

SIEMENS

SIVACON S8^{plus}

LOW-VOLTAGE SWITCHBOARD SIVACON S8^{PLUS}

The plus for your business:
Intelligent. Flexible. Safe.

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SIVACON S8^{plus} – Power your performance

Benefit from innovative power distribution,
developed by Siemens experts for your requirements



Future-proof and sustainable switchboard – thanks to an innovative tool landscape

- Intuitive power distribution planning with SIMARIS Suite:
[siemens.com/simaris](https://www.siemens.com/simaris)
- Discover the potential of system configuration and reduce your footprint with SIMARIS ecoguide:
[siemens.com/simarisecoguide](https://www.siemens.com/simarisecoguide)
- BIM-compliant digital twin of the switchboard as IFC data for smart planning and operation



High system availability and operational reliability – with SIMARIS control, the digital twin of the switchboard

- Easy local operation and diagnostics
- Flexible adaptation to changes in operation
- Condition monitoring for predictive maintenance via Health Index
- High power flow transparency and energy efficiency to optimize your energy costs
- Seamless integration in energy management and automation solutions or cloud-based analysis systems (IoT)



High level of flexibility for new possibilities – today and tomorrow

- Easily adaptable or expandable thanks to the innovative modular design
- Space-saving, compact withdrawable design
- Powerful motor management systems for flexible adaptation to new tasks



Optimum safety for personnel and switchboard

- Design verification according to IEC 61439-2
- Arc fault test according to IEC/TR 61641
- Extended, active, and resettable arc fault protection
- Targeted monitoring via built-in sensors (e.g. temperature sensors)
- Consistently design verified connection to SIVACON 8PS busbar trunking systems



Many applications – **one single power distribution**

Reliable and future-oriented power distribution for industries and infrastructure



Industrial applications

Safe, reliable, and cost-efficient – even under demanding conditions: SIVACON S8^{plus} offers ideal preconditions for low-voltage power distribution in industrial applications.

Specific requirements

- Safety for personnel and switchboard
- Reliable power supply
- Minimized risk of downtime
- Customer-specific, flexible, and extendable design

Versatile solutions

Thanks to the universal mounting design (ideal for Motor Control Centers), the withdrawable design (for a high level of personnel and operational safety and/or flexibility), and the connection of communication-capable devices to the overall automation and energy management systems, SIVACON S8^{plus} is especially versatile.

Further advantages

- Clear visualization and control via SIMARIS control
- Integration in the world of TIA with the prevalent process control system PCS 7, and use of the motor management system SIMOCODE
- Seamless interaction with the protection devices of the SIPROTEC family frequently used in the oil and gas industry is another plus



Benefit and added value

- Reliable operation thanks to safety for personnel and switchboard with design verification according to IEC 61439-2
- High level of protection of personnel and switchboard in the event of an arc fault
- Certification for offshore applications by the DNV GL classification society
- Operational reliability even under high seismic stress (optional: earthquake-tested version)
- Future-proof system thanks to the cost-efficient, flexible, and modularly extendable switchboard
- Cost-benefit optimization by integrating the power distribution into automation and energy management

The SIVACON S8^{plus} switchboard supports complex applications with high requirements regarding the safety and reliability as well as the cost-efficiency of the power supply. You can find typical applications in the process industry, but also in data centers and critical infrastructure facilities.



Data centers / infrastructures

Consistent and intelligent for very high availability: Low-voltage power distribution with SIVACON S8^{plus} for data centers and critical infrastructures ensures a reliable and cost-efficient operation.

Specific requirements

- For IT infrastructures and hospitals: high level of supply reliability
- For exhibition and production halls: flexibility
- High level of planning and project management expertise
- Financially strong partner for long-term projects

Custom solutions

SIVACON S8^{plus} meets every demand optimally – whether as an especially reliable, compact double-fronted version for data centers, or as a flexible version with in-line design for infrastructure applications. It fits into almost any building structure, economically and fast.

If necessary, it can be adapted and expanded if the needs change frequently, for example, in exhibition halls or hospitals.

In combination with the SIVACON 8PS busbar trunking systems, it forms one consistent and design verified power distribution. And: Siemens supports you comprehensively – across the entire service life of the infrastructure – with the appropriate technology and the required project management skills.



Benefit and added value

- Reliable operation thanks to safety for personnel and switchboard with design verification according to IEC 61439-2
- High level of protection of personnel and switchboard in the event of an arc fault
- Operational reliability even under high seismic stress (optional: earthquake-tested version)
- Cost-efficient, flexible, and extendable switchboard with space-saving design
- Cost-benefit optimization by integrating the power distribution into energy management systems
- Comprehensive support by Siemens experts



SIVACON S8^{plus} — the plus for real added value

Power distribution by experts

Whether for highly complex tasks in the process industry, in data centers, or in critical infrastructure facilities – your power supply needs a partner who can and is willing to deliver more.

Benefit from our decades of Siemens experience in planning, design, construction, and service for SIVACON S8^{plus}. With us, you get everything from a single source – or exactly as much as you need to supply your processes reliably with energy, in an efficient, flexible, and energy-saving manner.

Your success starts in our production facility!

The SIVACON S8^{plus} quality is based on the extensive experience in the engineering and manufacture of switchboards at our Center of Competence in Leipzig, Germany. It includes the high-quality product itself, but also its services and functions, which are planned and developed for each switchboard individually.

Siemens SIVACON S8^{plus} production facilities, strategically distributed worldwide, complement the Center of Competence in Leipzig and ensure the high quality with uniform CAD systems, software tools, and production standards. The result are sustainably constructed switchboards with an optimized use of materials and durable components.

Your advantages

- Engineered in Germany: developed, planned, and produced according to your specific requirements
- Support by qualified experts in all project phases – from development to service
- Research and development teams as well as local experts work hand in hand
- High system quality thanks to a proven and consistent process chain

Innovation straight from our Siemens production facilities

Apart from the comprehensive support by our technical experts in all project phases, the special functionalities of SIVACON S8^{plus} support you in making the operation of your switchboard even more reliable and future-proof.



Active and resettable arc fault protection for extended safety

The active arc fault protection system developed for SIVACON S8^{plus} complements the proven conventional protection measures. Detecting and extinguishing an arc fault within a few milliseconds extends the protection of personnel and switchboard. Continuous self-monitoring, testability, and up to two arc quenching operations without component exchange make the difference.



Frequency converter – with modular integration

SINAMICS frequency converters of the G120 series with Modbus, PROFIBUS, or PROFINET communication form the centerpiece of the standardized modules with design verification according to IEC 61439. This way, continuously operating or highly dynamic pumps, fans, and compressors can be supplied even more cost-efficiently and safely.



SIMARIS control – use energy data in a smart way

SIMARIS control increases the flexibility and transparency of your switchboard. For new requirements and commissioning, simply parameterize your devices through SIMARIS control. Perform your maintenance predictively with the Health Index function. Collect the data of all communication-capable devices of the switchboard and analyze it – on site, in higher-level energy management and automation solutions, or in the cloud.



Intelligent sensor technology – high switchboard availability

The continuous temperature monitoring of all on-site made busbar interconnections and cable connections monitors and alerts before a failure can create damages.



Space saving with SIMOCODE M-CP and Rogowski coil measuring technology

Design more compact Motor Control Centers by replacing conventional current transformer technology using SIMOCODE M-CP with Rogowski coil measuring system as an integrated solution in your SIVACON S8 low-voltage switchboards.

- Up to 25% smaller withdrawable units
- Same power ratings, smaller footprint



Higher performance thanks to highly efficient cooling technology

For switchboard cubicles in circuit-breaker design and universal mounting design, we have developed an energy-efficient cooling system with forced ventilation which reduces the derating. Speed-controlled fans and a redundant design ensure a low temperature profile in every cubicle – for more performance and longer service life of the components.

Benefit throughout the entire project cycle, from efficient planning to smart and flexible operation



Digital from the very beginning

Digitalization already starts in the planning process of your power distribution.

SIMARIS Suite is the platform for your uniform access to all SIMARIS planning tools:

- **SIMARIS design** for network calculation and dimensioning
- **SIMARIS curves** for visualizing characteristic tripping curves, let-through current curves, and let-through energy curves
- **SIMARIS project** for determining the space requirements of the distribution system, and for creating tender specifications and **BIM files** (Building Information Modeling). BIM data support the monitoring of the interaction of all installations in complex infrastructure.
- **Efficiency guide** for recognition of improvement potential and determination of the energy efficiency class achieved
- **SIMARIS ecoguide** for informed decisions on switchboard configurations – by visualizing sustainability impacts and total costs over the life cycle.
- **BIM-compliant IFC data** – for future-proof operation thanks to the “as-built” digital twin

Your advantages

- Efficient and sustainable planning
- Safe dimensioning – from the medium-voltage level down to the consumer
- Easy and fast determination of space requirements
- Clearly designed planning documentation



Digital intelligence for operation

Make use of all system advantages for efficient commissioning and cost-efficient operation – no matter whether as a Motor Control Center (MCC) or a mere power distribution board.

With SIMARIS control, SIVACON S8^{plus} offers you an entirely new perspective.

SIMARIS control simplifies the commissioning of the switchboard as well as the parameterization of the installed devices. It offers more transparency regarding power flows as well as switchboard and device conditions, and enables quicker fault diagnostics and predictive maintenance.

Furthermore, SIMARIS control supports flexible operation, offering interfaces for the integration in other systems such as overall automation systems as well as cloud-based analysis systems.

Your advantages

- High level of flexibility for new tasks
- Predictive maintenance thanks to Health Index
- Easy system overview and diagnostics – on site, in higher-level automation or energy management systems, as well as in the cloud
- Optimized power flows; higher switchboard availability and efficiency on the basis of sound data across the entire life cycle



Flexibility, today and tomorrow

Flexibility starts with planning, and extends through efficient operation up to service. SIVACON S8^{plus} adapts to your requirements. Different mounting designs can easily be combined in one cubicle.

Thanks to flexible modules – the space-saving, small withdrawable units, among others – functional units can be easily replaced or extended.

Powerful motor management systems complement the offer for the flexible adaptation to special tasks.

Your advantages

- Customized switchboard thanks to the modular system of different mounting designs
- Easy adaptation of operation thanks to exchangeable functional units
- Continuous technical further development



Tested safety for every application

SIVACON S8^{plus} is design verified according to IEC 61439-2, including the connection of the SIVACON 8PS busbar trunking systems. You thus get to create a coordinated and safe power distribution for your production or infrastructure. It has proven physical properties under operating and fault conditions.

With the modular arc fault protection system tested according to IEC/TR 61641, you go one step further for a higher level of personnel and switchboard safety, and for more availability.

SIVACON S8^{plus} can also be used in demanding applications, like on ships and in regions at risk from earthquakes.

Your advantages

- Personnel and switchboard safety tested under conditions of internal arcing according to IEC/TR 61641
- Optional, active, and resettable arc fault protection system
- Seismic upgrade and certification for ships and offshore platforms
- Consistently design verified connection to SIVACON 8PS busbar trunking systems





SIVACON S8^{plus} –
integral safety for personnel and switchboard

SIVACON S8^{plus} – safety without any ifs or buts

Safety as an integral part

For us, there are no compromises in questions of safety, only clear regulations. Our low-voltage switchboards are developed, manufactured, and tested according to the stipulations of IEC 61439-2 for power switchgear and controlgear assemblies.

Quality is not a luxury here, but the precondition for the cost-efficient operation of your switchboard and a high level of reliability of your production or infrastructure.

The SIVACON S8^{plus} quality ensures your success

IEC 61439-2 requires two main pieces of evidence that the switchboard is fit for purpose: design verifications and routine verifications. Siemens provides the design verifications during the basic development of SIVACON S8^{plus} by means of tests accompanying the development process. The routine verifications are performed on every manufactured low-voltage switchboard prior to delivery. These two verifications together are a decisive part of quality assurance, and a prerequisite for CE marking according to the EU directives and laws. They are evidence for the high level of safety SIVACON S8^{plus} provides for personnel and switchboard.

With SIVACON S8^{plus}, you are not only investing in standard-compliant technology, but also in technology that is especially reliable. Whether you intend to use your SIVACON S8^{plus} for applications in the chemical industry, for a data center, or for a critical infrastructure – it offers you specific advantages in any case.

Required verifications to be performed according to IEC 61439-1/2 standard

	Verification by means of:	Test	Calculation	Design rules
1.	Strength of materials and parts	•	–	–
2.	Degree of protection of enclosures	•	–	•
3.	Clearances and creepage distances	•	•	•
4.	Protection against electric shock and consistency of protective conductor circuits	•	• ¹⁾	• ¹⁾
5.	Installation of operational equipment	–	–	•
6.	Internal electrical circuits and connections	–	–	•
7.	Connections for conductors inserted from outside	–	–	•
8.	Insulation properties	•	–	• ²⁾
9.	Temperature-rise limits	•	up to 1,600 A	up to 630 A ³⁾
10.	Short-circuit withstand strength	•	conditionally ³⁾	conditionally ³⁾
11.	Electromagnetic compatibility (EMC)	•	–	•
12.	Mechanical function	•	–	–

1) Effectiveness of the switchgear and controlgear assembly in case of external faults 2) Only impulse strength 3) Comparison with an already tested design

Seismic upgrade with tested safety

For application in seismically critical locations, we deliver SIVACON S8^{plus} switchboards in vibration-resistant, earthquake-tested versions.

The test results are summarized and disclosed in three categories:

- Operability of the switchboard during the earthquake
- Operability of the switchboard after the earthquake
- Stability

Certification for ships and offshore platforms

The application on the high seas also poses a special challenge for switchboards. Among these challenges are, above all, the saline atmosphere with high air humidity (risk of corrosion) and the higher vibration load of the switchboard due to the swell or ship propulsion. SIVACON S8^{plus} switchboards are perfectly set to meet these challenges. And that is signed and sealed – in as much as that we have the necessary certifications of the DNV GL classification society for application on ships and offshore platforms.

Your advantages

- Safety for personnel and switchboard by means of tests according to IEC 61439-2
- High level of process safety thanks to SIVACON S8^{plus} quality and integrated system approach
- Consideration of national regulations
- Safe power supply in earthquake-tested version for higher seismic requirements
- Certifications for application on ships and offshore platforms

Tested under **worst-case conditions**

Arc fault protection with SIVACON S8^{plus}

Even though arc faults rarely occur in design verified low-voltage switchboards, their effects are still grave, as they can cause severe personal injuries and equipment damages, and produce high downtime costs. Caused, for example, by foreign objects, pollution, animals, or incorrect operations, an arc fault releases a high amount of energy with extreme heat development and a pressure wave within a short period of time.

To minimize these risks, SIVACON S8^{plus} provides a comprehensive, modular arc fault protection concept. The following principles apply to all measures defined for the protection of personnel and switchboard:

- Preventing arc faults
- Keeping the effects of residual risks from an arc fault as low as possible

Your advantages

- Modular arc fault protection concept for every customer requirement
- Personnel safety by testing the switchboard under conditions of arcing
- Switchboard safety by mitigating the effects of the arc fault within the switchboard
- Higher personnel and switchboard safety thanks to extended arc fault protection
 - Design of the busbar systems or cable connections as an arc ignition protected zone
 - Active arc fault protection system

Minimize your risk for a high level of availability

Design of the switchgear and controlgear assembly according to IEC 61439-2

- Design verification by means of test
- Form of internal separation

Uniform design and operating concept

- Clearly defined functional compartments and inscription
- Uniform operating concept for circuit-breaker design and withdrawable design

Application-conforming dimensioning of the switchgear and controlgear assembly

- Dimensioning and engineering tools from the SIMARIS Suite

Prevention of arc faults



Mitigation of arc faults

Arc fault tested zones in compliance with IEC/TR 61641

Arc ignition protected zones in compliance with IEC/TR 61641

Extended arc fault protection in compliance with IEC/TS 63107

- Active arc fault protection system with verification of functionality and false tripping safety by means of test

Basic arc fault protection

Low-voltage switchboards SIVACON S8^{plus} already offer a high level of protection against arc faults thanks to the switchboard design. The design verification by means of tests, the high-quality system components, the device and switchboard dimensioning using the engineering tools from the SIMARIS Suite, and the uniform operation with integrated operating error protection all serve to avoid arc faults.

Proven conventional protection measures mitigate the effects of arc faults. They include arc-resistant hinge and locking systems, pressure-relieving roof plates, protection measures on the ventilation openings at the front, and arc barriers.

They are further expanded by designing the busbar systems or cable connections as an arc ignition protected zone.

Verification of functionality in the event of an arc fault

The test under conditions of arcing due to an internal fault is done according to IEC/TR 61641.

For the evaluation of test results, criteria are applied which are summarized in arcing classes.

Characteristics under conditions of arcing

Criteria

- | | |
|---|--|
| 1 | Doors and covers do not open |
| 2 | No parts of the switchgear and controlgear assembly are ejected |
| 3 | No holes as a result of an arc fault burning through the external parts of the enclosure declared to be freely accessible |
| 4 | The indicators do not ignite. Limited access for authorized personnel in work clothes (cretonne 150 g/m ²) |
| | The indicators do not ignite. Unlimited access for untrained or unskilled persons in light summer clothes (batiste 40 g/m ²) |
| 5 | The protective conductor circuit for accessible parts of the enclosure is still effective |
| 6 | The arc fault is limited to the defined area of the switchgear and controlgear assembly |
| 7 | Emergency operation of the remaining switchgear and controlgear assembly is possible after the fault has been cleared and/or affected functional units have been disconnected or removed |

**Arcing class A
Personnel protection**
The arc fault is confined to the area within the switchgear and controlgear assembly

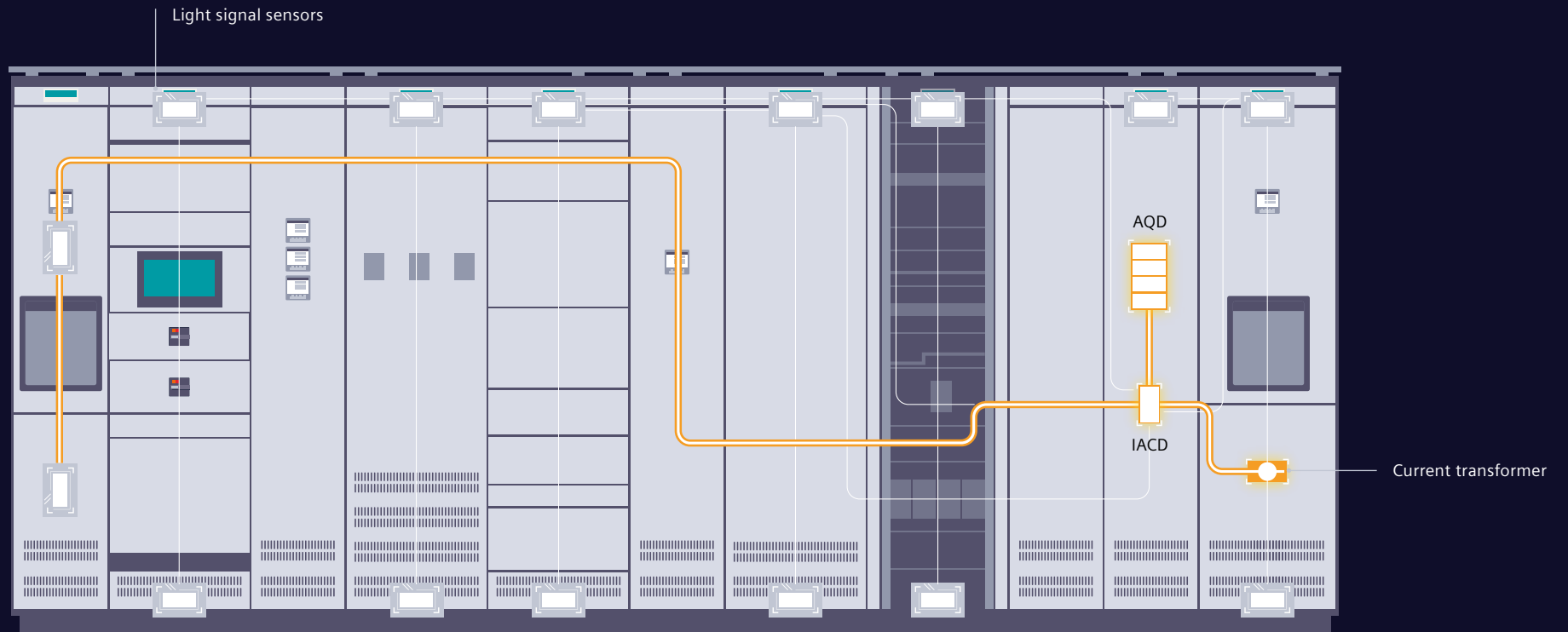
A

**Arcing class B
Personnel and switchboard protection**
The arc fault is confined to a defined area within the switchgear and controlgear assembly

B

**Arcing class C
Personnel and switchboard protection**
The arc fault is confined to a defined area within the switchgear and controlgear assembly. Limited operation is possible after the fault.

C



Mode of operation of an active protection system

Active protection at a high level

The active arc fault protection system specifically developed for SIVACON S8^{plus} reduces the energy converted during an arc fault, and thus additionally mitigates the effects on the low-voltage switchgear and controlgear assemblies.

The integration and testing of the active arc fault protection system of SIVACON S8^{plus} is done according to IEC/TS 63107 with the following objectives:

- Correct functioning of all components of the active arc fault protection system within the low-voltage switchgear and controlgear assembly
- Prevention of false tripping, e.g. due to switching arcs from open circuit breakers
- Test of the lower and maximum tripping threshold (smallest and maximum residual current)
- Behavior of the system immediately after switching on

How active arc fault protection works

An arc fault causes a flash of light which is detected by an optical sensor. At the same time, the current transformers register a quick current increase. Both events are reported to an internal arc fault control device (IACD) and, if they occur simultaneously, they are recognized as an arc fault. The energy converted in an internal arc fault is reduced by tripping the arc quenching device (AQD) and the incoming circuit breaker. By tripping the AQD, a low-impedance current path is established. The residual current / short-circuit current flows along this path and withdraws energy from the arc. This current path is maintained until the incoming circuit breaker interrupts the short-circuit current.

Technical data

Integrated in SIVACON S8^{plus} and tested up to 690 V/100 kA

No pyrotechnical operating mechanism of the arc quenching device

Continuous self-monitoring of all system components

Testability for detecting devices and the arc quenching device – up to 100 test cycles

Up to five arc quenching operations without exchanging the quenching device (resettable)

SIVACON S8^{plus} – modular arc fault protection concept

Arcing class A with limitation to the area of the switchgear and controlgear assembly

Personnel protection; the arc fault is confined to the area within the switchgear and controlgear assembly.

Arcing class C with limitation to the area of the cubicle

Personnel and switchboard protection; the arc fault is confined to a defined area within the switchgear and controlgear assembly. Limited operation is possible after the arc fault.

Arcing class C with limitation to the area of the cubicle

Personnel and switchboard protection; the arc fault is confined to a defined area within the switchgear and controlgear assembly. Limited operation is possible after the arc fault.

Extended arc fault protection by means of insulation

Design of the busbar systems or cable connections as an arc ignition protected zone

Extended arc fault protection by means of an active arc fault protection system (resettable)

With optical sensors, current transformers, and evaluation units. Reducing the energy converted in an internal arc fault by:

- Shutdown of the incoming circuit breaker, or
- Shutdown by means of an arc quenching device and the incoming circuit breaker

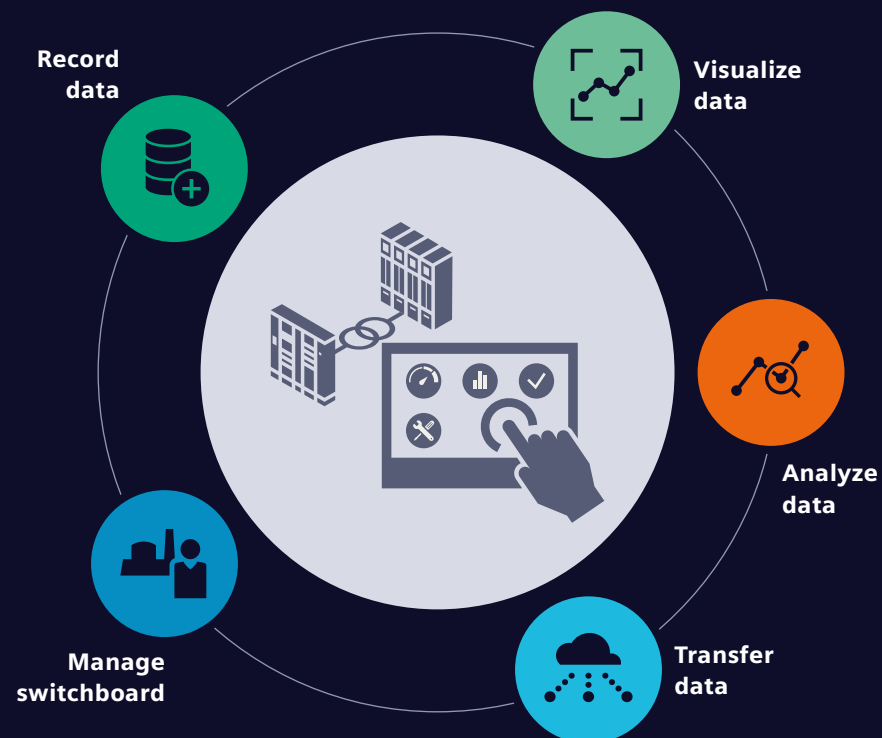


SIMARIS control – the digital intelligence for your SIVACON S8^{plus}

Manage your energy data – with SIMARIS control

Accelerate and simplify your operational diagnostics – on the basis of your energy data.
Define your threshold values for early signaling – for monitoring, control, and diagnostics – and transparency down to each individual feeder.

Use the data on switching rates and runtimes or temperatures to increase the switchboard availability through predictive maintenance and optimized energy management – and to reduce your costs as well as the power demand of your application. The software application SIMARIS control creates one integrated system from many individual devices, and supports you with five basic functions.



Your benefits

- **One integrated system with easier and faster identification of incidents** thanks to in-app alarm and e-mail notifications
- **More flexibility** in local operations with local control and monitoring functions
- **Higher system availability** thanks to Health Index functionality for accurate condition monitoring of the system
- **Ease of maintenance** with digital documentation and maintenance logbook
- **Saves costs and space** for various monitoring devices in the switchboard by displaying power flows and electrical measured values
- **Easy integration** with a cloud-based system
- **Parallel independent** operation with a higher-level control system (DCS-SCADA)

Consistent acquisition of device status, measured values, and sensor data

Temperature sensors, communication-capable measuring devices SENTRON 7KT/7KM PAC, air circuit breakers SENTRON 3WA, molded case circuit breakers SENTRON 3VA, intelligent motor management system SIMOCODE as well as the frequency converters provide comprehensive diagnostic, status, measurement, statistical, and service data. They form the basis on which the intelligent switchboard can show its advantages. After all, it is only with actual operational data that savings potentials can be detected and predictive maintenance can be planned in a targeted manner.



Record data – make the most of communication-capable devices:

- Current
- Power
- Energy
- Temperature
- Voltage

SIMARIS control – the digital twin of your switchboard

Acquiring switchboard data is one thing; visualizing it, another. SIMARIS control implements this in a way that is structured, clear, and oriented towards your information requirements. At a central location, you can see all that you need to know about the condition of the switchboard, sensor data, measured values, and power demand in your system – intuitively operable via touch control. Always on board: different bus systems, a standardized data model for the Motor Control Center, and a central message list for the latest diagnostics information of the entire switchboard, all in one system.



Visualize data – get a quick and sound overview:

- Measured values
- Status
- Statistics
- Signaling

Continuous data analysis – the foundation for your decisions

Receive your operational diagnostics locally or via remote access more quickly, more flexibly, more easily – and above all independently of the higher automation level. The Health Index function indicates the status of your switchboard and individual feeders on the basis of the operational data up to now. This way, you can act with foresight! Your personnel can easily and quickly perform important diagnostics and analyses on their own, and initiate required measures in a timely and targeted manner in order to support a reliable operation.



Analyze data – easily recognize correlations:

- Measured values
- Status
- Analysis
- Trends

Generating a competitive advantage from data – efficient switchboard management

Optimize your switchboard management with sound data and analyses from SIMARIS control. Change your operational parameters without additional parameterization software, and modify your feeder designations and comment information – according to the user authorizations. Make changes to the digital twin regarding runtime in order to adapt your switchboard easily and quickly to new operational requirements. The achievement: a high level of flexibility and, thanks to the Health Index, always sound information on the condition of your switchboard and individual feeders.



Manage switchboards –

experience your advantages live:

- Planning maintenance
- Parameterization of components
- Switching feeders on and off

For an ideal system overview – integration in overall systems

Integrate SIVACON S8^{plus} in existing IT structures, a comprehensive energy management system, or your overall predictive maintenance strategy – via the integrated LAN interface of the SIMARIS control hardware and the web interface (also for mobile devices). SENTRON Powermanager connects your SIVACON S8^{plus} to overall energy management systems. Alternatively, you can use interfaces such as OPC UA or Modbus TCP to integrate your switchboard in overall systems and benefit from the advantages of cloud-based analysis systems (e.g. in Insights Hub).



Transfer data – effectively use

the potentials of information exchange:

- Consistent communication across all levels
- Data analysis in the cloud
- Efficient energy management

Technical data

Reliable industrial PC system

Independent of higher automation levels

Uses the communication system of the switchboard

Compatible with various communication systems and network topologies

Interfaces for PROFIBUS, PROFINET, Modbus, OPC UA, Ethernet, and others

Flexible and expandable

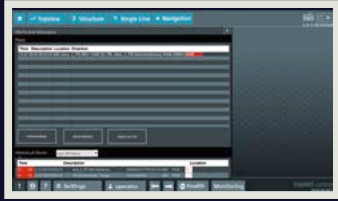
Operation e.g. via web client or mobile devices

Structured alarm and error display

Integrated user group administration with differentiated authorizations

Configuration changes possible during ongoing operation (number, positioning, designation, and description of feeders)

View – alarm signals



View – individual cubicle



View – entire switchboard



**SIMARIS control,
the digital twin of your switchboard**

View – SIMOCODE



View – Health Index



View – single line SIMOCODE



SIVACON S8^{plus} — innovative by tradition



- Design verification by means of tests according to IEC 61439-2, arc resistance by means of tests according to IEC 61641, earthquake upgrade, certification for application on ships and offshore platforms according to DNV GL
- Consistently design verified connection to SIVACON 8PS busbar trunking systems

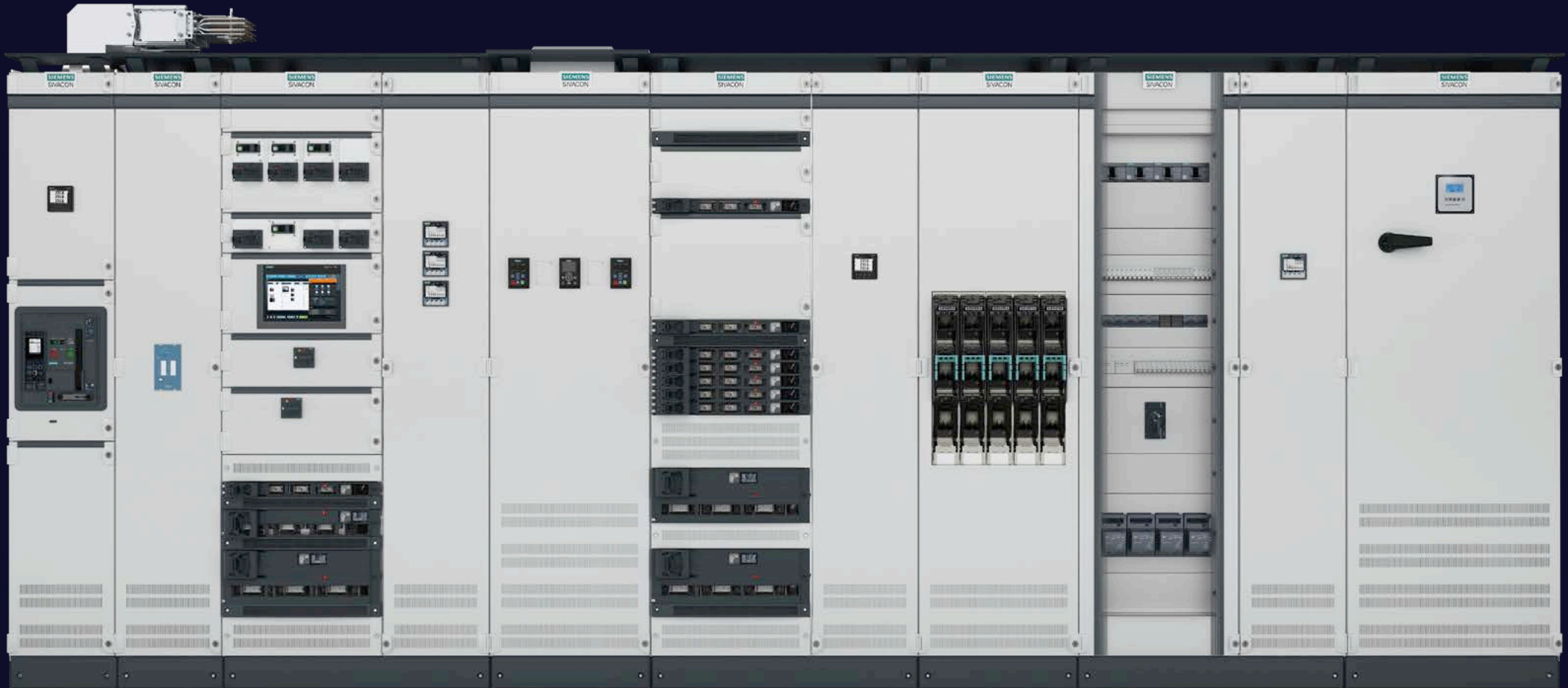
- **Active arc fault protection system with reusability**

- Two standard heights and two base heights permit a perfect adaptation to structural conditions
- Innovative locking system with multiple designs allows to change the door hinge at any time
- Installation of two independent main busbar runs possible in one switchboard (up to 4,000 A)
- Variable busbar positions (top, rear) with rated current up to 7,010 A
- Modular and compact frequency converter cubicle, tested according to IEC 61439

- **SIMARIS control – diagnostics station: visualizing, monitoring, parameterization, and connection to overall systems**

- Combination of different mounting designs (fixed-mounted feeders, plug-in design, withdrawable design)
- Easy exchange or addition of functional units
- High packing density with up to 48 feeders in withdrawable design in one outgoing feeder cubicle
- Arc-resistant distribution busbar embedding
- Shutter with double-action for normal and small withdrawable units

- Patented low-wear withdrawable unit contact system for long service life
- Normal withdrawable units up to 630 A and small withdrawable units up to 63 A
- Mechanical coding of withdrawable units and compartments with up to 9,216 options
- Operating-error-proof and uniform operating concept throughout all sizes of withdrawable units
- Lockable disconnected position for safe commissioning and maintenance



Circuit-breaker design

Arc fault protection design

Universal mounting design

Frequency converter design

In-line design, plug-in

In-line design, fixed-mounted

Fixed-mounted design

Reactive power compensation



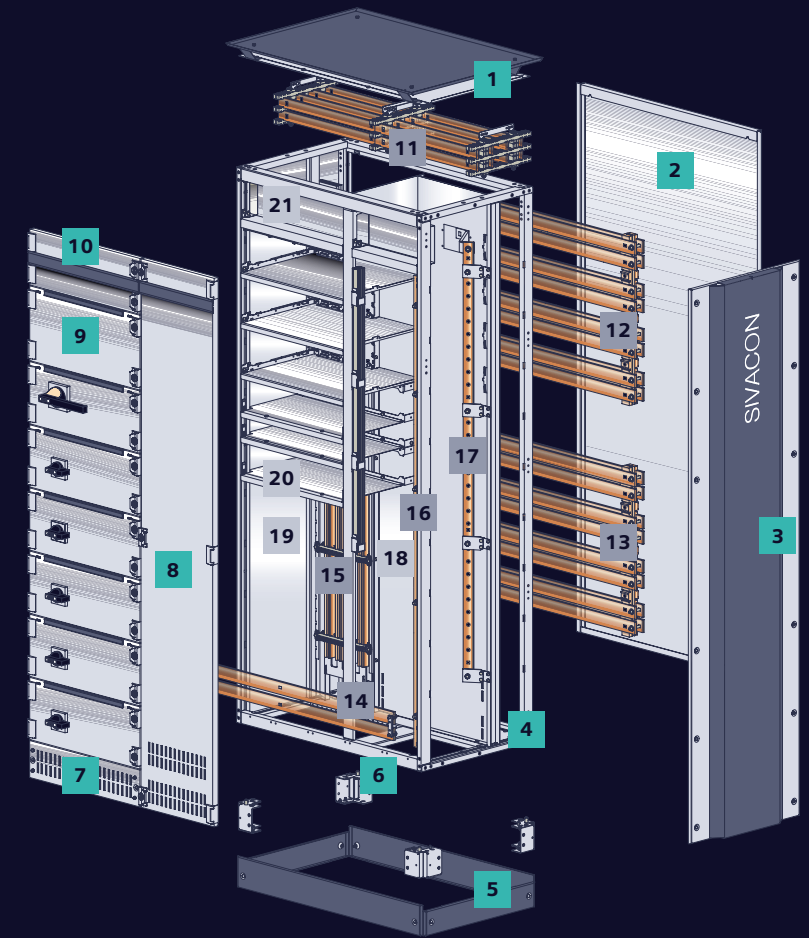
	1	2	3	4	5	6	7	8
	Circuit-breaker design	Arc fault protection design	Universal mounting design	Frequency converter design	In-line design, plug-in	In-line design, fixed-mounted	Fixed-mounted design	Reactive power compensation
Mounting design	Fixed-mounted design, withdrawable design	Fixed-mounted design	Withdrawable design, fixed mounted design with compartment doors, plug-in design	Fixed-mounted design	Plug-in design	Fixed-mounted design	Fixed-mounted design with front covers	Fixed-mounted design
Functions	Incoming feeder, outgoing feeder, coupler	Extended arc fault protection	Cable feeders, motor feeders (MCC)	Regulation of pumps, fans, compressors	Cable feeders	Cable feeders	Cable feeders	Central reactive power compensation
Rated values	up to 6,300 A	Short-circuit withstand strength up to 100 kA at 690 V	up to 630 A up to 250 kW	up to 132 kW	up to 630 A	up to 630 A	up to 630 A	up to 500 kvar choked/ unchoked
Type of connection	front or rear	–	front or rear	front	front	front	front	front
Cubicle width (mm)	400, 600, 800, 1,000, 1,400	400	600, 1,000, 1,200	600, 800, 1,000	1,000, 1,200	600, 800, 1,000	1,000, 1,200	800
Internal separation	Form 1, 2b, 3a, 4b, 4b type 7 (BS)	4b	Form 2b, 3b, 4a, 4b, 4b type 6 (BS), 4b type 7 (BS)	Form 1, 2b	Form 3b, 4b	Form 1, 2b	Form 1, 2b, 4a, 4b	Form 1, 2b
Busbar position	top, rear-top, rear-bottom	top, rear	top, rear	without, top, rear	top, rear	rear	top, rear	without, top, rear

Frame, enclosure, and busbars

SIVACON S8^{plus} – a perfect combination of cost-efficient design and high quality

The objective is clear: a perfect equipment for all of your demands – versatile, safe, user-friendly, and easy to operate.

The intelligent and flexible, modular design of SIVACON S8^{plus} is our answer to these requirements.



Enclosure

- 1** Roof plate
- 2** Rear wall
- 3** Design side wall
- 4** Frame
- 5** Base cover
- 6** Base
- 7** Base compartment cover, ventilated
- 8** Cubicle door, ventilated
- 9** Compartment door
- 10** Head compartment door

Busbars

- 11** Main busbar (L1 ... L3, N) – top
- 12** Main busbar (L1 ... L3, N) – rear-top
- 13** Main busbar (L1 ... L3, N) – rear-top
- 14** Main busbar (PE) – bottom
- 15** Distribution busbar (L1 ... L3, N) – device compartment
- 16** Distribution busbar (PE) – cable compartment
- 17** Distribution busbar (N) – cable compartment

Internal separation

- 18** Device compartment / busbar compartment
- 19** Cubicle to cubicle
- 20** Compartment to compartment
- 21** Cross-wiring compartment

Your advantages

- Personnel safety thanks to patented door looking system
- Arrangement of the busbar positions suitable for the application
- High level of flexibility thanks to variable busbar systems
- Robust version with high surface quality

Function with safety

The doors of SIVACON S8^{plus} are available with either simple or central locking (door locks or rotary handle locks are possible). The patented door locking system with universal door hinge allows for the hinge side to be changed with ease. Additional safety is provided by the pressure relief for the roof plates. The cubicles consist of separate functional compartments.

Systematic flexibility

The well thought-out design of the switchboard allows it to be integrated perfectly into a modern room concept. The cubicles, either single- or double-fronted, can be installed with a common main busbar system (MBB system), or back-to-back with separate MBB systems.

If required, two busbar systems can also be integrated in one switchboard, thus providing a high level of flexibility. For a higher current demand in so-called Power Centers (4,000 A and more), a double busbar system installed at the rear or top is used.



Locking system for simple or central locking

Technical data

Frame

Door opening angle	125°, 180° with stand-alone installation
Frame height (without base)	2,000, 2,200 mm
Base height (optional)	100, 200 mm
Cubicle depth	500 mm, 600 mm, 800 mm for single front 1,000 mm, 1,200 mm for double front
Degree of protection acc. to IEC 60529	IP30, IP31, IP40, IP41, IP43, IP54
Material of the switchboard	Sendzimir-galvanized sheet steel
Side walls and covers	Powder-coated
Type of installation	Single- or double-fronted with a common main busbar system (MBB system); back-to-back with separate MBB systems
Connection position of cable and busbar trunking system connection	from front, from rear, from top, from bottom

Main busbars

Rated currents	up to 7,010 A
Rated peak withstand current I_{pk}	up to 330 kA
Rated short-time withstand current I_{cw}	up to 150 kA
Horizontal busbar system	top, rear-top, and/or rear-bottom

Circuit-breaker design

Safe, efficient, and compact – wherever more current is needed

SIVACON S8^{plus} incoming feeder cubicles, outgoing feeder cubicles, and coupling cubicles of circuit-breaker design use SENTRON 3WA air circuit breakers in withdrawable or fixed-mounted design for the power supply of consumers with high power ratings, or, alternatively, SENTRON 3VA molded case circuit breakers. Since there are generally many consumer loads downstream from these cubicles, the personnel safety and operational reliability of these is of particular importance.

Safety with design verification

With its circuit-breaker design, SIVACON S8^{plus} meets the requirements of personnel safety and operational reliability in a compact and safe manner. Moving to the connected, test, or disconnected position with the SENTRON 3WA air circuit breaker takes place with the door closed. Design verification by means of tests in accordance with IEC 61439-2 also ensures a high level of safety for all sizes.

Space-saving solutions

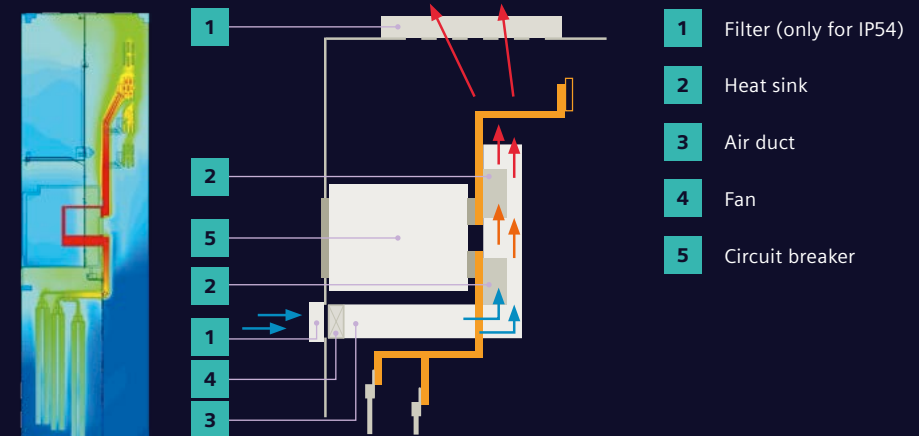
The design with SENTRON 3WA air circuit breaker and a cubicle width of only 400 mm is perfectly suitable for current ratings up to 2,000 A and minimized space requirements. The circuit breaker cubicle with a width of 600 mm offers enough space for up to three circuit breakers (with rear connection).

Flexibility for every size

In the cable or busbar connection compartment which can be positioned at the top or bottom, the circuit-breaker design offers optimal connection conditions for every size. There, cables or SIVACON 8PS busbar trunking systems can be connected through a design verified connection, while the switching and protection devices for control and monitoring can be kept in the auxiliary device compartment.

Energy-efficient cooling at any time

SIVACON S8^{plus} optionally offers a patented forced ventilation technology for cubicles in circuit-breaker design. It cools reliably, reduces the derating, and thus allows for a safe operation and a long service life. The fans are designed redundantly and – for a long service life – speed monitored.



Forced cooling for circuit-breaker design

Your advantages

- Cost-efficient technology for applications with higher current demand
- Safety thanks to connected, test, and disconnected position with the door closed
- Optimum cubicle width for every circuit breaker size
- Ideal space conditions for cable connection, for every size
- Design verified connection to SIVACON 8PS busbar trunking systems
- Can also be used for applications (FCB1) up to 800 V



Continuous power supply by means of design verified connection to SIVACON 8PS busbar trunking systems



Cooling system with fans underneath the SENTRON 3WA air circuit breaker

Technical data



One circuit breaker per cubicle (FCB1)

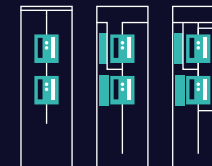
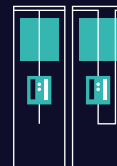


Two circuit breakers per cubicle (FCB2)



Three circuit breakers per cubicle (FCB3)

	One circuit breaker per cubicle (FCB1)	Two circuit breakers per cubicle (FCB2)	Three circuit breakers per cubicle (FCB3)
Mounting design	Fixed-mounted design, withdrawable design	Withdrawable design	Fixed-mounted design, withdrawable design
Functions	Incoming feeder, outgoing feeder, transversal coupler or longitudinal coupler	Incoming feeder, outgoing feeder, longitudinal coupler, bypass	Incoming feeder, outgoing feeder
Circuit breaker / rated current of the circuit breaker	SENTRON 3WA air circuit breakers (ACB), from 630 A to 6,300 A, 3- and 4-pole SENTRON 3VA molded case circuit breakers (MCCB), from 630 to 1,000 A	SENTRON 3WA air circuit breakers (ACB), from 630 A to 2,500 A (3,200 A bypass), 3- and 4-pole, size 1&2	SENTRON 3WA air circuit breakers (ACB), from 630 A to 1,600 A, 3- and 4-pole, size 1
Type of connection	Cable/busbar connection at the front or rear	Cable/busbar connection at the front	Cable connection at the rear
Connection position	top or bottom, depending on the position of the cable or busbar connection compartment		
Cubicle width (mm)	400 up to $I_n = 2,000$ A 600 up to $I_n = 3,200$ A 1,000 up to $I_n = 6,300$ A	600, 800, 1,000	600
Internal separation	Form 1, 2b, 3a, 4b, 4b type 7 (BS)	Form 1, 2b, 3a, 3b, 4b	Form 1, 3a, 3b
Busbar position	top, rear-top, rear-bottom	rear-top, rear-bottom	top



Universal mounting design

Safe, flexible, and cost-efficient – if there is little space available

The universal mounting design allows you to combine different mounting designs – withdrawable, fixed-mounted with compartment doors, plug-in – in one and the same cubicle of your SIVACON S8^{plus} switchboard. As a version in withdrawable design, it is the ideal solution for Motor Control Centers in industrial plants, where a high availability of feeders and quick adjustments of the power supply are required.



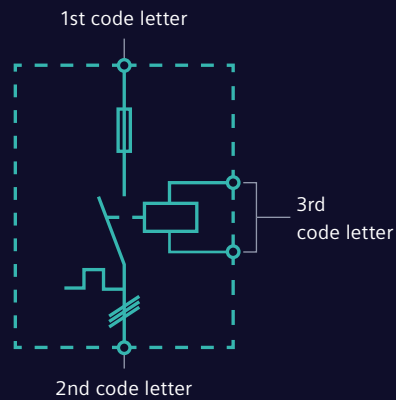
Combination of withdrawable design,
fixed-mounted design, and plug-in design

Technical data

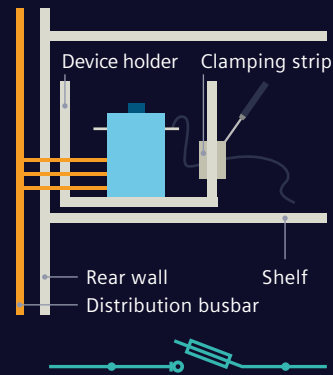
Mounting design	Withdrawable design, fixed-mounted design with compartment doors, plug-in design
Functions	Cable feeders up to 630 A, motor feeders up to 250 kW (at 400 V)
Type of connection	Front and rear
Cubicle width (mm)	600, 1,000, 1,200
Internal separation	Form 2b, 3b, 4a, 4b, 4b type 6 (BS), 4b type 7 (BS)

Your advantages

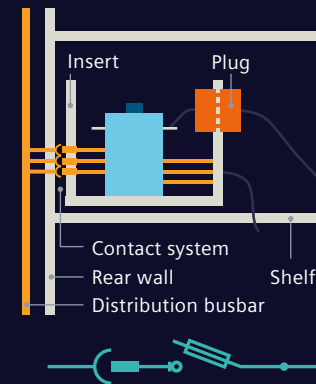
- High level of flexibility and efficiency by combinable functional assemblies in one cubicle
- Space-optimized modular design
- Personnel safety, even in the event of a fault, thanks to closed front doors in all withdrawable unit positions (connected, test, disconnected positions)
- Long service life thanks to patented low-wear contact system



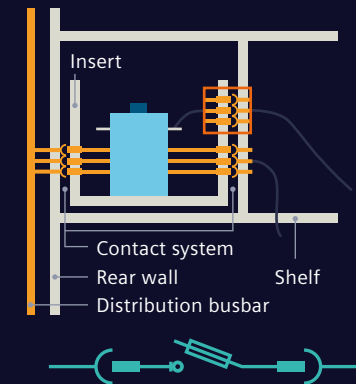
Fixed-mounted design (FFF)



Plug-in design (WFD)



Withdrawable design (WWW)



Technology basics for fixed-mounted design – plug-in design – withdrawable design

Code letters:

F for fixed connections **D** for detachable connections **W** for guided connections

Flexible and space-saving

The SIVACON S8^{plus} technology allows for a space-saving installation. The lateral connection compartment with cable brackets for propping up the cables can be 400 or 600 mm wide. Since the cables can also be connected at the rear in the universal mounting design, the cubicle width can be reduced to 600 mm. The rear-left vertical distribution busbars are executed as profile busbar or flat copper for tap-offs without any need for drilling or punching – optimal flexibility for later extensions.

Fixed-mounted design – modular and cost-efficient

The fixed-mounted switching and protection devices are installed on modular device holders. These can be equipped with circuit breakers or switch disconnectors with fuses. Cable connection is made directly at the device or, in cases of higher requirements, at special connection terminals in the cable compartment. For individual equipping, the system offers device holders for free arrangement of components.

Plug-in design – flexible modifications

3NJ63 switch disconnectors with fuses can be installed in the bottom 600 mm of the device compartment. They are equipped with a plug-in contact on the supply/line side. This means that the switch disconnector can be replaced or retrofitted without de-energizing the cubicle.

Withdrawable design – ergonomic and compact

When requirements are frequently changing, e.g. modifications in motor rating or the connection of new consumer loads, the withdrawable design offers the flexibility needed. Withdrawable units can be retrofitted or exchanged with ease and without de-energizing the cubicle, thus avoiding downtimes. The withdrawable design is therefore the solution if a very high switchboard availability is required.



Withdrawable design – ergonomic and compact

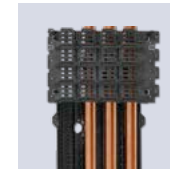
Regardless of whether small or normal withdrawable units are used, the size is optimally adapted to the required power rating, thus allowing to reduce the size of the switchboard to a minimum. The compact small withdrawable units are particularly useful here. With small withdrawable units of size 1/4 (up to four withdrawable units per compartment) and 1/2 (up to two withdrawable units per compartment), as well as with normal withdrawable units with heights starting from 100 mm, very high packing densities can be achieved, with up to 48 withdrawable units per cubicle for space-optimized installation.



Withdrawable units of all sizes are equipped with integrated operating error protection

Distribution with safety

In the withdrawable design, the distribution busbar system is arranged at the rear. It offers test finger safety (IP20B) to live parts even without additional shutters. Optionally, the plug-in busbar system can be embedded in a way that is arc-resistant, and equipped with a shutter with double-action system. The tap-off openings are arranged in a 50 mm modular grid. This ensures maximum flexibility, even for later extensions. Optionally, a withdrawable unit coding (up to 9,216 options) can be used for the unambiguous assignment of withdrawable units.



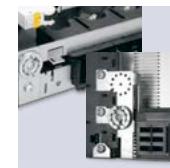
Arc-resistant distribution busbar embedding



Shutter with double-action for normal and small withdrawable units



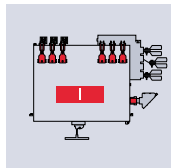
Operating-error-proof and uniform operating concept throughout all sizes of withdrawable units



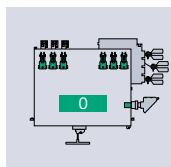
Mechanical coding of withdrawable units and compartments with up to 9,216 options

Safe operation of the withdrawable units

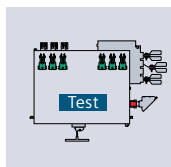
Withdrawable units of all sizes are equipped with integrated operating error protection and a uniform, clear indication of the withdrawable unit positions. Moving to the connected, disconnected, or test position takes place with the door closed and without eliminating the degree of protection. In addition to the main switch, the disconnected position of the withdrawable units can also be locked for additional safety. A coding of the withdrawable unit prevents any mix-up of withdrawable units of the same size. The patented withdrawable unit contact system has been conceived to be user-friendly and particularly wear-resistant. No connection work is required inside the withdrawable unit compartments.



In the connected position, both the power and the control contacts are closed.



Withdrawable units in disconnected position have maximum isolating distances on the incoming, outgoing, and control sides.



The test position allows for no-load testing of the withdrawable units.

Moving to the withdrawable unit positions behind closed door

Energy-efficient cooling at any time

The optional system reduces the derating and provides a low temperature profile inside the cubicle to ensure the safe operation and long service life of sensitive electronic equipment. The temperature is monitored at all critical spots, ensuring an energy-efficient cooling at any time. Speed-controlled fans optimize the service life and power demand.

More compact with Rogowski coil measurement

In addition to the conventional current/voltage measuring modules of the SIMOCODE M-CP motor management system with ring-core transformers, modules with Rogowski coils for measured value acquisition are also available specifically for the withdrawable design of SIVACON S8. The coils are integrated into the contact system of the normal withdrawable units. The elimination of the classic current/voltage measurement module enables more compact withdrawable units.

Up to 25% space is saved in the withdrawable unit.

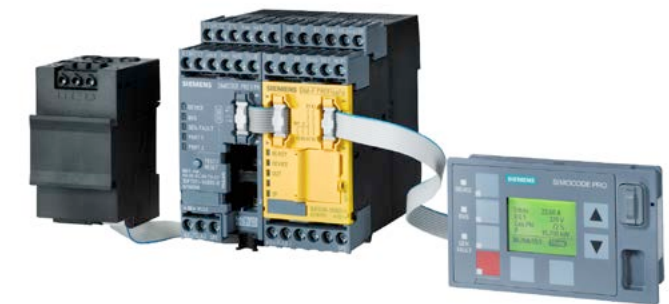


SIMOCODE –
the flexible and modular motor management system

Motor management and motor control devices

As a flexible, modular motor management system for motors in the low-voltage range, SIMOCODE optimizes the link between control system and motor feeder. The system increases the switchboard availability, and offers at the same time considerable savings during construction, commissioning, operation, and maintenance of a switchboard.

- Extensive protection, monitoring, safety, and control functions between the motor feeder and the automation system in just one compact system
- Independent of the controller
- Connection to process control systems using the most important communication protocols: PROFIBUS, PROFINET, Modbus RTU / TCP, Ethernet IP, and OPC UA
- SIMOCODE ES: for diagnostics and easy configuration, also in the TIA portal
- Integration in process control systems, such as SIMATIC PCS 7



Frequency converter design

Ideal for cost-efficient and safe power supply to continuously operating or highly dynamic pumps, fans, and compressors

The modular and compact frequency converter cubicle, as an integral part of SIVACON S8^{plus}, is supplied via the common busbar – or can optionally be delivered as an independent cubicle.

Specialized in the requirements of industrial applications

The cubicle contains up to nine standardized frequency converter modules, which integrate all required functions in a very small space. It is possible to use feeders either in design with fuses or without fuses. In terms of power rating, six tested frequency converter modules are available within the power range from 0.55 kW to 132 kW – modular, and flexibly convertible and expandable.

Your advantages

- Higher cost-efficiency thanks to the flexible solution for your switchboard with standardized modules
- More safety thanks to design verification according to IEC 61439, and test according to IEC/TR 61641
- Saved space in comparison with a conventional design

Fit for industrial applications –
the frequency converter module



Technical data

Mounting design	Fixed-mounted modules with SINAMICS G120 frequency converters
Functions	Control of continuously operating or highly dynamic pumps, fans, and compressors
Rated values of the module	From 0.55 kW to 132 kW
Type of connection	Front
Cubicle width (mm)	600, 800, 1,000
Internal separation	Form 1, 2b

Fit for the digital age

A converter of the SINAMICS G120 series is the centerpiece of each module, and its IOP (Intelligent Operator Panel) is plugged onto the control unit of the frequency converter itself or installed in the cubicle door to ensure perfect access. With integrated communication modules, the frequency converters can easily be integrated in higher-level automation and energy management systems as well as in cloud-based analysis systems. Configuration is done via the proven TIA portal.



Frequency converter module
size FSA



Frequency converter module
size FSF

In-line design, plug-in

High packing density and possible exchange without de-energizing the cubicle entirely

The cubicles for cable feeders in in-line design with plug-in contact on the supply/line side can be equipped with up to 35 horizontal 3NJ63 switch disconnectors with fuses.

Variable with plug-in design

The 3NJ63 in-line switch disconnectors with fuses are suitable for cable feeders up to 630 A. The cable compartment has a width of either 400 or 600 mm and contains cable brackets which prop up the cables.

Safe and flexible

The distribution busbar system at the rear of the in-line design cubicle offers test finger safety (IP20B) to live parts. The tap-off openings are arranged in a 50 mm modular grid. This ensures maximum flexibility also for later extensions.

Technical data

Mounting design	Plug-in design
Functions	Cable feeders up to 630 A
Type of connection	Front
Cubicle width (mm)	1,000, 1,200
Internal separation	Form 3b, 4b

Compact with high functionality

The cable is connected directly at the device, which also forms the front closure. Alternatively, SASILplus (JEAN MÜLLER) can also be executed in plug-in design on the load side. The plug-in in-line switch disconnectors are operated directly at the device. Up to three required current transformers can be installed in the in-line system within the device contours – auxiliary switches, measuring devices, and communication connections can also be integrated. Device compartments are available for individual equipping.

Up to 35 feeders per cubicle for 3NJ63 switch disconnectors with fuses



Your advantages

- High level of switchboard availability thanks to modification or replacement under operating conditions
- Simple and cost-efficient mounting thanks to plug-in contact on the supply/line side
- High packing density with up to 35 feeders per cubicle
- Flexible expansion possibilities

In-line design, fixed-mounted

Cost-efficient choice if replacement of components under operating conditions is not required

The cubicles for cable feeders in the fixed-mounted design up to 630 A are equipped with vertically installed 3NJ4 fuse switch disconnectors.

Compact and safe

Depending on the cubicle width, there is room for several switch disconnectors of size 00 to 3 in order to build compact, economically optimized infrastructure applications. Additional auxiliary devices can be installed on a mounting plate or with ALPHA fast mounting kits.

Cost-efficient and adaptable

The distribution busbar system located horizontally at the rear inside the cubicle offers various cross-sections. The PE, PEN, or neutral conductor bars are installed separately from the phase conductors in the cable compartment, either at the top or the bottom of the cubicle, depending on the connection.

Technical data

Mounting design	Fixed-mounted design
Functions	Cable feeders up to 630 A
Type of connection	Front
Cubicle width (mm)	600, 800, 1.000
Internal separation	Form 1, 2b

Flexible design

The switch disconnectors are fixed-mounted on the horizontal distribution busbar system and operated directly at the device. For each switch disconnector, up to three current transformers enable feeder-related measurements. The cables can be routed into the cubicle from the top or the bottom, and are connected directly at the switch disconnector.

A cubicle-height door provides the front closure, optionally fitted with a cutout area, which allows to operate the switching and protection devices when the door is closed.

Up to 18 feeders per cubicle with fixed-mounted 3NJ4 fuse switch disconnectors



Your advantages

- Space-saving thanks to compact design for up to 18 feeders per cubicle
- Consistently cost-efficient installation
- Optional installation of device holders for free arrangement of components, or ALPHA fast mounting kits for modular installation devices
- Optional door cutout for operation with closed front
- Can also be used for applications up to 800 V

Fixed-mounted design with front covers

Take advantage of the benefits of the fixed-mounted design and the easy operation through the cover

If short downtimes are acceptable for the replacement of devices, the fixed-mounted design with front covers offers advantages. Individual functional assemblies can be flexibly combined with it, and the functional compartments can be subdivided by means of additive modules as required (up to form 4b).

Safe, space-saving, and flexible

The design verified standard modules of the fixed-mounted design with front covers offer a high level of safety. The connection compartment on the right side of the cubicle has a width of either 400 or 600 mm; cable brackets are provided to prop up the cables.

The rear-left vertical distribution busbars are designed as a profile busbar or flat copper for tap-offs in the smallest of grids. Cables, wires, or busbars are connected without any need for drilling or punching – optimal flexibility for later extensions.

Technical data

Mounting design	Fixed-mounted design with front covers
Functions	Cable feeders up to 630 A
Type of connection	Front
Cubicle width (mm)	1,000, 1,200
Internal separation	Form 1, 2b, 4a, 4b

Multifunctional modules

The switching devices are installed on modular device holders of graduated depth. These can be equipped with circuit breakers, switch disconnectors with fuses, or modular installation devices. They are attached to the device holder and directly connected to the distribution busbar. Cable connection is made directly at the device or, in cases of higher requirements, at special connection terminals. Thanks to the cover, simple operation is possible directly at the device. The cubicle can be optionally closed with a glass door.



Easy installation of front covers, and uniform front level in the fixed-mounted design cubicle

Your advantages

- Cost-efficient arrangement of devices as single or multiple feeders
- Device holders of graduated depth
- More safety thanks to design verified standard modules
- High level of flexibility through the combination of high-rating feeders and modular installation devices

Reactive power compensation

Cubicles for the central reactive power compensation make your power supply more cost-efficient and more energy-efficient

Reactive power from inductive, linear, and non-linear consumers (e.g. motors, transformers, reactors, converters, or UPS systems) burden transformers and cables/lines in the power grid, thus leading to transmission losses and causing avoidable costs.

Cost-efficient overall system

For reactive power compensation, SIVACON S8^{plus} switchboards are equipped with unchoked or choked capacitor assemblies depending on the consumer load structure.

The controller assembly has an electronic reactive power controller for door installation. The multifunction display is used to set the desired target cos phi from 0.8 ind to 0.8 cap. Network parameters such as U, I, f, cos phi, P, S, Q, and harmonics are displayed.

The capacitor assemblies (up to 200 kvar) comprise a fuse switch disconnecter, capacitor contactors, discharge devices, and filter reactors. A central switch disconnecter assembly can optionally be used for the safety isolation of all capacitor assemblies. In this way, the central reactive power compensation of SIVACON S8^{plus} enables an economically optimized power supply with efficient network dimensioning.

If required, the compensation cubicle can also be installed separately.



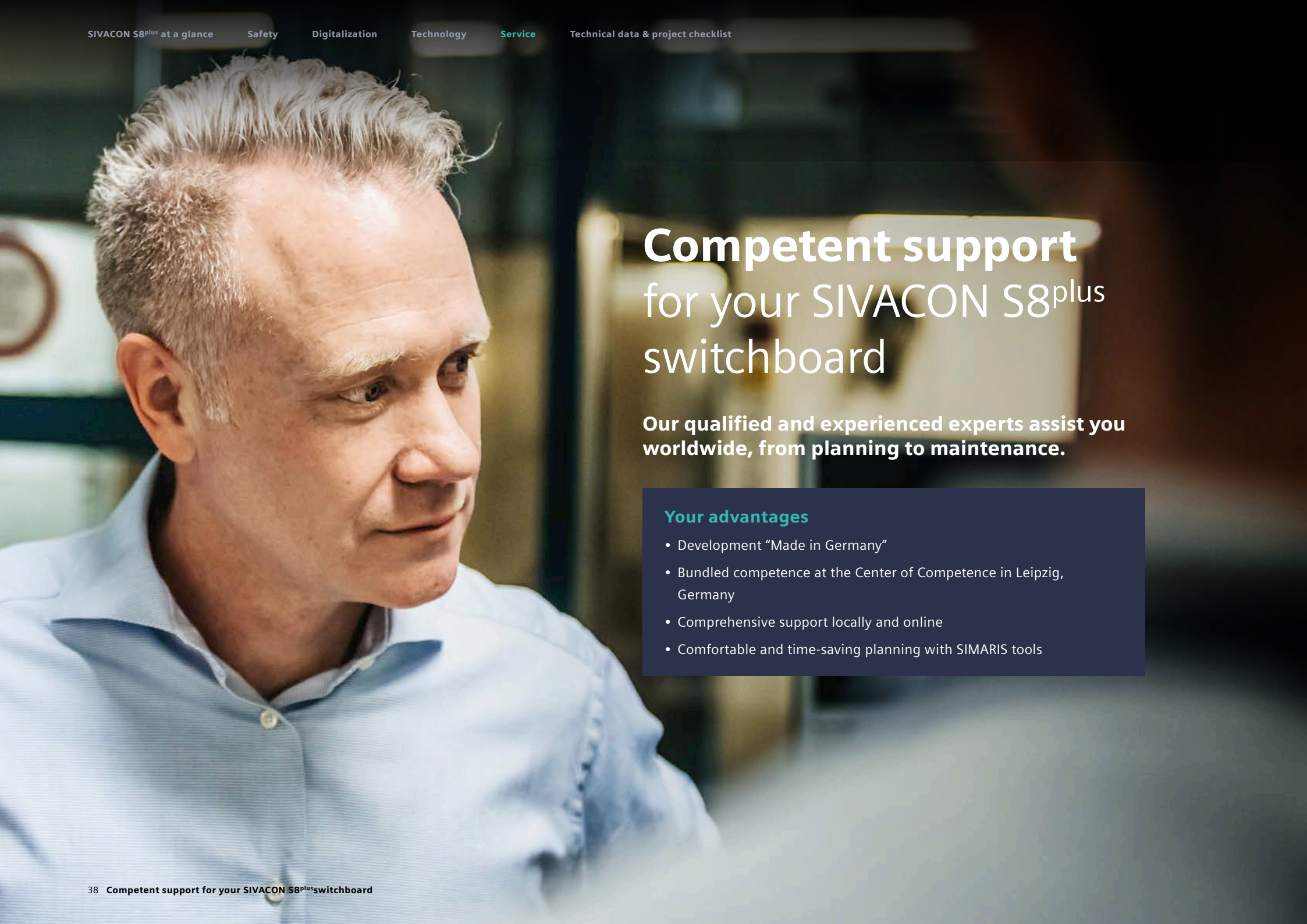
Cubicle for the central reactive power compensation

Technical data

Mounting design	Fixed-mounted design
Functions	Central reactive power compensation
Capacitor power	Up to 500 kvar unchoked/ choked
Degree of choking	Without, 5.67%, 7%, 14%
Type of connection	Front
Cubicle width (mm)	800
Internal separation	Form 1, 2b

Your advantages

- Increased cost-efficiency thanks to lower energy costs
- Efficient network dimensioning thanks to low reactive power
- Design verified integration, either directly in the switchboard or as a separate cubicle



Competent support for your SIVACON S8^{plus} switchboard

Our qualified and experienced experts assist you worldwide, from planning to maintenance.

Your advantages

- Development "Made in Germany"
- Bundled competence at the Center of Competence in Leipzig, Germany
- Comprehensive support locally and online
- Comfortable and time-saving planning with SIMARIS tools

Reliable local support, worldwide

Siemens experts assist you worldwide in all matters related to SIVACON S8^{plus}. They provide ideas and solutions for your power supply, and specific expertise on project management and financial services. Important aspects of safety, logistics, and environmental protection are also considered. Technical experts from TIP Consultant Support are available, too, especially for the planning and conception of electric power distribution systems.

[siemens.com/tip-cs](https://www.siemens.com/tip-cs)

Your local contact partners

Through our contact database you can easily identify the SIVACON S8^{plus} contact partner or service provider in your region.

[siemens.com/sivaconS8plus-contact](https://www.siemens.com/sivaconS8plus-contact)

SIVACON S8^{plus} low-voltage switchboards online

Our website offers you a broad range of information as well as helpful tools for the SIVACON S8^{plus} low-voltage switchboards.

Overview SIVACON S8^{plus}

[siemens.com/sivacon-S8plus](https://www.siemens.com/sivacon-S8plus)

Planning and operation

Insights into the technology.

[siemens.com/switchboard-insights](https://www.siemens.com/switchboard-insights)

SIVACON S8^{plus} in moving images

Various videos on the advantages of the low-voltage switchboards SIVACON S8^{plus} are available on the Siemens YouTube channel under

Power distribution – SIVACON



Comfortable planning with the tools of the SIMARIS Suite

Planning the electric power distribution for industrial plants, infrastructure, and buildings is becoming more and more complex. To help you work faster and better under existing conditions, the innovative SIMARIS software tools effectively support your planning process:

- **SIMARIS design** – dimensioning electric grids, and automatically selecting components
- **SIMARIS project** – determining space requirements and budget for power distribution systems
- **Efficiency guide** – recognizing improvement potential and determining the energy efficiency class achieved
- **SIMARIS ecoguide** – visualizing sustainability impacts and total costs of a switchboard configuration over the life cycle
- **BIM-compliant IFC data** – creating an “as-built” digital twin for future-proof operation

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

Efficiency from planning to maintenance – with BIM data

Within the scope of digitalization, Building Information Modeling (BIM) offers great benefits already in the planning process. Easy exchange of all relevant building data from planning to facility management ensures quality and saves both time and money. For this reason, BIM also plays an increasingly important part in electrical planning.

[siemens.com/bim-eplanning](https://www.siemens.com/bim-eplanning)

Technical documentation online

You will find an overview of the latest technical documentation available for SIVACON S8^{plus} on our website (updated daily) at

[siemens.com/lowvoltage/product-support/S8](https://www.siemens.com/lowvoltage/product-support/S8)

First-hand know-how

Our courses offer you solid foundations for your business success. Expert lecturers provide you with the necessary theoretical and practical information relating to our SIVACON S8^{plus} low-voltage switchboards.

Technical data

Standards and approvals

Standards and regulations

Power switchgear and controlgear assembly (design verification)	IEC 61439-2 DIN EN 61439-2 VDE 0660-600-2
Testing under conditions of arcing due to internal fault (arc faults)	IEC/TR 61641 DIN EN 61439-2 Supplement 1 VDE 0660-600-2 Supplement 1
Integration and testing of active arc fault protection systems	IEC/TS 63107
Induced vibrations	IEC 60068-3-3 IEC 60068-2-6 IEC 60068-2-57 IEC 60980 KTA 2201.4 Uniform Building Code (UBC), Edition 1997 Vol. 2, Ch. 19, Div. IV
Protection against electric shock	EN 50274 (VDE 0660-514)

Approvals and certifications

Europe	CE Marking and EC Declaration of Conformity
Russia, Belarus, Kazakhstan	EAC (Eurasian Conformity)
China	CCC
United Kingdom	UKCA
Det Norske Veritas	DNV GL Type Approval Certificate
Shell Conformity	"DEP Shell"

Technical data

Rated operational voltage U_e (rated frequency f_n 50 Hz)	Main circuit	up to 690 V / up to 800 V for circuit-breaker design (FCB1) and in-line design, fixed-mounted
Clearances and creepage distances	Rated impulse voltage withstand strength U_{imp}	up to 12 kV
	Rated insulation voltage U_i	1,000 V
	Pollution degree	3
Main busbars, horizontal	Rated current	up to 7,010 A
	Rated peak withstand current I_{pk}	up to 330 kA
	Rated short-time withstand current I_{cw}	up to 150 kA, 1s
	Busbar position	top, rear-top, rear-bottom
Rated currents of devices	Circuit breakers	up to 6,300 A
	Cable feeders	up to 630 A
	Motor feeders	up to 250 kW
Internal separation	IEC 61439-2	form 1 to form 4b
	BS EN 61439-2	up to form 4b type 7
IP degree of protection	In accordance with IEC 60529	ventilated up to IP43 non-ventilated IP54 forced ventilated up to IP54
Mechanical strength	IEC 62262	up to IK10
Dimensions	Height (without base)	2,000, 2,200 mm
	Height of base (optional)	100, 200 mm
	cube width	200, 350, 400, 600, 800, 850, 1,000, 1,200, 1,400 mm
	Depth	single front 500, 600, 800; double front 1,000, 1,200 mm
Installation conditions	Indoor installation, ambient temperature in the 24-h mean	+35 °C (-5 °C to +40 °C)

Project checklist – Part 1

Customer

Author

Project

Tel./mobile

Project no.

E-mail

Delivery date

Date

Standards and regulations

 IEC 61439-1/2/
EN 61439-1/2
VDE 0660 Part 600-1/2

IEC/TR 61641, testing under conditions of arcing

- Arcing class A
 Arcing class C with limitation to the area of the cubicle
 Arcing class C with limitation to the area of the compartment

IEC/TR 61641, arc ignition protected zone

- Main busbar
 Cable connection, FCB cubicles
 Neutral conductor

IEC/TS 63107, integration and testing of active arc fault protection systems

- Arc detection system, quenching by circuit breaker
 Arc detection system, quenching by arc quenching device (AQD) and circuit breaker

Communication, sensors, and power monitoring

Preferred bus system

PROFINET
 MODBUS TCP
 PROFIBUS DP
 Others
 Modbus RTU

Power monitoring

Temperature supervision

Wired with PT100 or PT1000
 Wireless with IR sensors

Position of the sensors

- On the main busbar at the joints of the transport unit
 Customer connections of the circuit breaker cubicles
 Connection to the main busbar in universal mounting design cubicle
 Others:

SIMARIS control

- System software for customer PC with industry PC
 In the switchboard
 With central touch display at the switchboard

Environmental conditions

- Operating conditions
- Standard (indoor climate 3K4)
 Special
 Corrosive gases (for example, H₂S)
- Ambient temperature (24-h mean)
- 20 °C
 25 °C
 30 °C
 35 °C
 40 °C
 45 °C
 50 °C
- Site altitude above sea level
- ≤ 2.000 m
 Others: _____ m
- Adverse operating conditions
- None
 Earthquake-proof
 Ship/Offshore
 Others:

Layout and installation

- Type of installation
- Single-fronted
 Double-fronted
 Back-to-back
- Connection inside the cubicle
- Front
 Rear
- Restriction of total length
- Without
 Yes _____ mm
- Max. net length per transport unit
- 2,400 mm
 Others _____ mm

Cable/busbar entry

- Incoming feeder cubicles
- From bottom
 From top
- Outgoing feeder cubicles
- From bottom
 From top

Degree of protection

- Ventilated cubicle
- IP30
 IP31
 IP40
 IP41
 IP43
- Non-ventilated cubicle
- IP54
- Towards the cable floor
- IP00
 IP30
 IP40
 IP54
 Provided by the factory
 Provided by the customer

Project checklist – Part 2

Project

Network data / infeed data

Network type	<input type="checkbox"/> TN-C <input type="checkbox"/> IT	<input type="checkbox"/> TN-S <input type="checkbox"/> TT	<input type="checkbox"/> TN-C-S
Transformer rated power S_r	kVA	Rated impedance voltage U_z	%
Rated operational voltage U_e	V	Frequency f	Hz
Rated short-time withstand current I_{cw}	kA	Short-circuit withstand current I_k at DC	kA
Design of external connection	<input type="checkbox"/> L1, L2, L3, PEN <input type="checkbox"/> Others:	<input type="checkbox"/> L1, L2, L3, PE + N	<input type="checkbox"/> CEP (PEN + PE)
	<input type="checkbox"/> 3-pole switchable	<input type="checkbox"/> 4-pole switchable	

Horizontal busbar system

Position	<input type="checkbox"/> Top	<input type="checkbox"/> Rear-top	<input type="checkbox"/> Rear-bottom
Rated current I_n	A	A	A
Cu surface treatment	<input type="checkbox"/> Bare	<input type="checkbox"/> Silver-plated	<input type="checkbox"/> Tinned
Design L1, L2, L3 + ...	<input type="checkbox"/> PEN <input type="checkbox"/> PEN, N = 50% <input type="checkbox"/> Others:	<input type="checkbox"/> PE <input type="checkbox"/> PEN, N = 100%	<input type="checkbox"/> N

Vertical busbar system / distribution bars

Cu surface treatment	<input type="checkbox"/> Bare	<input type="checkbox"/> Silver-plated	<input type="checkbox"/> Tinned
Design L1, L2, L3 + ...	<input type="checkbox"/> PEN <input type="checkbox"/> PEN, N = 50%	<input type="checkbox"/> PE <input type="checkbox"/> PEN, N = 100%	<input type="checkbox"/> N

Internal separation

Circuit-breaker design	<input type="checkbox"/> Form 1	<input type="checkbox"/> Form 2b <input type="checkbox"/> Form 4b	<input type="checkbox"/> Form 3a	<input type="checkbox"/> Form 3b <input type="checkbox"/> Form 4b type 7 (BS)
Universal mounting design	<input type="checkbox"/> Form 4a	<input type="checkbox"/> Form 2b <input type="checkbox"/> Form 4b	<input type="checkbox"/> Form 4b type 6 (BS)	<input type="checkbox"/> Form 3b <input type="checkbox"/> Form 4b type 7 (BS)
Frequency converter design	<input type="checkbox"/> Form 1	<input type="checkbox"/> Form 2b		
In-line design, plug-in		<input type="checkbox"/> Form 4b		<input type="checkbox"/> Form 3b
In-line design, fixed-mounted	<input type="checkbox"/> Form 1	<input type="checkbox"/> Form 2b		
Fixed-mounted design	<input type="checkbox"/> Form 1 <input type="checkbox"/> Form 4a	<input type="checkbox"/> Form 2b <input type="checkbox"/> Form 4b		
Reactive power compensation	<input type="checkbox"/> Form 1	<input type="checkbox"/> Form 2b		

Assumed load of the consumer feeders

Values for assumed loading for motor-operated consumers	<input type="checkbox"/> 1	<input type="checkbox"/> 0.8		
Values for assumed loading for power distribution	<input type="checkbox"/> 1 <input type="checkbox"/> 0.6	<input type="checkbox"/> 0.9	<input type="checkbox"/> 0.8	<input type="checkbox"/> 0.7

Notes

The road to
SIVACON S8^{plus}



[siemens.com/sivacon-S8plus](https://www.siemens.com/sivacon-S8plus)

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