individual panels and panel blocks (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.

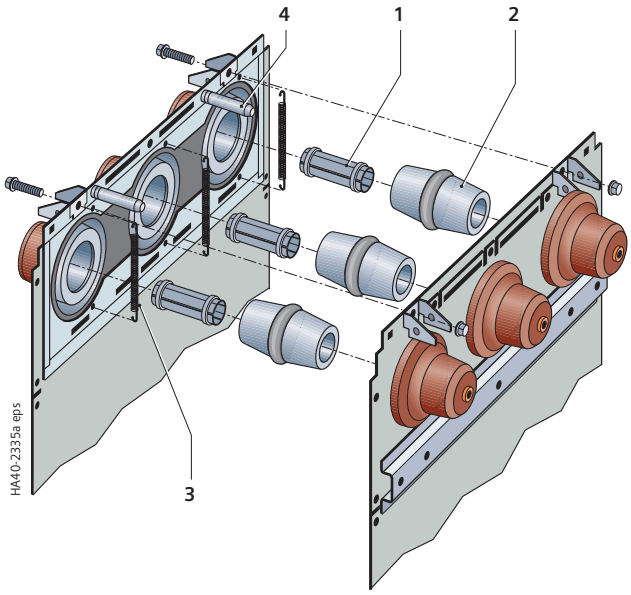
Every panel block and every individual panel is optionally available with busbar extension on the right, on the left, or on both sides. This offers a high flexibility for the creation of switchgear configurations whose functional units can be lined up in any order. Local installation and lining up is done without gas work.

Lining up takes place as follows:

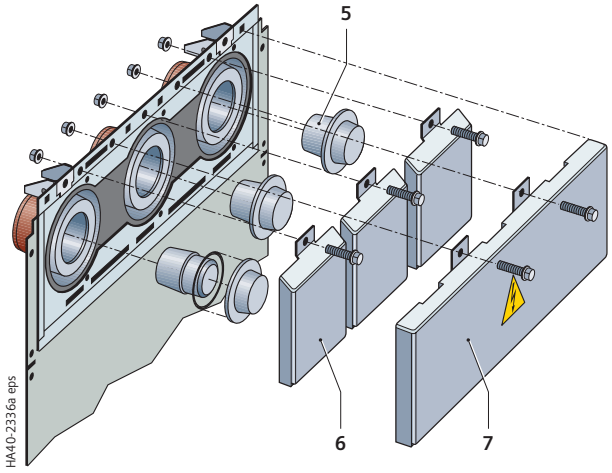
- By the busbar couplings on the medium-voltage side. Tolerances between adjacent panels are compensated by spherical fixed contacts and the movable contact coupling with degrees of freedom in all axis directions.
- By safe dielectric sealing with screened silicone couplings that are externally earthed and adjustable to tolerances. These silicone couplings are pressed on with a defined pressure when the panels are interconnected.
- On free busbar ends, screened dummy plugs are inserted, each of which is pressed on through a metal cover. A common protective cover with a warning is fixed over all three covers.
- By centering bolts for easier switchgear installation and fixing of adjacent panels.
- By bolted panel joints with defined stops for the distances between adjacent panels and the associated pressure for contact pieces and silicone couplings.

Switchgear installation, extension, or the replacement of one or more functional units requires a lateral wall distance of ≥ 200 mm.

Interconnecting the panels



Surge-proof termination



1 Contact piece
2 Silicone coupling
3 Tension spring for earthing
4 Centering bolt
5 Silicone dummy plug with insertable sleeve
6 Clamping cover for dummy plugs
7 Busbar termination cover

Features
- Access to the cable compartment only if the feeder has been disconnected and earthed
- Bushings according to DIN EN 50181 with outside cone and bolted connection M16 as interface type C.

Connection of
- Thermoplastic-insulated cables (1- or 3-core cables) via cable elbow plug or cable T-plug
- Paper-insulated mass-impregnated cables via customary adapters.

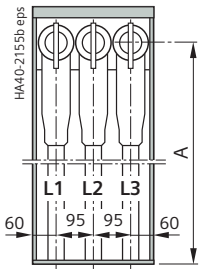
Option
- Mounted cable clamps on cable bracket
- Connection of two 1-core cables per phase
- Deep cable compartment cover for a larger available mounting depth (possibly required depending on the plug or arrester combinations).

Cable plugs
- Numerous cable plug types from different manufacturers can be used
- Screened cable plugs (with conductive, earthed layer) particularly suitable, even in harsh ambient conditions (e.g. pollution, humidity, high site altitude)
- Use of insulated cable plugs (without conductive layer) on request.

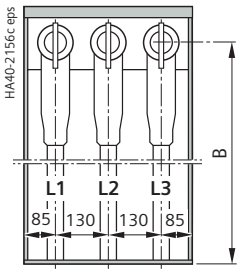
Surge arresters
- Connected directly at the cable T-plug
- Compatible arrester types from the cable manufacturers' product range can be used
- Surge arresters recommended if, at the same time,
  - the cable system is directly connected to the overhead line,
  - the protection zone of the surge arrester at the end tower of the overhead line does not cover the switchgear.

Surge limiters
- Connected directly at the cable T-plug
- Suitable cable plug / limiter combinations on request
- Surge limiters recommended when motors with starting currents < 600 A are connected.

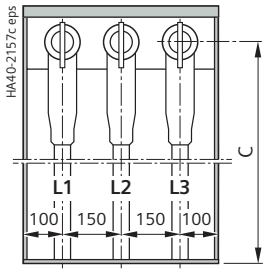
Cable compartment



Panel width 310 mm



Panel width 430 mm

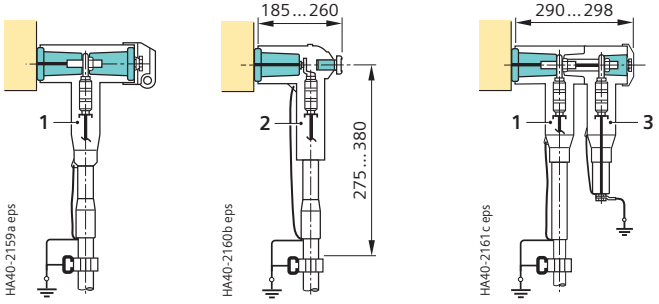


Panel width 500 mm

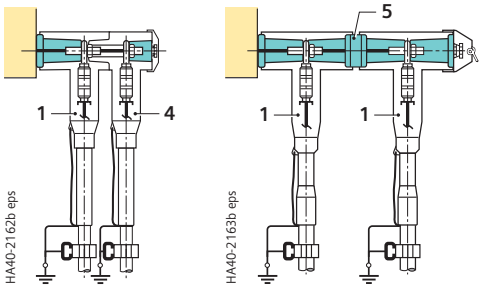
Switchgear height without low-voltage compartment [1]			**1040** [2]	**1200**	**1400 without absorber base frame**	**1400 with absorber base frame, or 1700**
Panel width 310 mm	Typical K, R	A	500	660	860	1160
Panel width 430 mm	Typical K(E), L	B	–	660	860	1160
Panel width 500 mm	Typical R(500), L(500)	C	–	510	710	1010

1) Option: With low-voltage compartment
2) Only for panel blocks RR, RRR, RT, RRT and RTR

Connection options



Single cable



Double cable

1 Cable T-plug
2 Cable elbow plug
3 Surge arrester
4 Coupling T-plug
5 Screw-type coupling insert

Components

Cable connection for transformer feeders with interface type A

Features

- Access to the cable compartment only if the feeder has been disconnected and earthed
- Bushings according to DIN EN 50181 with outside cone and plug-in contact as interface type A.

Connection of

- Thermoplastic-insulated cables (1-core cables) via cable elbow plug or cable T-plug.

Option

- Mounted cable clamps on cable bracket
- Bushings according to DIN EN 50181 with outside cone and bolted contact as interface type C for cable routing downwards.

Cable routing

For the cable compartment, different design options can be selected for the arrangement of the feeder bushings and cable entries. In combination with the shape of the cable plugs used, different cable entries can thus be implemented (see opposite illustration).

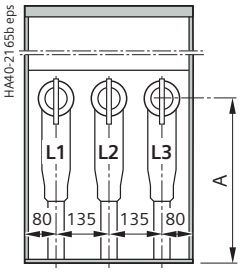
Cable plugs

- Numerous cable plug types from different manufacturers can be used
- Screened cable plugs (with conductive, earthed layer) particularly suitable, even in harsh ambient conditions (e.g. pollution, humidity, high site altitude)
- Use of insulated cable plugs (without conductive layer) on request.

Switchgear height without low-voltage compartment [1]			**1040** [2]	**1200**	**1400 without absorber base frame**	**1400 with absorber base frame, or 1700**
Panel width 430 mm	Typical T	A	62	222	422	722

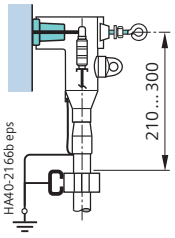
1) Option: With low-voltage compartment
2) Only for panel blocks RR, RRR, RT, RRT and RTR

Cable compartment

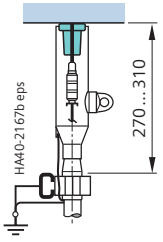


Feldbreite 430 mm

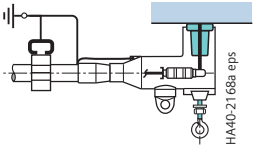
Connection options



Cable routing downwards with cable elbow plug (standard)

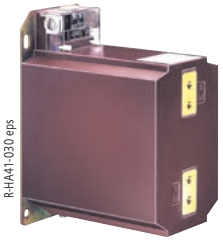


Cable routing downwards with straight plug (option)



Cable routing to the rear with cable elbow plug (option)

Current transformers according to IEC/EN 61869-1 and -2



Type	Cable-type current transformer 4MC7033 and 4MC7031 (1-pole)	Three-phase current transformer 4MC63 (3-pole)	Cable-type current transformer 4MC7032 (1-pole)	Block-type current transformer 4MA7 (1-pole)
Features	• Ring-core current transformer • Inductive type • Enclosure free of dielectric stress • Insulation class E • Secondary connection by means of cast-in wires or screw-type terminals (for 4MC7031)			• Dimensions according to DIN 42600-8 (narrow design) • Inductive type • Cast-resin insulated • Insulation class E • Secondary connection by means of screw-type terminals
Installation	• As current transformer at the feeder (for a panel width of 430 mm and 500 mm, for 4MC7031 also 310 mm): Below the switchgear vessel, on current transformer mounting plates in the cable compartment, around the cables • Installation on the cables on site Note: Depending on the design option of the panel and the overall height of the current transformer, the current transformers may protrude from the cable compartment downwards	• As current transformer at the feeder (for a panel width of 500 mm): Below the switchgear vessel, around the feeder bushings in the cable compartment • Factory-assembled	• As current transformer at the busbar: Below the switchgear vessel, around the screened busbars that are led out per section (option) in the instrument transformer compartment, factory-assembled • As current transformer at the feeder (for a panel width of 310 mm): Below the switchgear vessel, on current transformer mounting plates in the cable compartment, around the cables; installation on the cables on site Note: Depending on the design option of the panel and the overall height of the current transformer, the current transformers may protrude from the cable compartment downwards	• In the air-insulated metering panel • Factory-assembled • Option: Installation on site

Voltage transformers according to IEC/EN 61869-1 and -3

Type	Voltage transformer 4MT3 (1-pole)	Voltage transformer 4MR (1-pole or 2-pole)
Features	• Plug-in voltage transformer for outside-cone bushing type A • Inductive type • Enclosure metal-coated or metal-enclosed (option) and earthed • Insulation class E • Secondary connection by means of system plug	• Dimensions according to DIN 42600-9 (narrow design) • Inductive type • Cast-resin insulated • Insulation class E • Secondary connection by means of screw-type terminals
Installation	• As voltage transformer at the busbar or in the busbar voltage metering panel M(430): Above the switchgear vessel at separate outside-cone bushings • As voltage transformer at the feeder: Below the switchgear vessel, in the cable compartment, on separate outside-cone bushings • Factory-assembled	• In the air-insulated metering panel • Factory-assembled • Option: Installation on site

Components

Current sensors, voltage sensors

Current sensors (make Zelisko)

The current sensors are inductive current transformers whose secondary winding delivers a voltage signal through a precision shunt. At the rated primary current, this is 225 mV.

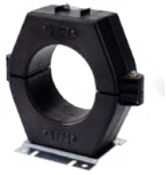
Depending on their version, the sensors have a dual accuracy class; the output signal can be equally used for measuring, protection and, if required, earth-fault detection. Suitable secondary devices with low-signal inputs can process the sensor signal directly.

R_HA40-147.tif

R_HA40-152.tif

R-HA40-148.tif

R_HA40-151.tif



Type	Ring-core current sensor SMCS-JW 1001	Ring-core current sensor SMCS/T-JW 1002, divisible	Three-phase ring-core current sensor SMCS3-JW1004, optionally with integrated earth-fault detection sensor	Ring-core current sensor GAE120/SENS-JW 1003 for earth-fault detection, divisible
Features	Example for available secondary devices that can be connected: • SICAM FCM • 7SJ81 (SIPROTEC Compact) • 7SY82			
Installation	• As current sensor at the feeder: Below the switchgear vessel, in the cable compartment, around the cables or cable plugs • Installation on the cables or cable plugs on site	• As current sensor at the feeder (particularly for retrofitting): Below the switchgear vessel, in the cable compartment, around the cables • Installation on the cables on site	• As current sensor at the feeder (for a panel width of 310 mm): Below the switchgear vessel, around the feeder bushings in the cable compartment • Factory-assembled	• As summation current sensor at the feeder: Below the switchgear vessel, in the cable compartment, around the cables • Installation on the cables on site

Voltage sensors (make Zelisko)

The voltage sensors are resistor dividers that provide an output signal of 3.25 V / $\sqrt{3}$ at the rated primary voltage. Suitable secondary devices with low-signal inputs can process the sensor signal directly.

R_HA40-153.tif

R-HA3541-194.tif

Type	Voltage sensor SMVS-UW1001	Voltage sensor SMVS-UW1002
Features	Example for available secondary devices that can be connected: • SICAM FCM • 7SJ81 (SIPROTEC Compact) • 7SY82	
Installation	• As voltage sensor at the feeder: Below the switchgear vessel, in the cable compartment, mounted on the cable plugs • Installation on the cable plugs on site Note: Voltage sensors of different design options can be selected, matching with the corresponding cable plug type	

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.

R_HA402_010.jpg

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 plus (design option for SIBushing) • 7SY82

Components

Time fuse-link protection system

Time fuse-link protection system

The time fuse-link protection system in accordance with the TS 12-6 British ENA specification is a simple protection system for protection of medium-voltage transformers with circuit-breakers.

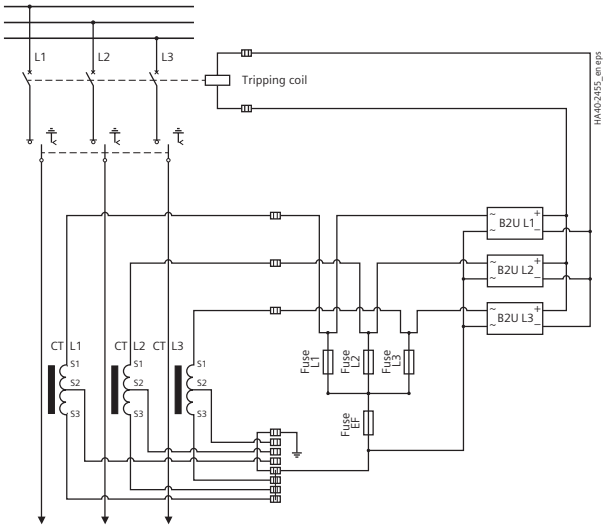
Mode of operation

In undisturbed operation, the ring-core current transformers of the protection system are short-circuited on the secondary side via type XF low-voltage fuses. In the case of a fault, the fuses are tripped and commutate the secondary current directly on the tripping coil of the circuit-breaker.
The switching device disconnects the fault. The selection of fuses is made based on the fuse protection table for the protection system.

Application

- For transformers with the connection symbol Dyn with the following power ratings:
  - Operating voltage 6.6 kV: ≤ 1000 kVA
  - Operating voltage 11 kV: ≤ 1250 kVA
  - Additional values on request
- For short-circuit and earth-fault protection
- For circuit-breaker type 2 with specially adapted low-energy release
- Installation in the front operating mechanism box of the panel.

Time fuse-link



Circuit diagram of the time fuse-link

Features
- Separate selection possible for every panel (depending on the panel type and the extent of the secondary equipment)
- Available overall heights 200 mm, 400 mm, 600 mm and 900 mm
- Mounted on the panel. Installation/removal possible on site
- Customer-specific equipping with protection, control, measuring and metering devices
- Door with hinge on the left (standard for heights of 400, 600 and 900 mm)
- Door powder-coated (same color as the switchgear front), with hinge on the left, optionally with hinge on the right, closure with rotary lock
  – Option: (for an overall height of 200 mm)
  Bolted front cover for narrow spaces, e.g. in substations without control aisle, powder-coated (same color as the switchgear front).

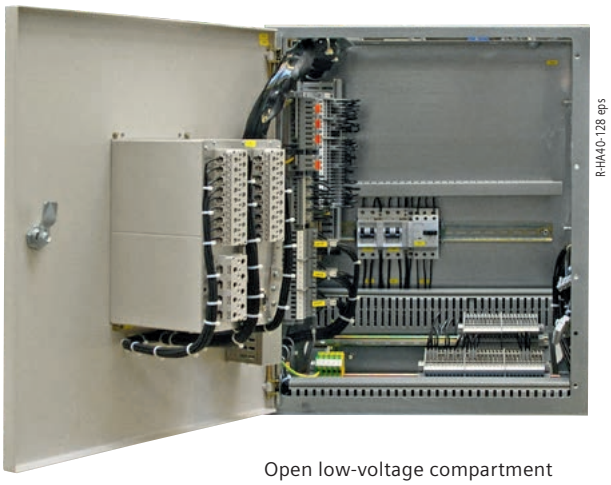
Low-voltage cables
- Control cables of the panel to the low-voltage compartment via multi-pole, coded module plug connectors
- Option: Plug-in bus wires from panel to panel in the separate wiring duct on the panel.

Low-voltage niche
- Integrated in the panel front of the billing metering panels type M
- With bolted front cover
- For accommodation of options, e.g.:
  – Voltage transformer m.c.b.s
  – Small distribution fuse-box and fuse-links type DIAZED or NEOZED.

Wiring duct
- Metallic duct, mounted on the panel
- Overall height 60 mm
- For panel-overlapping wiring
- Can be selected for panels without low-voltage compartment.

Top cover
- Cover made of powder-coated sheet-metal (same color as the switchgear front), mounted on the panel
- Overall height 200 mm, 400 mm, 600 mm or 900 mm
- For height adjustment of the panel front
- Can be selected for panels without low-voltage compartment.

Low-voltage compartment (example 500 × 600 mm)



Open low-voltage compartment with built-in equipment (option)

Low-voltage niche

Low-voltage niche of a billing metering panel type M, open cover

1 Low-voltage niche

2 Built-in equipment (option)

Dimensions

Room planning

Switchgear installation

Wall-standing arrangement
– 1 row
– 2 rows (for face-to-face arrangement)

Option: Free-standing arrangement.

Pressure relief

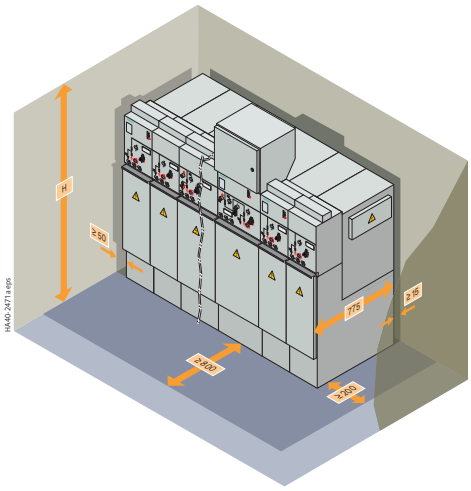
The type of pressure relief selected has an effect on the switchgear depth, and places requirements on the size of the cable basement and/or the room height. In case of pressure relief upwards, the room heights reproduced in the type test are decisive for the internal arc classification according to IEC 62271-200 (see table on page 37).

Switchgear extension or panel replacement

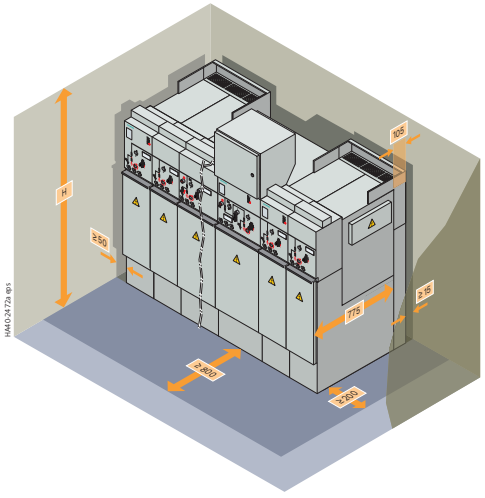
For switchgear extension or for panel replacement, a control aisle of at least 1000 mm is recommended in front of the switchgear. For panel replacement of lined up panels, there must be a wall distance of at least 200 mm on one side.

Control aisle

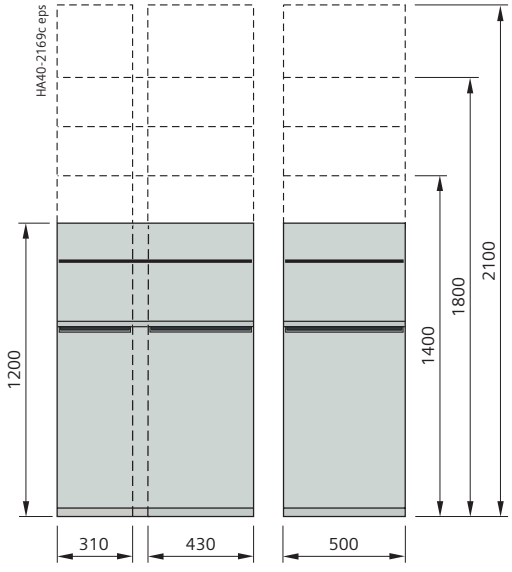
In front of the switchgear, a control aisle of at least 800 mm is required according to IEC 62271-200.



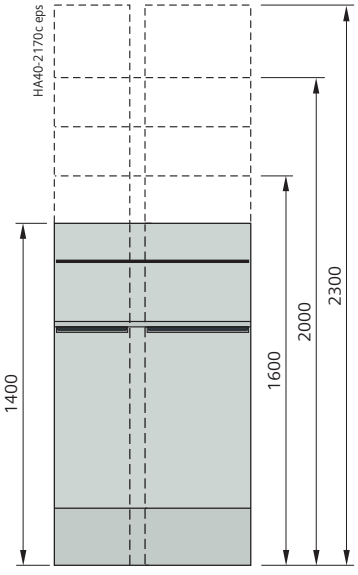
Switchgear without rear pressure relief duct



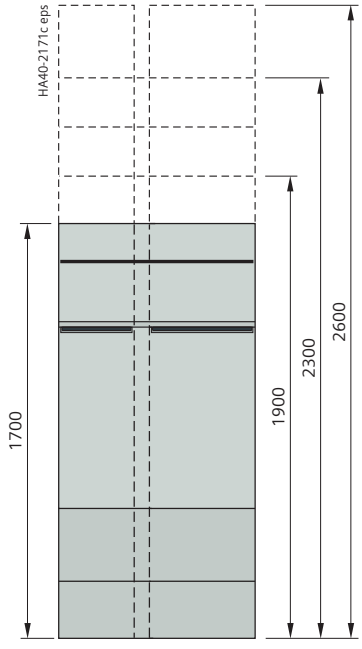
Switchgear with rear pressure relief duct



Switchgear height 1200 mm



1400 mm

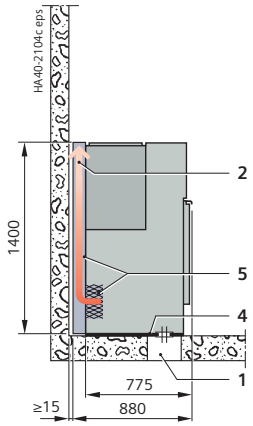


1700 mm

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 mm 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**



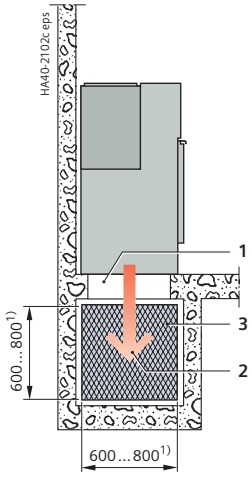
Side view

1 Floor opening
2 Direction of pressure relief
3 Expanded metal (supplied by site)
4 Floor cover (divided plate for comfortable working at the cable connection)
5 Pressure absorber system with pressure relief duct

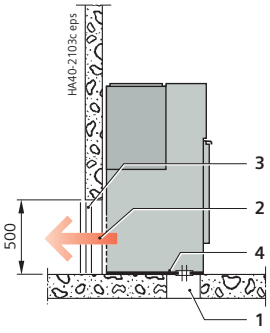
Room heights for switchgear installation with pressure relief duct at the rear (design with or without base frame)

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

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



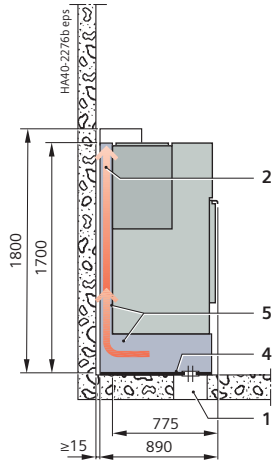
Side view



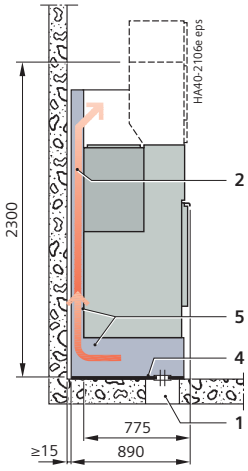
Side view

1) Total opening minimum 0.48 m²

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**



Side view, wall-standing arrangement without metering panel



Side view, free-standing arrangement, also metering panel for wall-standing arrangement

Dimensions

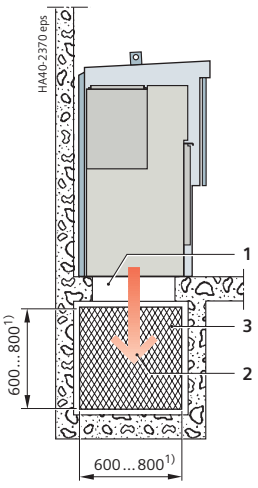
Pressure relief

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 on the right)
- 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.

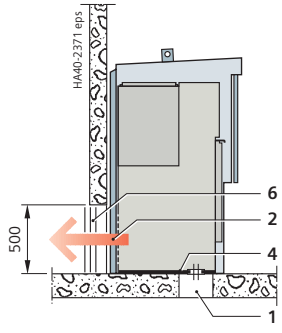
Switchgear installation for outdoor enclosure with pressure relief downwards



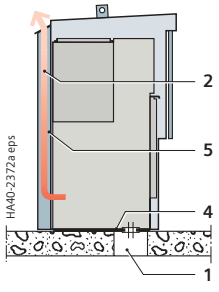
Side view

1 Floor opening
2 Direction of pressure relief
3 Expanded metal (supplied by site)
4 Floor cover (divided plate for comfortable working at the cable connection)
5 Pressure absorber system with pressure relief duct

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



Side view



Side view

Published by
Siemens AG

Smart Infrastructure
Electrification & Automation
Mozartstrasse 31c
91052 Erlangen, Germany

For further information please contact
our Customer Support Center:
Phone: +49 9131 174 30 72
E-mail: support.ea.si@siemens.com
siemens.com/medium-voltage-switchgear
siemens.com/8DJH

Article No. SIEA-C10172-00-7600
VO 2411156 en KG 01.25 0.0

For the U.S. published by
Siemens Industry Inc.

3617 Parkway Lane
Peachtree Corners, GA 30092
United States

Smart Infrastructure combines the real and digital worlds across energy systems, buildings and industries, enhancing the way people live and work and significantly improving efficiency and sustainability.

We work together with customers and partners to create an ecosystem that both intuitively responds to the needs of people and helps customers achieve their business goals.

It helps our customers to thrive, communities to progress and supports sustainable development to protect our planet for the next generation.

siemens.com/smart-infrastructure

Medium-Voltage Switchgear

Solution Partner
Power Distribution
SIEMENS

Status 01/2025