power your future

SIVACON S8

The low-voltage switchgear that sets new standards

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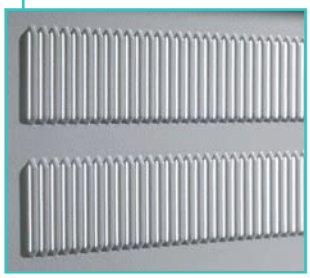
Labeling system

Ventilation roof



Ventilation holes

Hinge/locking system

Base

Design side panel

All elements of the new generation of switchgears fit together in shape and functionality.

Many advantages, numerous features

- Maximum system safety thanks to standard modules with construction verification.
- Maximum personnel safety thanks to the electric arc resistant locking system.
- High-quality industrial design that perfectly matches the modern style of the rooms.
- Space-saving erection surfaces, from 400 x 500 mm.
- Variable, top or rear position of the main busbars.
- Combinations of different installation systems in one cell.
- Flexible adaptation of the internal separation form to different requirements.
- Simple subsequent changes of door opening direction thanks to universal hinges.
- The ventilation system characterized by a high degree of performance and maintenance advantages.
- Cable / busbar connections from the top, bottom or rear.

SIVACON S8 - features

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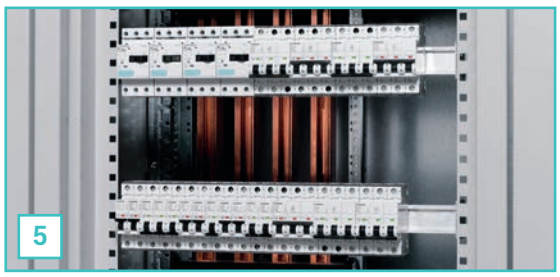
	1 Circuit breaker system	2 Universal Installation system
Mounting systems	Fixed-mounted design Withdrawable design	Fixed-mounted design with compartment doors Plug in 3NJ6 in-line design Withdrawable unit design, plug-in unit design
Functions	Incoming feeder Outgoing feeder Coupler	Cable feeders Motor feeders
Rated current I_n	Up to 6300 A	Up to 630 A Up to 250 kW
Connection position	Front & Rear	Front & Rear
Cell width (mm)	400/600/800/1000/1400	600*/1000/1200
Internal separation	Form 1, 2b, 3a, 4b, 4 type 7 (BS)	Form 2b, 3b, 4a, 4b, 4 type 7 (BS)
Main busbar position	Rear/Top	Rear/Top * not for 3NJ6

3 Fixed mounted system	4 3NJ6 in-ilne system	5 3NJ4 in-ilne system	6 Reactive power compensation
Fixed-mounted design with front covers	Plug-in 3NJ6 in-line design	Fixed-mounted design	Fixed-mounted design
Cable feeders	Cable feeders	Cable feeders	Central reactive power compensation
Up to 630 A	Up to 630 A	Up to 630 A	Non-chocked up to 600 kvar Chocked up to 500 kvar
Front	Front	Front	Front
1000/1200	1000/1200	600/800/1000	800
Form 1, 2b, 3b, 4a, 4b	Form 1, 3b, 4b	Form 1, 2b	Form 1, 2b
Rear/Top	Rear/Top	Rear	Rear/Top/Without

SIVACON S8 - features

1. Position of the main busbars at the top up to 6300 A
2. Variable rear busbar position up to 7000 A (top and/or bottom)

3. Plug-in busbar system with contact protection, cover (IP 20B) for quick and easy replacement of fuse switch disconnectors
4. Optimal connection conditions in the busbar connection compartment



5. Multi-profile busbars allow easy assembly of modular installation devices
6. Cells with reactive power compensation with design verification according to PN-EN 61439 reduce transmission losses

7. Overview of power distribution thanks to a standardized labeling system for sections and feeders
8. A modern look with design elements like the side panel and optionally extendable base

Circuit breaker system

Extremely friendly operation

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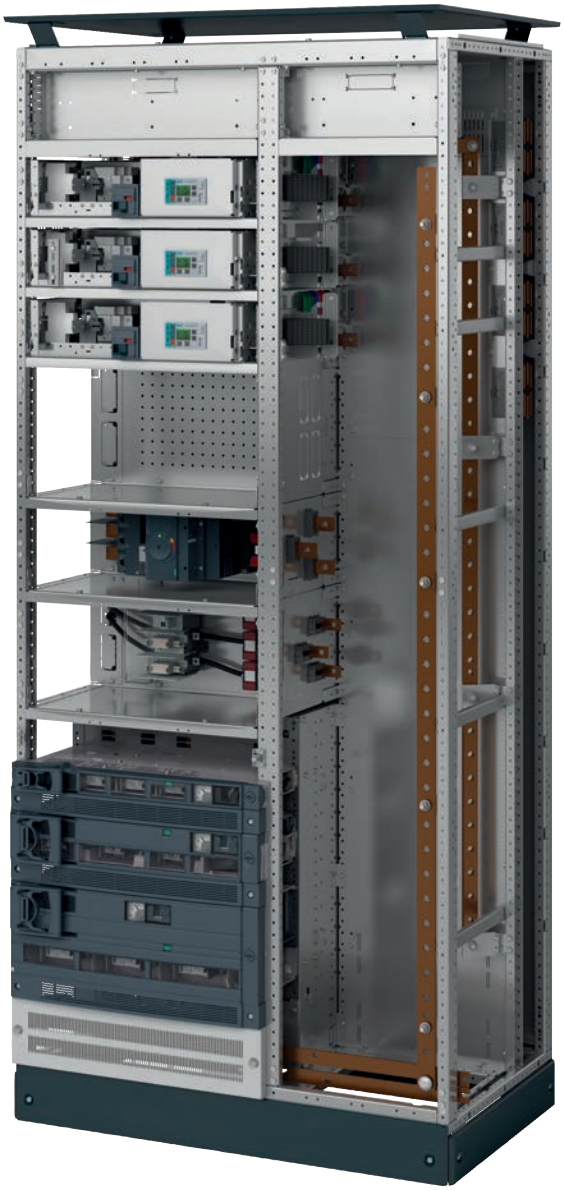
Space saving thanks to the installation of up to 3 air circuit breakers in one bay.

With its compact form, where the cell width is only 400 mm, the SENTRON 3WL is installed in S8 switchgears for the rated current range up to 1600 A.

Supply, outgoing and coupling cells are equipped with SENTRON® 3WL air circuit breakers in stationary and withdrawable technology, or alternatively, with SENTRON 3VL compact circuit breakers. Because many receivers are generally installed on the line downstream these circuit breakers, they are extremely important in ensuring long-term operational safety of the switchgear and personnel safety. SIVACON compactly and safely meets the above requirements through the components of the circuit breaker system.

Universal installation system

Individual configuration options (withdrawable, plug-in technology)



Universal mounting system with withdrawable units in combination with fixed-mounted outgoing feeders and plug-in 3NJ6 in-line unit design.

Because many applications require a space-optimized assembly of the power distribution switchgears, different installation systems must be integrated in one cell. For such applications, the universal SIVACON assembly system ensures high performance, safety and diversity due to the combination of outgoing feeders in withdrawable, plug-in, stationary techniques and outgoing feeders in the 3NJ6 pin strip technology. What's more, the withdrawable technique provides significant flexibility with often varying requirements such as variable motor parameters or connecting new receivers. In addition, this technique also meets ergonomic requirements and facilitates simple and safe operation, as well as short set-up times for maximum system availability.

Rear plug-in busbar system

Optional with shutter

Plug-in busbar system

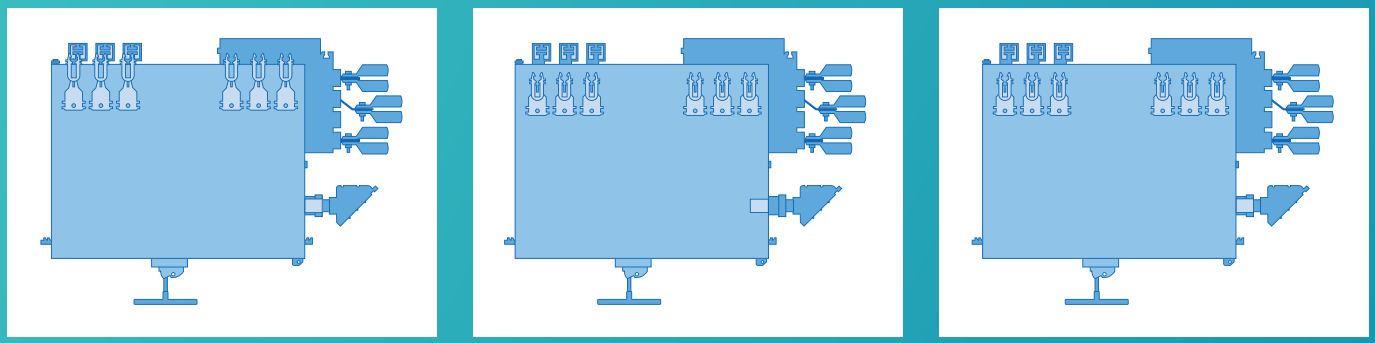
The plug-in busbar system is located at the back of the cell. It provides touch protection without any additional covers for active parts.

- Installation resistant to electric arc
- Phase separation
- 3- and 4-pole technique
- Touch protection (IP20B)
- Connection holes in the 50 mm modular grid for mounting standard withdrawable units

Optional

- Double-action shutters for standard withdrawable units

SIVACON withdrawable units ensure safety in operation and maintenance



I

„Connected" position

Moving from „connected" position to „diconnected" and vice versa

0

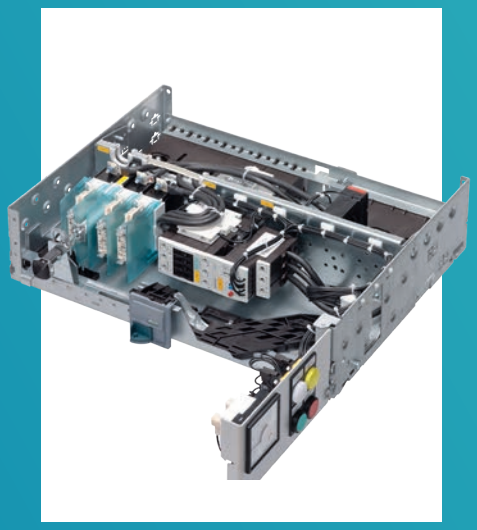
„Withdrawn" position

Moving from the „diconnected" position to the „test" position, and vice versa

TEST

„Test" position

- Maximum system security thanks to standard modules with type testing.
- Identical operation of all withdrawable unit sizes.
- Sizes of withdrawable units matched to power parameters.
- All parts are installed inside the withdrawable unit - protection against accidental damage.
- Integrated protection against switching errors for all withdrawable units.
- Clear indication of the position of the withdrawable units.
- Separate operation of the main switch and withdrawable unit position.
- „Test" and „disconnected" position with the door closed without reducing the degree of protection of the switchgear.
- Lockable in „diconnected" position.
- Patented slow wearing contact system of withdrawable unit ensuring long life.
- Optional mechanical coding of withdrawable units to avoid mistake with withdrawable units of the same size.
- Hinged panel for mounting control and signaling devices.
- Standard withdrawable units for cable and motor outgoing feeders up to 630 A.
- Fuse and circuit breaker technology.



Hinged panel for mounting control and signalling devices in order to perform service works during work.

Standard withdrawable units

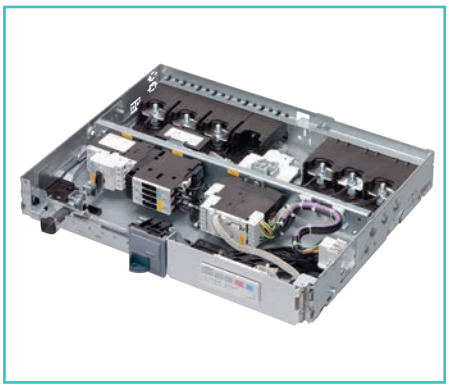
- Height 100 mm to 700 mm up to 18 (withdrawable units in one cell)

Optionally to standard withdrawable units a similar plug-in design

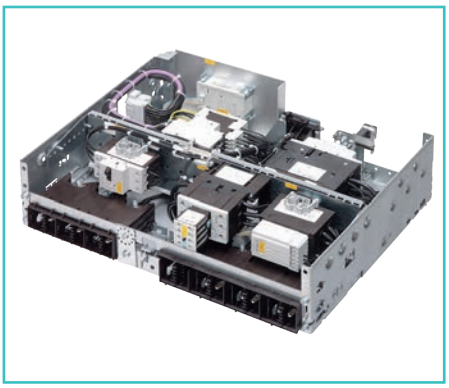
- Supply and outgoing contact systems permanently attached to the plug-in segment.
- „Connected" and „diconnected" position (no „test" position).
- Integrated protection against switching errors.

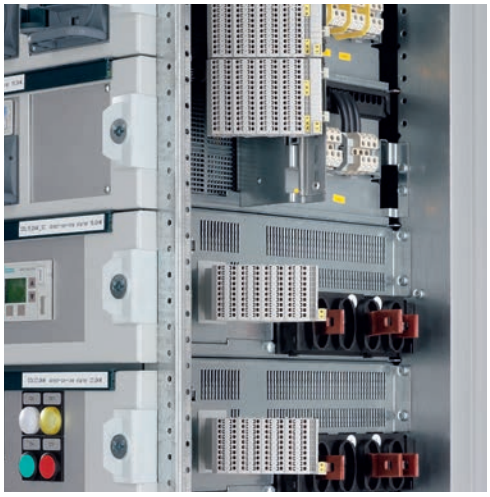
Lockable in „disconnected" position

Standard withdrawable unit, 100 mm high



Standard withdrawable unit, 150 mm high (rear view)

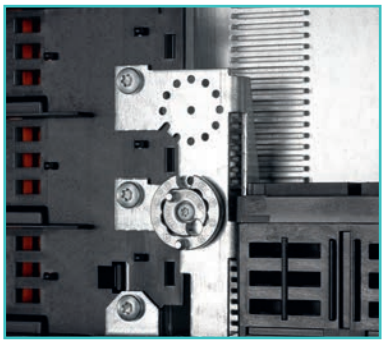




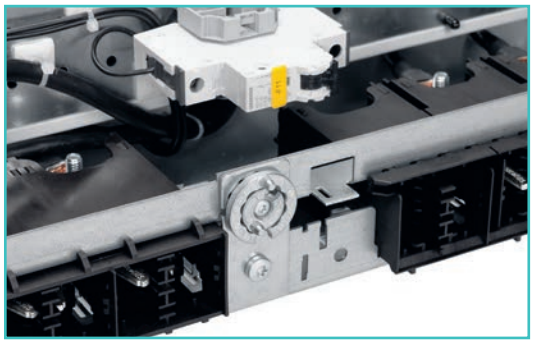
Flexibility and safety when making changes in the configuration of the cell

- Simple conversion or modernization of compartments with withdrawable units without disconnecting the voltage of the cell.
- Does not require connection work in the compartment with withdrawable units.
- Main and control circuit cable connectors in separate connection compartments.
- Cable compartment 400 mm or 600 mm width with operation from the front.
- Cable compartment with rear operation 600 mm width with 600 mm width cell.
- Control connectors in screw or spring technology.

Simple operation of the withdrawable unit without the need to overcome resistance

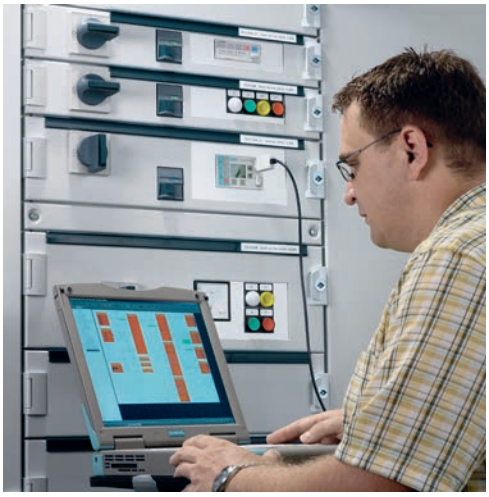


Coding element in compartment of the withdrawable unit



Coding element in the withdrawable unit

Coding of withdrawable units mechanically prevents mistakes in mounting withdrawable units of the same size (up to 9216 combinations).



Communication with SIMOCODE pro via PROFIBUS DP

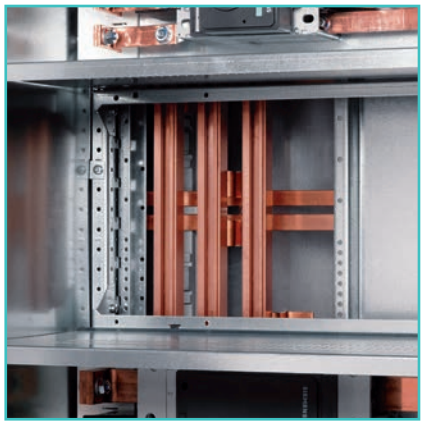
- Integrated full motor protection.
- Extensive control functions.
- Convenient diagnostic options.
- Autonomous handling of each outgoing feeder via the operator panel.
- Reduced cost of equipment and cabling.

Universal Installation System

Individual Combination Options (Fixed-Mounted Design with compartment doors, Plug-In 3NJ6 In-Line Design)

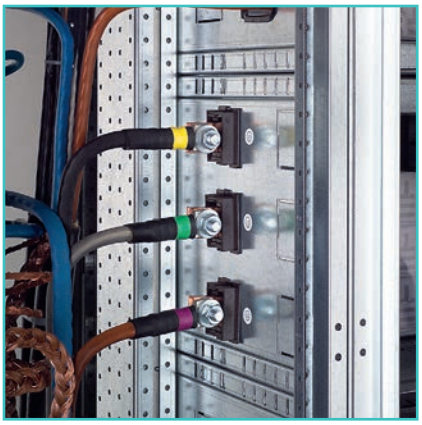
A cell with universal mounting space in fixed+mounted design (individual doors for each compartment) in combination with plug-in 3NJ6 in-line design.

Many applications require different solutions suitable for different protection systems, therefore different installation systems must be integrated in one cell. For such applications, the universal SIVACON mounting system ensures high performance, safety and flexibility due to the combination of outgoing feeders in fixed-mounted design and in plug-in 3NJ6 in-line system.



Vertical distribution bars

Separation of functional compartments according to user requirements



Patented connection terminals

- High system security due to standard modules with type testing,
- Cable feeders up to 630 A with and without current measurement,
- Combination of various installation techniques (fixed-mounted, plug-in base and plug-in 3NJ6 in-line design),
- Expansion modules when functional separation of compartments is required (up to form 4b),
- Doors about the height of the entire cell or individual for each functional compartment,
- Cable connection compartment 400 mm or 600 mm width.

Compartments

- Expansion modules to ensure individual ease of use and meet safety requirements.

Patented connection terminals

- Internal separation to form 4b.

Fixed-Mounted System with Front Covers

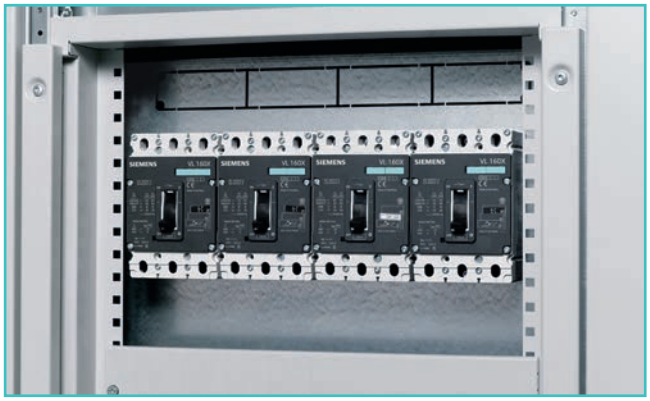
Wide integration options

Cell in stationary technique with covers, installed in one plane to ensure uniform handling of all manoeuvring elements.

- High system safety due to standard modules with type testing.
- Cable feeders up to 630 A with and without current measurement.
- Modularly combined functional groups.
- The innovative quick fastening system allows easy mounting of the cover.
- Hinged frame with covers for easier supervision and ease of maintenance.
- Expansion modules when functional separation of compartments is required (up to form 4b).
- Front control panel with covers, optionally with full cell door height.
- Doors with an inspection window enabling integration with modern interiors.
- Cable connection compartment 400 mm or 600 mm width.

Some applications do not require component replacement under operating conditions or short downtimes are allowed. In these cases, the SIVACON system in fixed-mounted system covers ensures maximum performance, safety and flexibility.

Quick mounting system of the front cover



Outgoing feeders set with SENTRON 3VL circuit breakers

Hinged frame with covers

Possibility to mount installation devices

Quick assembly system or hinged frame with covers

- The innovative quick fastening system allows simple and quick assembly of the cover.
- Hinged frame with covers for easier supervision and ease of maintenance.

Single or multiple feeders

- Smoothly adjustable mounting plate installation depth to achieve a homogeneous front operating plane.
- Operation of devices from the front cover.
- Feeders with or without a plug-in base.

Solutions for installation devices

- Durable aluminium mounting rail ensuring simple and durable installation of installation devices.

Fixed-Mounted 3NJ4 In-Line System

Efficient assembly

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Fixed-mounted 3NJ4 in-line system. Fuse disconnector and quick assembly kits for installation devices.

- High system safety due to standard modules with type testing.
- Cable feeders up to 630 A with and without current measurement.
- Possibility of installing up to 14 feeders in one cell.
- Fuse replacement with the receiver switched off.
- Door optionally with a cut-out or without a cut-out.
- Optional installation of quick assembly kits or mounting plates for individual equipment.
- Cell widths: 600 mm and 800 mm.

The cells designed for cable feeders in fixed-mounted system are equipped with fuse switch disconnectors, whose compact and modular design ensures optimal performance, especially in the case of applications in infrastructure.

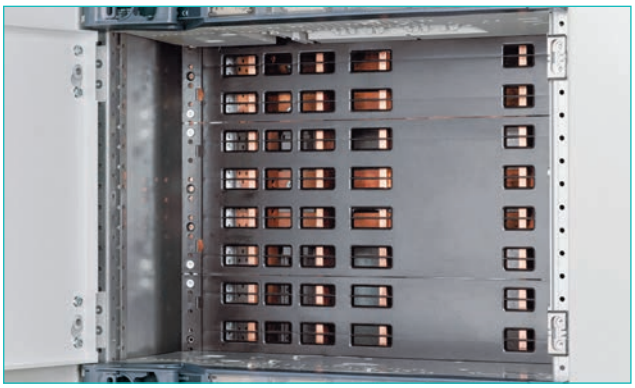
ZPUE Koronea

Plug-In 3NJ6 In-Line System

Quick modernization

Cell with 3NJ6 switch disconnector with fuses

3NJ6 switch disconnector with fuses



Distribution busbar system, protected against accidental contact (IP20B)

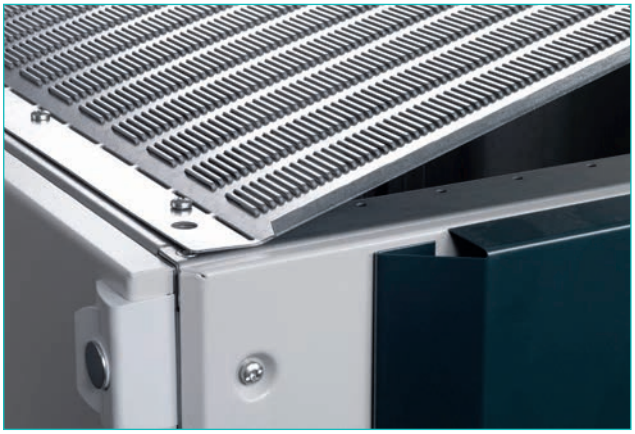
- High system safety due to standard modules with type testing.
- Switch disconnector with double break for cable feeders up to 630 A.
- Integrated replaceable current transformer.
- Manual or motor drive with stored energy mechanism.
- Possibility of upgrading the accessories by the user.
- High packing density - up to 35 feeders in one cell.
- Cable connection compartment: 400 mm or 600 mm width.
- Degree of protection up to IP41.
- Replacement of outgoing feeders possible with powered switchgear busbars.

Strip-type disconnectors with a plug-in power connector are an economical alternative to the withdrawable system and provide simple and quick modernization, as well as - thanks to their modularity - measurement activities in working conditions. For such applications, SIVACON guarantees high efficiency, safety and flexibility.

Arc resistance

Optimal protection

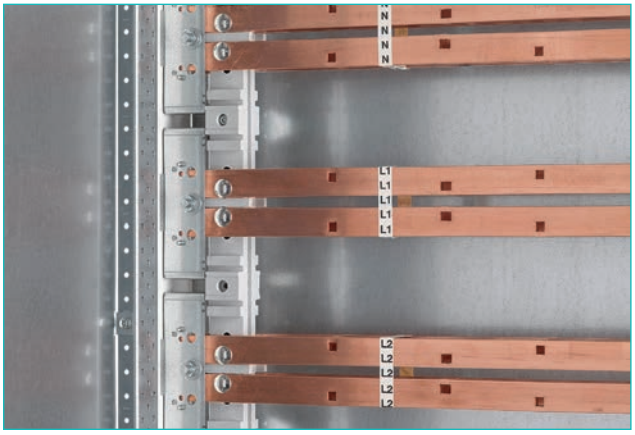
The LV switchgear test for arc faults is considered a special test in accordance with IEC 61641 and VDE 0660 Part 500, Appendix 2. This test is used to assess the hazards to which personnel may be exposed in the event of an arc. Thanks to these tests, already standard SIVACON versions have a personnel safety certificate.



Top plate with pressure release in the event of an arc fault

Assessment criteria

- There can be no spontaneous opening of the doors and covers.
- Parts must not fall off.
- There may not form any opening in the housing.
- Control indicators may not ignite.
- The PE conductor circuit on the touched distribution cabinet parts must function.

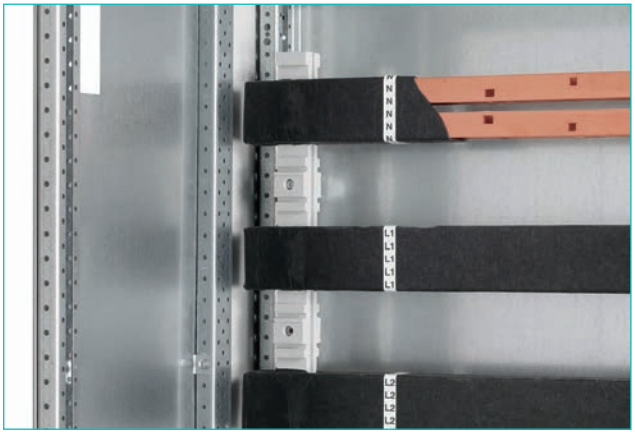


Arc barriers

Elements of additional protection

In order to limit the effects of arc faults in the switchgear, the following can be additionally used:

- Arc barriers limiting the occurrence of arc faults to one cell.
- Isolating the main busbars of the switchgear to prevent the initiation of an arc fault.



Isolated main busbars

Perfect for your needs

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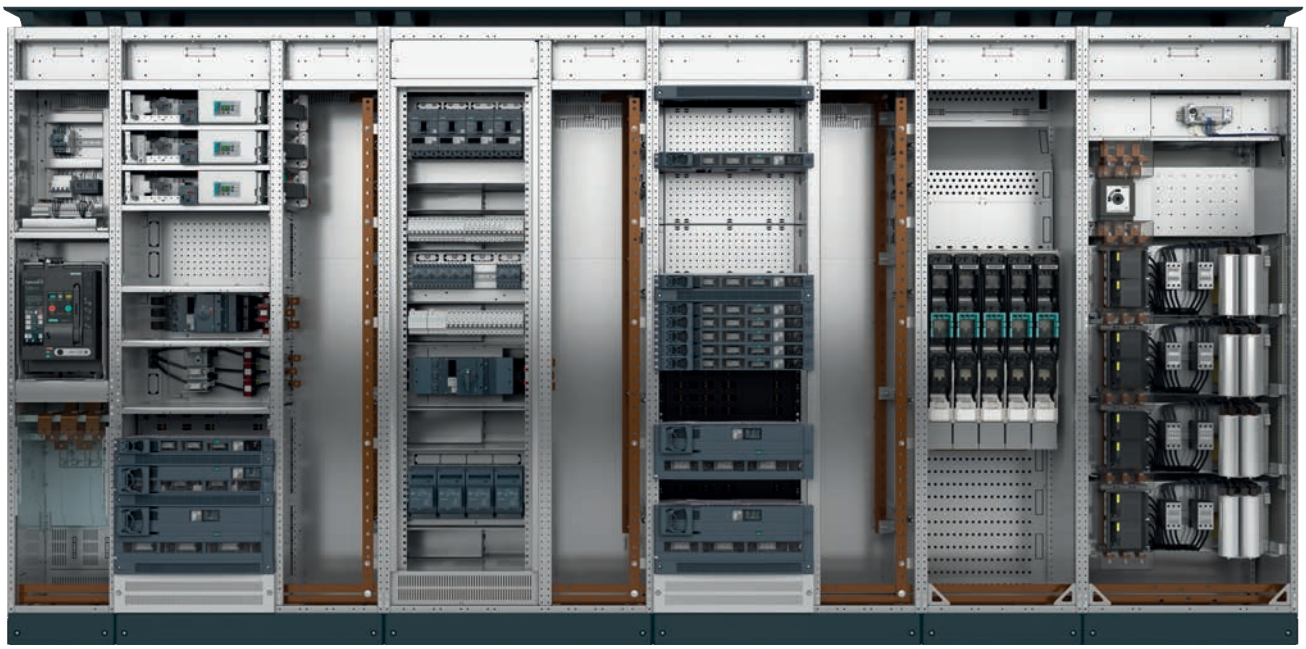
Modular technology - both for individual cells and entire systems - ensures optimal adaptation of SIVACON switchgears to your individual needs.

Optimal adjustment to spatial conditions

- Optional wall-mounted, free-standing or double-front mounting.
- Optional cable or busbar connections from the top or bottom.
- System height optionally 2000 mm or 2200 mm.
- Additional base 100 mm or 200 mm.

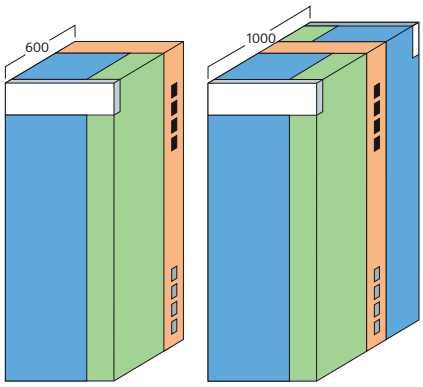
Quick adjustment to new power distribution requirements

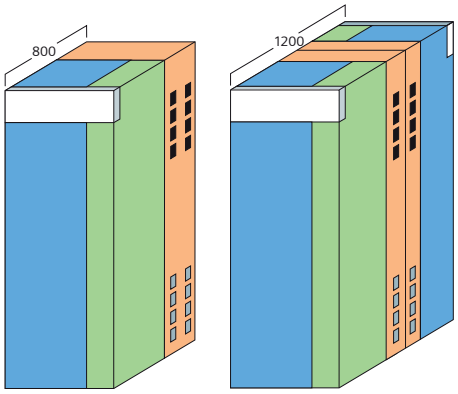
- Simple replacement or extension of funcional units.
- Easy and safe access to the distribution busbars.
- Simple ordering process and short delivery times thanks to the modular system.
- Optimal position of the main busbars at the top or rear of the switchgear.
- Individual equipment of the compartments, independent of the position of the main busbars and the depth of the cell.
- Internal separation suitable to customer requirements from form 1 to form 4b (PN-EN 61439-2).
- Withdrawable, plug-in and fixed-mounted units that can be combined in one cell (universal installation system).



Rear main busbar position (top and / or bottom)

Up to 4000 A

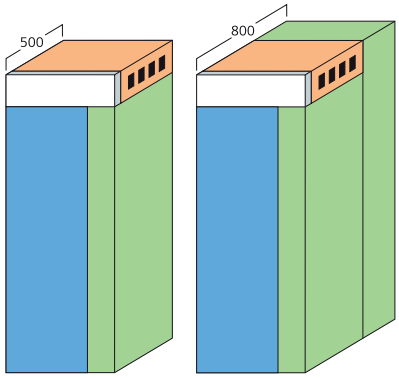


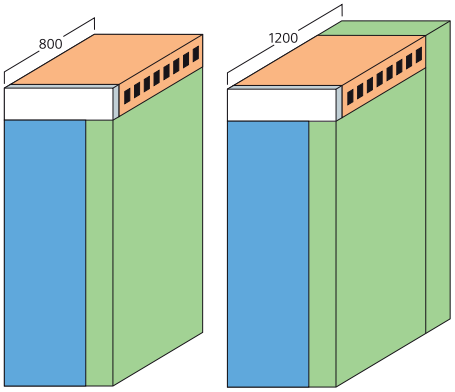


Up to 7000 A

Top main busbars position

Up to 3270 A





Up to 6300 A

Divice compartment

Main busbars compartment

Cross-wiring compartment

Cable / busbar connection compartment

Frame and enclosure

Embedded protection

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The frame containing all elements of the cell structure consists of stable screw-fastened sheet-steel profiles.

- Rows of holes in the form of a raster placed along the entire height and width of the frame with a spacing of 25 mm, which allow individual configuration.
- Patented lock and hinge system to ensure staff safety.
- Doors with individual or central locking.
- Universal hinge system that allows easy change of the direction of door opening.
- Door opening angle up to 125° (180° for free-standing assembly).
- Doors with a two-position lock or with a rotary lever lock.
- Top plates with pressure relief system.
- Frame heights: optionally 2000 mm or 2200 mm.
- Additional base 100 mm or 200 mm.
- Standard separation partitions between cells.

Surface treatment

- Cubicle parts, bases, back panels and bottom plates galvanized with the use of Sendzimir method.
- Easy and safe access to distribution busbars.
- Doors, enclosures and covers painted / powder coated in light grey RAL 7035; construction elements in blue-green.

Material

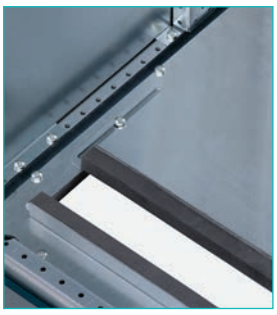
The frame and enclosure are made of sheet steel with the following thicknesses:

- Frame, base 2.5 mm.
- Covers: 2.0 mm.
- Doors: 2.0 mm.

Locking system

Hinge

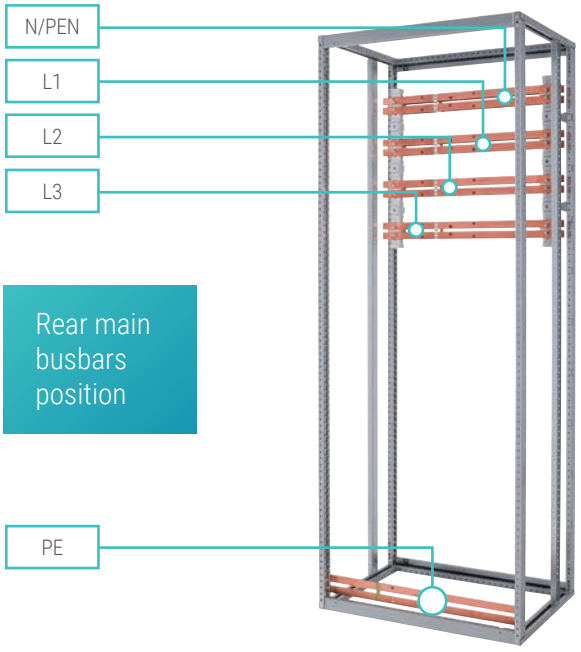
Top plate

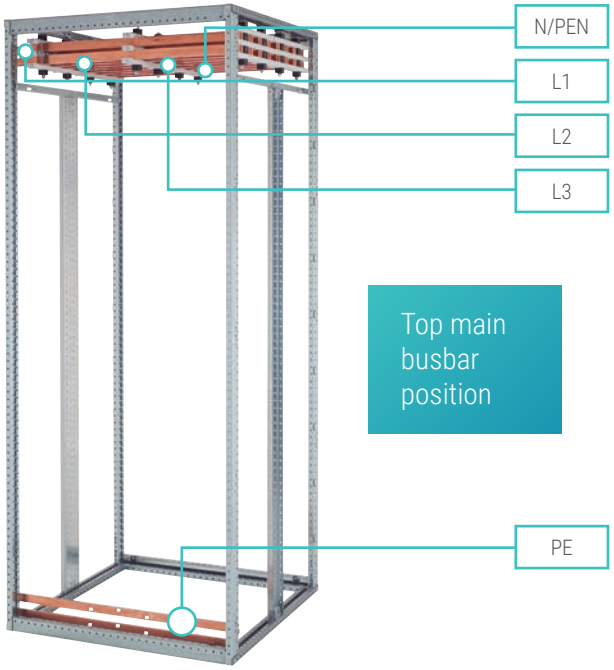


Bottom plate with sliding sheet

Location of the main busbars

Variety of solutions





Various switching tasks require individual solutions: Whether "simple" systems or complex networks with transversal and longitudinal couplings: SIVACON combines efficient design with the highest quality.

- The top or rear position of the main busbars.
- Main busbar systems for rated currents up to 7000 A.
- Rated peak withstand current (Ipk) up to 330 kA.
- Integrity of two main busbar systems in one switchgear.
- Connection points of transport units easily accessible from the front and top.
- Maintenance-free main busbar connections.

Additional elements

- Arc barriers limiting the occurrence of arc faults to one cell.
- Isolating the main busbars of the switchgear to prevent the initiation of an arc fault.

The vertical PE and N busbars are located on the right side of the cable compartment.

Connection points of the main busbar are accessible from the front of the switchgear.

SIVACON S8 – structure verification by testing in accordance with PN-EN 61439

Necessary to demonstrate compliance with standard PN-EN 61439

Requirements of the PN-EN 61439 standard

Low voltage switchgears should be designed, manufactured and tested in accordance with the requirements of PN-EN 61439-1 / -2 (VDE0660 part 600-1 / -2). To determine switchgear compliance with these standards, two main verification methods are required - structure verification and routine inspections. The structure verification includes tests performed at the product development stage and should be carried out by the original manufacturer. Routine inspections should be carried out by the prefabricator on the finished switchgear before delivery.

Structure verification

The SIVACON S8 switchgear ensures the safety of personnel and devices thanks to type tests in accordance with PN-EN 61439-2. Its physical properties have been checked in a test chamber, in both operating and emergency conditions. This guarantees the highest safety of people and the system. Structural verification and routine inspections are an important element of quality assurance and are a prerequisite for CE marking in accordance with EU regulations and directives.

Benefits

- Safety of people and the system thanks to type tests in accordance with PN-EN 61439-2.
- Highest quality guaranteed thanks to structure verification and routine inspections.
- Tests are always carried out at a complete switchboard with all devices installed.

Structure verification

	Verification by tests	Verification by calculations	Verification by following design principles
1. Strength of materials and parts	✓	---	---
2. Degree of protection	✓	---	✓
3. Isolation gaps	✓	✓	✓
4. Protection against electric shock and continuity of protective conductors	✓	✓[1]	✓[1]
5. Installation of devices	---	---	✓
6. Internal electrical circuits and connections	---	---	✓
7. Terminals for external conductors	---	---	✓
8. Insulating properties	✓	---	✓[2]
9. Thermal restrictions	✓	Up to 1600 A	Up to 630 A[3]
10. Short-circuit strength	✓	Conditionally[3]	Conditionally[3]
11. Electromagnetic Compatibility (EMC)	✓	---	✓
12. Mechanical operation	✓	---	---

[1] Effectiveness of protection devices in the event of a failure
[2] Only impulse withstand voltage
[3] Comparison with the design already tested

Technical data

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Norms and standards	Low Voltage Switchgear and Control gear	PN-EN 61439-2 DIN EN 61439-2 (VDE 0660 Część 600-2)	
	Testing of response to internal faults (arcing faults)	IEC 61641, VDE 0660 Część 500, Suplement 2	
	Protection against electric shock	DIN EN 50274, VDE 0660 Część 514	
Rated insulation voltage (Ui) Rated operating voltage (Ue)	Main circuit Main circuit	1000 V Up to 690 V	
Direct and indirect distances between active elements	Rated impulse withstand voltage Uimp Overvoltage category Pollution degree rating	 8 kV III 3	
Busbar bridges (3-pole and 4-pole)	Main busbar horizontal	Rated Current Reated peak withstand current (Ipk) Rated short-time withstand current (Icw)	Up to 7000 A Up to 330 kA Up to 150 kA
	Vertical busbar bridges in switching technology	Rated Current Reated peak withstand current (Ipk) Rated short-time withstand current (Icw)	Up to 6300 A Up to 220 kA Up to 100 kA
	Vertical busbar bridges in the universal assembly technology and stationary technique	Rated Current Reated peak withstand current (Ipk) Rated short-time withstand current (Icw)	Up to 1600 A Up to 143 kA Up to 65 kA *
	Vertical busbar bridges in 3NJ4 fuse strip technology	Rated Current Rated short-time withstand current (Icw)	Up to 1600 A Up to 50 kA
	Vertical busbar bridges in 3NJ6 plug strip technology	Rated Current Reated peak withstand current (Ipk) Rated short-time withstand current (Icw)	Up to 2100 A Up to 110 kA Up to 50 kA *
Rated currents of devices	3WL / 3VL circuit breakers Cable outgoing feeders Motor outgoing feeders	3WL / 3VL circuit breakers Cable outgoing feeders Motor outgoing feeders	Up to 6300 A Up to 630 A Up to 250 kW
Internal separation	Form 1 to 4b Type 7 for form 4	IEC 61439-2, Sekcja 8.101, VDE 0660 Part 600-2, 8.101 BS EN 61439-2	
Surface treatment	(Coating according to DIN 43656) Frames and bases Doors Side panels Rear panels, top plates Ventilated roof Standard colour of powder coated elements (coating thickness 100 ± 25 um)	 Sendzimir-galvanized Powder-coated Powder-coated Sendzimir-galvanized Powder-coated RAL 7035, light gray Design parts: blue green basic	
Degree of protection IP	In accordane with IEC 60529, EN 60529	IP30, IP31, IP40, IP41, IP42, IP54	
Dimensions	Preferred dimensions in accordance with DIN 41488	Height (without base): Width: Depth (wall-mounted, freestanding): Depth (double-front):	2000, 2200 mm 200, 350, 400, 600, 800, 850, 1000, 1200 mm 500, 600, 800 mm 1000, 1200 mm

* I_{cc} = 100 kA

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