



Catalog  
HA 35.42 ·  
2024

## MEDIUM-VOLTAGE SWITCHGEAR

Fixed-Mounted Circuit-Breaker Switchgear  
**Type NXPLUS C 24 – blue GIS up to 24 kV,**  
Gas-Insulated

[siemens.com/nxplusc24](https://www.siemens.com/nxplusc24)

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# Applications

Typical uses



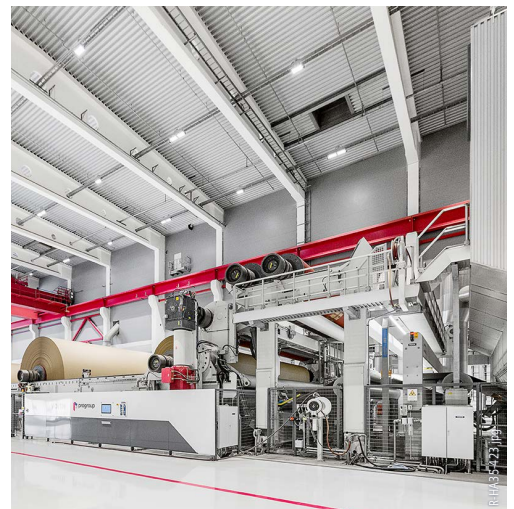
**Application:**  
Public power  
supply system



Example: NXPLUS C switchgear 20 kV (Data Center Germany)



**Application:**  
Industry



MEDIUM-VOLTAGE SWITCHGEAR

# Fixed-Mounted Circuit-Breaker Switchgear Type NXPLUS C 24 – blue GIS up to 24 kV, Gas-Insulated

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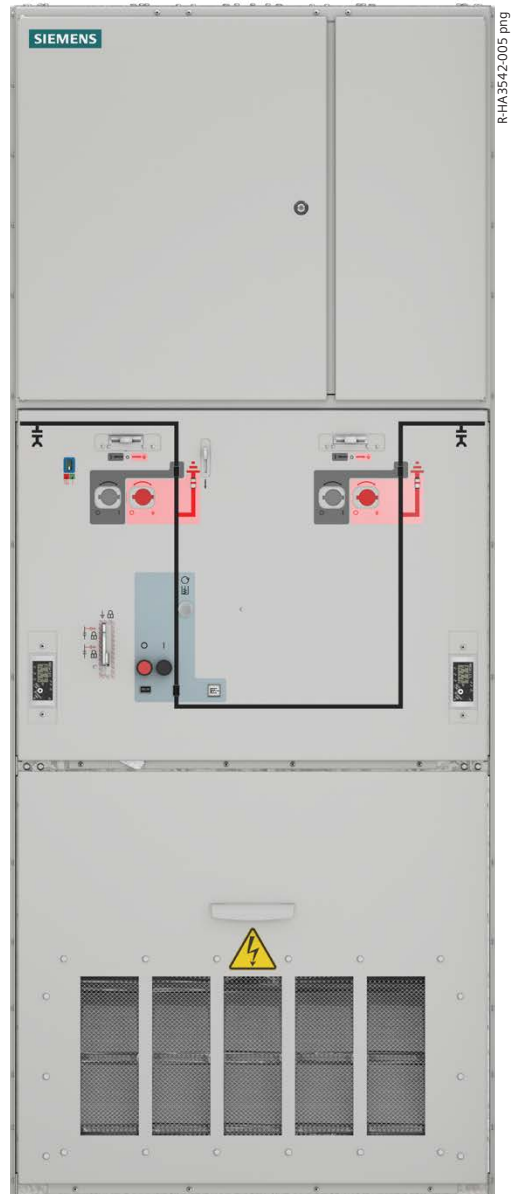
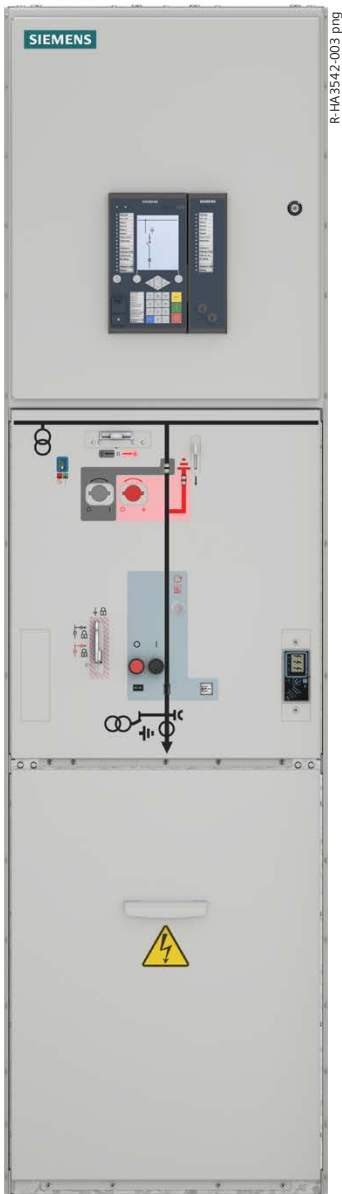
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**27 to 30**

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).

# Applications

Types



Circuit-breaker panel 600 mm

Disconnecter panel 600 mm

Bus sectionalizer 900 mm

## Typical uses

Fixed-mounted circuit-breaker switchgear NXPLUS C 24 is a factory-assembled, type-tested, metal-enclosed, gas-insulated switchgear with metallic partitions<sup>3)</sup> for single-busbar and double-busbar applications and indoor installation.

It is used in transformer and switching substations, e.g., in:

- Power supply companies
- Power stations
- Cement industry
- Automobile industry
- Iron and steel works
- Rolling mills
- Mining industry
- Textile, paper and food industries
- Chemical industry
- Petroleum industry
- Pipeline installations
- Offshore installations
- Electrochemical plants
- Petrochemical plants
- Shipbuilding industry
- Diesel power plants
- Emergency power supply installations
- Lignite open-cast mines
- Traction power supply systems.

## Ratings

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 <sup>1)</sup>	28 <sup>2)</sup>	36	38	50
Rated lightning impulse voltage	kV	60 <sup>1)</sup>	75 <sup>2)</sup>	95	95	125
Rated peak withstand current	kA	68	68	68	68	68
Rated short-circuit making current	kA	68	68	68	68	68
Rated short-time withstand current 3 s	kA	25	25	25	25	25
Rated short-circuit breaking current	kA	25	25	25	25	25
Rated continuous current of the busbar	A	2500	2500	2500	2500	2500
Rated continuous current of the feeders	A	2000	2000	2000	2000	2000
Width	mm	300 <sup>4)</sup>	300 <sup>4)</sup>	300 <sup>4)</sup>	300 <sup>4)</sup>	300 <sup>4)</sup>
	mm	600	600	600	600	600
	mm	900	900	900	900	900
Depth	mm	1225	1225	1225	1225	1225
Height	mm	2250	2250	2250	2250	2250

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

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

3) Corresponds to "metal-clad" according to former standard IEC 60298

4) Only dummy panel

# 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 NXPLUS C 24 switchgear

- Insensitive to certain aggressive ambient conditions, such as saline air, air humidity, dust and condensation
- Tight to ingress of foreign objects, such as dust, pollution, small animals, humidity
- Independent of the site altitude.

### Compact design

Thanks to the use of an insulation of natural gases (Clean Air), 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 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 NXPLUS C 24 is at least 40 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.

## Safety

### Personal safety

- Safe-to-touch and hermetically sealed primary enclosure
- Cable terminations, busbars and voltage transformers are surrounded by earthed layers
- All high-voltage parts including the cable terminations, busbars and voltage transformers are metal-enclosed
- Capacitive voltage detecting system to verify safe isolation from supply
- Operating mechanisms and auxiliary switches safely accessible outside the primary enclosure (switchgear vessel)
- Due to the system design, operation is only possible with closed switchgear enclosure
- Standard degree of protection IP65 for all high-voltage parts of the primary circuit, IP3XD for the switchgear enclosure according to IEC 60529
- High resistance to internal arcs by logical mechanical interlocks and tested switchgear enclosure
- Panels tested for resistance to internal faults up to 25 kA
- Logical mechanical interlocks prevent maloperation
- Make-proof earthing by means of the vacuum circuit-breaker.

### Security of operation

- Hermetically sealed primary enclosure independent of environmental effects (pollution, humidity and small animals)
- Maintenance-free in an indoor environment (IEC 62271-1)
- Operating mechanisms of switching devices accessible outside the primary enclosure (switchgear vessel)
- Metal-coated and plug-in inductive voltage transformers mounted outside the gas-insulated switchgear vessel
- Current transformers as ring-core current transformers mounted outside the gas-insulated switchgear vessel
- Complete switchgear interlocking system with logical mechanical interlocks
- Welded switchgear vessels, sealed for life
- Minimum fire load
- Type- and routine-tested
- Standardized and manufactured using numerically controlled machines
- Quality assurance in accordance with DIN EN ISO 9001
- More than 500,000 switchgear panels of Siemens in operation worldwide for many years.

### Reliability

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

## General

- 3-pole enclosure of the primary part consisting of a switchgear vessel made of stainless steel
- Insulating gas Clean Air (natural gases)
- Three-position switch as busbar disconnecter and feeder earthing switch
- Make-proof earthing by means of the vacuum circuit-breaker
- Compact dimensions due to gas insulation
- Hermetically tight, welded switchgear vessel made of stainless steel
- 1-pole, solid-insulated, screened busbars, plug-in type
- Cable connection with outside-cone plug-in system, or for connection of solid-insulated bars
- Wall-standing or free-standing arrangement
- Cable connection access from front
- Low-voltage door hinge on the left or right
- Installation and extension of existing switchgear at both ends without gas work and without modification of existing panels
- Option: Flexible pressure relief duct systems.

## Interlocks

- According to IEC 62271-200
- Logical mechanical interlocks prevent maloperation
- Interlocking of three-position disconnecter
  - If the DISCONNECTING function is in CLOSED position, the READY-TO-EARTH function cannot be selected
  - If the READY-TO-EARTH function is in CLOSED position, the DISCONNECTING function cannot be selected
- Three-position disconnecter can only be operated with circuit-breaker in OPEN position
- Circuit-breaker can only be operated with three-position disconnecter in end position and operating lever removed
- Locking device for “feeder earthed”
- Locking device for three-position disconnecter  
The following interlocks can be fulfilled by placing the padlock accordingly:
  - Padlock on the left: Three-position disconnecter DISCONNECTING function cannot be operated, three-position disconnecter READY-TO-EARTH function can be operated
  - Padlock in the center: Control gate blocked, no switching operations possible
  - Padlock on the right: Three-position disconnecter DISCONNECTING function can be operated, three-position disconnecter READY-TO-EARTH function cannot be operated

- Option: Cable compartment cover interlocked against three-position disconnecter (circuit-breaker panel)
- Option: Closing lockout for mechanical CLOSING of the circuit-breaker
- Option: Closing lockout for three-position disconnecter DISCONNECTING function when the cable compartment cover / instrument transformer compartment cover is removed (circuit-breaker panel)
- Option: Electromagnetic interlocks (-Y1, -Y5, -Y8E, -Y16, -Y32)
- Option: Mechanical pushbuttons of the circuit-breaker can be padlocked
- Option: Locking device for “feeder”.

## Modular design

- Panel replacement possible without gas work
- Low-voltage compartment removable, plug-in bus wires.

## Instrument transformers

- Current transformers not subjected to dielectric stress
- Easy replacement of current transformers designed as ring-core transformers
- Metal-coated, plug-in and disconnectable voltage transformers.

## 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.

## Standards (see page 28)

# 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 40 years. 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.

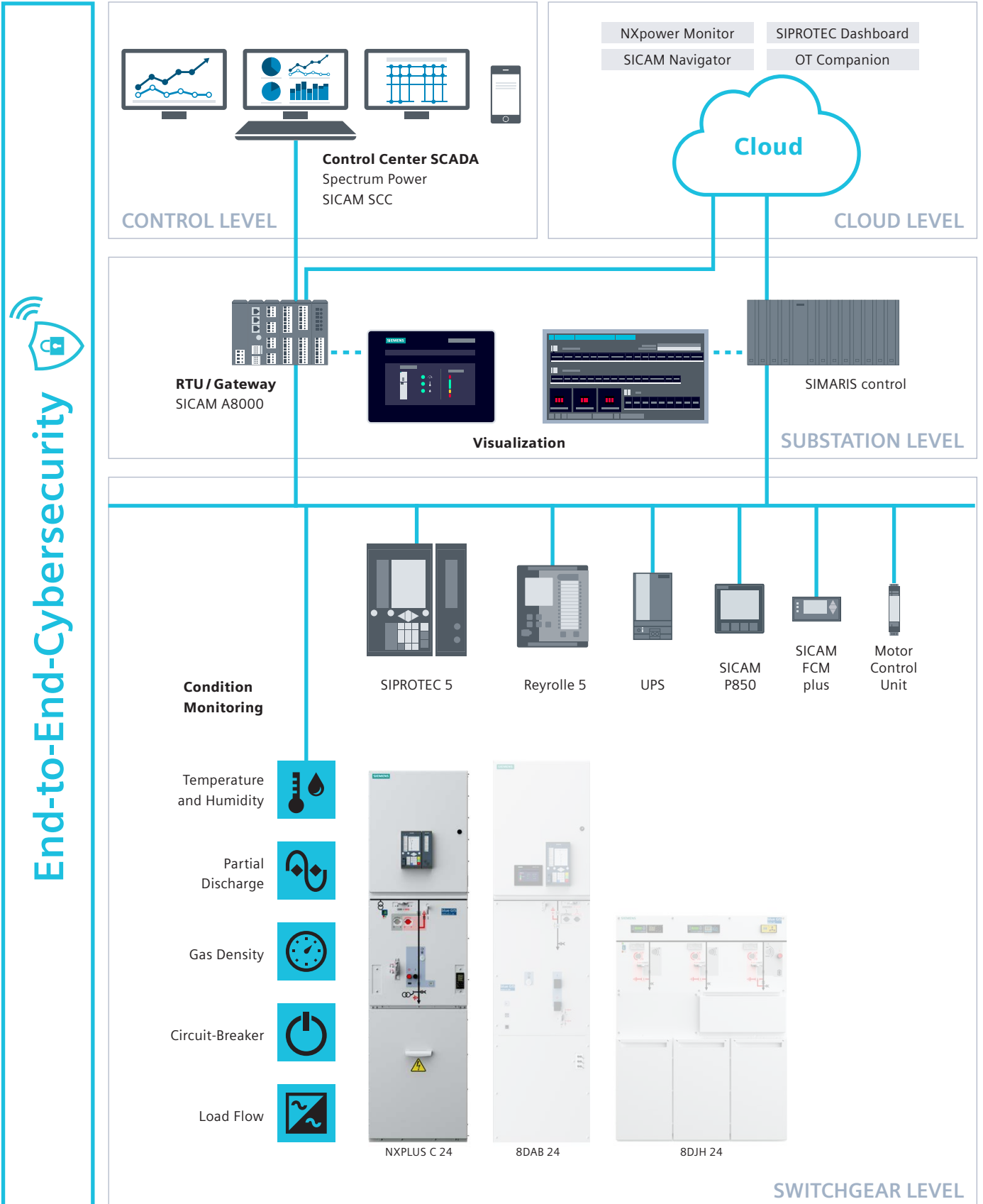
### Load flow monitoring

Load flow monitoring provides the basis for the relation between the electrical utilization and other defined and monitored status values. Knowing the actual utilization, for example, it is possible to determine how the temperature characteristic will develop with increasing electrical utilization, and if this leads to a possible recommended action.



# Digitalization, condition monitoring

Digitalization solutions from a single source



# Sustainability

## Our contribution to a sustainable and cleaner planet

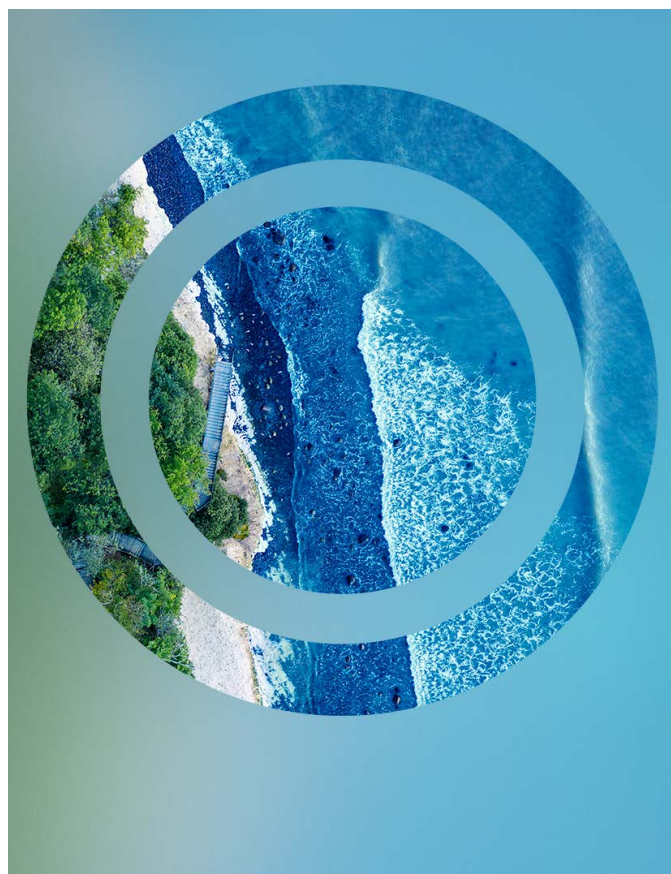
At Siemens, sustainability is not just a commitment, but a core strategy deeply ingrained in our operations. Our DEGREE framework, representing **Decarbonization, Ethics, Governance, Resource Efficiency, Equity, and Employability**, guides our journey towards a sustainable future. It constitutes a 360-degree 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) systems have played a key role over the last 40 years for a reliable and safe power distribution. The new Siemens blue GIS portfolio reflects our commitment to 100% sustainable innovation, which integrates both Clean Air as an insulating medium and an eco-efficient design that reduces its CO<sub>2</sub> footprint throughout the entire life cycle. With a wide range of products covering all the needs, our blue GIS will be the core of a sustainable energy transition. The following innovative solutions offer a remarkable CO<sub>2</sub> footprint reduction:

**F-gas-free insulation:** Clean Air consists of natural-origin gases with a GWP < 1, which means it has virtually no negative impact on the environment or climate change during the entire life cycle. It can even be released into the atmosphere after reaching its end of life.

**Space efficiency:** Like the traditional GIS design, Siemens blue GIS also offer very compact solutions that save valuable space and additionally decrease the environmental impact of electrical infrastructure installations.



**Material efficiency:** blue GIS products are designed to have a very low CO<sub>2</sub> 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, blue GIS have an expected service life of 40 years, thus extending the re-investment cycle and further diminishing the CO<sub>2</sub> footprint.

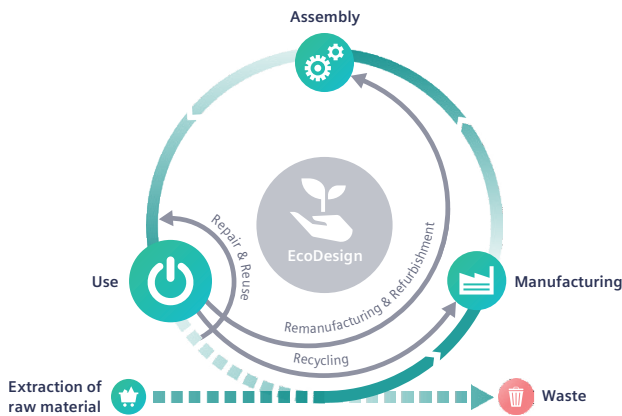
**Maintenance-free design:** No additional maintenance is necessary, and the CO<sub>2</sub> footprint can be reduced further by avoiding site visits during the operational phase of the switchgear.

**Sustainable services:** The CO<sub>2</sub> footprint can be diminished thanks to services from predictive maintenance to condition monitoring, remote FAT, CO<sub>2</sub> 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.

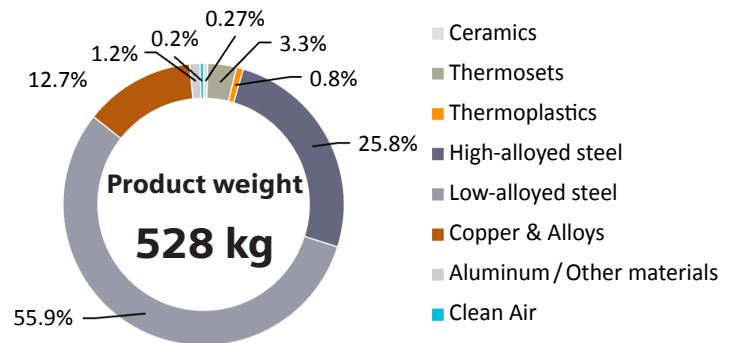
**Robust Eco Design:** Our blue GIS panels are designed as a part of the Eco Efficiency @ Siemens program, where the environmental impacts to be expected in each of the product's life cycle phases are addressed right from the design phase. The switchgear is designed not only to minimize its CO<sub>2</sub> footprint, but also to prioritize resource efficiency and circular economy.



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.

Product	NXPLUS C 24 – primary distribution blue GIS
Technical data	$U_r = 24 \text{ kV}$ , $I_k = 25 \text{ kA}$ , $I_r = 1250 \text{ A}$
Product description	NXPLUS C 24 is an F-gas-free single-busbar gas-insulated circuit-breaker switchgear with Clean Air insulation for primary distribution grids, and available as circuit-breaker, bus sectionalizer and disconnecter panels
Functional unit	Reference NXPLUS C 24 – circuit-breaker panel – blue GIS, primary part, type-tested according to IEC 62271-200. Maintenance-free, operating 24 h, 365 days/a with an expected service life of 40 years

## Material composition



## Resource efficiency

The end-of-life phase of an NXPLUS C 24 blue GIS 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 95.5% mainly thanks to high metal content
- An energy recoverability of up to 4.1% from plastic materials
- A minimum disposal rate of 0.4%

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

Electrical data, filling pressure, temperature for single-busbar switchgear

Common electrical data, filling pressure and temperature							
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 <sup>1)</sup>	28 <sup>2)</sup>	36	38	50
	– across the isolating distance	kV	23 <sup>1)</sup>	32 <sup>2)</sup>	40	45	60
	Rated lightning impulse withstand voltage $U_p$						
	– phase-to-phase, phase-to-earth, open contact gap	kV	60 <sup>1)</sup>	75 <sup>2)</sup>	95	95	125
	– across the isolating distance	kV	70 <sup>1)</sup>	85 <sup>2)</sup>	110	110	145
Rated frequency $f_r$		Hz	50/60	50/60	50/60	50/60	50/60
Rated continuous current <sup>3)</sup> $I_r$	for the busbar	up to A	2500	2500	2500	2500	2500
Rated filling level (absolute) $p_{re}$	for gas-insulated switchgear vessel	kPa	190	190	190	190	190
Minimum functional level (absolute) $p_{me}$	for gas-insulated switchgear vessel	kPa	180	180	180	180	180
Gas leakage rate		%	< 0.1 per year				→
Ambient air temperature		°C	–5 to +55 <sup>4)</sup>				→

Data of the switchgear panels							
Circuit-breaker panel 630 A, 800 A, 1000 A, 1250 A, 1600 A, 2000 A							
Bus sectionalizer 1000 A, 1250 A							
Rated continuous current $I_r$	at an ambient air temperature of 40°C	A	630	630	630	630	630
		A	800	800	800	800	800
		A	1000	1000	1000	1000	1000
		A	1250	1250	1250	1250	1250
		A	1600	1600	1600	1600	1600
		A	2000	2000	2000	2000	2000
Rated short-time withstand current $I_k$	for switchgear with $t_k = 1$ s	kA	20 25	20 25	20 25	20 25	20 25
	for switchgear with $t_k = 3$ s	kA	20 25	20 25	20 25	20 25	20 25
Rated peak withstand current $I_p$	50 Hz	kA	54 68	54 68	54 68	54 68	54 68
	60 Hz	kA	54 68	54 68	54 68	54 68	54 68
Rated short-circuit making current $I_{ma}$	50 Hz	kA	54 68	54 68	54 68	54 68	54 68
	60 Hz	kA	54 68	54 68	54 68	54 68	54 68
Rated short-circuit breaking current $I_{sc}$		kA	20 25	20 25	20 25	20 25	20 25
Electrical endurance of vacuum circuit-breakers	at rated continuous current		10,000 operating cycles				→
	at rated short-circuit breaking current		50 breaking operations				→
Endurance classes according to IEC 62271-100			M2, E2, C2, S2				→
Endurance classes according to IEC 62271-102		DISCONNECTING	M1	M1	M1	M1	M1
		EARTHING	M0, E0	M0, E0	M0, E0	M0, E0	M0, E0

The EARTHING function with endurance class E2 is reached by closing the circuit-breaker in combination with the earthing switch (endurance class E0).

Disconnecter panel 630 A, 800 A, 1000 A, 1250 A, 1600 A, 2000 A							
Rated voltage $U_r$		kV	7.2	12	15	17.5	24
Rated continuous current <sup>3)</sup> $I_r$	at an ambient air temperature of 40°C	A	630	630	630	630	630
		A	800	800	800	800	800
		A	1000	1000	1000	1000	1000
		A	1250	1250	1250	1250	1250
		A	1600	1600	1600	1600	1600
		A	2000	2000	2000	2000	2000
Rated short-time withstand current $I_k$	for switchgear with $t_k = 1$ s	kA	20 25	20 25	20 25	20 25	20 25
	for switchgear with $t_k = 3$ s	kA	20 25	20 25	20 25	20 25	20 25
Rated peak withstand current $I_p$	50 Hz	kA	54 68	54 68	54 68	54 68	54 68
	60 Hz	kA	54 68	54 68	54 68	54 68	54 68
Endurance classes according to IEC 62271-102		DISCONNECTING	M1	M1	M1	M1	M1
		EARTHING	M0, E0	M0, E0	M0, E0	M0, E0	M0, E0

- 1) Higher values of the rated short-duration power-frequency withstand voltage available with:  
 – 32 kV for phase-to-phase, phase-to-earth and open contact gap, as well as  
 – 37 kV across the isolating distance  
 Higher values of the rated lightning impulse withstand voltage:  
 – 60 kV for phase-to-phase, phase-to-earth and open contact gap, as well as  
 – 70 kV across the isolating distance
- 2) Higher values of the rated short-duration power-frequency withstand voltage available with:  
 – 42 kV for phase-to-phase, phase-to-earth and open contact gap, as well as  
 – 48 kV across the isolating distance  
 Higher values of the rated lightning impulse withstand voltage:  
 – 95 kV for phase-to-phase, phase-to-earth and open contact gap, as well as  
 – 110 kV across the isolating distance

- 3) 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) 2500 A with natural ventilation
- 4) Optional ambient air temperature –25°C to +55°C (secondary devices (e.g. protection devices, meters, measuring transducers, etc.) must be suitable for the given ambient air temperature)

## Switchgear installation

- For single-busbar applications:
  - Wall-standing arrangement or
  - Free-standing arrangement
  - Face-to-face arrangement accordingly.

## Room dimensions

See dimension drawings on the following page.

## Room height

- $\geq 2750$  mm  
NXPLUS C 24, all technical data, all types of arrangement, with / without horizontal pressure relief duct
- $\geq 2400$  mm  
NXPLUS C 24, wall-standing and free-standing arrangement with rear / central pressure relief duct, low-voltage compartment 761 mm, without horizontal pressure relief duct.

## Door dimensions

Recommended as a minimum for the door dimensions:  
 Door height:  $\geq 2500$  mm  
 Door width:  $\geq 900$  mm (for panel widths of 600 mm)  
 $\geq 1200$  mm (for panel widths of 900 mm).

## Switchgear fixing

- For floor openings and fixing points of the switchgear, see pages 17 to 20
- Foundations:
  - Steel girder construction
  - Steel-reinforced concrete with foundation rails, welded or bolted on.

## Panel dimensions

See pages 17 to 20.

## Weights

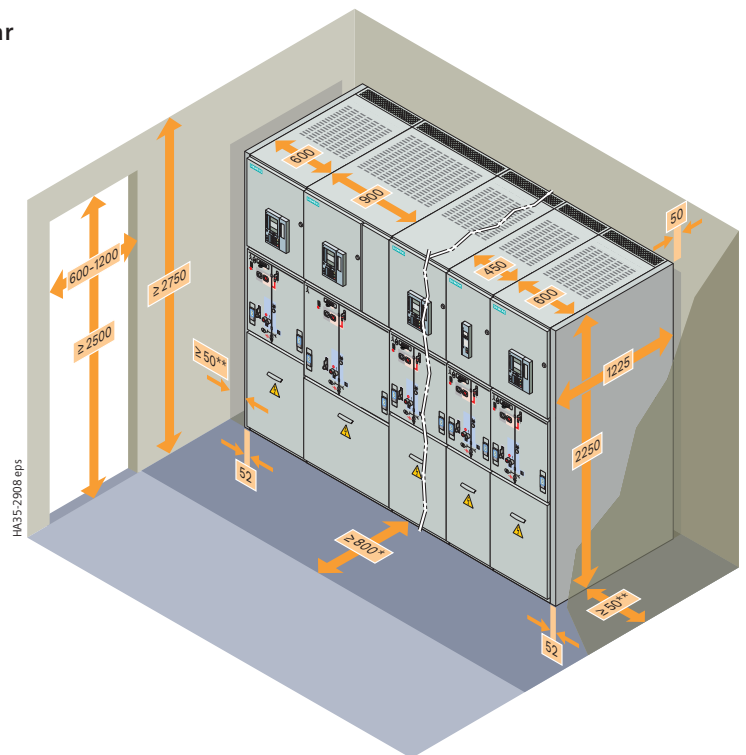
Single-busbar panels

- Panels for  $\leq 1250$  A: Approx. 800 kg.

## Switchgear installation

### Wall-standing arrangement for single-busbar switchgear

All panels with cable connection at the front and pressure relief duct at the rear



- \* Control aisle depending on national specifications; for extension / panel replacement:
  - $\geq 1400$  mm recommended (600 mm panels)
  - $\geq 1600$  mm recommended (900 mm panels)
- \*\* Lateral wall distances on the left or on the right; for installation and maintenance (according to IEC 61936-1):  $\geq 500$  mm recommendable

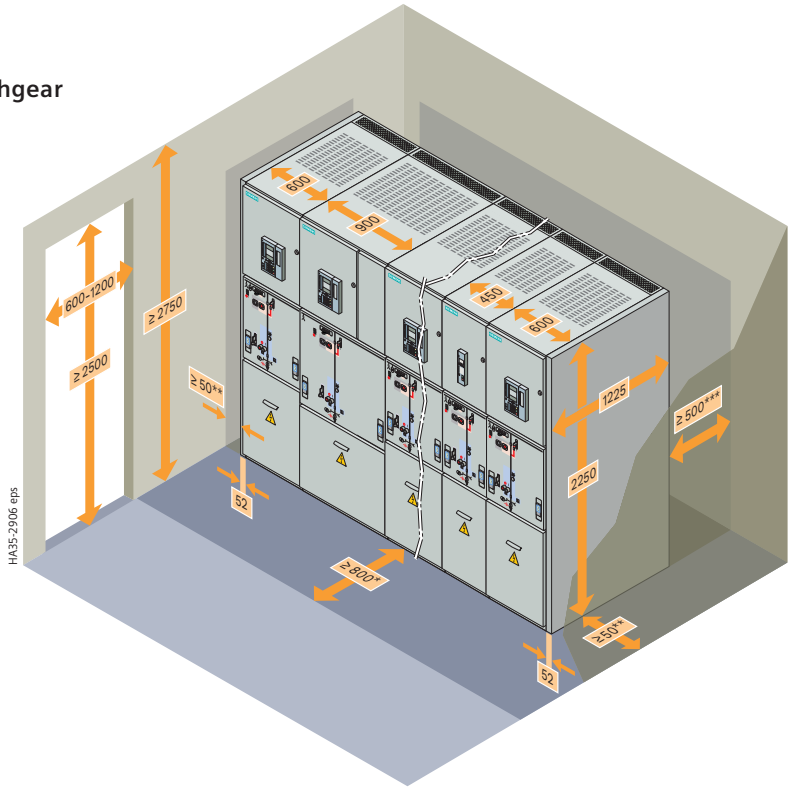
# Technical data

## Room planning

### Switchgear installation

#### Free-standing arrangement for single-busbar switchgear

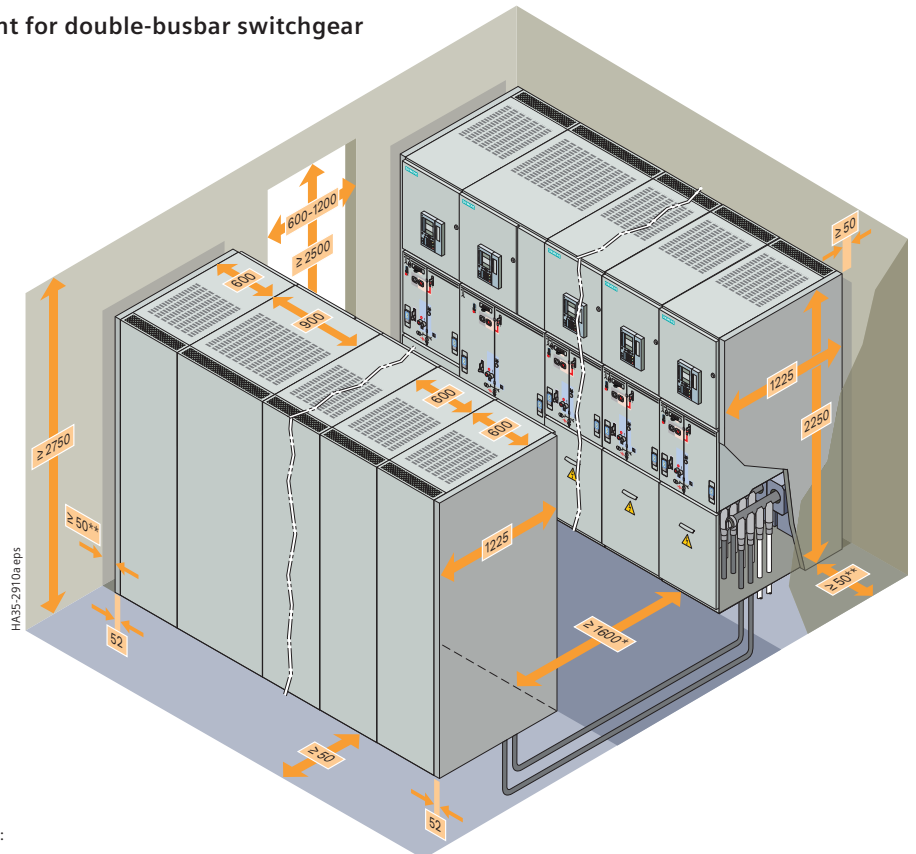
All panels with cable connection at the front and pressure relief duct at the rear



- \* Control aisle depending on national specifications; for extension/panel replacement:
  - ≥ 1400 mm recommended (600 mm panels)
  - ≥ 1600 mm recommended (900 mm panels)
- \*\* Lateral wall distances on the left or on the right; for installation and maintenance (according to IEC 61936-1):
  - ≥ 500 mm recommendable
- \*\*\* ≥ 500 mm aisle for installation and maintenance (according to IEC 61936-1)
  - ≥ 800 mm aisle for operation (according to IEC 62271-200)

### Switchgear installation

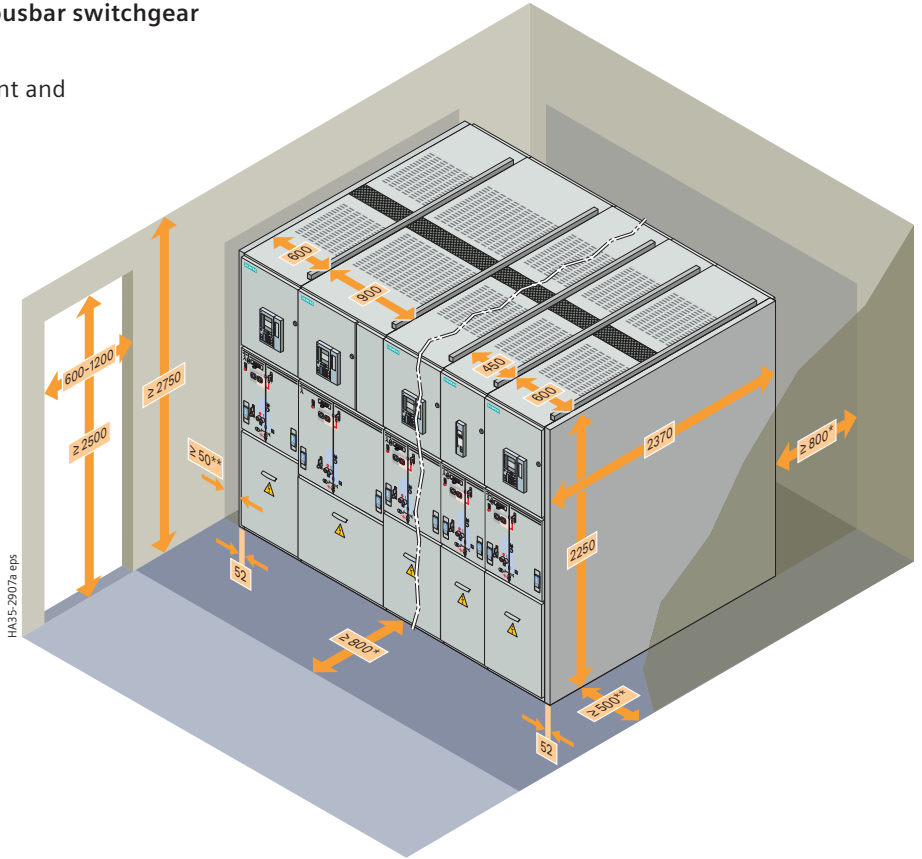
#### Free-standing / wall-standing arrangement for double-busbar switchgear



- \* Control aisle depending on national specifications; for extension/panel replacement:
  - ≥ 1400 mm recommended (600 mm panels)
  - ≥ 1600 mm recommended (900 mm panels)
- \*\* Lateral wall distances on the left or on the right; for installation and maintenance (according to IEC 61936-1):
  - ≥ 500 mm recommendable

**Free-standing arrangement for double-busbar switchgear**

All panels with cable connection at the front and central pressure relief duct



- \* Control aisle depending on national specifications; for extension/panel replacement:  
 ≥ 1400 mm recommended (450 mm, 600 mm panels)  
 ≥ 1600 mm recommended (900 mm panels)
- \*\* Lateral wall distance ≥ 50 mm optionally possible on the left or on the right:  
 ≥ 500 mm for installation and maintenance (according to IEC 61936-1)  
 ≥ 800 mm for operation (according to IEC 62271-200)  
 ≥ 800 mm for panel replacement (450 mm, 600 mm panels)  
 ≥ 1100 mm for panel replacement (900 mm panels)

**Transport**

NXPLUS C 24 switchgear is delivered in form of individual panels. Please observe the following:

- Transport facilities on site
- Transport dimensions and transport weights
- Size of door openings in building.

**Packing**

Means of transport: Rail and truck

- Panels on pallets
- Open packing with PE protective foil.

Means of transport: Ship and airplane

- Panels on pallets
- In closed crates (cardboard) with sealed upper and lower PE protective foil
- With desiccant bags
- With sealed wooden base
- Max. storage time: 6 months.

**Dimensions, weights**

Transport	Panel spacing mm	Transport dimensions			Transport weight	
		Width mm	Height mm	Depth mm	With packing kg	Without packing kg
<b>Single busbar</b>						
Truck or rail	1 × 600	1100	2460	1450	900	800
	1 × 900	1100	2460	1450	1500	1400
Ship or airplane	1 × 600	1130	2550	1450	900	800
	1 × 900	1130	2550	1450	1500	1400

# Technical data

## Classification

### Classification of NXPLUS C 24 switchgear according to IEC 62271-200

Design and construction		
Partition class		PM (metal partition) <sup>1)</sup>
Loss of service continuity category		
Single-busbar panels with connection compartment	Circuit-breaker panel	LSC 2
	Disconnecter panel	
Panels without connection compartment	Bus sectionalizer, single-panel	No LSC assigned, as no connection compartment available. <sup>5)</sup> <b>Note:</b> The single-panel bus sectionalizer (incl. both busbar sections) can remain in operation if the lower compartment is opened.
	Bus sectionalizer, two-panel	No LSC assigned, as no connection compartment available. <sup>5)</sup> <b>Note:</b> If the longitudinal panel interconnection is earthed, both busbar sections can remain in operation if the compartment of the longitudinal panel interconnection is opened.
	Metering panel	No LSC assigned, as no connection compartment available. <sup>5)</sup> <b>Note:</b> The busbar of the switchgear can remain in operation if the voltage transformer compartment is opened.
Accessibility to compartments <sup>6)</sup> (enclosure)		
Busbar compartment		Tool-based
Switching-device compartment		Non-accessible
Instrument transformer compartment / transformer compartment		Tool-based
Fuse compartment		Interlock-controlled and tool-based
Low-voltage compartment <sup>6)</sup>		Tool-based
Cable compartment		Tool-based
Internal arc classification		
Designation of the internal arc classification IAC		7.2 kV, 12 kV, 15 kV, 17.5 kV, 24 kV
IAC class	for wall-standing arrangement	IAC A FL 25 kA, 1 s <sup>2)</sup> <sup>3)</sup>
	for free-standing arrangement	IAC A FLR 25 kA, 1 s <sup>2)</sup> <sup>3)</sup>
Accessibility type A		Switchgear in closed electrical service location, access "for authorized personnel only" according to IEC 62271-200
	– F	Front
	– L	Lateral
	– R	Rear (for free-standing arrangement)
Arc test current $I_a$		25 kA
Test duration		1 s
Test arrangement		According to IEC 62271-200 Annex A: Minimum wall distance 800 mm (for accessible sides)

1) Corresponds to "metal-clad" according to former standard IEC 60298

2) Metering panel: Voltage transformer compartment fuse-protected

3) Valid for normal operating conditions, not for normal use <sup>4)</sup>

4) Normal operating conditions: At least one part of the panel is live, and all doors and covers are closed and locked

Normal use: Use of the switchgear as described in the operating instructions

5) According to standard IEC 62271-200

6) The low-voltage compartment and the operating mechanism compartment (operating mechanisms of the switching devices) are not high-voltage compartments according to the IEC 62271-200 standard.



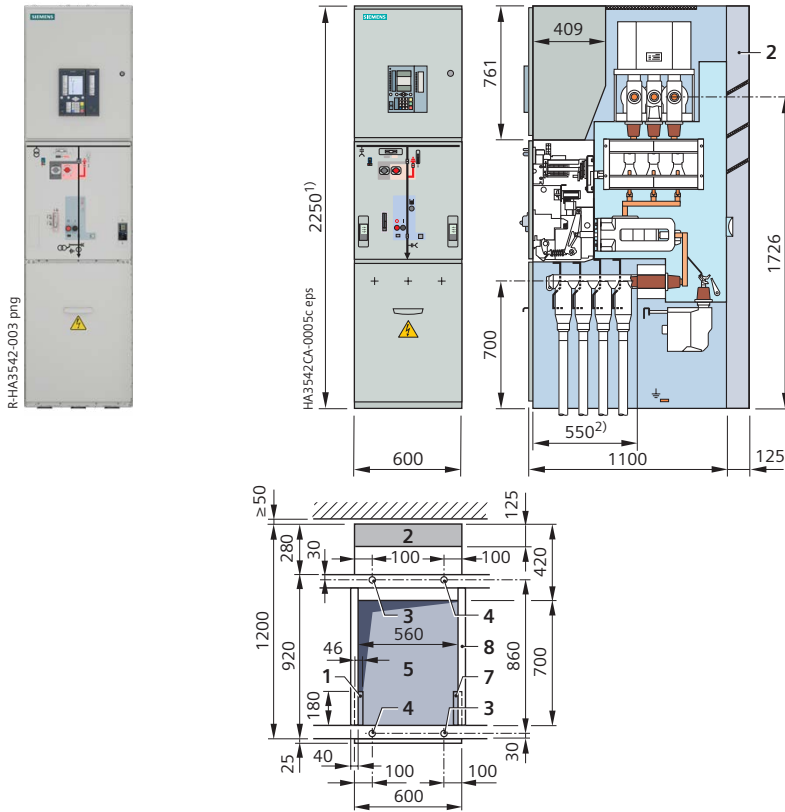
# Panel dimensions

Circuit-breaker panel, single busbar

24 kV

Circuit-breaker panel 630 A, 800 A, 1000 A, 1250 A

600 mm



### Legend for pages 17 to 20:

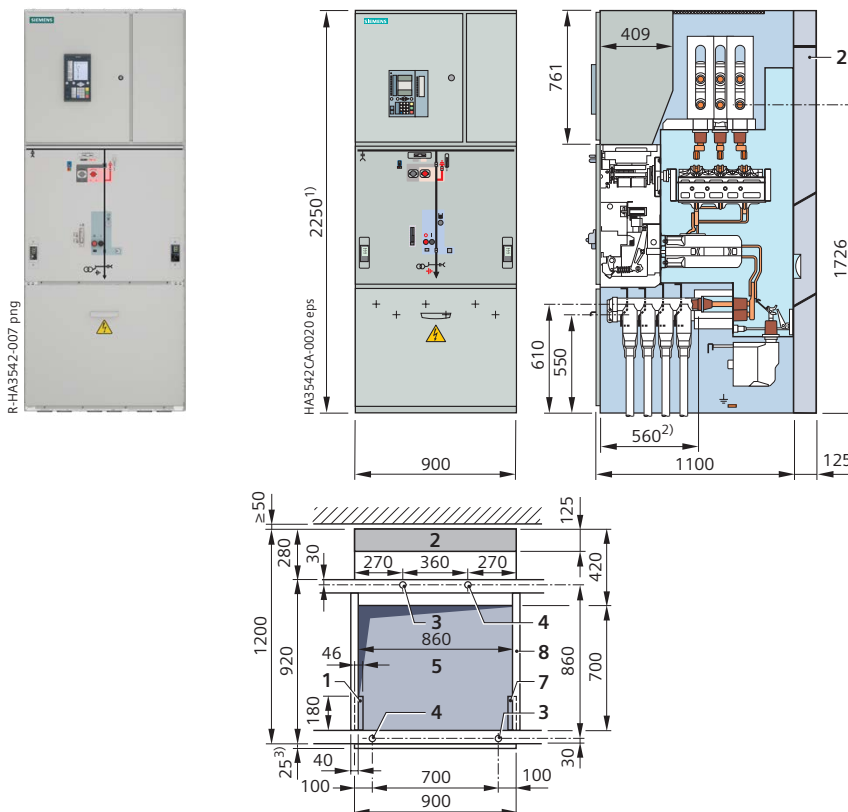
- 1 Left-side floor opening for control cables
- 2 Pressure relief duct
- 3 Fixing hole for M8 / M10
- 4 Fixing hole for M8 / M10 (only for resistance against shock, vibration, earthquakes)
- 5 Floor opening for high-voltage cables
- 7 Right-side floor opening for control cables (only required for zero-sequence current transformers in the cable basement)
- 8 Cross member (necessary for panel replacement)

1) 2650 mm for higher low-voltage compartment  
2) 698 mm when using SIBushing

24 kV

Circuit-breaker panel 1600 A, 2000 A

900 mm



### Legend see above

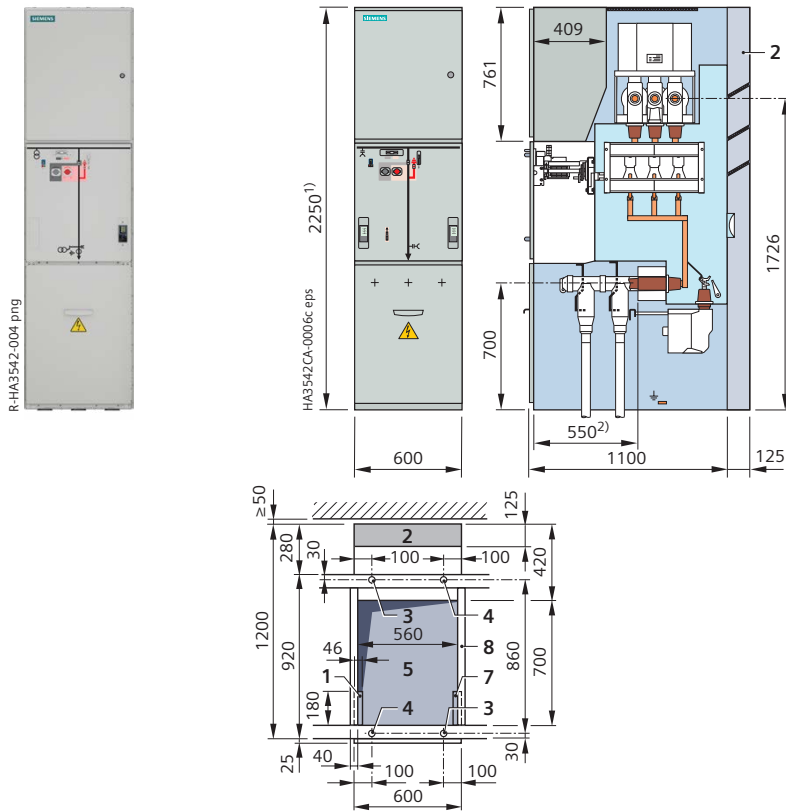
1) 2650 mm for higher low-voltage compartment  
2) 708 mm when using SIBushing

# Panel dimensions

Disconnecter panel, single busbar

## 24 kV Disconnecter panel 630 A, 800 A, 1000 A, 1250 A

600 mm

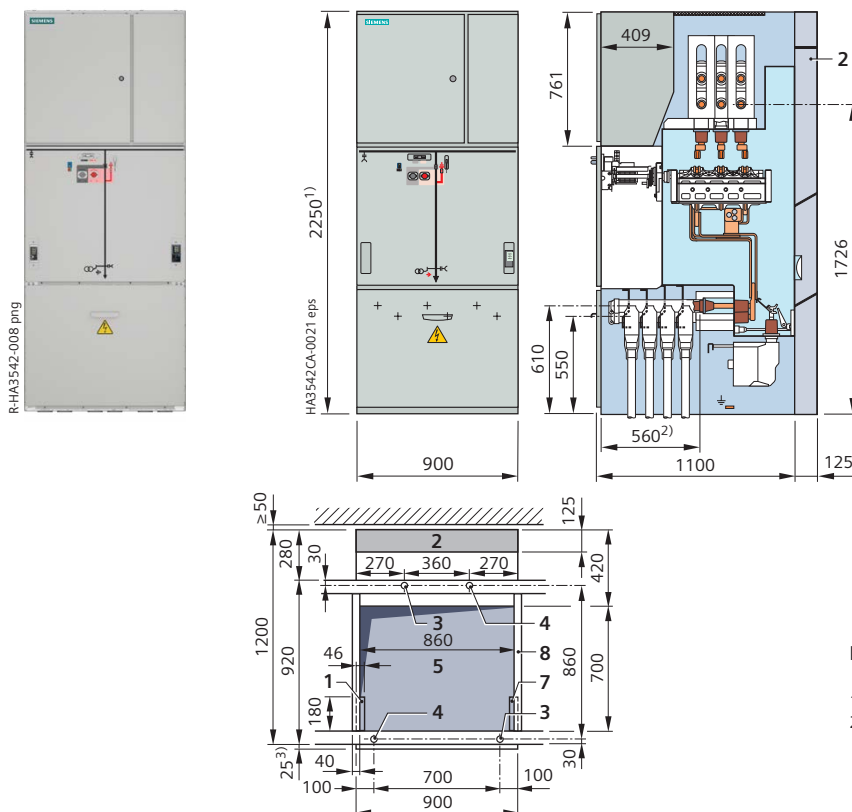


Legend see page 17

- 1) 2650 mm for higher low-voltage compartment
- 2) 698 mm when using SIBushing

## 24 kV Disconnecter panel 1600 A, 2000 A

900 mm



Legend see page 17

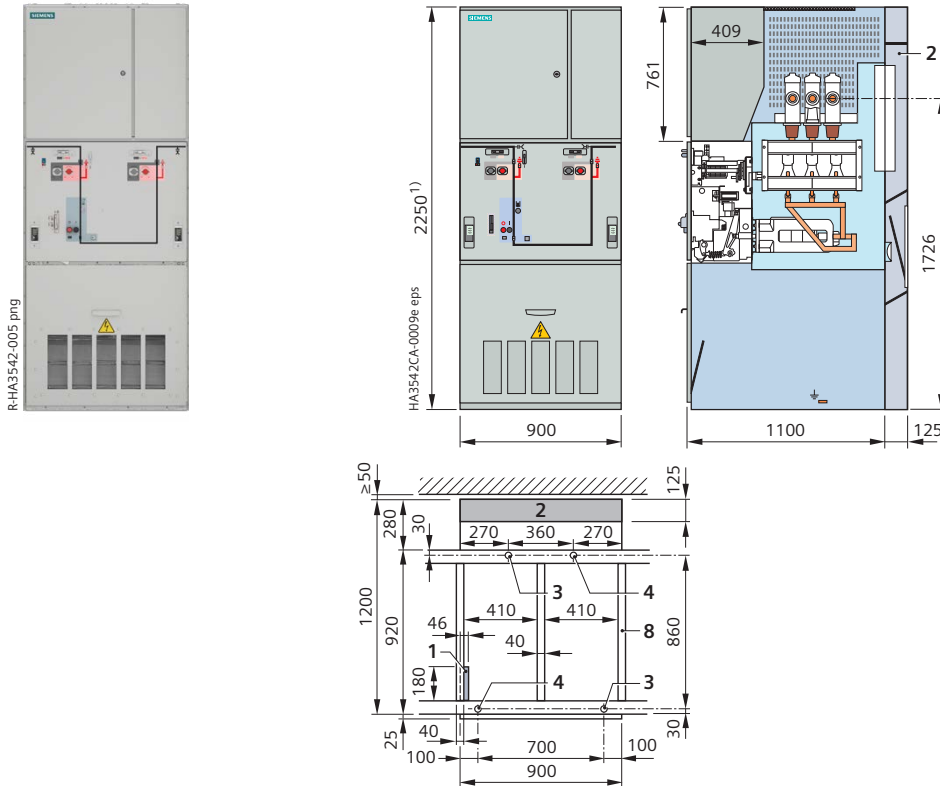
- 1) 2650 mm for higher low-voltage compartment
- 2) 708 mm when using SIBushing

# Panel dimensions

Bus sectionalizer, single busbar

**24 kV** Bus sectionalizer 1000 A, 1250 A

**900 mm**

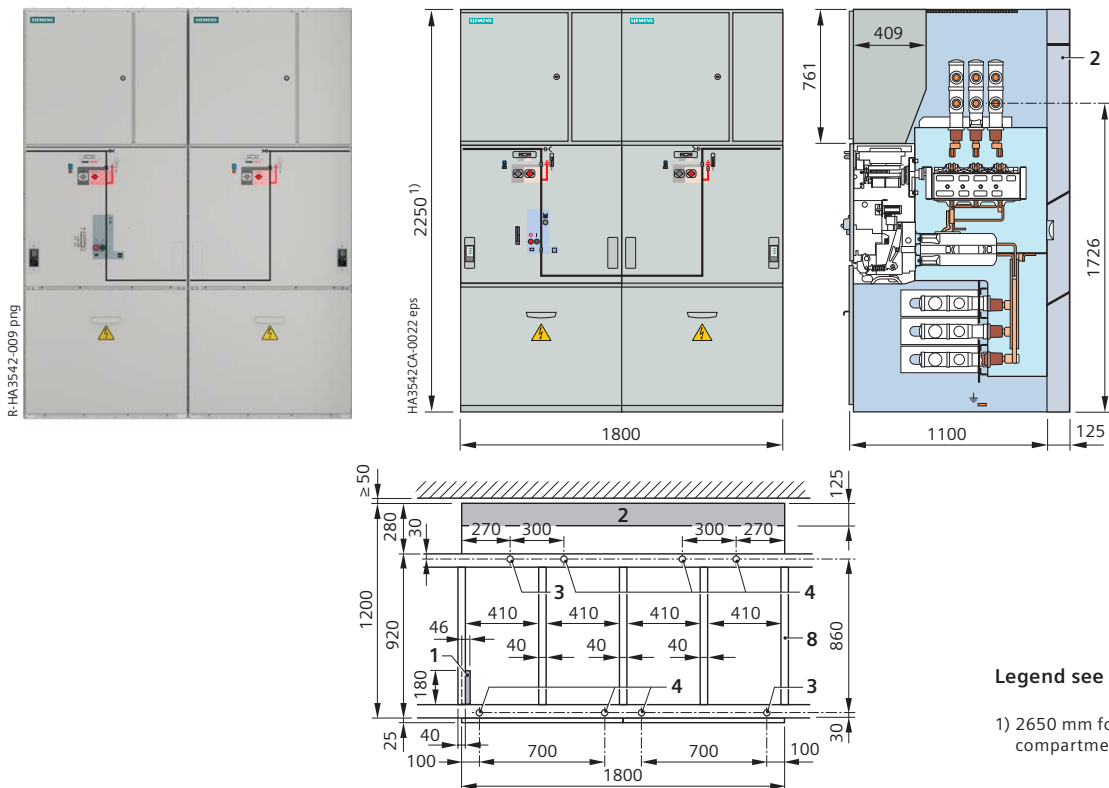


Legend see page 17

1) 2650 mm for higher low-voltage compartment

**24 kV** Bus sectionalizer 1600 A, 2000 A

**2 x 900 mm**



Legend see page 17

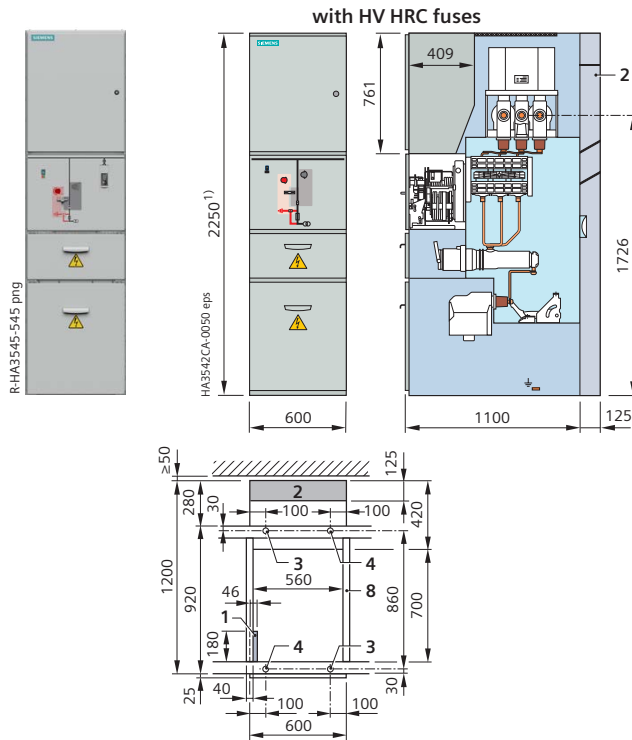
1) 2650 mm for higher low-voltage compartment

# Panel dimensions

Metering panel, dummy panel, single busbar

## 24 kV Metering panel

600 mm

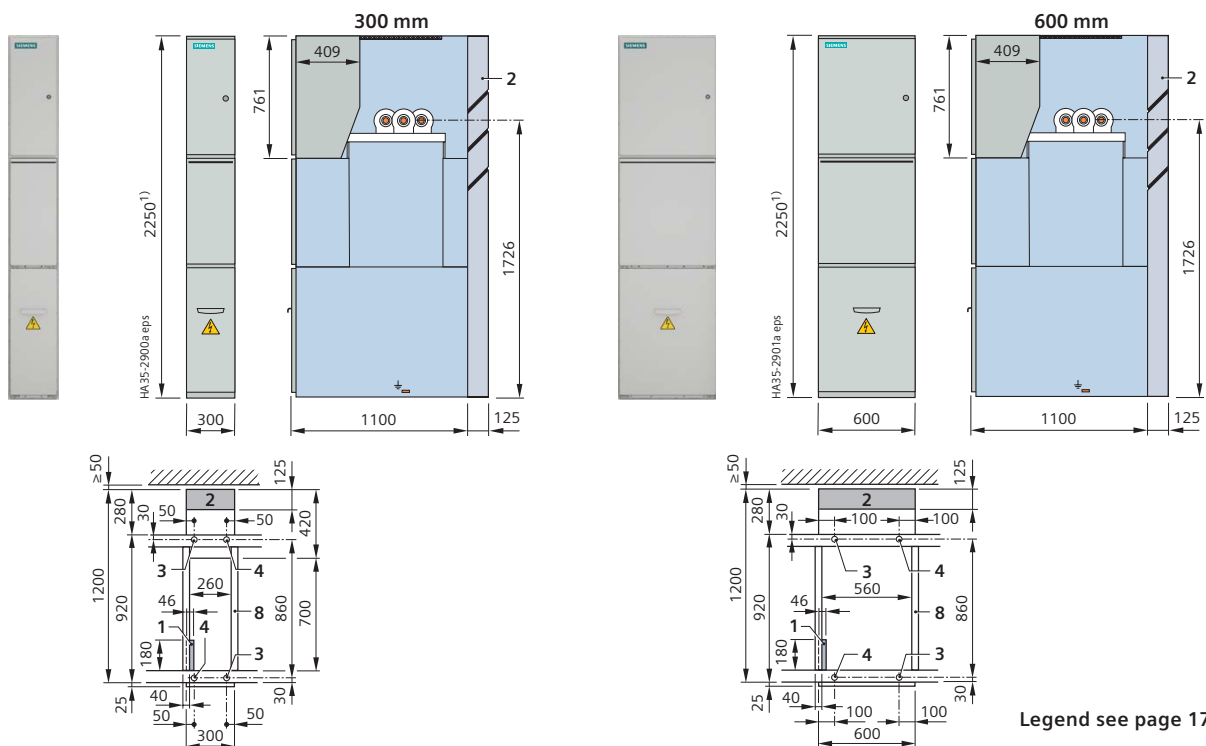


Legend see page 17

1) 2650 mm for higher low-voltage compartment

## 24 kV Dummy panel

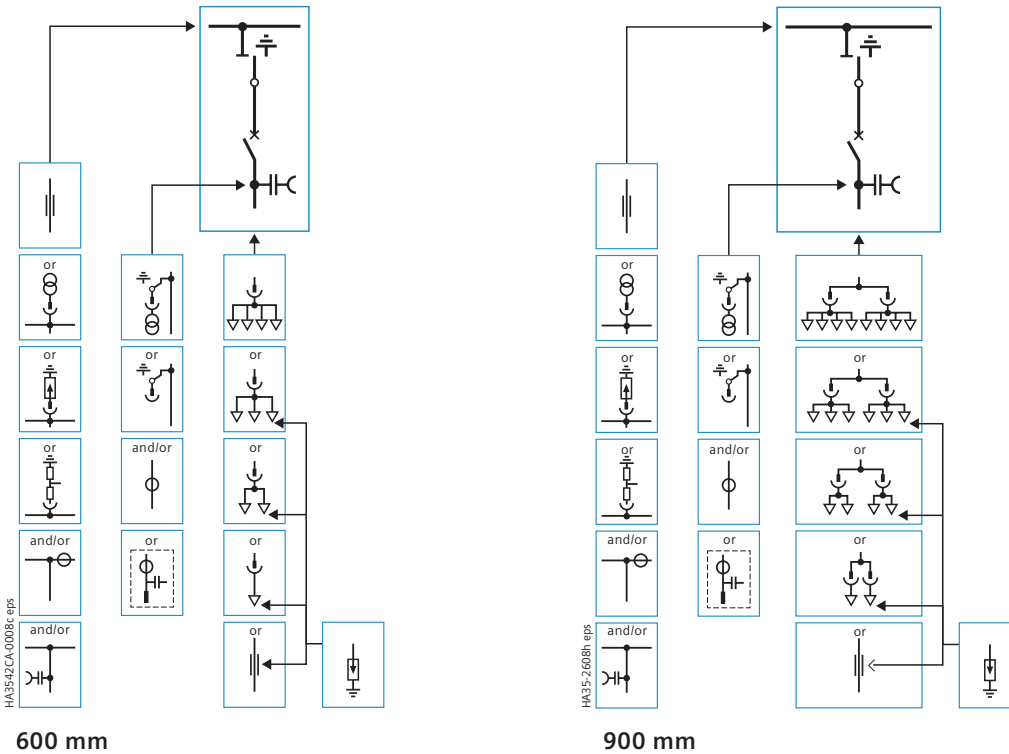
300 mm, 600 mm



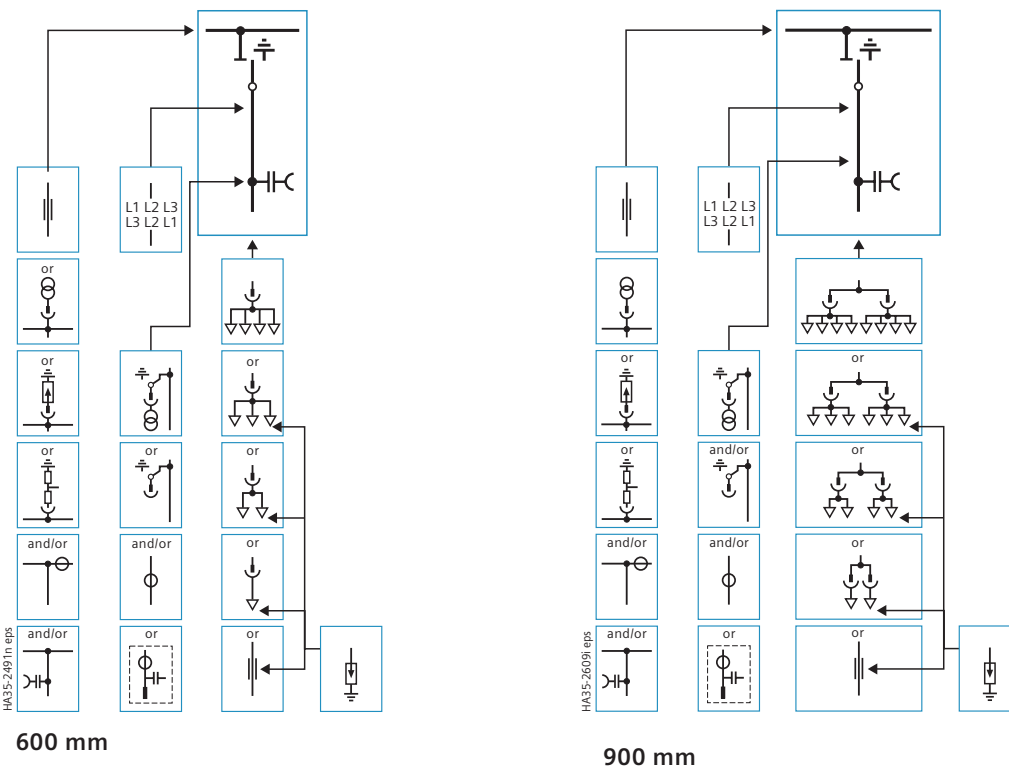
Legend see page 17














1) 2650 mm for higher low-voltage compartment

## 24 kV Circuit-breaker panels 630 A, 800 A, 1000 A, 1250 A, 1600 A, 2000 A



## 24 kV Disconnector panels 630 A, 800 A, 1000 A, 1250 A, 1600 A, 2000 A



-  Three-position disconnect
-  Vacuum circuit-breaker
-  Current transformer
-  Capacitive voltage detecting system
-  Solid-insulated bar
-  Plug-in voltage transformer
-  Surge arrester or limiter
-  Earthing device for plug-in voltage transformers
-  Cable connection with outside-cone plug (not included in the scope of supply)
-  Inverted phases
-  Prepared for installation of plug-in voltage transformers
-  Voltage sensor (resistor divider)
-  SI Busing

# Product range

Single-busbar panels



Three-position disconnecter



Vacuum circuit-breaker



Current transformer



Capacitive voltage detecting system

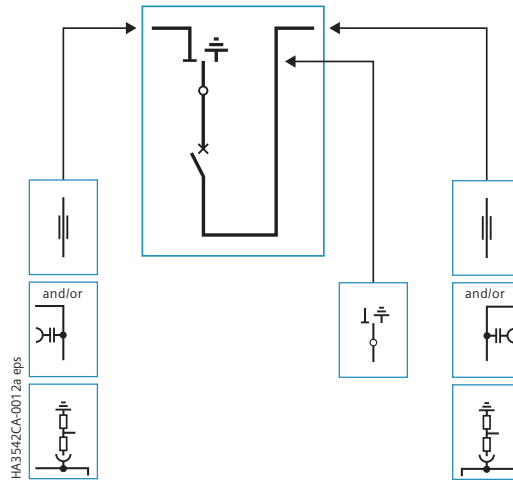


Solid-insulated bar



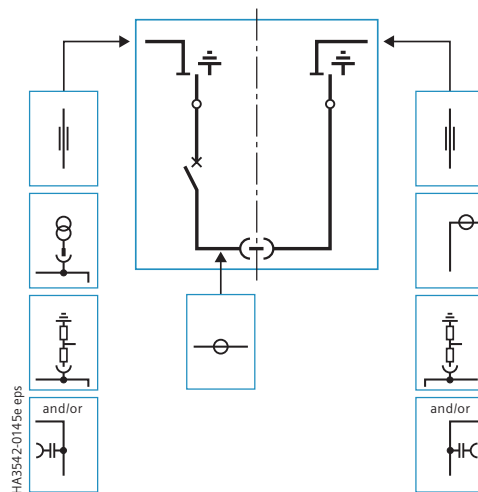
Voltage sensor (resistor divider)

## 24 kV Bus sectionalizers 1000 A, 1250 A



900 mm

## 24 kV Bus sectionalizers, two-panel, 1600 A, 2000 A

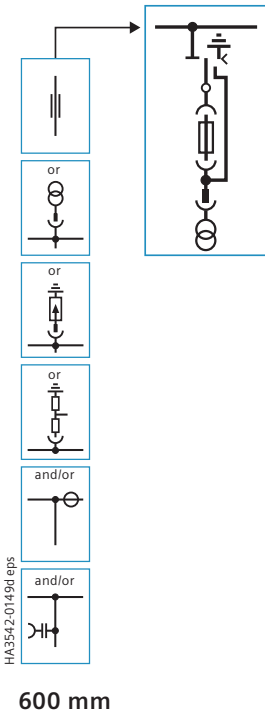


2 x 900 mm

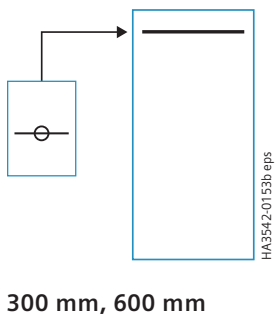
# Product range









Single-busbar panels

## 24 kV Metering panel



## 24 kV Dummy panel



-  Three-position disconnect with make-proof earthing switch
-  HV HRC fuses
-  Plug-in voltage transformer
-  Surge arrester or limiter
-  Current transformer
-  Capacitive voltage detecting system
-  Solid-insulated bar
-  Voltage sensor (resistor divider)

# Components

## Panel connection

### Features

- Bushings with outside cone
- With bolted contact (M16) as interface type C according to EN 50181
- For cable connection heights, see table on the right
- Max. connection depth: See side views on pages 17 to 20
- With cable bracket type C40 according to DIN EN 60715
- Option: Access to the cable compartment only if the feeder has been isolated and earthed
- For thermoplastic-insulated cables
- For shielded cable T-plugs or cable elbow plugs with bolted contact
- For connection cross-sections up to 1200 mm<sup>2</sup>
- Larger cross-sections on request
- Cable routing downwards, cable connection from the front
- For rated continuous currents up to 1250 A
- Cable T-plugs are not included in the scope of supply.

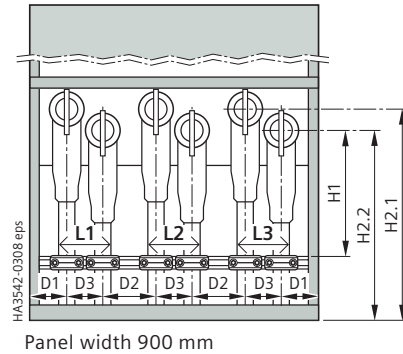
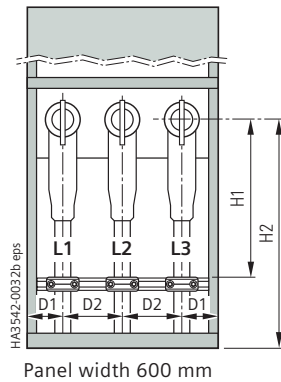
### Surge arresters

- Pluggable on cable T-plug
- 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

- Pluggable on cable T-plug
- Surge limiters recommended when motors with starting currents < 600 A are connected.

### Cable compartment



### Cable connection heights

Panels	Height of cable compartment		Distance between bushing and cable bracket	Distances cable – cable cable – separation wall		
	(H2) mm	(H1) mm		D1 mm	D2 mm	D3 mm
600 mm	700	500	112	188	–	
900 mm	(H2.1) mm	(H2.2) mm	(H1) mm	D1 mm	D2 mm	D3 mm
	610	550	410	110	175	110

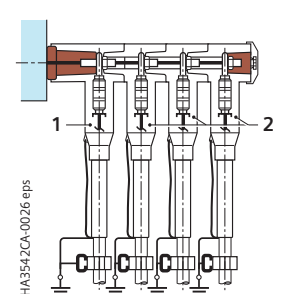
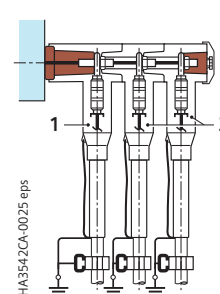
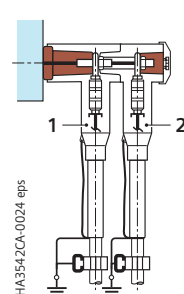
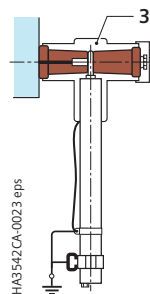
### Connectable cables

Cable T-plug with coupling insert

a) Panel width 600 mm

Solid-insulated bar

Cable T-plug with coupling T-plug



a) Connection with 2 cables per phase

a) Connection with 3 cables per phase

a) Connection with 4 cables per phase

### Legend

- 1 Cable T-plug
- 2 Coupling T-plug
- 3 End adapter



### Permissible cable types

Cable type	Cable sealing end			Remark
	Make	Type	Cross-section mm <sup>2</sup>	

#### Thermoplastic-insulated cables ≤ 12 kV according to IEC 60502-2

Single-core cable, PE and XLPE-insulated N2YSY (Cu) and N2XSY (Cu) or NA2YSY (Al) and NA2XSY (Al)	Nexans Euromold	480TB/G	35 to 300	EPDM with semi-conductive layer
		484TB/G	50 to 630	EPDM with semi-conductive layer
		489TB/G	800 to 1200	EPDM with semi-conductive layer
	NKT	CB 24-630	25 to 300	Silicone with semi-conductive layer (optionally with metal housing)
		CB 24-1250/2	95 to 500	Silicone with semi-conductive layer
		CB 36-630	35 to 400	Silicone with semi-conductive layer
		CB 36-630(1250)	240 to 800	Silicone with semi-conductive layer
		CB 42-1250/3	95 to 1000	Silicone with semi-conductive layer
		CSE-A 12630	25 to 630	EPDM with semi-conductive layer
		TE connectivity	RSTI-58xx	25 to 300
	RSTI-395x		400 to 1000	Silicone with semi-conductive layer, with capacitive measuring point
	ELBC-58xx		25 to 300	EPDM with semi-conductive layer
	Cellpack	CTS 630A 24 kV	50 to 400	EPDM with semi-conductive layer
		CTS 1250A 24 kV	500 to 630	EPDM with semi-conductive layer
	Südkabel	SET 12	40 to 300	Silicone with semi-conductive layer
SAT 12		185 to 630	Silicone with semi-conductive layer	
Three-core cable PE and XLPE-insulated N2YSY (Cu) and N2XSY (Cu) or NA2YSY (Al) and NA2XSY (Al)	Nexans Euromold	480TB/G	35 to 300	EPDM with semi-conductive layer, in combination with distribution kit
	NKT	CB 24-630	25 to 300	Silicone with semi-conductive layer (optionally with metal housing), in combination with distribution kit
		CB 24-1250-2	185 to 500	Silicone with semi-conductive layer, in combination with distribution kit
	TE connectivity	RSTI-58xx	25 to 300	Silicone with semi-conductive layer, with capacitive measuring point, in combination with distribution kit RSTI-TRFOx
		ELBC-810	25 to 500	EPDM with semi-conductive layer, in combination with distribution kit

#### Thermoplastic-insulated cables 15/17.5/24 kV according to IEC 60502-2

Single-core cable, PE and XLPE-insulated N2YSY (Cu) and N2XSY (Cu) or NA2YSY (Al) and NA2XSY (Al)	Nexans Euromold	K480TB/G	35 to 300	EPDM with semi-conductive layer
		K484TB/G	50 to 630	EPDM with semi-conductive layer
		K489TB/G	800 to 1200	EPDM with semi-conductive layer
	NKT	CB 24-630	25 to 300	Silicone with semi-conductive layer (optionally with metal housing)
		CB 24-1250/2	35 to 500	Silicone with semi-conductive layer
		CB 36-630	35 to 400	Silicone with semi-conductive layer
		CB 36-630(1250)	240 to 800	Silicone with semi-conductive layer
		CB 42-1250-3	630 to 1000	Silicone with semi-conductive layer
		CSE-A 24630	25 to 630	EPDM with semi-conductive layer
		TE connectivity	RSTI-58xx	25 to 300
	RSTI-595x		400 to 1000	Silicone with semi-conductive layer, with capacitive measuring point
	ELBC-58xx		35 to 300	EPDM with semi-conductive layer
	Cellpack	CTS 630A 24 kV	25 to 400	EPDM with semi-conductive layer
		CTS 1250A 24 kV	400 to 630	EPDM with semi-conductive layer
	Südkabel	SET 24	25 to 240	Silicone with semi-conductive layer
SAT 24		95 to 630	Silicone with semi-conductive layer	
Three-core cable PE and XLPE-insulated N2YSY (Cu) and N2XSY (Cu) or NA2YSY (Al) and NA2XSY (Al)	Nexans Euromold	K480TB/G	35 to 300	EPDM with semi-conductive layer, in combination with distribution kit
	NKT	CB 24-630	25 to 300	Silicone with semi-conductive layer (optionally with metal housing), in combination with distribution kit
		CB 24-1250-2	35 to 500	Silicone with semi-conductive layer, in combination with distribution kit
	TE connectivity	RSTI-58xx	25 to 300	Silicone with semi-conductive layer, with capacitive measuring point, in combination with distribution kit RSTI-TRFOx
		ELBC-824	35 to 400	EPDM with semi-conductive layer, in combination with distribution kit

# Components

Panel connection

## Permissible cable types

Cable type	Cable sealing end			Remark
	Make	Type	Cross-section mm <sup>2</sup>	
<b>Thermoplastic-insulated cables 36 kV according to IEC 60502-2</b>				
Single-core cable, PE and XLPE-insulated N2YSY (Cu) and N2XSY (Cu) or NA2YSY (Al) and NA2XSY (Al)	Nexans Euromold	M480TB/G	35 to 300	EPDM with semi-conductive layer
		M484TB/G	50 to 630	EPDM with semi-conductive layer
		M489TB/G	800 to 1200	EPDM with semi-conductive layer
	NKT	CB 36-630	35 to 300	Silicone with semi-conductive layer (optionally with metal housing)
		CB 36-630(1250)	240 to 630	Silicone with semi-conductive layer
		CB 42-1250/3	95 to 1000	Silicone with semi-conductive layer
		CSE-A 36630	50 to 630	EPDM with semi-conductive layer
	TE connectivity	RSTI-68xx	35 to 300	Silicone with semi-conductive layer, with capacitive measuring point
		RSTI-695x	400 to 1000	Silicone with semi-conductive layer, with capacitive measuring point
	Cellpack	CTS 630A 36 kV	35 to 400	EPDM with semi-conductive layer
		CTS 1250A 36 kV	400 to 630	EPDM with semi-conductive layer
	Südkabel	SET 36	70 to 300	Silicone with semi-conductive layer
		SAT 12	185 to 630	Silicone with semi-conductive layer
		SAT 24	95 to 1000	Silicone with semi-conductive layer
SAT 36		400 to 500	Silicone with semi-conductive layer	
Three-core cable PE and XLPE-insulated N2YSY (Cu) and N2XSY (Cu) or NA2YSY (Al) and NA2XSY (Al)	Nexans Euromold	M480TB/G	35 to 300	EPDM with semi-conductive layer, in combination with distribution kit
	NKT	CB 36-630	35 to 300	Silicone with semi-conductive layer (optionally with metal housing), in combination with distribution kit
		CB 36-630(1250)	240 to 630	Silicone with semi-conductive layer, in combination with distribution kit
	TE connectivity	RSTI-68xx	35 to 300	Silicone with semi-conductive layer, with capacitive measuring point, in combination with distribution kit RSTI-TRFOx

## Commercially available bar systems

Bar type	Bar connection				Remark
	Make	Type	Conductor material	Max. rated current	
Solid-insulated bar	MGC Moser Glaser	Duresca DE	Copper	1250 A / 2500 A	Outer sheath made of polyamide (polyamide tube)
		Duresca DG	Copper	1250 A / 2500 A	Outer sheath made of CrNi steel or aluminum (metal sheath)
	Preissinger	ISOBUS MB	Copper	1250 A / 2500 A	Outer sheath made of epoxy resin (with heat shrinkable tube, if required)
	Ritz	SIS	Copper	1250 A / 2500 A	Outer sheath made of epoxy resin (with heat shrinkable tube, if required)

## Type of service location

The switchgear can be used as indoor installation according to IEC 61936 (Power installations exceeding 1 kV AC)

- Outside lockable electrical service locations at places which are not accessible to the public. Enclosures of switchgear can only be removed with tools
- In lockable electrical service locations. A lockable electrical service location is a place outdoors or indoors that is reserved exclusively for housing electrical equipment and which is kept under lock and key. Access is restricted to authorized personnel and persons who have been properly instructed in electrical engineering. Untrained or unskilled persons may only enter under the supervision of authorized personnel or properly instructed persons.

## Terms

“Make-proof earthing switches” are earthing switches with short-circuit making capacity according to IEC 62271-102 and EN 62271-102.

## Dielectric strength

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

The rated values are referred to sea level and to normal atmospheric conditions (1013 hPa, 20 °C, 11 g/m<sup>3</sup> humidity according to IEC 60071).

The gas insulation at a relative gas pressure of 90 kPa permits switchgear installation at an altitude of up to 4000 m above sea level without the dielectric strength being adversely affected. This also applies to the cable connection when plug-in sealing ends are used.

**Table – Dielectric strength**

Rated voltage (r.m.s. value)	kV	7.2	12	15	17.5	24
Rated short-duration power-frequency withstand voltage (r.m.s. value)						
– Between phases and to earth	kV	20	28	35	38	50
– Across isolating distances	kV	23	32	39	45	60
Rated lightning impulse withstand voltage (peak value)						
– Between phases and to earth	kV	60	75	95	95	125
– Across isolating distances	kV	70	85	105	110	145

# Standards

Standards, specifications, guidelines

## Standards

NXPLUS C 24 switchgear complies with the relevant standards and specifications applicable at the time of type tests. In accordance with the harmonization agreement reached by the countries of the European Union, their national specifications conform to the IEC standard.

Standards			
	IEC standard / EN standard	Title	
Switchgear	62271-1	High-voltage switchgear and controlgear: Common specifications for alternating current switchgear and controlgear	
	62271-200	High-voltage switchgear and controlgear: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV	
Switching devices	Circuit-breakers	62271-100	High-voltage switchgear and controlgear: Alternating-current circuit-breakers
		Disconnectors and earthing switches	62271-102
Voltage detecting systems	62271-213	Voltage detecting and indicating system (VDIS)	
	62271-215	Phase comparator used with VDIS	
Surge arresters	60099	Surge arresters	
Degree of protection	60529	Degrees of protection provided by enclosures (IP code)	
	62262	Degree of protection provided by enclosures (IK code)	
Insulation	60071	Insulation co-ordination	
Instrument transformers	61869-1	Instrument transformers	
	61869-2	Current transformers	
	61869-3	Voltage transformers	
	61869-6	Low-power instrument transformers	
	61869-10	Low-power passive current transformers	
	61869-11	Low-power passive voltage transformers	
Installation	61936-1	Power installations exceeding 1 kV a.c.	
Environmental conditions	60721-3-3	Classification of environmental conditions	
Operation	EN 50110	Operation of electrical installations	
Clean Air	62271-4	High-voltage switchgear and controlgear: Handling procedures for gases for insulation and/or switching	

## Operation of electrical installations

- According to IEC 62271-200 or IEC 62271-1, the rated continuous current refers to the following ambient air temperatures:
  - Maximum of 24-hour mean + 35°C
  - Maximum + 40°C
- The current carrying capacity of the panels and busbars depends on the ambient air temperature outside the enclosure.

## Internal arc classifications

- Protection of operating personnel by means of tests for verifying the internal arc classification
- Internal arcing tests must be performed in accordance with IEC 62271-200
- Definition of criteria:
  - Criterion 1: Correctly secured doors and covers do not open, limited deformations are accepted
  - Criterion 2: No fragmentation of the enclosure, no projection of small parts above 60 g
  - Criterion 3: No holes in accessible sides up to a height of 2 m
  - Criterion 4: No ignition of indicators due to hot gases
  - Criterion 5: The enclosure remains connected to its earthing point.

## Resistance to internal faults

Due to the single-pole enclosure of external components and the gas insulation of switching devices, the possibility of faults in gas-insulated switchgear is improbable and a mere fraction of that typical of earlier switchgear types:

- There are no effects due to external influences, such as:
  - Pollution layers
  - Humidity
  - Small animals and foreign objects
- Maloperation is practically excluded due to logical arrangement of operating elements
- Short-circuit-proof feeder earthing by means of the circuit-breaker or the three-position switch-disconnector.

The escaping gases are discharged upwards through a pressure relief duct.

## Aseismic capacity (option)

NXPLUS C 24 switchgear can be upgraded for regions at risk from earthquakes.

For upgrading, earthquake qualification testing has been carried out in accordance with the following standards:

- IEC/TS 62271-210 "Seismic qualification for metal enclosed and solid-insulation enclosed switchgear and controlgear assemblies for rated voltages above 1 kV and up to and including 52 kV"
- IEC 60068-2-57 "Test Ff: Vibration – Time-history method"

The tested ground accelerations conform to the following required response spectrums:

- IEC/TS 62271-210 – Severity level 2, (ZPA) = 1 g (Figure 2)
- IEEE 693-2018 – High performance level required response spectrum, 1.0 g (Figure A.1).

For operation in regions at risk from earthquakes, the operator must ensure compliance with the national directives and legal stipulations.

The test verifications are valid for switchgear installations on even and rigid concrete or steel structure (possible building influences, such as superelevation factors, are not considered).

The operator must ensure compliance with application-specific seismic requirements.

## Shock, vibration

RAL 7035 Light grey.

# Standards

Standards, specifications, guidelines

## Climate and environmental influences

The parts under high voltage of the primary circuit of NXPLUS C 24 switchgear are completely enclosed and insensitive to climatic influences.

- All medium-voltage devices are installed in a gas-tight, welded stainless-steel switchgear vessel which is filled with Clean Air
- Live parts outside the switchgear vessel are provided with single-pole enclosure
- At no point can creepage currents flow from high-voltage potentials to earth
- Operating mechanism parts which are functionally important are made of corrosion-resistant materials
- Bearings in the operating mechanism are designed as dry-type bearings and do not require lubrication.

NXPLUS C 24 switchgear is suitable for application in indoor installations under normal service conditions as defined in the standard IEC 62271-1.

- Temperature                    –5°C to +55°C  
  –25°C to +55°C <sup>1)</sup> (option)
- Relative air humidity        Mean value over 24 hours <sup>1)</sup>: ≤ 98 %  
  Mean value over 1 month: ≤ 90 %
- Condensation                 Occasionally  
  Frequently (degree of protection  
  min. IP31D, with anti-condensation  
  heater in the low-voltage part<sup>2)</sup>)
- Site altitude                   4000 m

Furthermore, the high-voltage part of NXPLUS C 24 switchgear can be used in environmental conditions of the climatic category 3C2 according to the standard IEC 60721-3-3.

NXPLUS C 24 has been subjected to a climatic test according to IEC 60932, Level 2, and is suitable for service conditions according to "Design Class 2". This test also meets the requirements of IEC 62271-304 for "Design Class 2".

## 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. The insulating gas Clean Air can be safely released into the ambient air.

## Protection against solid foreign objects, electric shock and water

NXPLUS C 24 switchgear fulfills according to the standards

IEC 62271-1	EN 62271-1
IEC 62271-200	EN 62271-200
IEC 60529	EN 60529
IEC 62262	EN 50102

the following degrees of protection:

Degree of protection IP	Type of protection
IP65	for parts of the primary circuit under high voltage
IP3XD	for switchgear enclosure
IP31D	for switchgear enclosure (optional)
IP32D	for switchgear enclosure (optional)
IP34D	for switchgear enclosure (optional)
IP4X	for switchgear enclosure (optional)
IP54	for switchgear enclosure (optional)

Degree of protection IK	Type of protection
IK07	for switchgear enclosure

For secondary devices in the low-voltage door, the stipulations of the IP degree of protection apply according to the definitions for the switchgear enclosure.

1) Secondary devices (e.g. protection devices, meters, measuring transducers, etc.) must be suitable for the given service conditions

2) Heater in the low-voltage compartment and operating mechanism box of the circuit-breaker



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