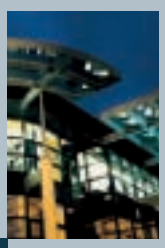
Type-Tested Power Distribution Board 8PT
with Rear Busbars

sivacon



SIEMENS

The Obvious Solution for Global Challenges – **SIVACON**

Type-testing is one of today's important issues for low-voltage technology and will become increasingly more significant in the near future. Fortunately, all SIVACON systems that are supplied are type-tested.
But this is not all that Siemens offers. With "SIVACON Technology Partners", Siemens brings the versatile and type-tested SIVACON low-voltage switchboard right to your door.

Faster, more flexible and more favourably priced than ever thanks to our competent local switchgear manufacturers and with all the advantages that only a local supplier can offer you.

For specific requirements in infrastructure projects you can now use our new SIVACON – with rear busbars – and of course equipped with all the features of state-of-the-art low-voltage technology.

Your advantage: "SIVACON Technology Partners"

The SIVACON Technology Partners are permanently audited, qualified switchboard manufacturers, which Siemens has selected, close to you. They are located worldwide. They offer you the wealth of Siemens know-how at conditions that only a local supplier can offer. Fast, flexible and favourably priced.

SIVACON
Siemens Technology

Versatile and Safe –
Type-Tested Modules for Power Distribution

The SIVACON low-voltage switchboard is the standard solution for infrastructure projects in industry and buildings (administration and functional buildings as well as industrial and commercial buildings).
SIVACON provides you with a complete power distribution board (main distribution board and subdistribution board). It is available worldwide for all applications up to 3200 A either for fixed or plug-in designs using withdrawable Sentron WL circuit-breakers.

- Safety and proven quality for every system by type-testing
- Siemens switchgear for reliable operation
- Worldwide presence with local production
- High flexibility for economical solutions

SIVACON Features

- Type-tested standard modules (TTA)
- Variable busbar position at the rear of the cubicle
- 3- and 4-pole busbar system up to 3200 A
- Rated peak withstand current I_{pk} up to 187 kA
- Multi-phase combination possibilities
- Single-front and back-to-back installation
- Cable entry from above or below

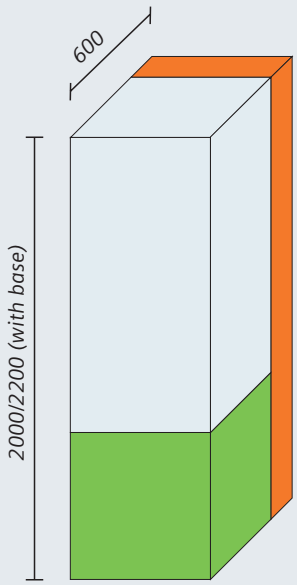
Always Flexible –
SIVACON Adapts to your Requirements

Modular technology makes it possible to optimally adapt SIVACON to any requirement.

- Variable busbar position at the rear of the cubicle (either above or below)
- Any component can be installed in the device compartments
- User-oriented compartmentalisation of functional compartments
  – Busbar covers
  – Partition between two cubicles

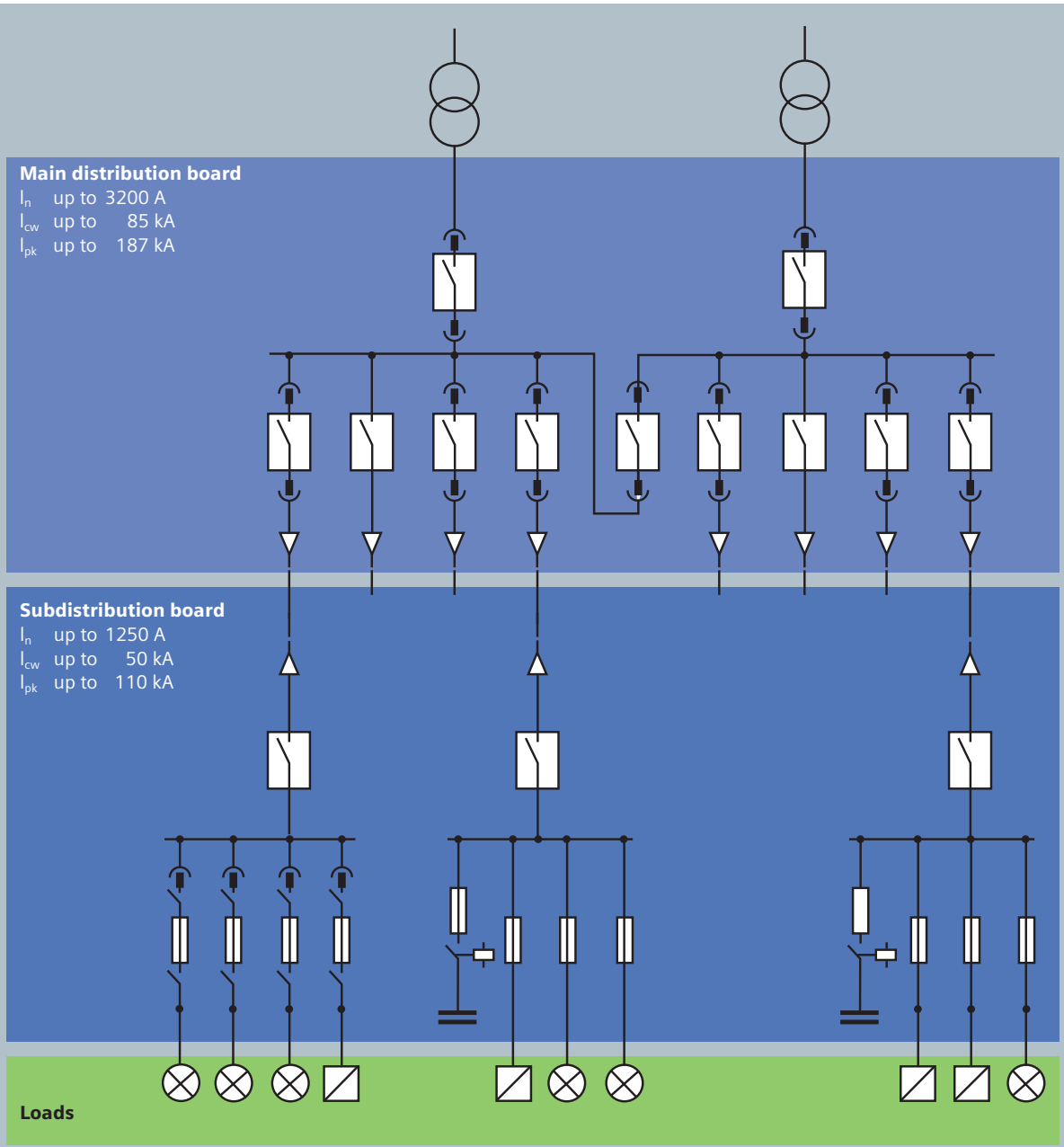
Optimum Adaptation to the Space Conditions:

- Wall-mounted or free-standing
- Cables and busbars may be connected from above or below
- Cable connection from the front
- Base (200 mm) with removable covers to locate the control wires and cables



- Device compartment
- Busbar compartment
- Optional cable connection compartment from the side, top or bottom (depending on the technology used).

SIVACON for All Applications in the Low-Voltage Network



Frame and Enclosure –
Dimensionally Accurate and Stable

The frame consists of rigid sheet steel sections that are connected to one another: SIVACON's dimensionally accurate and sturdy frame is available in a bolted version.

- Holes are provided around the frame in a 25-mm hole grid for individual installation
- Door opens to 180°
- Door lock with espagnolette or release lever
- 200-mm base (optional)

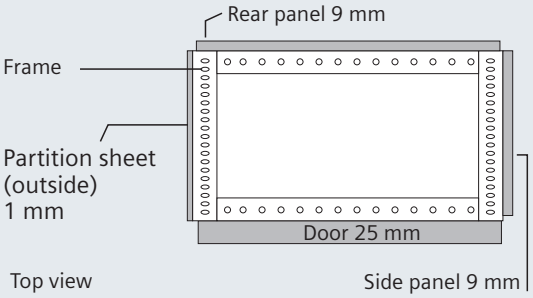
Surface Treatment
- Galvanised frame parts and base
- Galvanised cover
- Powder-coated side panels, doors and base covers

Material
Frame and enclosure are manufactured from sheet steel in the following thicknesses:

Frame, base	2.5 mm
Cover	1.5 mm
Doors	2.0 mm
Partition, Base plate	1.0 mm

Degrees of Protection to IEC 60529
IP 30, IP 31, IP 40, IP 41 ventilated
IP 54 non-ventilated

Cubicle Dimensions (without enclosure)



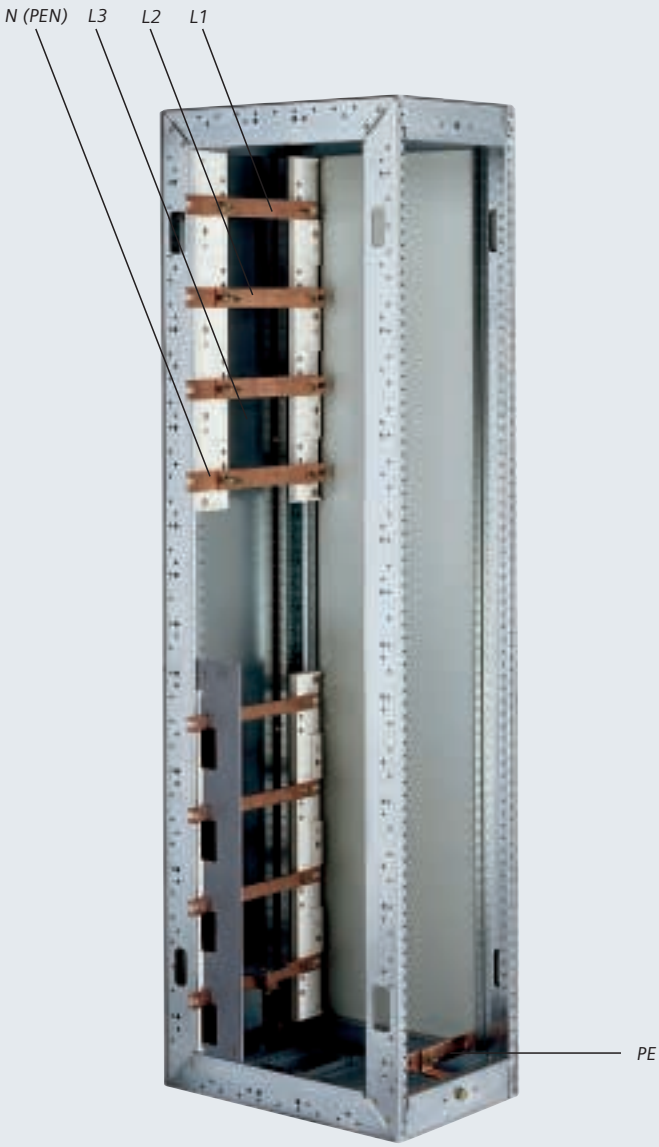
Cubicle height (mm)	Cubicle width (mm)	Cubicle depth (mm)
2000	400, 600, 800, 850, 1000, 1200	600
2200 (2000 + 200 base)	400, 600, 800, 850, 1000, 1200	600

Base 200 mm

Variable Busbar System –
The Answer to a Wide Range of Requirement

Differing requirements for busbar systems usually call for individual solutions.
SIVACON offers modules for cost-effective designs with a high level of safety.

- Rear busbar position
- Busbar system for rated currents up to 3200 A
- User-oriented gradation of rated currents
- Rated peak withstand current I_{pk} up to 187 kA
- Busbar compartment separated from the device compartment
- Two busbar systems can be fed in the switchboard
- Connection points between transport units are easily accessible from the front
- Maintenance-free busbar connections
- Arc barriers to limit the effects of arcing faults (optional)



Busbar System

Arc barrier

Transport connection point easily accessible from the front

Rated currents at 35 °C Ambient Temperature

Phase conductor (L1, L2, L3), Quantity, Dimensions (mm)	Non-ventilated A	Naturally ventilated A	kA	I_{pk} / I_{cw}
1 x 30 x 10	810	990	52.2 / 25	
1 x 40 x 10	950	1160	52.5 / 25	
1 x 60 x 10	1240	1510	143 / 65	
2 x 40 x 10	1600	1990	143 / 65	
2 x 60 x 10	1830	2300	187 / 85	
2 x 80 x 10	2060	2590	187 / 85	
2 x 100 x 10	2280	2900	187 / 85	

Circuit-Breaker Design –
Compact, Reliable and User-Friendly

It is common practice in modern circuit-breaker designs to connect a number of loads to a supply, feeder and coupling cubicles. The long-term operating reliability and personal safety of the switchboard are of particular importance.
Our SIVACON cubicles are equipped with fixed-mounted or withdrawable 3WL circuit-breakers (ACB) or, alternatively, with 3VL MCCB circuit-breakers. For this reason they are especially user-friendly and also guarantee a maximum safety.

Compact and reliable

- High degree of safety due to type-tested standard modules (TTA)
- Test and disconnect position with the door closed
- Circuit-breakers integrated in separate compartments, each equipped with a separate door
- Optimum connection conditions for every rated current range
- High safety for the installation personnel due to optimum cubicle separation

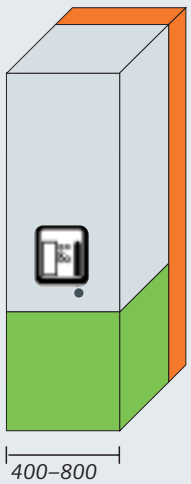
3WL extremely user-friendly

Siemens 3WL fixed-mounted and withdrawable circuit-breakers are used for the rated current range from 630 to 3200 A. This means:

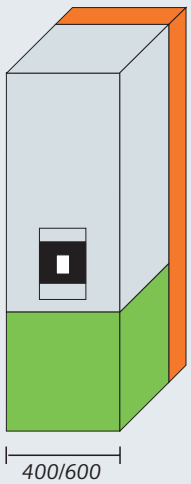
- The feed direction can be freely selected without restricting the technical data
- High short-time current-carrying capacity for time-graded short-circuit protection up to 400 ms assures that sections of the switchboard, which are not affected by a short-circuit, can continue to reliably operate
- Short-circuit protection with short-time grading control (ZSS) for very brief delay times (50 ms), irrespective of the grading level
- LCD operating current display in the control console (without ammeters and current transformers)
- Indication and operation when the door is closed

Cubicle Dimensions / Cubicle Structure

ACB circuit-breaker 3WL
630 A–3200 A
Cable connection at the front



MCCB circuit-breaker VL
630 A–1600 A
Cable connection at the front



3WL circuit-breaker;
1600 A rated current
400 mm wide

3VL circuit-breaker;
630 A rated current
400 mm wide

Switching Device Compartment

- Reliable travel of the circuit-breaker while the door is closed
- A maintenance position allows direct local inspection without having to remove the circuit-breaker

3WL in the maintenance position
Inspection without removing the circuit-breaker

Cable or Busbar Connection Compartment

- Optional cable or busbar connection from above or below
- A rated current-dependent connection compartment offers optimum termination conditions for cables and busbars
- Assembly times are shortened by optimum connection compartments

Optimum connection compartments
for high safety

In-line Fixed-Mounted Design 3NJ4 –
Economical, Reliable and Variable

The cubicles for outgoing feeders in fixed-mounted designs are equipped with in-line fuse switch disconnectors. These in-line fuse switch disconnectors are easy to install thanks to their compact design and modular structure.

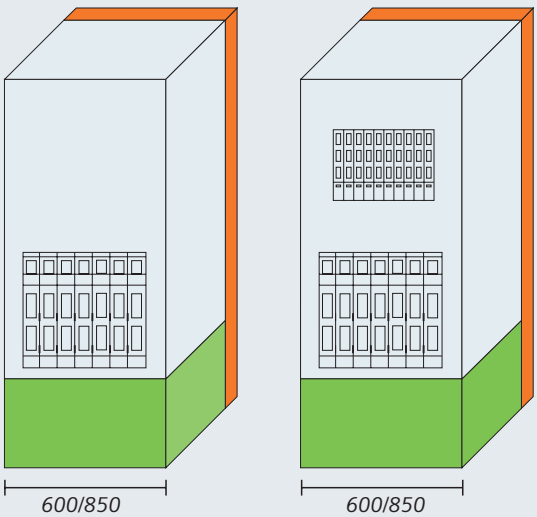
These cubicles are used for applications where devices do not have to be replaced in operation. In this case, the SIVACON fixed-mounted design offers an extremely cost-effective, safe and versatile solution.

- High degree of safety due to type-tested standard modules (TTA)
- Cable feeders up to 630 A with/without current metering.
- 24 feeders can be installed in each cubicle
- Dead-state fuse replacement
- Optional door cut-out
- Optional mounting of rapid assembly kits and fuse switch disconnectors up to 160 A (operated behind the door)

Fuse switch disconnector 3NJ4

Cubicle Dimensions / Cubicle Structure

Fuse switch disconnector 3NJ4
Cable connection at the front



In-line Plug-in Design 3NJ6 –
Quickly Plugged-in, Always Safe

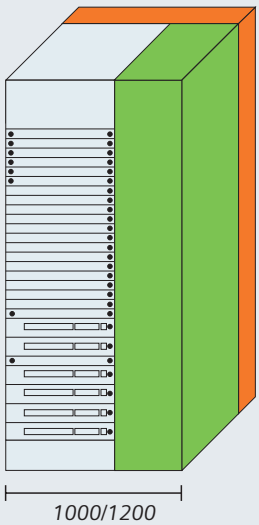
The in-line plug-in design outgoing feeders represents a low-priced alternative to the withdrawable unit. By virtue of the supply-side plug-in contact and their compact design, the modules can be easily and quickly interchanged without having to shut down the switchboard. With the in-line plug-in design, SIVACON offers a high degree of cost-effectiveness, safety and flexibility.

Plug-on bus system covered with safe-to-touch protection (IP 20B)

- High degree of safety due to type-tested standard modules (TTA)
- Supply-side plug-in contacts enable quick replacement
- In-line type switching devices for cable feeders up to 630 A available in the following design:
  – fuse module with fuses
  – fuse switch disconnectors (single-break)
  – fuse switch disconnectors (double-break)
  – switch disconnectors
- High packing density up to 32 feeders per cubicle
- Dead-state fuse replacement
- Protection against electric shock from plug-on bus system
- 400- and 600-mm-wide cable connection compartment
- Degree of protection up to IP 41
- A feeder can be replaced without having to shut down the system

Cubicle Dimensions / Cubicle Structure

Plug-in switch disconnectors 3NJ6
Cable connection right-hand side



Plug-in switch disconnector 3NJ6 with 250 A fuses featuring supply-side plug-in contacts

Reactive Power Compensation –
Lower Costs with Increased Safety

The cubicles for central reactive power compensation ease the load on transformers and cables, reduce transmission losses and save power costs. Depending on the load structure, they can be equipped with choked or chokeless capacitor modules.

Controller Module with Electronic Power Factor Controller for Flush Door Mounting

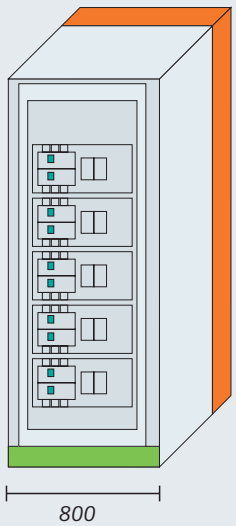
- Multi-function display
- Self-adaptation of the C/k value
- Adjustable nominal cos phi from 0.8 ind to 0.98 cap
- Manual/automatic operation

Capacitor Module up to 100 kvar

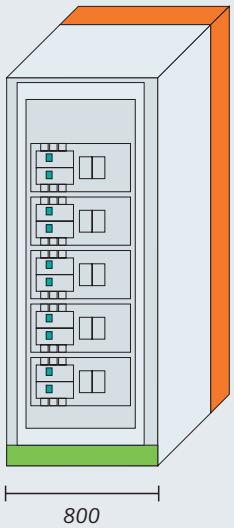
- Fuse switch disconnectors
- Capacitor contactors
- MKK power capacitors
- Discharge units
- Filter circuit chokes

Cubicle Dimension / Cubicle Structure

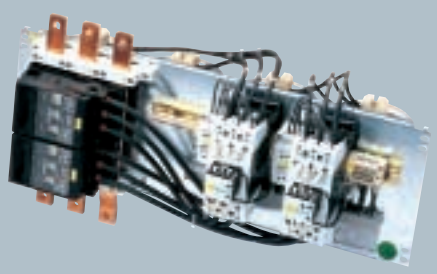
Reactive power compensation



Chokeless up to 500 kvar



Choked type up to 300 kvar

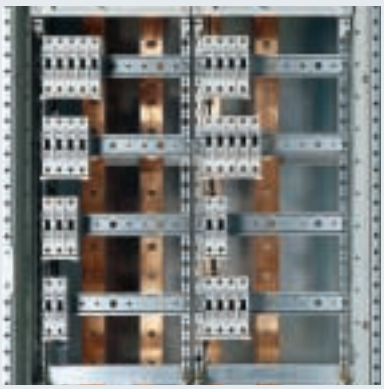


Capacitor module,
100 kvar (chokeless)

Cubicle for Customised Solutions –
Plenty of Space for Flexibility

Cubicles which can be freely engineered are designed so that devices can be installed using rapid assembly kits and for fused and non-fused outgoing feeders up to 630 A.

- High-degree safety due to type-tested standard modules (TTA)
- A wide range of components can be installed
- Continuously adjustable device-mounting plates for a standard front plane
- Doors with or without inspection glass or front covers

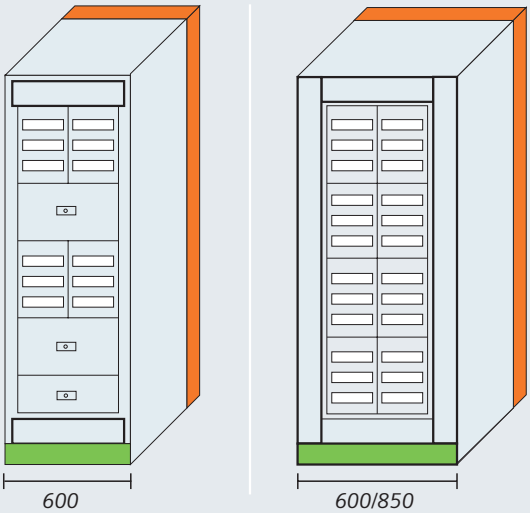


Rapid assembly kit with the cover removed

Outgoing feeders with 3VL circuit-breakers fixed on a mounting plate

Cubicle Dimensions / Cubicle Structure

Cubicle for customised solutions up to 1150 A



Type-Tested Switchgear and Controlgear Assembly (TTA) –
Signed, Sealed and Delivered Safety

SIVACON is a type-tested switchgear and controlgear assembly (TTA) whose physical characteristics were designed in the test laboratory both for normal operating conditions and for fault situations. Conclusive type tests assure a maximum of reliability and personal safety. SIVACON has passed the following verification tests as detailed in IEC 60439-1, DIN EN 60439-1 (VDE 0660 Part 500):

Type Testing

- Verification of temperature rise limits by test
- Verification of dielectric properties by test
- Verification of the short-circuit withstand strength by test
- Verification of the effective connection between the exposed conductive parts of the assembly and the protective circuit by inspection or resistance measurement
- Verification of the short-circuit withstand strength of the protective circuit by test
- Verification of clearances and creepage distances
- Verification of mechanical operation
- Verification of the degree of protection

Every SIVACON Switchboard undergoes Routine Testing Before Delivery:

- Inspection of the assembly including wiring and, if necessary, electrical operation test
- Dielectric test
- Checking of protective measures and of the electrical continuity of the protective circuits

These Safety Requirements are Supported by a Series of Details in SIVACON, for Example:

- With the withdrawable circuit-breaker design, operating errors are ruled out by exactly shaped mechanical guides and interlocks
- Only a few high-quality insulating materials are used (e.g. for busbar supports, reinforcements, etc.)
- Use of high-quality Siemens switchgear ensures long lifetime and minimised downtimes
- Reliable disconnection after 70 to 100 ms, even for long-time delays using 3WL circuit-breakers with short-time grading control (ZSS)
- Computer-assisted engineering ensures error-free selection and arrangement of equipment
- Arcing fault-tested
- Effective quality management



Technical Data –
At a Glance

Standards and specifications	Type-tested low-voltage switchgear and control gear assembly (TTA) Testing of response to internal faults (arcing faults)	IEC 60439-1, DIN EN 60439-1 (VDE 0660 Part 500) IEC 61641, VDE 0660 Part 500, Supplement 2
Creepance distance and clearance	Rated impulse withstand voltage (U_{imp})	8 kV
	Overvoltage category	III
	Pollution degree	3
Rated insulation voltage (U_i)		1000 V
Rated operational voltage (U_e)		up to 690 V
Rated currents (I_n) **Busbars (3-pole and 4-pole)**	Main horizontal busbars	Rated current up to 3200 A Rated peak withstand current (I_{pk}) up to 187 kA Rated short-time withstand current (I_{cw}) up to 85 kA, 1 s
	Vertical busbars for circuit-breakers	Rated current up to 3200 A Rated peak withstand current (I_{pk}) up to 187 kA Rated short-time withstand current (I_{cw}) up to 85 kA, 1 s
	Vertical busbars for fixed-mounted design	Rated current up to 1150 kA Rated peak withstand current (I_{pk}) up to 110 kA Rated short-time withstand current (I_{cw}) up to 50 kA*, 1 s
	Vertical busbars for in-line plug-in design (3NJ6)	Rated current up to 2100 A Rated peak withstand current (I_{pk}) up to 110 kA Rated short-time withstand current (I_{cw}) up to 50 kA*, 1 s
Switchgear rated currents		Circuit-breaker up to 3200 A Outgoing feeders up to 630 A
Surface treatment	Frame parts, base	Galvanised
	Cover	Galvanised
	Doors, side panels, base covers	Powder-coated
Degree of protection	to IEC 60529, EN 60529	IP 30 to IP 54
Dimensions		Height: 2000, 2200 mm (with base) Width: 400, 600, 800, 850, 1000, 1200 mm Depth: 600 mm

* Rated conditional short-circuit current I_{CC} up to 100 kA

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