



MEDIUM-VOLTAGE SWITCHGEAR

Circuit-Breaker Switchgear Type NXAirS up to 24kV, 31.5kA, Air-Insulated

Catalog
HA 1734
Edition 2023

Scan the
QR code to
learn about
Siemens
NXAirS 24kV



SIEMENS

Application

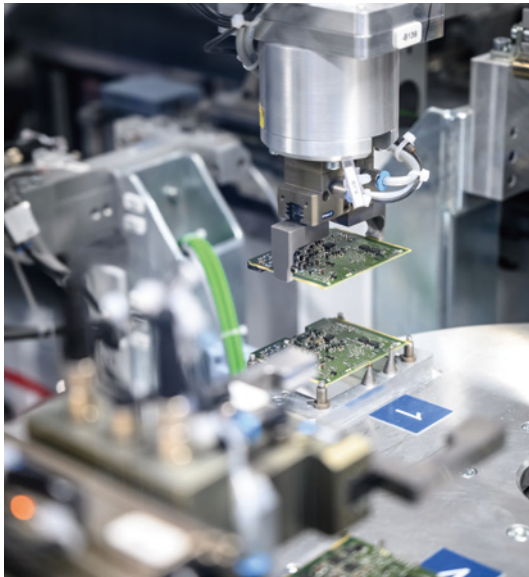
Typical Applications



Application:

Public power supply

- Power supply companies
- Energy producers
- System operators



Industrial Systems

- Cement industry
- Automobile industry
- Steel industry
- Mining industry
- Semiconductors
- Chemical industry
- Petroleum industry
- Pipeline installations
- Data Center
- Electrochemical industry
- Airports
- Electrical & Electronics



MEDIUM-VOLTAGE SWITCHGEAR

Circuit-Breaker Switchgear Type NXAirS up to 24kV, 31.5kA, Air-Insulated

Rated voltage 24 kV, Catalog · HA 1734 · 2023 A

[siemens.com.cn/mv-lv-solutions](https://www.siemens.com.cn/mv-lv-solutions)

Application

Typical Applications **2**

Customer Benefits

Ensures peace of mind **4**

Ensures personnel safety **5**

Increases productivity **6**

Saves money **7**

Protects our environment **8**

Design

Classification **9**

Basic panel design, operation **10**

Compartments **11**

Components

Vacuum circuit-breaker **12**

Secondary wiring diagram
for vacuum circuit-breaker **13**

Current transformers **14**

Voltage transformers **15**

Low-voltage compartment **16**

Intelligent solution **17 - 18**

Technical Data

Electrical data **19**

Product range, primary solution **20 - 25**

Dimensions **26**

Room planning **27**

Typical for IP41/42 **28**

Transport and packing **29**

Standards

Standards, specifications, guidelines **30 - 31**

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 ISO 45001).

Customer Benefits

Ensures peace of mind



For power supply companies and industrial plants, the NXAirS family has very concrete advantages, i.e. smooth operation, exemplary availability and optimal safety.

Features

- No handling of insulating gas and low and high pressure monitoring required
- As insulating medium, air is always available
- Factory-assembled, type-tested switchgear according to IEC 62271-200 , GB/T 3906 and DL/T 404
- Platform concept introduced worldwide, centrally controlled development, local manufacture
- Use of standardized block-type current transformers
- Use of standard components available worldwide
- More than 510,000 air-insulated switchgear panels of Siemens in operation worldwide
- Use of maintenance-free vacuum circuit-breakers
- Type testing of the vacuum circuit-breaker and the make-proof earthing switch in the panel
- Pressure-resistant partitions
- Flexibility regarding the low-voltage equipment (removable compartment, plug-in wires)
- Quality assurance in accordance with DIN EN ISO 9001

Customer Benefits

Ensures personnel safety



The NXAirS family are approved with internal arc classification IAC A FLR, loss of service continuity category LSC 2B and partition class PM.

This makes them suitable for universal installation, meeting the higher requirements regarding personal safety.

Features

- All operations with closed high-voltage door including manual operation of vacuum circuit-breaker
- Metallic enclosure, earthed shutters and partitions
- Internal arc classified switchgear according to IAC A FLR (front, lateral and rear accessibility) for all short-circuit currents and an arc duration of 1 s
- Loss of service continuity category LSC 2B (separate partitions for busbar, connection and truck compartments)
- Partition class PM (metal-clad in pressure-resistant design)
- Unambiguous position indicators on the high-voltage door
- Use of Siemens SION M 3AE vacuum circuit-breakers
- Degree of protection IP4X as standard; different degrees of protection possible as an option
- Positively driven shutters (separately lockable)
- Logical mechanical interlocking system
- Further upgrade of intelligent devices as required

Customer Benefits

Increases productivity



Properties such as modular design, type tests of the switching devices in the switchgear, confinement of an internal arc to the respective compartment, and thus high operational reliability, contribute to optimum operation and a remarkable increase of productivity.

Features

- Loss of service continuity category LSC 2B (separate partitions for busbar, cable and switch compartments)
- Partition class PM
- Positively driven shutters
- Use of standardized block-type current transformers
- Cable testing without isolating the busbar
- Functions, such as establishment of the isolating distance as well as feeder and busbar earthing, can be remotely controlled
- Internal arc restricted in the respective compartment
- Use of maintenance-free Siemens SION M 3AE vacuum circuit-breakers
- Control cables in metallic wiring ducts
- Easy access to panel components

Customer Benefits

Saves money



NXAirS 24kV use Siemens SION M 3AE vacuum circuit-breaker.

On the one hand, building costs can be reduced in this way, and on the other hand, the maintenance-free circuit-breakers and the modular design enable continuous operation without expensive shutdown times.

Features

- Use of maintenance-free Siemens SION M 3AE vacuum circuit-breakers
- Interruption of operation reduced to very low level by logical mechanical interlocking system
- Minimized space requirements (reduced building investments)
due to compact design and flexible cable connection options and/or flexible pressure relief duct systems
- Further upgrade of intelligent devices as required

Customer Benefits

Preserves the environment



Air used as insulating medium, local production locations with short transportation distance and time, as well as a service life of more than 30 years, optimize the total energy balance.

Features

- As insulating medium, air is neutral to the environment
- Service life of more than 30 years optimizes the energy balance additionally
- Materials used are fully recyclable without special knowledge
- Easy disposal

NXAirS is factory-assembled, type-tested, metal-enclosed switchgear for indoor installation according to IEC 62271-200, GB/T 3906 and DL/T 404 and corresponds to the following classifications.



Accessibility to compartments	
Busbar compartment	Tool-based
Switching-device compartment	Interlock-controlled
Connection compartment	Interlock-controlled or tool based
Low-voltage compartment	Tool-based
Internal arc classifications	
The following internal arc classifications are fulfilled: IAC A FLR, I_{sc} , t	
IAC	internal arc classification
A	Distance between the indicators 300 mm, i.e. installation in rooms with access for authorized personnel only, closed electrical service location
F	Accessibility: Front arrangement of indicators for test
L	Accessibility: Lateral arrangement of indicators for test
R	Accessibility: Rear arrangement of indicators for test
I_{sc}	Test current: NXAirS up to 31.5kA
t	Arc duration 1s

Design

Basic panel design, operation

Operation at the panel

Features

- Integrated mimic diagram (optional)
- Indication of the respective switch positions for circuit - breaker CLOSED / OPEN, disconnected position, earthing switch CLOSED/OPEN, on the integrated mimic diagram
- Clear assignment of actuating openings and control elements to the corresponding position indicators
- All switching operations only with high-voltage door closed
- Ergonomically favorable height for all control and indicator elements
- Option:
 - Verification of safe isolation from supply for feeder or busbar by means of the capacitive voltage detecting system with panel front closed.
 - Manual/Motor-operated mode

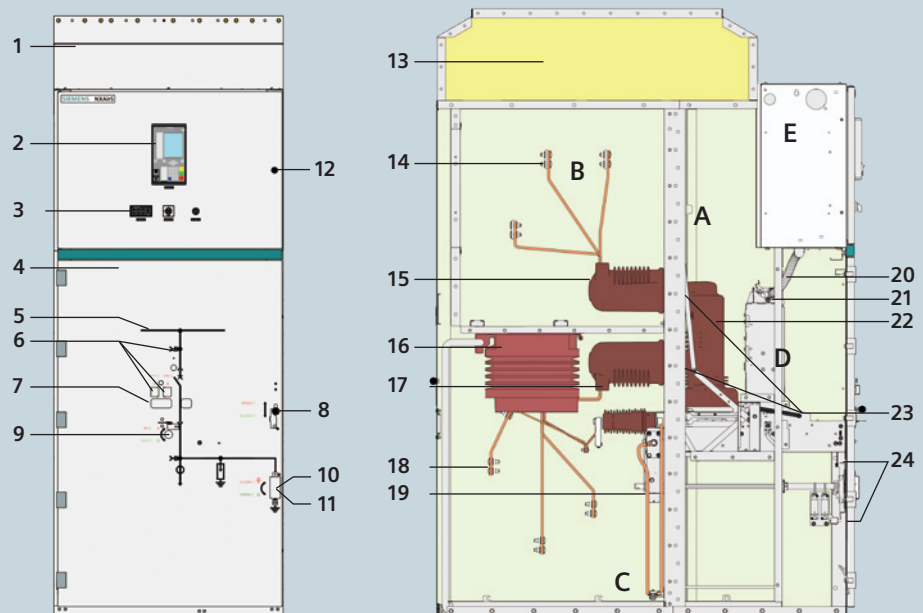
Interlocks

- Interlocking conditions specified according to IEC 62271-200 and GB/T 3906 are fulfilled
- Feeder earthing switch can only be operated with switching device in disconnected position and test position
- Switching device can only be racked on the movable part with the associated switching device OPEN position and with earthing switch OPEN
- Switching device can only be operated in interlocked disconnected or service or test position.

Beyond the specifications of the standards

- Coding prevents insertion of switching devices with a lower rated normal current into panels with a higher rated normal current
- Reliable interlocking between the high voltage door and the withdrawable part
- Option: Electromagnetic interlocks, mechanical key interlocking systems and padlocks.

Basic panel design (example of circuit-breaker panel)



- 1 Pressure relief duct (front)
- 2 Relay protection device
- 3 Option: Voltage presence indicator
- 4 High-voltage door
- 5 Mimic diagram (optional)
- 6 "CLOSE-OPEN" actuating openings for the circuit-breaker, opening for spring charging
- 7 Inspection window to recognize the "CLOSED-OPEN" indicator of the circuit-breaker, "Closing spring charged" indicator, operations counter
- 8 Handle for opening the high-voltage door
- 9 Actuating opening for racking the switching device
- 10 Mechanical position indicator for feeder earthing switch
- 11 Actuating opening for feeder earthing switch, Manual/Motor-operated

- 12 Door lock of LV compartment
- 13 Pressure relief duct, if required, with top-mounted arc absorber
- 14 Busbars
- 15 Bushing-type insulator
- 16 Block-type current transformer
- 17 Bushing-type insulator
- 18 Copper bar connection
- 19 Make-proof earthing switch
- 20 LV connection, plug-in type
- 21 Operating and interlocking unit for circuit-breaker
- 22 Vacuum interrupters and poles
- 23 Contact system
- 24 Operating and interlocking unit for racking the switching device and for earthing, Manual/Motor-operated

- A Switching device compartment
B Busbar compartment
C Connection compartment

- D Withdrawable circuit-breaker
E LV compartment

Switching-device compartment

- Enclosure made of sendzimir-galvanized sheet steel
- Pressure relief upwards
- Panel front powder-coated with epoxy resin
- Color RAL 7035 as standard
- Separate shutter mechanism for opening and closing the busbar compartment and connection compartment
- Metallic shutters can be opened and locked separately
- High-voltage door pressure-resistant in the event of internal arcs in the panel
- Pressure-resistant partitions between connection and busbar compartments
- Lateral metallic wiring duct for laying the control cables
- Low-voltage plug connectors for connection of control cables between primary and secondary parts
- switching device compartment for the different panel versions with withdrawable devices:
 - Vacuum circuit-breaker
 - High-voltage fuse
 - Isolated truck
 - Metering unit
- Endurance classes for:
 - Circuit-breaker: E2, M2, C2
 - Withdrawable part: M0, Manual/Motor-operated

Busbar compartment

- Enclosure made of sendzimir-galvanized sheet steel
- Pressure relief upwards
- Transverse partition from panel to panel
- Busbars made of flat copper, bolted from panel to panel
- Option: Busbars with heat-shrink heat shrink tube
- Pressure-resistant partitions between connection and switching device compartments
- Shutters can be opened and locked separately
- Bushing-type insulators for supporting the busbars and for accommodating the upper fixed contacts for the switching device
- Option: Coupling electrode for capacitive voltage presence indicator

Additional compartments (optional) for busbar components, see also product range

- Top-mounted compartment over the busbar compartment, within the pressure relief duct
- Separate pressure relief of the additional compartment via pressure relief flaps
- Options: Possibility of installing the following components (but not for panels with natural and forced ventilation, see also product range)
 - Voltage transformers
 - Make-proof earthing switch (endurance class: M1, E1), Manual/Motor-operated
 - busbar or cable connection

Connection compartment

- Enclosure made of sendzimir-galvanized sheet steel
- Pressure relief upwards through rear pressure relief duct
- Pressure-resistant partitions between switching device and busbar compartments
- Earthing busbar
- Option: Installation of bushing-type insulators or block-type current transformers
- Option: Coupling electrode for voltage presence indicator
- Pressure-resistant floor cover
- Connection from front/bottom, or from rear/bottom, or from rear/top
- Suitable for connection of:
 - Single-core XLPE cables up to 6 x 300 mm² per phase
 - Three-core XLPE cables up to 3 x 240 mm² per phase
 - Flat copper bars with bushings in a base plate
- Installation of voltage transformers
 - Cast-resin insulated
 - 3 x 1-pole
 - Fixed-mounted
 - Fixed-mounted, without/with primary fuses
 - Withdrawable with primary fuses in a separate compartment, with bushings and shutters to the connection compartment
- Make-proof earthing switch
 - With manual operating mechanism, optionally motor operating mechanism
 - Additional interlock: Earthing switch optionally lockable or electromagnetically interlocked against the withdrawable unit
- Endurance class for earthing switch: M1, E1
- Surge arrester or surge limiter
 - Surge arrester for protecting the switchgear against external over-voltage
 - Surge limiter for protecting consumers against switching over-voltages while operating motors with starting currents ≤ 600 A.

Components

Vacuum circuit-breaker

Features

- According to IEC 62271-100 and GB/T 1984
- Suitable for all switching operations
- Stored-energy spring mechanism, motor-charged or manual operation possible
- Racking the circuit-breaker with manual operating mechanism, optionally with motor operating mechanism
- 64-pole LV plug connector between circuit-breaker and fixed part
- Maintenance-free operating mechanisms under normal climatic conditions and for max. permissible number of operating cycles.



2,500 A



1,250 A

Circuit-breaker		≤ 31.5kA
Model		3AE
Rated voltage	kV	24
Rated 1-min power frequency withstand voltage	kV	50/60 (65/79 optional)
Lightning impulse withstand voltage (peak)	kV	125/145
Rated operation sequence		O-0.3s-CO-15s-CO O-0.3s-CO-180s-CO
Pole-center distance	mm	210, 275
Rated current	max. A	3,150 *
Rated short-circuit breaking current	max. kA	31.5
Rated short-time withstand current/duration	max. kA/s	31.5/4
Breaking cycles at rated short circuit breaking current		50
Rated mechanical life		10,000 (30,000 optional)
max. making current	kA	80 / 82 (50Hz / 60Hz)
Rated peak withstand current	kA	80 / 82 (50Hz / 60Hz)
Capacitive switching current	A	630
Total breaking time	ms	≤80
Closing time	ms	≤75
Opening time	ms	<65
Arcing time	ms	<15
Closing/opening non-synchro-nism	ms	≤2
Voltage range of opening coil	%	65% to 110%
Voltage range of closing coil	%	75% to 110%
Power of opening coil	W	200 / 160 (110V / 220V)
Power of closing coil	W	200 / 160 (110V / 220V)
Spring charging time	s	≤15
Voltage of charging motor	V	DC110, DC220, AC110, AC220
Voltage range of charging motor	%	85% to 110%

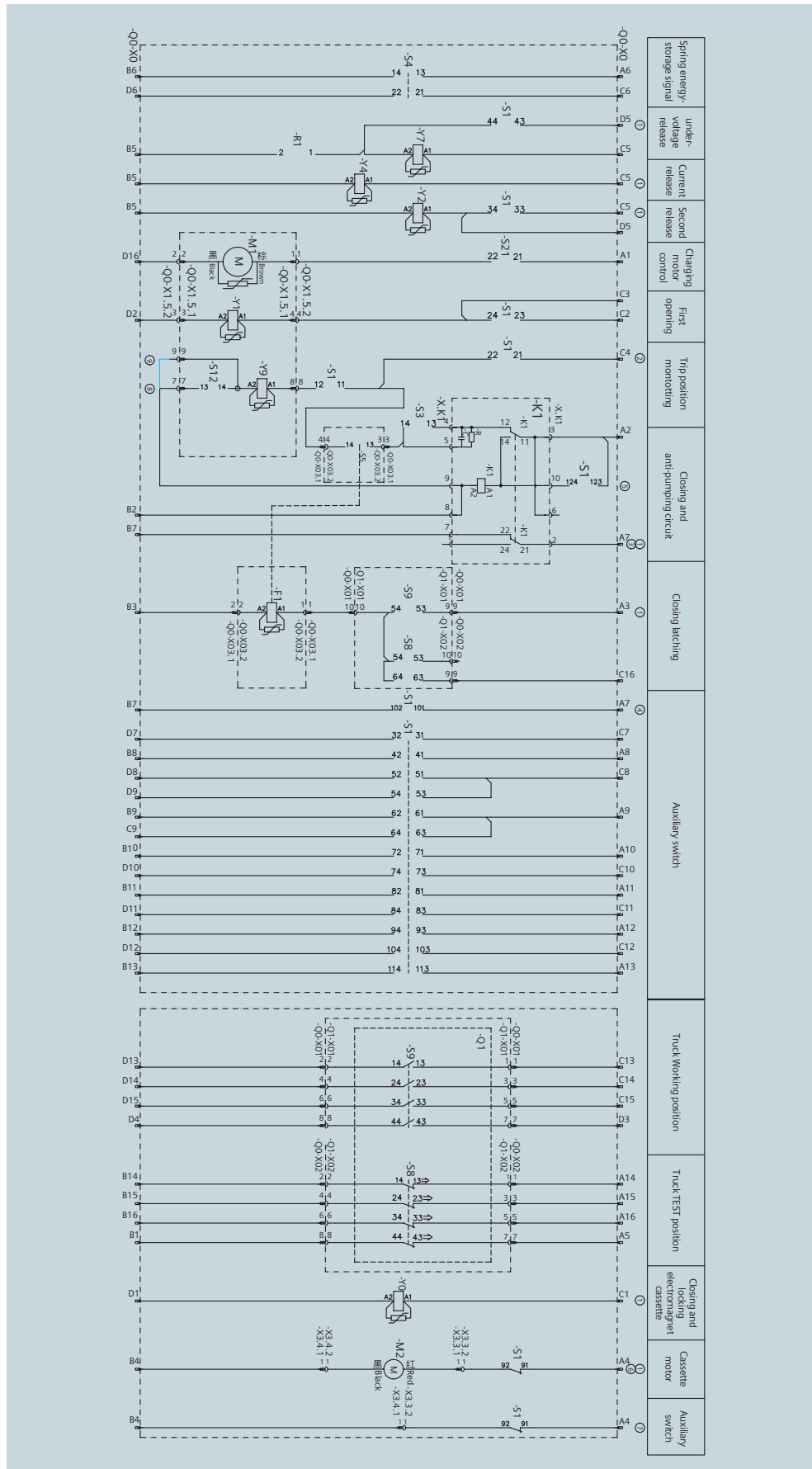
* Force Ventilation inside NXAirS can achieve 4,000A on request

Designation

- M1, M2 Charging motor, cassette motor
- Y1, Y9 Opening coil, closing coil
- K1 Anti-pumping relay module
- S8, S9 Truck position switch
- S1 Auxiliary switch
- S3, S4, S5, S12, S21 Position switch
- F1, Y0 Closing and locking electromagnet, cassette locking electromagnet
- Q0, Q1 Circuit-breaker, cassette
- Y2, Y4, Y7, R1 Second release, current release, under-voltage release, resistor

Notes:

- 1) The circuit-breaker is in the TEST, OFF and Not Charged status.
- 2) Optional for parts marked with (1). If necessary, please specify individual requirements in the order.
- 3) Only one of the second release, under-voltage release and current release can be configured.
- 4) Part marked with (2) is the trip position monitoring circuit. If necessary, the trip position relay of the relay protection device can be connected at -X0:C4.
- 5) Part marked with (5) is the anti-pumping function wiring. If the anti-pumping function is not required, -S1:123/124 do not need to be wired.
- 6) -S12 is the signal switch for TEST/SERVICE position of the circuit-breaker.
- 7) NC contacts of (3) anti-pumping relay and (4) auxiliary switch can not be selected simultaneously. NC contact of (4) auxiliary switch is selected by default.
- 8) Wiring with mechanical interlocking according to (8)
- 9) Wiring without mechanical interlocking according to (9)
- 10) NC contacts of (6) motor-driven cassette and (7) auxiliary switch can not be selected simultaneously. NC contact of (7) auxiliary switch is selected by default.



Components

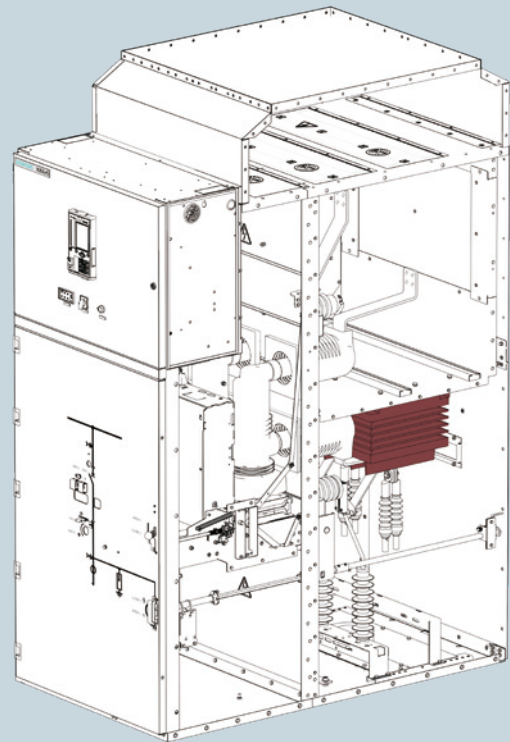
Current transformers

Features

- Inductive indoor support-type current transformer in block-type design according to IEC 61869-2, GB/T 20840.2, standardized, available worldwide
 - Cast-resin insulated
 - Insulation class E
 - Narrow design
 - Options:
 - With coupling electrode for capacitive voltage presence indicator for block-type current transformers
 - Secondary multi ratio possible
- Current transformer with type test certificate and declaration of conformity.



Block-type current transformer



Electrical data		
Rated voltage		24 kV
Rated current		up to 3,150 A
Rated short-time withstand current		up to 31.5 kA
Rated short-circuit duration		up to 4 s
Rated peak withstand current		up to 82 kA
Number of secondary cores		up to 3
Secondary current		1 A or 5 A
Accuracy classes	Metering	0.2 to 0.5, depending on the type of CT
	Protection	5P/30 to 10P/20, depending on the type of CT
Rated output		up to 60 VA, depending on the type of CT

Features

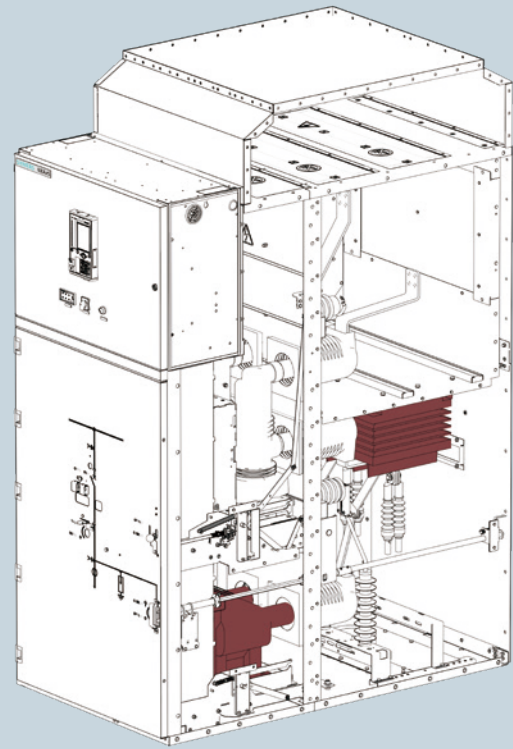
- Inductive principle according to IEC 61869-3 and GB/T 20840.3
 - Cast-resin insulated, single-pole
 - Insulation class E
 - Secondary connection via screw-type terminals
 - Options:
 - With earth-fault winding
 - Double-pole voltage transformer



Voltage transformer, fixed-mounted



Voltage transformer, withdrawable



Electrical data

Rated voltage	up to 24 kV
Secondary operating voltage	up to 100 V or up to $100 V/\sqrt{3}$
Accuracy classes	0.2/0.5/1.0/3P/6P, depending on the type of CT
Rated output	up to 200 VA, depending on the type of CT

Components

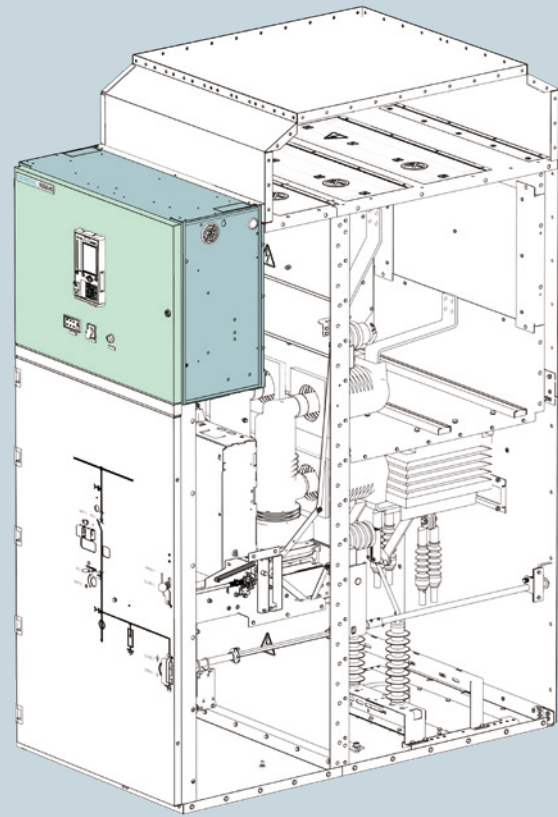
Low-voltage compartment

Features

- Used for installing protection, control, measurement and metering devices
- Independent from the high-voltage part, safe to touch
- Standard LV compartment 705mm, higher LV compartment 980mm (optional)
- LV cables are flexible conductors protected by metal covers
- To connect the removable part and wiring in the panel to the LV compartment with a 64-core coding plug
- Specific key for low voltage door



LV compartment door (example)



Siemens NXAirS Intelligent Solution (optional)

The intelligent distribution solution is mainly used for the intelligent operation and maintenance application of MV/LV substations, covering from data perception, collection, processing, analysis, storage to application, and featuring a three-level architecture, i.e. field level, edge level and application level.

Field level (optional)

Thanks to integrated intelligent sensing technology, such as temperature sensing units, circuit-breaker control loop coils, typical motor characteristics sensing units and arc light sensing technology, the intelligent MV air-insulated switchgear supports holographic status monitoring by data mining, analysis and processing through intelligent devices.

1. Intelligent NXAirS air-insulated switchgear

Control function

- Circuit-breaker ON/OFF control
- Motor-driven cassette movement control
- Motor-driven earthing switch opening and closing control
- One-button sequence control
- max. driving power of the motor 400W, continuous current 3A

Monitoring function

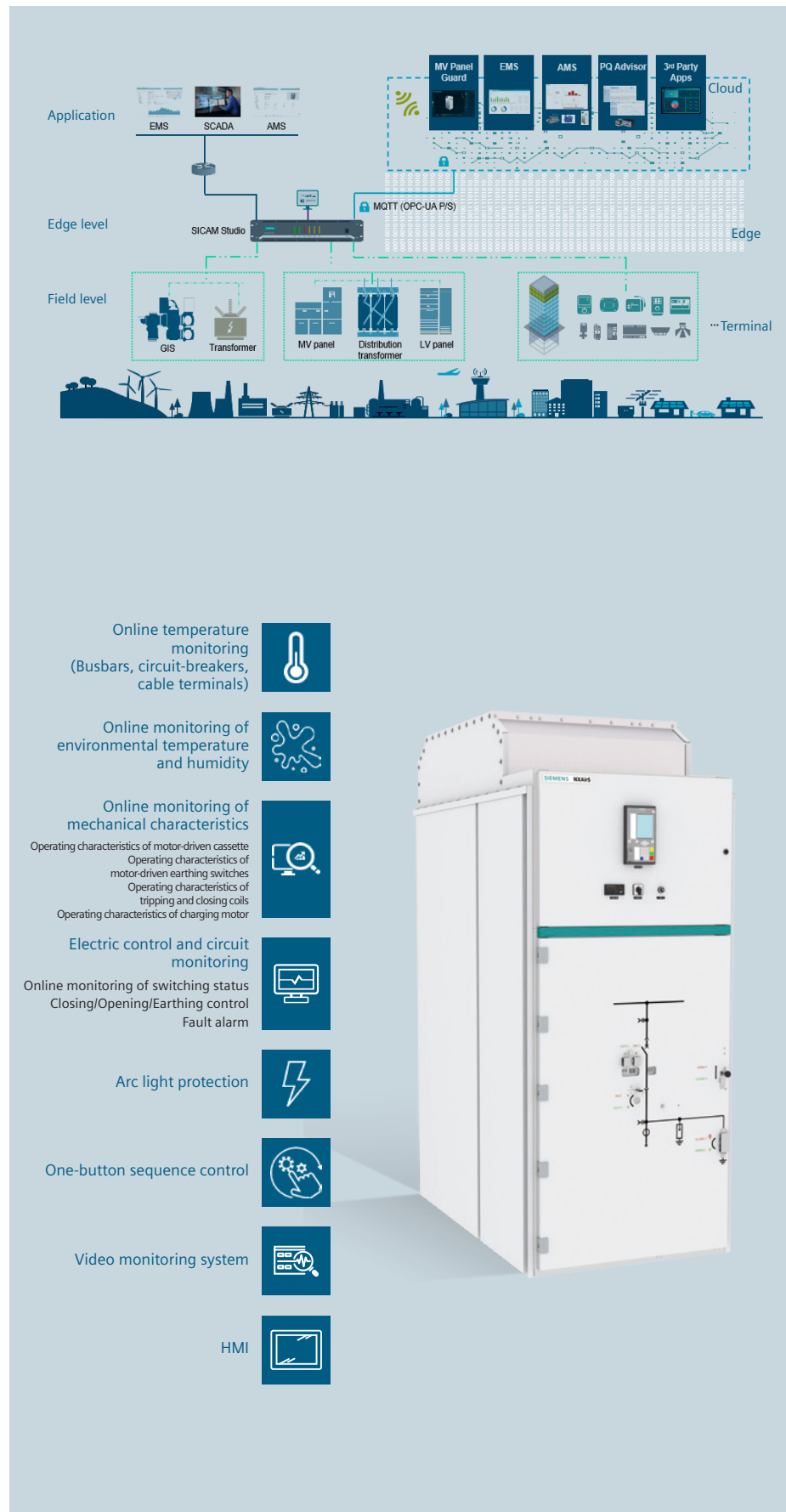
- Wireless temperature online monitoring
- Temperature measurement of cable compartment, busbars, contact arm of circuit-breaker
- Online monitoring of environmental temperature and humidity
- Video monitoring system

Monitoring function

- Operating characteristics of motor-driven cassette
- Operating characteristics of motor-driven earthing switches
- Operating characteristics of tripping and closing coils
- Operating characteristics of charging motor

Statistics of operating status of switchgear

- Analysis of vacuum interrupter life of circuit-breaker
- Statistics of tripping and closing cycles of the switchgear
- Statistics of operating loads



Components

Intelligent solution

2. 7SJ686+All in One intelligent switching protection solution

- Protection function
- Arc light protection
- Motor-operated and one-button sequence control
- Diagnosis and warning of abnormal temperature rise
- Environmental temperature and humidity monitoring
- VCB characteristics
- Electrical life prediction of circuit-breaker

3. 6MD685 intelligent solution

- Color touchscreen display supports embedded and DIN rail mounting
- 48/110/220 VDC power supply
- Wireless temperature measurement function
- Analysis and evaluation of the electrical life of circuit-breaker
- Online monitoring of VCB characteristics
- Multiple sensor connections
- Supports Modbus RTU/Modbus TCP/IEC 61850 communication protocols

Edge level (optional)

SICAM Studio intelligent gateway integrates many functions such as local monitoring backend (power monitoring), protocol conversion and cloud gateway, enabling edge computing and control functions and transferring the data collected from the field level to the backend via protocol conversion.

- Integrated Siemens professional power monitoring software
- Supports multiple power communication protocols
- Intelligent gateway enables data to be uploaded to the cloud
- Edge computing application deployment, ready to use

Application level (optional)

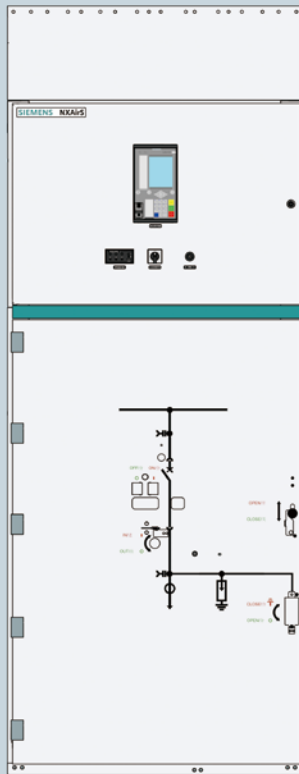
NXpower intelligent distribution management platform allows real-time monitoring of switchgear status, efficient asset management, reliable and proactive operation and maintenance, intelligent energy efficiency management and power quality insight.

- EMS Basic: for small and medium-sized enterprises, integrating the standard energy audit template and KPI into the IPC to reduce the use cost and realize rapid deployment and delivery
- AMS Asset Management System: allowing reasonable asset operation and maintenance, status monitoring and lifecycle management
- PQ Advisor online power quality analysis



Technical Data

Electrical data



up to 24 kV, 31.5 kA, 4,000 A (optional)

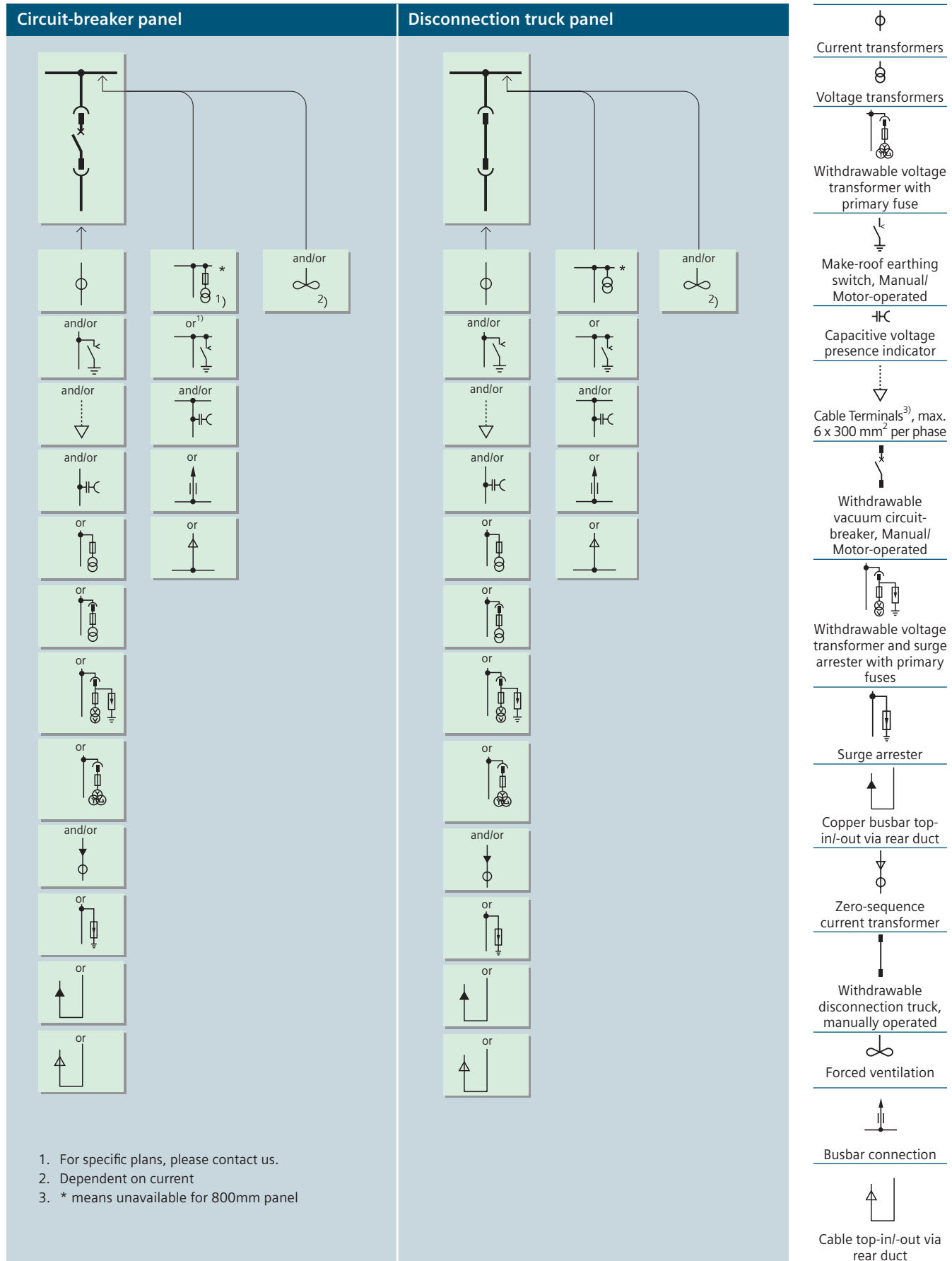
up to 31.5 kA

Rated voltage	kV	24
Rated frequency	Hz	50/60
Rated 1-min power frequency withstand voltage	kV	50/60 (optional 65/79)
Lightning impulse withstand voltage (peak)	kV	125/145
Rated short-circuit breaking current	kA, max.	31.5
Rated short-time withstand current/duration	kA/s, max.	31.5/4
Rated short-circuit making current	kA, max.	80 (50Hz)/82 (60Hz)
Rated peak withstand current	kA, max.	80 (50Hz)/82 (60Hz)
Rated busbar current	kA, max.	4,000*
Rated feeder current:		
Circuit-breaker panel	A, max.	3,150 (4000*)
Disconnection truck panel	A, max.	3,150 (4000*)
Bus sectionalizer	A, max.	3,150 (4000*)
Busbar connection panel	A, max.	3,150 (4000*)

* for >3.150A please consult Siemens' local sales representative

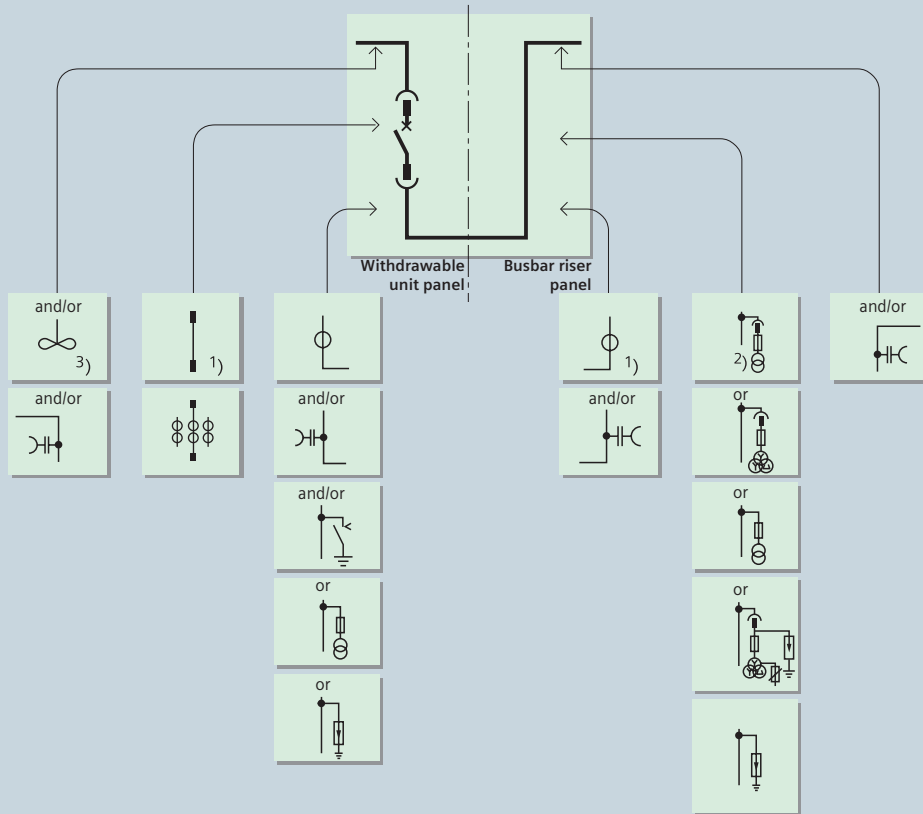
Technical Data

Product range and primary solution



1. For specific plans, please contact us.
2. Dependent on current
3. * means unavailable for 800mm panel

Bus sectionalizer (mirrored interchangeable mounting also possible)



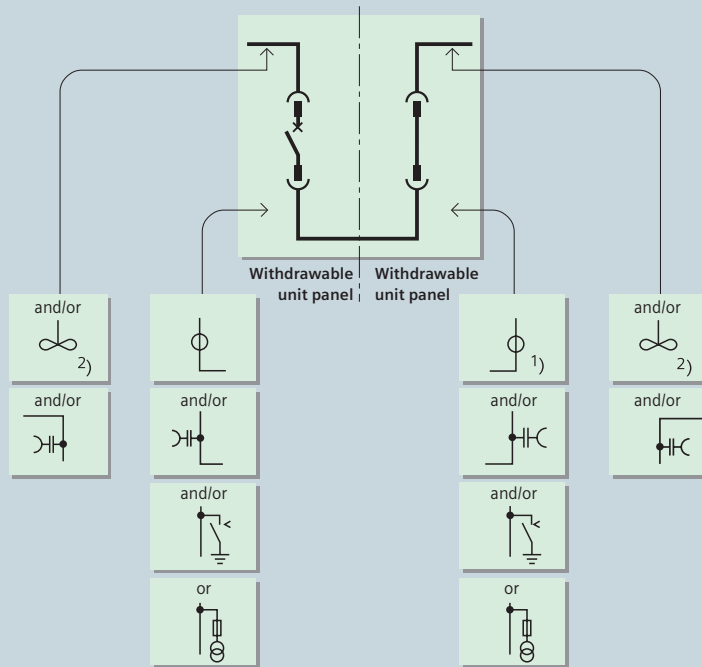
1. The current transformer needs to be used together with a withdrawable disconnection truck
2. Withdrawable metering unit
3. Dependent on ratings

	Current transformers
	Voltage transformers
	Withdrawable voltage transformer with primary fuse
	Make-roof earthing switch, Manual/ Motor-operated
	Capacitive voltage presence indicator
	Cable Terminals ³⁾ , max. 6 x 300 mm ² per phase
	Withdrawable vacuum circuit-breaker, Manual/ Motor-operated
	Withdrawable voltage transformer and surge arrester with primary fuses
	Surge arrester
	Copper busbar top-in/-out via rear duct
	Zero-sequence current transformer
	Withdrawable disconnection truck, manually operated
	Forced ventilation
	Busbar connection
	Cable top-in/-out via rear duct

Technical Data

Product range and primary solution

Bus sectionalizer (mirrored interchangeable mounting also possible)


















1. The current transformer needs to be used together with a withdrawable disconnection truck
2. Dependent on ratings

	Current transformers
	Voltage transformers
	Withdrawable voltage transformer with primary fuse
	Make-roof earthing switch, Manual/Motor-operated
	Capacitive voltage presence indicator
	Cable Terminals ³⁾ , max. 6 x 300 mm ² per phase
	Withdrawable vacuum circuit-breaker, Manual/Motor-operated
	Withdrawable voltage transformer and surge arrester with primary fuses
	Surge arrester
	Copper busbar top-in/-out via rear duct
	Zero-sequence current transformer
	Withdrawable disconnection truck, manually operated
	Forced ventilation
	Busbar connection
	Cable top-in/-out via rear duct

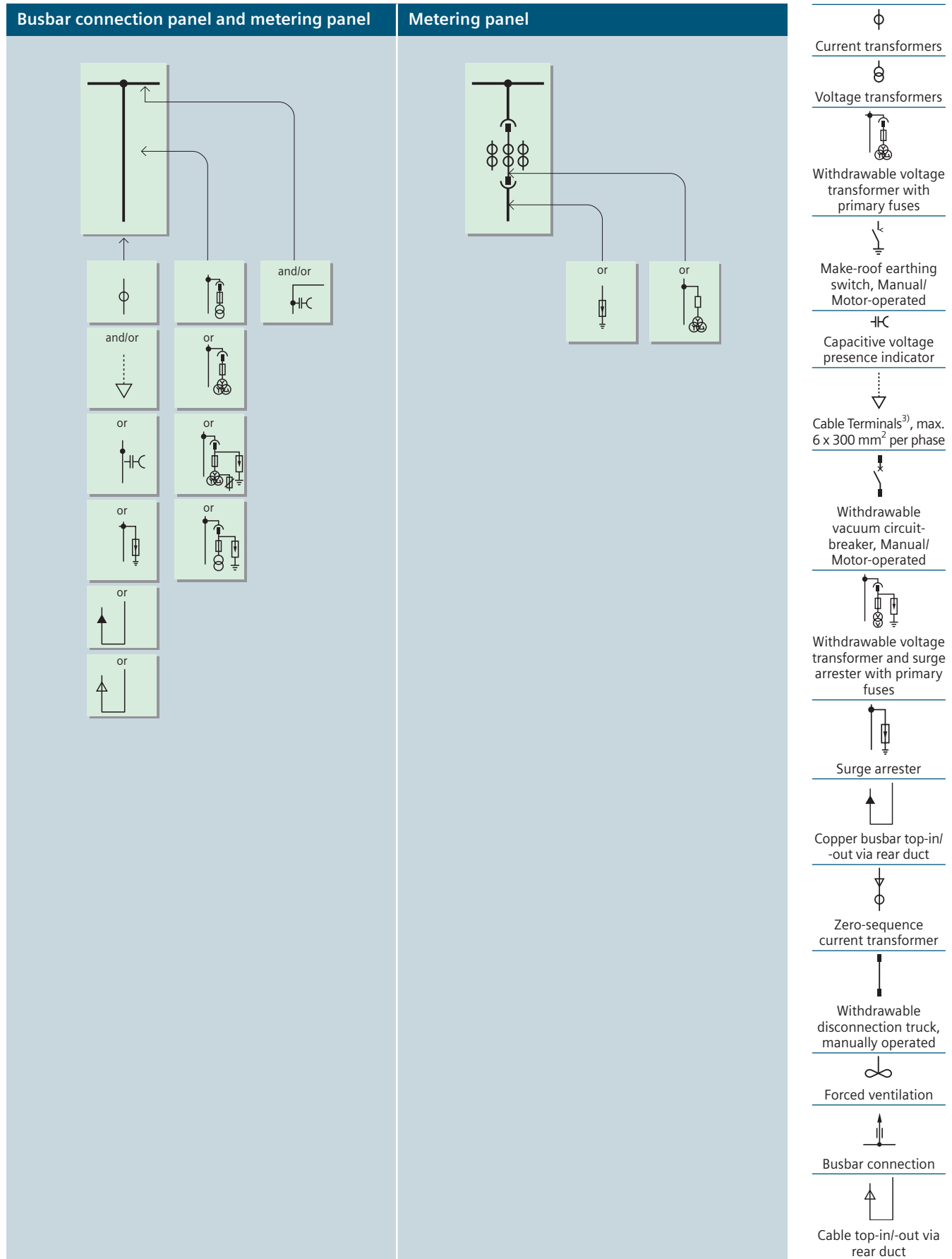
Product range and primary solution

The diagram illustrates the connection of a busbar riser panel to various electrical components. The busbar riser panel is a central vertical structure with two main sections labeled "Busbar riser panel". It is connected to a network of components including switches, fuses, and relays, all arranged in a symmetrical layout around the central busbar.

- | | |
|---|--|
|  | Current transformers |
|  | Voltage transformers |
|  | Withdrawable voltage transformer with primary fuse |
|  | Make-roof earthing switch, Manual/Motor-operated |
|  | Capacitive voltage presence indicator |
|  | Cable Terminals ³⁾ , max. 6 x 300 mm ² per phase |
|  | Withdrawable vacuum circuit-breaker, Manual/Motor-operated |
|  | Withdrawable voltage transformer and surge arrester with primary fuses |
|  | Surge arrester |
|  | Copper busbar top-in/-out via rear duct |
|  | Zero-sequence current transformer |
|  | Withdrawable disconnection truck, manually operated |
|  | Forced ventilation |
|  | Busbar connection |
|  | Cable top-in/-out via rear duct |

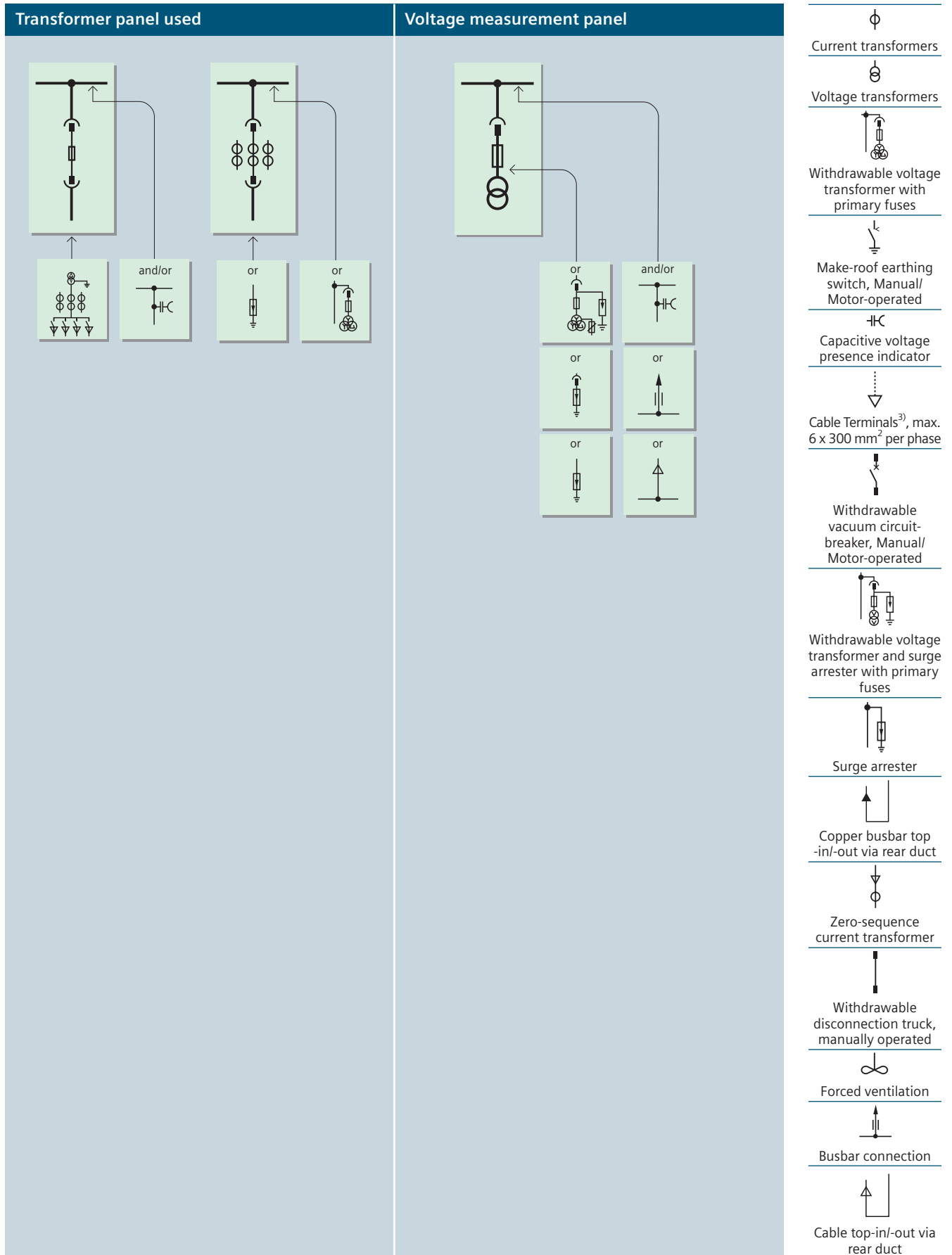
Technical Data

Product range and primary solution



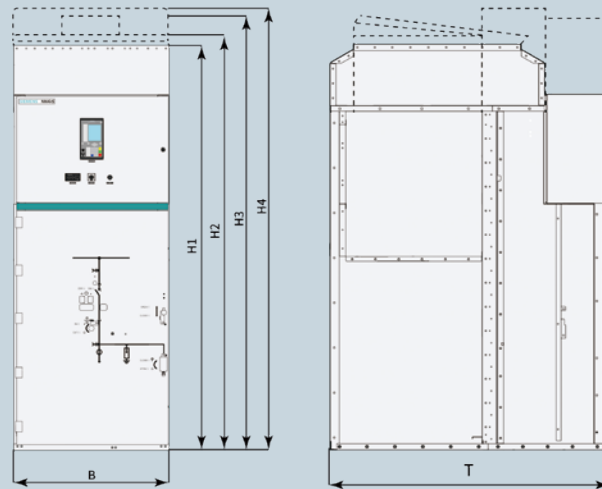
Technical Data

Product range and primary solution



Technical Data

Dimensions

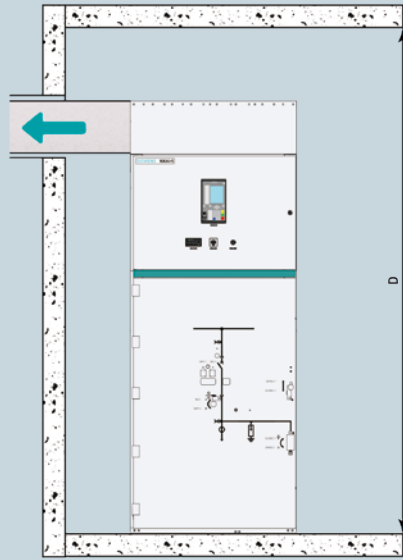


NXAirS ≤ 24 kV; ≤31.5 kA; ≤ 4,000 A*

		Panel type	Rated current	Short-time withstand current
				≤ 31.5 kA
Width mm	B	Circuit-breaker panel, disconnection truck panel	630 A	800 / 1,000
			1,250 A	800 / 1,000
			1,600 A	800 / 1,000
			2,000 A	1,000
			2,500 A	1,000
			3,150 A	1,000
4,000 A*	1,000			
		Bus sectionalizer	1,250 A	2 x 800 / 1,000
			1,250 A to 2,500 A	2 x 1,000
			> 2,500 A	2 x 1,000
		Voltage measurement panel	–	1,000
		Transformer panel used	–	1,000
		Busbar connection panel and metering panel	–	1,000
Height mm	H1	Standard panel or standard panel with natural ventilation		2,295
	H2	with higher LV compartment or additional compartment for busbar components		2,620
	H3	with forced ventilation		2,680
	H4	with optional arc absorber ²⁾		2,820
Depth mm	T ³⁾	Standard panel		1,800
		≤1,250A, cable top-out via rear duct 300mm		2,100
		Standard rear duct 600mm		2,400

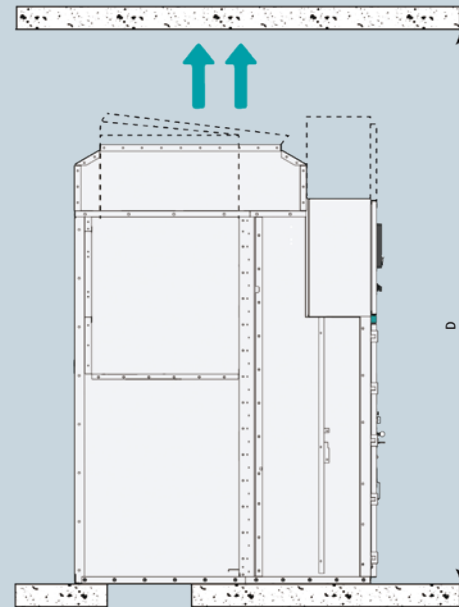
1. The width depends on a multiple of the rated current.
2. The number of absorbers depends on switchgear configuration.
3. The rear duct with depth 300 mm/600 mm is used for the special configuration.
4. *Please consult Siemens' local sales representatives for rated current > 3,150 A

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



Horizontal pressure relief

Pressure relief into the switchgear room through absorbers

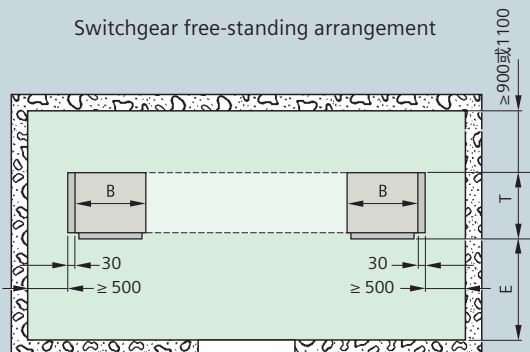


Vertical pressure relief

Type of pressure relief	Rated voltage	Ceiling height D, in mm
		≤31.5 kA
Pressure relief into the switchgear room through absorbers	24 kV	≥ 3,400
Pressure relief out of the switchgear room through a pressure relief duct	24 kV	≥ 3,000
IP42	24 kV	≥ 3,400
Width of control aisle E (min.) for panel replacement	24 kV	≥ 1,250

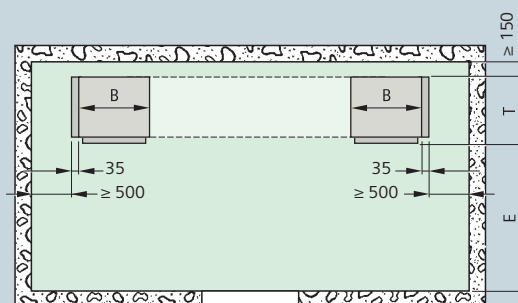
Single-row arrangement for single-busbar switchgear (plan view)

Switchgear free-standing arrangement



Dimension from panel backplate to wall for rear connection
 800 mm panel: ≥ 900 mm
 1,000 mm panel: ≥ 1,100 mm

Switchgear wall-standing arrangement

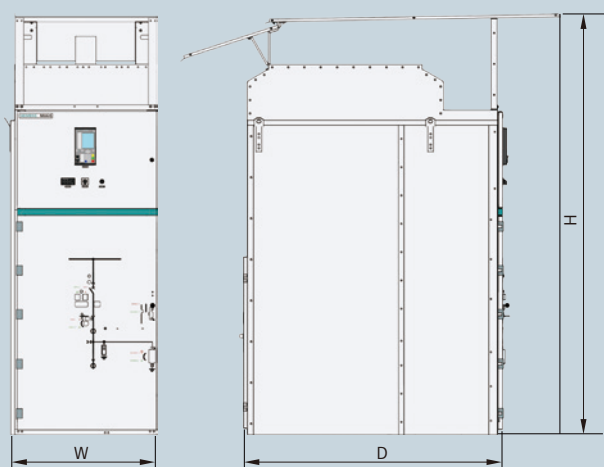


Recommended E value
 Single row arrangement ≥ 1,250 mm
 Double rows arrangement ≥ 2,500 mm

For dimensions B (width) and T (depth), you can see the table on page 26.

Technical Data

Typical for IP41/42

Features	Dimensions																																		
<p>Special design for application in marine, offshore, data center and some other areas, based on the NXAirS standard product range</p> <ul style="list-style-type: none">• Available up to 24 kV, 31.5 kA, 4,000 A *• Factory-assembled, metal-enclosed and type-tested switchgear according to IEC 62271-200• Internal arc classification IAC A FLR 31.5 kA / 1 s• Pressure relief into the switchgear room through absorbers and exhaust, with an optimized ceiling height of 3,400 mm• Degrees of protection IP41 or IP42																																			
Front /side view of switchgear with IP41/42																																			
<table><tr><th rowspan="2"></th><th rowspan="2">Panel type</th><th rowspan="2">Rated current</th><th>Short-time withstand current</th></tr><tr><th>≤ 31.5 kA</th></tr><tr><td rowspan="7">Width, in mm W</td><td rowspan="7">Circuit-breaker panel, disconnecting panel</td><td>630 A</td><td>800/1,000</td></tr><tr><td>1,250 A</td><td>800/1,000</td></tr><tr><td>1,600 A</td><td>800/1,000</td></tr><tr><td>2,000 A</td><td>1,000</td></tr><tr><td>2,500 A</td><td>1,000</td></tr><tr><td>3,150 A</td><td>1,000</td></tr><tr><td>4,000 A*</td><td>1,000</td></tr><tr><td rowspan="2">Height, in mm H</td><td>Standard panel with horizontal pressure relief duct</td><td></td><td>2,620</td></tr><tr><td>IP41 / 42, with top cover</td><td></td><td>2,973</td></tr><tr><td>Depth, in mm D</td><td>Standard panel</td><td></td><td>1,800</td></tr></table>					Panel type	Rated current	Short-time withstand current	≤ 31.5 kA	Width, in mm W	Circuit-breaker panel, disconnecting panel	630 A	800/1,000	1,250 A	800/1,000	1,600 A	800/1,000	2,000 A	1,000	2,500 A	1,000	3,150 A	1,000	4,000 A*	1,000	Height, in mm H	Standard panel with horizontal pressure relief duct		2,620	IP41 / 42, with top cover		2,973	Depth, in mm D	Standard panel		1,800
	Panel type	Rated current	Short-time withstand current																																
			≤ 31.5 kA																																
Width, in mm W	Circuit-breaker panel, disconnecting panel	630 A	800/1,000																																
		1,250 A	800/1,000																																
		1,600 A	800/1,000																																
		2,000 A	1,000																																
		2,500 A	1,000																																
		3,150 A	1,000																																
		4,000 A*	1,000																																
Height, in mm H	Standard panel with horizontal pressure relief duct		2,620																																
	IP41 / 42, with top cover		2,973																																
Depth, in mm D	Standard panel		1,800																																
* Please consult Siemens' local sales representatives for rated current > 3,150A																																			

Transport

NXAirS 24 kV switchgear is delivered in form of individual panels.

Please observe the following:

- Transport facilities on site
- Transport dimensions and 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: Sea-freight

- Panels on pallets
- Sealed in PE protective foil, with closed wooden crate
- With desiccant bags
- With sealed wooden base
- max. storage time: 6 months.

Means of transport: Air-freight

- Panels on pallets
- In wooden latticed crate with sealed upper and lower PE protective foil.

These transport and packing stipulations apply to the complete NXAirS product family.

More information on transport dimensions/weights is given in the corresponding table and may change depending on the project.

NXAirS up to 31.5 kA

Transport dimensions, transport weights for individual panels

Transport by rail or truck (wooden crate or paper packaging)

Panel type	Branch busbar	Packing dimensions W x D x H (mm)	Net weight (kg)	Gross weight (kg)
Circuit-breaker panel	630 A	1,300 (1,000)* x 2,000 x 2,800	970	1,050
	1,250 A	1,300 x 2,000 (2,600)** x 2,800	1,210	1,290
	1,600 A	300 (1,100) x 2,000 x 2,500	1,140	1,170
	2,000 A	300 x 2,000 (2,600) x 2,800	1,250	1,330
	2,500 A	300 x 2,000 x 2,800	1,410	1,490
Busbar riser panel, Bus sectionalizer	3,150 A	300 x 2,000 (2,600) x 2,800	1,350	1,430
	630 A	1,300 x 2,000 x 2,800	950	1,030
	1,250 A		1,000	1,080
	2,500 A		1,200	1,280
	3,150 A		1,300	1,380
Station transformer panel		1,300 x 2,000 x 2,800	1,350	1,430
PT panel	-	1,300 x 2,000 x 2,800	850	935

Transport by sea-freight or air-freight

Panel type	Branch busbar	Packing dimensions W x D x H (mm)	Net weight (kg)	Gross weight (kg)
Circuit-breaker panel	630 A	1,300 (1,100) x 2,000 x 2,500	970	1,050
	1,250 A	1,300 (1,100) x 2,000 x 2,500	1,050	1,130
		1,300 x 2,000 (2,600) x 2,500	1,210	1,290
	1,600 A	1,300 (1,100) x 2,000 x 2,500	1,140	1,170
	2,000 A	1,300 x 2,000 (2,600) x 2,500	1,350	1,380
	2,500 A	1,300 x 2,000 (2,600) x 2,500	1,410	1,490
	3,150 A	1,300 x 2,000 (2,600) x 2,500	1,600	1,680
Busbar riser panel, Bus sectionalizer	630 A	1,300 x 2,000 x 2,500	950	1,030
	1,250 A		1,000	1,080
	2,500 A		1,200	1,280
	3,150 A		1,300	1,380
Station transformer panel		1,300 x 2,000 x 2,500	1,350	1,430
PT panel	-	1,300 x 2,000 x 2,500	850	935

* values in brackets are for 800mm panel width, and rest for that of 1,000mm

** values in brackets are for standard panel depth, and rest for that with 600mm rear duct

Standards

Standards, Specifications, Guidelines

Type of Service Location

The switchgear can be used as indoor installation according to IEC 61936.1 and GB/T 36271.1.

- 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.

Dielectric Strength

- The dielectric strength is verified by testing the switchgear with rated short-duration power-frequency withstand voltage and rated lightning impulse withstand voltage according to IEC 62271-1 and GB/T 11022 (see Table "Dielectric strength").
- The ratings are referred to altitude and to normal atmospheric conditions (1,013 hPa, 20 °C, 11g/m³ humidity according to IEC 60071 and GB/T 36271.1).
- The dielectric strength decreases with increasing altitude. For site altitudes about 1,000m (above sea level), the standards do not provide any guidelines for the insulation rating. Instead, special regulations apply to these altitudes.
- Site altitude
 - The dielectric strength of air insulation decreases with increasing altitude due to low air density. This reduction is permitted up to a site altitude of 1,000 m according to IEC and GB.
 - For site altitudes above 1,000 m, a higher insulation level must be selected. It results from the multiplication of the rated insulation level for 0 to 1,000 m with the altitude correction factor K_a .

Standards

The 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.

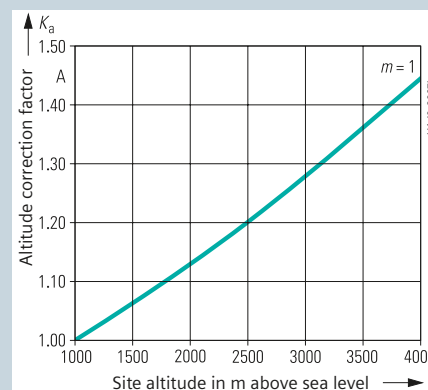
The switchgear NXAirS optional conforms to the GB standard.

Table – Dielectric Strength

Rated voltage (r.m.s. value)	kV	24
Rated short-duration power-frequency withstand voltage (r.m.s. value)		
– Between phases and to earth	kV	50 (65 optional)
– Across isolating distances	kV	60 (79 optional)
Rated lightning impulse withstand voltage (peak value)		
– Between phases and to earth	kV	125
– Across isolating distances	kV	145

Altitude Correction Factor K_a

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



Rated short-time power-frequency withstand voltage to be selected for site altitudes > 1,000 m

\geq Rated short-timed power-frequency withstand voltage up to $\leq 1,000 \text{ m} \cdot K_a$

Rated lightning impulse withstand voltage to be selected for site altitudes > 1,000 m

\geq Rated lightning impulse withstand voltage up to $\leq 1,000 \text{ m} \cdot K_a$

Example:

1,500 m site altitude above sea level,

24 kV switchgear rated voltage,

125 kV rated lightning impulse withstand voltage

Rated lightning impulse withstand voltage to be selected =
 $125 \text{ kV} \cdot 1.063 \approx 133 \text{ kV}$

Result:

According to the above table, switchgear with rated voltage of 24 kV, rated lightning impulse withstand voltage of 133 kV for 1,500 m application is to be selected.

Overview of Standards

		IEC standard	GB standard
Switchgear	NXAirS	IEC 62271-1 IEC 62271-200	GB/T 11022 GB/T 3906
Devices	Vacuum circuit-breaker	IEC 62271-100	GB/T 1984
	Disconnectors and earthing switches	IEC 62271-102	GB/T 1985
	HV HRC fuses	IEC 60282-1	GB/T 15166.2
	Voltage detecting systems	IEC 61243-5	-
Degree of protection	IP-Code	IEC 60529	GB/T 4208
	IK-Code	IEC 62262	GB/T 20138
Insulation	–	IEC 60071	GB/T 311.1
Instrument transformers	–	IEC 61869-1	GB/T 20840.1
	Current transformers	IEC 61869-2	GB/T 20840.2
	Voltage transformers	IEC 61869-3	GB/T 20840.3
Installation, erection	–	IEC 61936-1	GB/T 36271.1

Current Carrying Capacity

- According to IEC 62271-200 or IEC 62271-1, GB/T 11022 or GB/T 3906, the rated normal 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 / GB 3906
- 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.
- Beyond the standards mentioned above, NXAirS switchgear up to 31.5 kA/1 s is optionally provided with confinement of an internal arc to the respective compartment.

Seismic Capacity (optional)

NXAirS 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 62271-2
High-voltage switchgear and controlgear - Part 2: Seismic qualification for rated voltages of 72.5 kV and above
- IEC 62271-200
High-voltage switchgear and controlgear - Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 40.5 kV
- GB/T 13540
Seismic qualification for high voltage switchgear and controlgear
- GB/T 3906
High-voltage switchgear and controlgear - Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 3.6 kV and up to and including 40.5 kV

Color of the Panel Front

RAL 7035 (light gray)

The NXAirS switchgear is suitable for application in indoor installations under normal operating conditions as defined in the standard IEC 62271-1 and GB 11022.

- Temperature -5°C to +40°C
-25°C to +40°C ¹⁾ (optional)
- Relative humidity Mean value over 24 hours: ≤ 95 %
Mean value over 1 month: ≤ 90 %
- Condensation Occasionally or frequently
- Site altitude considered Altitude correction to be considered (see page 30)
- No significant pollution of the ambient air (dust, gases, vapors, salts).

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.

Terms

"Make-proof earthing switches" are earthing switches with short-circuit making capacity according to:

- IEC 62271-102
- GB/T 1985

Protection against solid foreign objects, electric shock and water

NXAirS switchgear complies with the following standards:

IEC 62271-1	GB/T 11022
IEC 62271-200	GB/T 3906
IEC 60529	GB/T 4208
IEC 62262	GB/T 20138

Degrees of protection:

Switchgear panel	NXAirS ≤ 24 kV
Degree of protection of enclosure as standard optionally	IP4X IP41, IP42
Degree of protection for the partitions	IP2X
Degree of protection for the enclosure against mechanical impacts from outside	IK07

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.

- Secondary devices (e.g. protection devices, meters, measuring, etc.) must be suitable for the given operating conditions

**Published by
Siemens Ltd., China**

Siemens Ltd., China
Smart Infrastructure
Electrification and Automation
299, Tianning Road, Min Hang District
200245 SHANGHAI, China
Siemens Switchgear Limited Shanghai
298, Tianning Road, Min Hang District
200245 SHANGHAI, China

For further information please contact
Our Customer Support Center
Hotline: 400 616 2020

Order No.: EMDS-B80072-00-5DCN

Subject to changes and errors. The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.

NXAirS and SION M are registered trademarks of Siemens AG. Any unauthorized use is prohibited. All other designations in this document may represent trademarks whose use by third parties for their own purposes may violate the proprietary rights of the owner.