

A Siemens SIVACON S8 low-voltage switchboard is shown in a grey industrial setting. The switchboard features multiple compartments with circuit breakers, a digital display, and a control panel. Overlaid on the switchboard is a semi-transparent blue digital interface showing a complex electrical schematic with various components like transformers, capacitors, and switches connected by lines. In the background, there are vertical columns of yellow binary code (0s and 1s) floating in the air, suggesting a digital or smart infrastructure theme.

# SIEMENS

*Ingenuity for life*

## Safe power distribution, intelligent data and process management

Totally Integrated Power –  
SIVACON S8 low-voltage switchboard

[siemens.com/sivacon-S8](https://www.siemens.com/sivacon-S8)

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## Totally Integrated Power

The importance of electrical power as an energy source for industries, buildings, and infrastructures is increasing steadily. Each business has specific needs and challenges and requires a versatile, adaptable, and tailored power supply in order to optimize availability and profitability. Totally Integrated Power (TIP) from Siemens is a completely customizable and integrated power supply solution comprising software and hardware products, systems, and solutions across all voltage levels. TIP perfectly integrates into industrial and building automation systems and enables companies to focus on their core business while supporting their value chains with a reliable, safe, and efficient power supply. Because power matters.

### SIVACON S8 – Intelligent power distribution for TIP

SIVACON S8 sets standards as a power distribution board or Motor Control Center (MCC) for industrial applications or in the infrastructure. The switchboard system for the simple and consistent distribution of power allows a high level of personnel and switchboard safety and, due to its optimal design, offers a wide range of possible uses. Thanks to the



modular design, the switchboard can be optimally adapted to every requirement when designing the complete system. Combining a high level of safety with a modern design and the SIMARIS control HMI, the switchboard provides an efficient solution.

# SIVACON S8 low-voltage switchboard – safe, flexible, and intelligent



## Intelligent switchboard

As a Motor Control Center or a mere power distribution board, SIVACON S8 is ready for the challenges of digitalisation already today. Thanks to complete Building Information Modelling (BIM) data, SIVACON S8 can be used cost-efficiently throughout the entire infrastructure lifecycle, from planning to service. Using the SIMARIS control visualisation application, all communication-capable switching devices of SIVACON S8 can be operated and monitored uniformly. The clearly organized display of its status information, measured values, warnings, and error messages enables simple and fast diagnostics of the cause of the fault. In addition, the data can be connected with higher level automation or energy management systems. Cloud-based analysis systems like MindSphere from Siemens thus open up new approaches for more switchboard availability and a high level of transparency of the power flows.

## Your benefits at a glance

### Future-oriented solution with intelligent switchboard

- SIMARIS control, the digital twin of the switchboard, local operation and diagnostics station
- Clear display of extensive measured values, status, and diagnostics information
- Preventive maintenance supported by diagnostics information
- Integration in energy management and automation solutions or cloud-based analysis systems
- Energy efficiency according to IEC 60364-8-1 possible

### High level of personnel safety and operational reliability

- Design verification according to IEC 61439-2 and under conditions of arcing by means of tests in accordance with IEC/TR 61641
- Extended protection against internal arcing
- Redundant and efficient ventilation system
- Consistently design verified connection to SIVACON 8PS busbar trunking systems

### High level of flexibility

- Innovative and modular design
- Space-optimised use with compact withdrawable design
- Optimum application thanks to powerful motor management systems

## Tested safety

SIVACON S8 is a design verified low-voltage switchboard according to IEC 61439-2, with proven physical properties in operation and failure situations. Optimum personnel safety is furthermore ensured by the test passed under conditions of arcing in accordance with IEC/TR 61641. SIVACON S8 goes beyond the standard and offers safety at a high level, for instance with its active protection system against internal arcing. The efficient and redundant ventilation system also supports safe and reliable operation.

## Flexible solutions

SIVACON S8 adapts to match your requirements with intelligent solutions. Easy combination of different mounting designs in one cubicle as well as flexible modules allow for the simple exchange or addition of functional units. The SIVACON S8 modules are continuously being refined, thereby ensuring the technical progress for the overall system, for example through compact small withdrawable units for space-optimised use and powerful motor management systems for a wide variety of applications.

# SIVACON S8 – system overview

## Cubicle design



	Circuit-breaker design	Arc protection design	Universal mounting design
<b>Mounting design</b>	<ul style="list-style-type: none"> <li>Fixed-mounted design</li> <li>Withdrawable design</li> </ul>	<ul style="list-style-type: none"> <li>Fixed-mounted design</li> </ul>	<ul style="list-style-type: none"> <li>Withdrawable design</li> <li>Fixed-mounted design with compartment doors</li> <li>Plug-in design</li> </ul>
<b>Functions</b>	<ul style="list-style-type: none"> <li>Incoming feeder</li> <li>Outgoing feeder</li> <li>Bus coupler</li> </ul>	<ul style="list-style-type: none"> <li>Extended protection against internal arcing</li> </ul>	<ul style="list-style-type: none"> <li>Cable feeders</li> <li>Motor feeders (MCC)</li> </ul>
<b>Rated values</b>	<ul style="list-style-type: none"> <li>up to 6,300 A</li> </ul>	<ul style="list-style-type: none"> <li>Short-circuit rating up to 100 kA at 690 V</li> </ul>	<ul style="list-style-type: none"> <li>up to 630 A</li> <li>up to 250 kW</li> </ul>
<b>Type of connection</b>	front or rear	–	front or rear
<b>Cubicle width (mm)</b>	400, 600, 800, 1,000, 1,400	400	600, 1,000, 1,200
<b>Internal separation</b>	Form 1, 2b, 3a, 4b, 4 type 7 (BS)	4b	Form 3b, 4a, 4b, 4 type 7 (BS)
<b>Busbar position</b>	top, rear	top, rear	top, rear
<b>Human-Machine Interface (HMI)</b>	SIMARIS control (option)	SIMARIS control (option)	SIMARIS control (option)



Fixed-mounted design	In-line design, plug-in	In-line design, fixed-mounted	Reactive power compensation
<ul style="list-style-type: none"> <li>Fixed-mounted design with front covers</li> </ul>	<ul style="list-style-type: none"> <li>Plug-in design</li> </ul>	<ul style="list-style-type: none"> <li>Fixed-mounted design</li> </ul>	<ul style="list-style-type: none"> <li>Fixed-mounted design</li> </ul>
<ul style="list-style-type: none"> <li>Cable feeders</li> </ul>	<ul style="list-style-type: none"> <li>Cable feeders</li> </ul>	<ul style="list-style-type: none"> <li>Cable feeders</li> </ul>	<ul style="list-style-type: none"> <li>Central compensation of reactive power</li> </ul>
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front	front	front	front
1,000, 1,200	1,000, 1,200	600, 800, 1,000	800
Form 1, 2b, 3b, 4a, 4b	Form 3b, 4b	Form 1, 2b	Form 1, 2b
top, rear	top, rear	rear	without, top, rear
SIMARIS control (option)	SIMARIS control (option)	–	–



# SIVACON S8<sup>plus</sup> —

the special feature package directly from Siemens

With the SIVACON S8<sup>plus</sup> feature package you receive additional innovations which make your SIVACON S8 switchboard from Siemens even safer, more efficient, and more reliable. These features are available only for switchboards from Siemens' production facilities.

Integration in energy management and automation solutions or cloud-based analysis systems for future-proof and reliable operation



- SIMARIS control – Interface and monitoring system for uniform operation, monitoring and parameterisation of intelligent switchboards as well as connection to higher-level control systems and to cloud-based systems
- Integration of communication-capable switching and measuring devices as well as sensors in SIMARIS control for recording data



Extended protection against internal arcing for increased personnel and switchboard safety



Higher ratings through energy-efficient cooling. Patented forced cooling technology for cubicles in circuit-breaker design and in universal mounting design



300 mm high small withdrawable units for space-saving switchboards



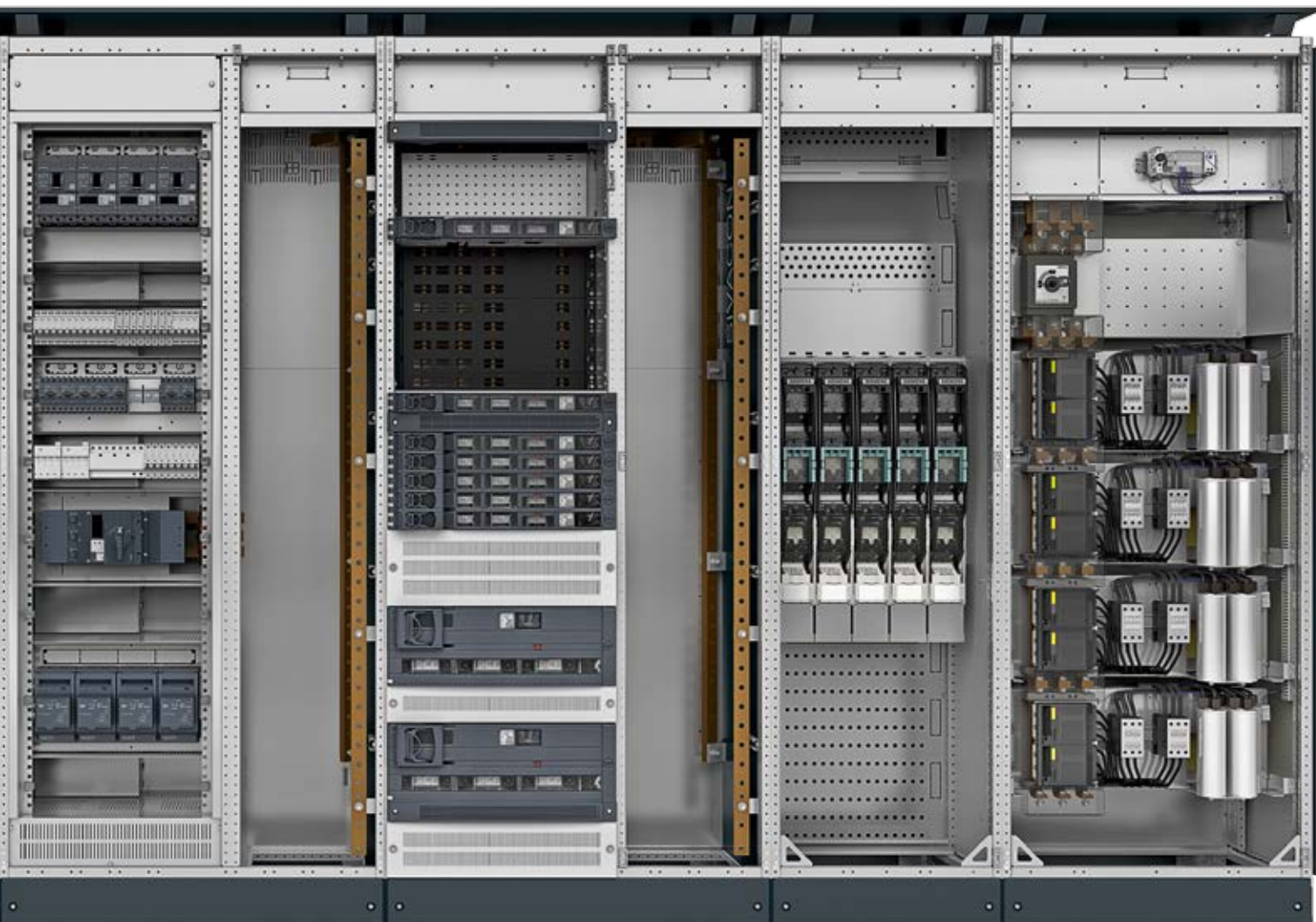
Powerful motor management system – the solution for the oil and gas market with specific demands

# SIVACON S8 – system overview

## Cubicle design



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Busbar position	top, rear	top, rear	top, rear
Human-Machine Interface (HMI)	SIMARIS control (option)	SIMARIS control (option)	SIMARIS control (option)



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front	front	front	front
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Form 1, 2b, 3b, 4a, 4b	Form 3b, 4b	Form 1, 2b	Form 1, 2b
top, rear	top, rear	rear	without, top, rear
SIMARIS control (option)	SIMARIS control (option)	–	–



## Tested safety

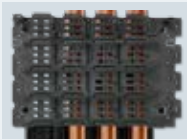
Design verification by means of tests according to IEC 61439-2, arc resistance by means of tests according to IEC 61641, earthquake upgrade, certification for application on ships and offshore platforms according to DNV and GL



Consistently design verified connection to SIVACON 8PS busbar trunking systems



Arc-resistant distribution busbar embedding



Lockable disconnected position for safe commissioning and maintenance



Shutter with double-action for normal and small withdrawable units



Patented low-wear withdrawable unit contact system for long service life



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 possibilities



## Flexible solutions

Variable busbar positions (top, rear) with rated current up to 7,000 A



Installation of two independent main busbar runs possible in one switchboard (up to 4,000 A)



### Innovative mounting design

- Combination of different mounting designs (fixed-mounted feeders, plug-in design, withdrawable design)
- Easy exchange or addition of functional units



Innovative locking system with multiple designs allows to change the door hinge at any time



Normal withdrawable units up to 630 A and small withdrawable units up to 63 A



High packing density with up to 48 feeders in withdrawable design in one outgoing feeder cubicle



Two standard heights and two base heights permit optimum adaptation to structural conditions



## Intelligent switchboard

Integration in energy management solutions via communication-capable switching and measuring devices, communication connection



# Solution for uniform operation and monitoring of intelligent switchboards



## Your benefit

- Simple operation thanks to clear display of all switching states, extensive measured values, status and diagnostics information in a central diagnostics station
- Flexible and extendable solution
- Fast diagnostics by means of structured and detailed fault information
- Transparent power flows help identify potential savings
- Increased switchboard availability through continuous monitoring and preventive maintenance by means of diagnostics data
- Simple transfer of relevant data and display to higher-level automation and energy management systems
- Future-oriented solution thanks to possibility of integration in cloud-based solution

## **SIMARIS control – from the SIVACON S8<sup>plus</sup> feature package – supports reliable operation as a permanent diagnostics station.**

Switchboards must operate cost-efficiently. Consequently, downtimes must be avoided, and their utilisation must be constantly optimised. The IEC 60364-8-1 or VDE 0100-801 standards describe the energy efficiency as well as the measured values to be recorded. ISO 50001 takes the topic further during switchboard operation, supporting companies with a specific process description when an operational energy management system is introduced. A standard-based energy management optimises the use of energy and increases the energy efficiency constantly. The connection to energy management automation systems and to cloud-based analysis systems contribute to reliable and future-oriented operation.

### **Consistently well informed: Recording of device status and energy values**

Anybody who wants to reduce energy costs and increase operational reliability on a long-term basis must first know the status of the installed devices as well as the power flows and electrical values.

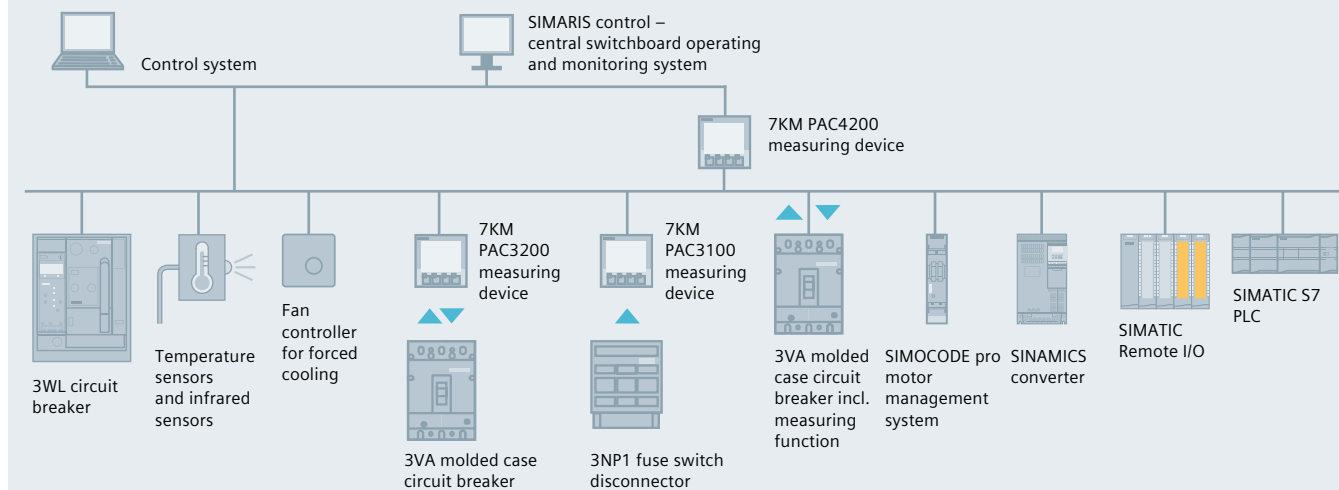
Modern low-voltage switchboards, especially Motor Control Centers, use intelligent protection, switching, and control devices almost exclusively.

Measuring devices such as SENTRON 7KT/7KM PAC, 3WL/3VA circuit breakers, or the intelligent motor management system SIMOCODE pro provide extensive diagnostics, status, measuring, statistical, and service data.

As a result, you will obtain precise and reliable measurements of the energy values for electrical feeders or individual consumer loads. In addition to this, the devices provide you – via standardised bus systems – with important measured values for the assessment of the switchboard state and the network quality. Furthermore, high failure safety is supported by redundant communication up to the withdrawable unit.

SIVACON S8 also offers communication-capable molded case circuit breakers in withdrawable design, and fully redundant communication systems solutions. By means of an IEC 61850 Gateway solution<sup>1)</sup>, the special data concentrator converts all data into a single IED (Intelligent Electronic Device) node.

In addition, sensors<sup>1)</sup> enable consistent temperature monitoring around the clock.



Communication-capable switching and measuring devices as well as sensors

## Communication-capable systems and sensors for future-proof and reliable operation

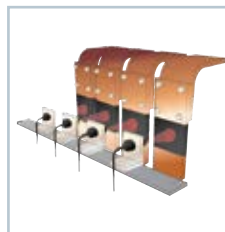
### Uniform local visualisation: Clear display

While the use and display in the process control system is reduced to a few items of status information and individual measured values as well as the control function, signalling and control directly on the switchboard are extremely limited and unclear.

They take place using indicator lights, pushbuttons, or device-specific operator panels. By contrast, comprehensive and clear presentation of all device information is often only possible with a PC and the appropriate software. The individual devices use different software tools here.

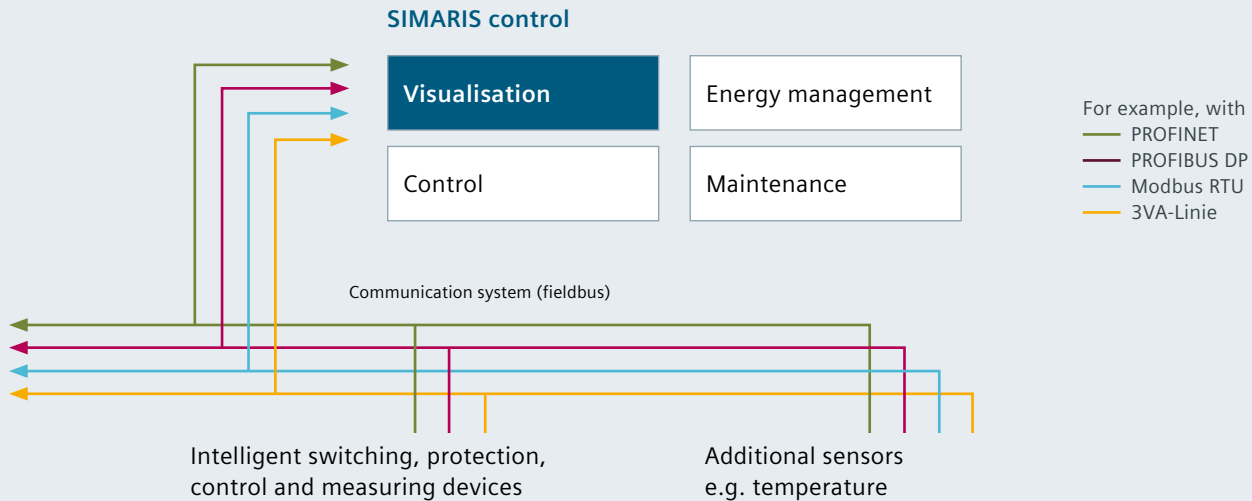
SIMARIS control<sup>1)</sup> offers an optimum solution for local visualisation and control of the communication-capable switching devices installed.

SIMARIS control integrates various bus systems. A standardised data model for Motor Control Centers enables uniform visualisation of the data. Thus, in SIMARIS control, all the information of the communication-capable switching, protection, and measuring devices used in SIVACON S8 is displayed clearly and in a structured, requirement-oriented form. The current diagnostics information of the individual devices is recorded in a centralised message list for the complete switchboard.



1) Option from the feature package SIVACON S8<sup>plus</sup>

## Intelligent switchboard



### Simple and safe operation:

#### For extra safety

Operation of SIMARIS control is touch-screen-optimised. Navigation through the switchboard structure is clear and intuitive. With just a few uniform operation steps, extensive feeder-specific detailed information can be displayed from a general overview.

Appropriate authorisation levels are defined in individual user groups to avoid operating errors. Users of the "Guest" group, for example, have no switching authorisation and also cannot make any changes in SIMARIS control.

### Simple local control and digital twin:

#### Easy commissioning and flexible operation

Individual operating parameters like current settings can be modified without parameterisation software, thus simplifying the commissioning of SIMOCODE motor feeders or the labelling and initialisation of withdrawable units/ compartments, for example.

With SIMARIS control, the digital twin can be adjusted by the end user during runtime. Feeder names and comments can be freely modified. Adjustments to the switchboard structure resulting, for example, from moving, adding, or removing feeders can be carried out in SIMARIS control by users themselves.

### High level of switchboard availability: Preventive maintenance and energy management

With SIMARIS control, operational diagnostics can be carried out faster, more flexibly, and more simply. Threshold values for monitoring, control, and diagnostics can be set for early signaling.

Comprehensive display of all measured values, status signals, and statistical data provides a high level of transparency right down to the individual feeder. Statistical data such as switching frequencies, runtimes, etc. support optimisation and planning of maintenance measures.





Sensor data (e.g. for temperatures) can also be displayed in the visualisation system for the purpose of monitoring relevant status information of a switchboard. This helps reduce downtimes and increase switchboard availability. Moreover, the power demand of the switchboard can be analysed and optimised using the consumption values of the feeders.

### Technical features

- Windows PC / industrial PC system with optimised operation for touch screen
- Independent of higher-level automation levels (acyclic communication)
- Use of existing switchboard communication system
- Compatible to various communication systems and network topologies
- Flexible and expandable
- Interfaces for PROFIBUS, PROFINET, Modbus, Ethernet, and others
- Several operator stations possible
- Operation possible via web client or mobile device
- Structured representation of alarms and faults / message list
- Integral user group administration with differentiated authorisations
- Configuration changes possible during operation (changes to number and positioning of feeders, adaptation of feeder names and descriptions)



# Benefit from SIVACON S8 step by step

Targets	Benefits	Actuators
<b>1. Recording</b>		
 <b>Recording measured values</b> (among others, energy W, power P, current I, voltage U, ...)	<b>Transparency =</b> Providing the measured value	Examples of integrated communication-capable devices: <ul style="list-style-type: none"> <li>• 7KM PAC measuring devices</li> <li>• 3WL, 3VA circuit breakers</li> <li>• SIMOCODE pro motor management system</li> <li>• SINAMICS converter</li> <li>• Temperature sensors</li> <li>• Infrared sensors</li> </ul>
<b>Recording switching device status</b> (switching frequency, runtimes, ...)	<b>Status transparency =</b> Providing information about installed devices	Examples of integrated communication-capable devices: <ul style="list-style-type: none"> <li>• 3WL, 3VA circuit breakers</li> <li>• SIMOCODE pro motor management system</li> <li>• SINAMICS converter</li> </ul>
<b>2. Visualising</b>		
 <b>Visualising power flows as well as electrical measured values</b> (load profiles, diagrams, current, power factor, harmonics, ...)	<b>Central interface for power transparency =</b> Knowing and visualising the power	SIMARIS control powermanager – power monitoring software
<b>Visualising switching device status</b>	<b>Central diagnostics station for status transparency =</b> Visualising the information down to the individual feeder	SIMARIS control
<b>3. Managing</b>		
 <b>Controlling and parameterising feeders</b>	<b>Uniform operator panel =</b> Parameterising various devices via a single interface	SIMARIS control
<b>Following process changes</b>	<b>Flexible operation =</b> Digital twin can be adjusted during runtime	SIMARIS control
<b>Planning maintenance</b>	<b>High switchboard reliability =</b> Preventive maintenance through fast diagnostics	SIMARIS control
<b>4. Transferring</b>		
 <b>Integration in existing IT structures</b>	<b>Future-oriented switchboard diagnostics station =</b> Uniform interface to higher-level automation and energy management systems and to cloud-based analysis systems	SIMARIS control

Benefit from the advantages of the intelligent SIVACON S8 switchboard step by step – and be prepared already today for the challenges of tomorrow.



SIVACON S8: Safe power supply with design verification

## Your benefit

- Safety for personnel and switchboard thanks to design verification with tests according to IEC 61439-2
- Quality assurance through design verifications and routine verifications
- Systematic tests always carried out with devices

# SIVACON S8 – standard-compliant, design verified low-voltage switchboard

**Low-voltage switchboards are developed, manufactured, and tested following the specifications of IEC 61439-2 for power switchgear and controlgear assemblies.**

### Requirement of the IEC 61439-2 standard

In order to provide evidence that the switchboard is fit for purpose, this standard requires two main forms of verification – design verifications and routine verifications. Design verifications are tests carried out during the development process and are the responsibility of the original manufacturer (developer). Routine verifications must be performed by the manufacturer of the power switchgear and controlgear assembly on every manufactured switchboard prior to delivery.

### Design verification with tests

The SIVACON S8 switchboard offers safety for personnel and switchboard by means of design verification with tests according to IEC 61439-2.

The physical properties are dimensioned and verified at the testing laboratory for both operation and failure situations. Design verifications as well as routine verifications are a decisive part of quality assurance, and the prerequisite for CE marking according to the EC directives and laws.

# Solutions for high seismic requirements and vibrations

**SIVACON S8 switchboards offer a safe solution even for regions at risk from earthquakes, or areas of application with high mechanical stress.**

## Earthquake upgrade

In the earthquake-tested version, SIVACON S8 is available for seismic requirements. During the test, the functionality and stability after and during the earthquake are checked.

The results of the seismic tests are divided into three categories:

- 1: Functionality during the earthquake
- 2: Functionality after the earthquake
- 3: Stability

## Certifications for application on ships and offshore platforms

The conditions of application on the high seas are a special challenge for switchboards: Besides the saline atmosphere with a high air humidity, this is particularly due to enhanced mechanical stress due to vibrations or swells. SIVACON S8 switchboards are perfectly set to meet these challenges. For application on ships and offshore platforms, SIVACON S8 was given the necessary certifications from renowned international classification societies under hand and seal.

## Your benefit

- Safety for personnel and switchboard by means of tests according to IEC 61439-2
- Safe power supply with earthquake-tested version for seismic requirements
- Certifications for application on ships and offshore platforms



Safe power supply even under high seismic requirements



Tests under conditions of arcing in accordance with IEC/TR 61641

### Your benefit

- Personnel safety by testing the switchboard under conditions of arcing
- Switchboard safety by limiting the effects of internal arcing faults inside the switchboard
- Reliability thanks to extensive systematic check
- Increased personnel and switchboard safety thanks to extended protection against internal arcing

## Safety as an integral part – arc resistance

**Besides the reliability of power supply, a high level of personnel protection plays a central part.**

### Top priority: Protection for personnel and switchboard

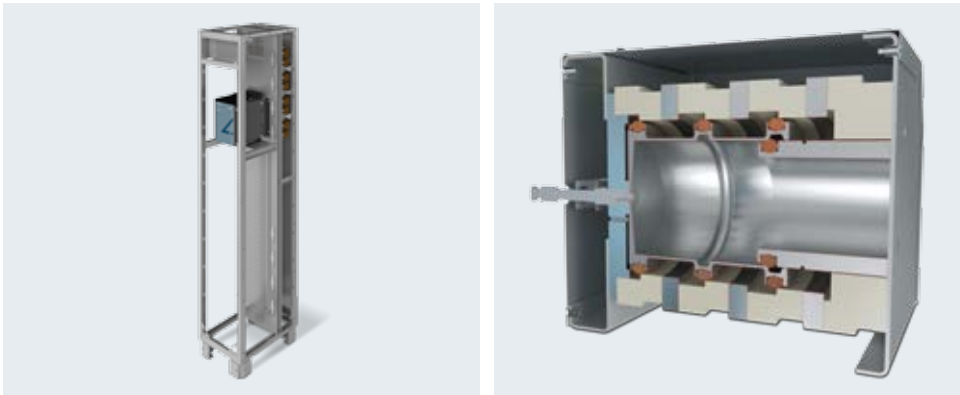
Internal arcing faults in switchboards can cause personal injury or heavy damage to installations which may lead to high downtime costs. Internal arcing faults can occur even in modern low-voltage switchboards, caused, for example, by objects, animals, or by incorrect work. Within milliseconds, an internal arc releases a high amount of energy which causes extreme heat, a pressure wave, and toxic gases. Testing of low-voltage switchboards under conditions of arcing is a special test in accordance with IEC/TR 61641. SIVACON S8 offers the verification of personnel safety by testing under conditions of arcing, and has also passed the more severe test according to AS/NZS 3439.1 (Australian / New Zealand standard).

### The first step towards more safety

Preventive protection measures such as the high-quality insulation of live parts (for example, busbars), uniform and simple operation, integrated operating error protection, and reliable switchboard dimensions prevent arcing, and thus injuries of personnel.

Moreover, passive and reactive protective measures limit the effects of an internal arc. They include: arc-resistant hinge and locking systems, safe operation of withdrawable units or circuit breakers behind a closed door, and protective measures on ventilation openings at the front, as well as arc barriers.





Extended protection against internal arcing for increased personnel and switchboard safety

### The second step for increased safety

In addition, SIVACON S8 can be equipped with an active protection system against internal arcing<sup>1)</sup> comprising an arc detection system, a quenching device, and sensors. For this purpose, optical sensors are installed, whose signals are assessed in an evaluation unit in combination with a current detection system. If an internal arc is detected, this evaluation unit activates a quenching device which extinguishes the arc within a few milliseconds. The system limits the arcing time, the pressure wave, and the temperature rise significantly, which minimises the risk of injury during operation and maintenance, as well as damages to the switchboard.

With SIVACON S8, Siemens offers an innovative solution that can be used several times without replacing components. Thus, the switchboard remains fully protected after an internal arcing event without the need of replacement measures.

The active protection system against internal arcing<sup>1)</sup> offers the following key features:

- Short-circuit rating of 100 kA up to 690 V
- Continuous self-supervising condition monitoring of the system
- No explosive substances needed; activation takes place via a Thomson Coil
- Reusability – two full-load operations at fault conditions with easy reset mechanism
- Testable – up to 100 test cycles
- Special internal arcing protection configurations

### Arc protection levels

For SIVACON S8 with requirements concerning the arc resistance, Siemens has developed a level concept. The arc protection levels describe the limitation of the effects of an arc on the entire switchboard or parts thereof. The functionality of the measures described has been proven by numerous, comprehensive arcing tests under “worst-case” conditions, performed on a wide variety of cubicle types and functional units.

#### Level 1



Personnel safety without extensive limitation of the arcing fault effects inside the switchboard.

#### Level 2



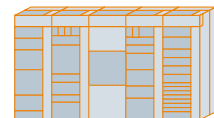
Personnel safety with limitation of the arcing fault effects to a cubicle or double-front unit.

#### Level 3



Personnel safety with limitation of the arcing fault effects to the main busbar, device or cable compartments in a cubicle or double-front unit.

#### Level 4



Personnel safety with limitation of the arcing fault effects to the place of origin.

1) Option from the feature package SIVACON S8<sup>plus</sup>

# Application examples

## Cost-efficient low-voltage power distribution for the oil & gas industry



### Requirement

- Safety for personnel and switchboard
- Reliable power supply
- Minimisation of failure risk
- Customer-specific, flexible and extendable solutions

### Solution

The cubicles in universal mounting design are perfectly suitable for Motor Control Centers. The withdrawable design combines a high level of personnel and operating safety with flexibility for changing requirements. Communication-capable devices establish the link to higher-level automation and energy management systems. With SIMARIS control, a clear visualisation and control of SIVACON S8 is ensured even in complex plants and distribution systems.

### Added value / result

- Safety for personnel and switchboard by means of design verification acc. to IEC 61439-2
- Personnel and switchboard safety in case of arcing
- Certification by renowned classification societies available for offshore applications and for earthquake-tested design
- Cost-efficient, flexible, and modularly extendable switchboard
- Consistent, reliable power distribution with links to automation and energy management

## Smart low-voltage power distribution for data centers



### Requirement

- High level of safety for personnel
- Uninterrupted power supply with minimum failure risk
- High reliability of supply for the information and communication technology (ICT) as well as for infrastructure systems
- High level of cost-efficiency

### Solution

A SIVACON S8 switchboard as a double-fronted switchboard, connected through SIVACON 8PS busbar trunking systems with standard connection components in order to reduce the fault rate and effects to a minimum.

The universal mounting design allows to combine various mounting designs in one cubicle as a cost-efficient solution for different requirements.

### Added value / result

- Safety for personnel and switchboard by means of design verification acc. to IEC 61439-2
- Personnel and switchboard safety in case of arcing
- Cost-efficient, flexible, and modularly extendable switchboard with space-optimised installation
- Consistent, reliable power distribution with links to energy management systems

**Safe and compact  
low-voltage power distribution for  
high-rise buildings and infrastructure**



#### Requirement

- High level of safety for personnel
- Reliable power supply
- High level of cost-efficiency
- Minimum maintenance requirements

#### Solution

A SIVACON S8 switchboard with design verified connection to SIVACON 8PS busbar trunking systems ensures safe power transmission from the transformer to the main distribution board and up to the floor distribution boards.

The cubicles in fixed-mounted and in-line design are efficient and economical; the link to the energy management system is established through communication-capable devices.

#### Added value / result

- Safety for personnel and switchboard by means of design verification acc. to IEC 61439-2
- Personnel and switchboard safety in case of arcing
- Earthquake-tested version available
- Cost-efficient, space-saving switchboard
- Modular construction with high level of flexibility and extensibility
- Consistent and reliable power distribution

**Cost-efficient  
low-voltage power distribution for  
chemical plants**



#### Requirement

- Safety for personnel and switchboard
- Reliable and flexible power supply
- Minimisation of failure risk
- Customer-specific, flexible and extendable solutions

#### Solution

SIVACON S8 with design verified connection to SIVACON 8PS busbar trunking systems transports the power from the transformer through the main distribution board to the production facilities and factory buildings around the clock in flexible, reliable, and safe manner.

Thanks to the withdrawable design, MCC cubicles in universal mounting design are safe for personnel and operation, and flexible. SIMOCODE pro, among others, provides for the intelligent link between the automation system and the motor feeder.

#### Added value / result

- Safety for personnel and switchboard by means of design verification acc. to IEC 61439-2
- Personnel and switchboard safety in case of arcing
- Earthquake-tested version available
- Cost-efficient, flexible, and modularly extendable switchboard
- Consistent, reliable power distribution with links to automation and energy management

**Reliable  
low-voltage power distribution as  
part of the prefabricated E-House  
power supply containers**



#### Requirement

- Alternative to conventional substations built on site
- Temporary power supply or reliable emergency power supply
- Integration of fossil fuels and renewable energy sources, energy storage, or power electronics for grid applications

#### Solution

Power supply solution prefabricated and tested in the container. Comprehensive integration of the entire Siemens low-voltage and medium-voltage product portfolios, including the SIVACON S8 low-voltage switchboard.

Developed, manufactured, assembled at the factory, and ultimately tested and set up on site, connected and commissioned – entirely by Siemens

#### Added value / result

- Cost-efficient and space-saving solution
- Cost-efficient planning and commissioning
- Reliable and modular power supply solution

# Frame, enclosure, and busbars

## Your benefit

- Personnel safety thanks to the patented door locking system
- Arrangement of busbar positions suitable for the application
- High level of flexibility thanks to variable busbar systems



Variable busbar positions (rear or top)

**The SIVACON S8 switchboard offers a perfect combination of a cost-efficient structure and high quality. The target is clear: a perfect equipment for all of your demands – versatile, safe, user-friendly, and easy to operate. The intelligent design of SIVACON S8 is our answer to these requirements.**



Locking system for simple or central locking



Flexible framework for high stability, corrosion protection and safe earthing

### Safety with functionality

The frame and all of the bearing components of the cubicle are made from stable, screw-fastened sheet steel profiles. Circumferential rows of holes allow for individual expansion. The patented door locking system with universal door hinge allows for the hinge side to be changed with ease. The doors are available with either simple or central locking (door locks or rotary handle systems). The roof plates feature pressure relief for additional safety. Cubicle-to-cubicle separation is provided as standard. The surfaces of

frame components, rear walls, and floor plates are sendzimir-galvanised. Doors, side walls, and covers are powder-coated or painted.

### 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.



## Enclosure

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

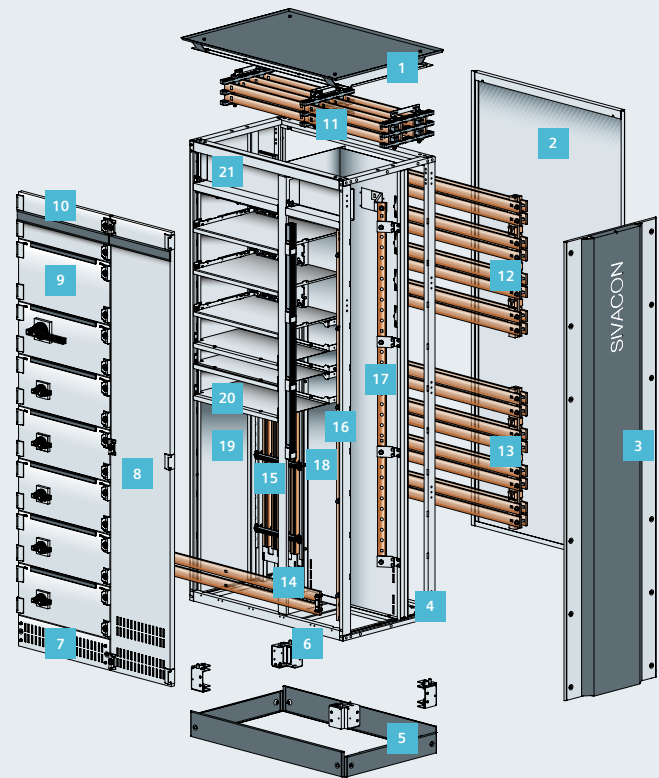
## Busbars

- |  |
|--|
| 11 Main busbar (L1 ... L3, N) – top                        |
| 12 Main busbar (L1 ... L3, N) – rear top                   |
| 13 Main busbar (L1 ... L3, N) – rear bottom                |
| 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 | 20 Compartment to compartment |
| 19 Cubicle to cubicle                      | 21 Cross-wiring compartment   |

## Cubicle in universal mounting design



The busbars can be positioned at either the top or the rear and, if required, two busbar systems can also be integrated in one switchboard, thus providing a high level of flexibility. The busbar connections are maintenance-free. The transport joints are easily accessible from the front or the top.

## 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
Degree of protection	in accordance with IEC 60529: IP30, IP31, IP40, IP41, IP43, IP54

### Main busbars

Rated currents	up to 7,000 A
Rated peak withstand current $I_{pk}$	up to 330 kA
Rated short-time withstand current $I_{cw}$	up to 150 kA

# Circuit-breaker design



## Your benefit

- Safety by 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



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

High switchboard safety for all requirements in functional buildings



Compact cubicles with circuit-breaker design

**Where more current is needed, e.g. in incoming feeder cubicles or for high-power consumer loads, the circuit-breaker design offers a powerful, compact solution.**

### User-friendly with safety

The cubicles for 3WL/3VA circuit breakers cater for personnel safety and long-term operational reliability. The incoming feeder, outgoing feeder and coupling cubicles in circuit-breaker design are fitted with 3WL air circuit breakers in withdrawable or fixed-mounted design or, alternatively, with 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. SIVACON S8, with its components of the circuit-breaker design, meets all these requirements in compact and safe manner.

Moving to the connected, test, or disconnected position with the 3WL air circuit breaker takes place with the door closed. Design verification by tests in accordance with IEC 61439-2 also ensures a high level of safety for all sizes.

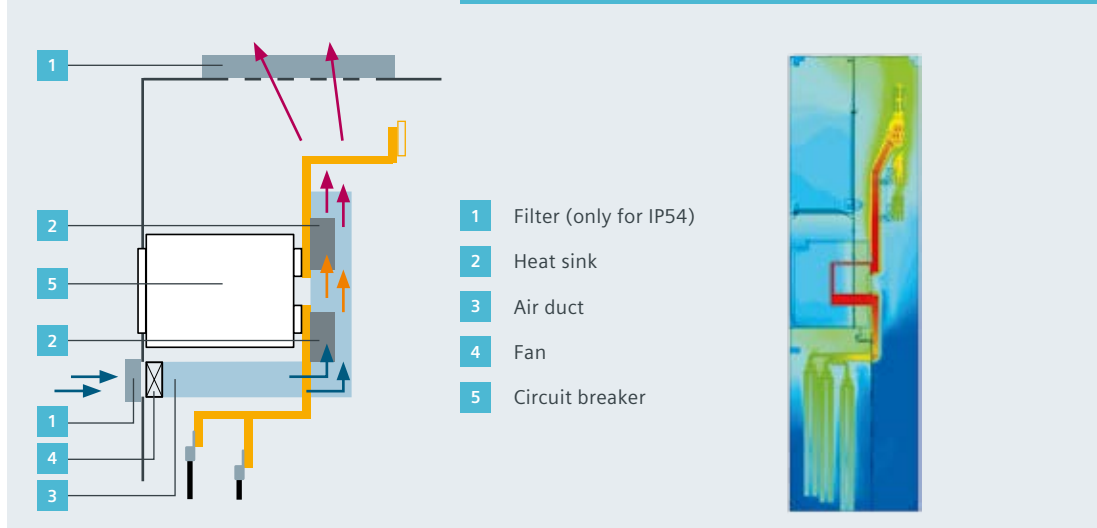
### Space-saving solutions

As a compact version with a cubicle width of just 400 mm, the cubicle with 3WL air circuit breaker is perfectly suitable for current ratings up to 2,000 A. For a cost-efficient installation, the circuit-breaker cubicle with a width of 600 mm offers enough space for up to three circuit breakers. In this version, the connection is made at the rear.

### Higher ratings through energy-efficient cooling

SIVACON S8 offers a patented forced cooling technology<sup>1)</sup> for cubicles in circuit-breaker design. The system was designed and optimised by Computational Fluid Dynamics (CFD) simulation, and was confirmed by numerous design verifications according to IEC 61439. The system reduces the derating and provides a low temperature profile inside a cubicle to ensure safe and long life operation of sensitive electronic equipment. The control system monitors the temperature at critical spots, ensuring an energy-efficient cooling at any time. For increased service life, all fans are speed

## Higher ratings through energy-efficient cooling for safe and reliable operation



Forced cooling<sup>1)</sup> for circuit-breaker design

monitored. For this purpose, the system has been designed redundantly.

### Flexible for individual requirements

The cubicles consist of separate functional compartments. In the cable or busbar connection compartment, 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.

The auxiliary device compartment offers ideal space conditions for the switching devices provided for control and monitoring. Depending on the position of the cable or busbar connection compartment, the auxiliary device holder can be installed at the top or bottom.

### Technical data

<b>Mounting design</b>	Fixed-mounted design, withdrawable design
<b>Functions</b>	Incoming feeder, outgoing feeder, transversal or longitudinal coupler
<b>Rated current <math>I_n</math> of the circuit breaker</b>	up to 6,300 A
<b>Type of connection</b>	front or rear
<b>Cubicle width (mm)</b>	400, 600, 800, 1,000, 1,400
<b>Internal separation</b>	Form 1, 2b, 3a, 4b, 4 type 7 (BS)
<b>Busbar position</b>	top, rear top and/or rear bottom



Cooling system with fans underneath the 3WL circuit breaker

1) Option from the feature package SIVACON S8<sup>plus</sup>

# Universal mounting design



## Your benefit

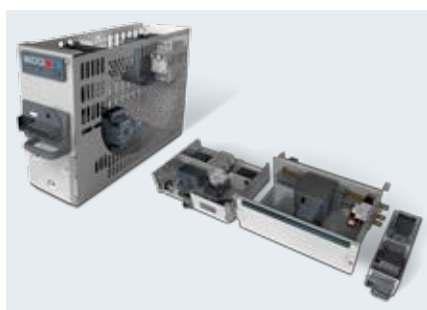
- High level of flexibility and efficiency by functional assemblies which can be combined as required in space-optimised modular design
- Personnel safety, even in the event of a fault, thanks to closed front doors in all withdrawable unit positions (connected, test, disconnected positions)
- Long service life thanks to patented low-wear contact system

High level of availability of the Motor Control Center even in a harsh industrial environment



Combination of withdrawable design, fixed-mounted design, and switch disconnectors with fuses

**If there is little space available, the universal mounting design offers a safe, flexible, and cost-efficient solution. It allows to combine different mounting designs – withdrawable, fixed-mounted with compartment doors, plug-in – in one cubicle. 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 system are required.**



Flexible withdrawable design with normal and small withdrawable units for high packing densities

## Flexible and space-saving

The functional assemblies can be combined at will, allowing for a space-saving installation of your switchboard. The 400 mm or 600 mm wide cable compartment on the right side of the cubicle offers cable brackets for propping up the cables. In universal mounting design, the cables can also be connected at the rear, which makes

the lateral cable compartment unnecessary, thus reducing the cubicle width to 600 mm. The vertical distribution busbars are arranged at the rear left in the cubicle. As profile busbar or flat copper, tap-offs are possible in the smallest of grids. Cables, wires, or busbars can also be connected without any need for drilling or punching – optimal flexibility for later extensions.





Forced ventilation to install withdrawable units with frequency converters



Wide cable connection duct for easy installation

Cubicles in universal mounting design combine different mounting designs in one cubicle. The flexible cubicle design integrating withdrawable, fixed-mounted, and plug-in designs allows an optimal answer to the customer requirements.

#### Higher ratings through energy-efficient cooling

Like for cubicles in circuit-breaker design, the forced cooling technology<sup>1)</sup> enables cost-efficient operation of cubicles in universal mounting design.

The system reduces the derating and provides a low temperature profile inside a cubicle to ensure safe and long life operation of sensitive electronic equipment. The control system monitors the temperature at critical spots, ensuring an energy-efficient cooling at any time. For increased service life, all fans are speed monitored. For this purpose, the system has been designed redundantly.

#### Technical data

<b>Mounting design</b>	Withdrawable design, fixed-mounted design with compartment doors, plug-in design
<b>Functions</b>	Cable feeders up to 630 A Motor feeders up to 250 kW (at 400 V)
<b>Type of connection</b>	front and rear
<b>Cubicle width (mm)</b>	600, 1,000, 1,200
<b>Internal separation</b>	Form 3b, 4a, 4b, 4 type 7 (BS)
<b>Busbar position</b>	top, rear top and/or rear bottom

1) Option from the feature package SIVACON S8<sup>plus</sup>

### Fixed-mounted design – modular and cost-efficient



Fixed-mounted design with 3VA circuit breaker

The fixed-mounted switching 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 freely assignable device holders.

### Plug-in design – flexible modifications



Plug-in design with 3NJ62 switch disconnectors with fuses

3NJ62 or SASILplus (JEAN MÜLLER) 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-energising the cubicle.

### Withdrawable design – ergonomic and compact



Simple and safe operation of the withdrawable units with the doors closed

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 modified or retrofitted with ease, and without de-energising the cubicle.

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), or with a height of 300 mm<sup>1)</sup>, 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-optimised installation. The 300 mm high small withdrawable unit is especially suitable for the new Siemens SIRIUS and SENTRON device ranges. It offers an optimised air-flow design to lower the temperature rise caused by the power loss of the devices. Better access to the devices on the mounting plate ensures easy maintenance.



Space-saving 300 mm high small withdrawable unit<sup>1)</sup>



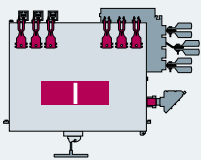
Mechanical coding of the withdrawable unit to prevent mix-up of withdrawable units of the same size

### Safe operation of the withdrawable units

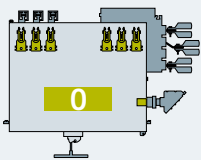
Withdrawable units of all sizes are equipped with integrated operating error protection and a uniform, clear indication of the withdrawable unit positions. Moving to the test, disconnected, or connected position takes place with the door closed and without eliminating the degree of protection.

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.

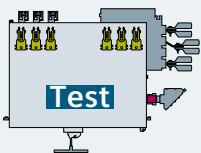
The patented withdrawable unit contact system has been conceived to be user-friendly and particularly wear-resistant. In order to protect against damage, in the disconnected position all parts of the withdrawable units are located within the contours of the withdrawable units. No connection work is required inside the withdrawable unit compartments.



In the connected position, both power and 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



SIMOCODE pro. The flexible, modular motor management system

### Motor management and motor control devices SIMOCODE pro

SIMOCODE pro is a flexible, modular motor management system for motors in the low-voltage range. It optimises the link between control system and motor feeder, increases 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, and OPC UA



Motor Control Unit MCU. Simply special

### Powerful motor management system – the solution for the oil and gas market with specific demands

The SIVACON Motor Control Unit MCU<sup>1)</sup>, specially designed for SIVACON S8 switchboards, is one of the most compact, robust, and powerful intelligent protection and control device for three-phase low-voltage motors. It offers fault-tolerant, dual-redundant Modbus communication for up to 25 devices per loop. To simplify reconfiguration, initialisation modules are also available.

1) Option from the feature package SIVACON S8<sup>plus</sup>

# Fixed-mounted design with front covers



## Your benefit

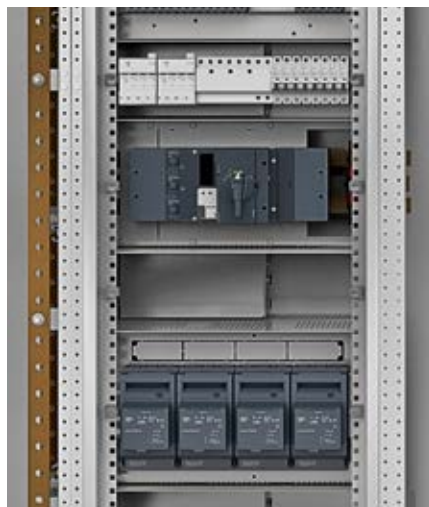
- Cost-efficient arrangement of devices as single or multiple feeders
- More safety thanks to design verified standard modules
- High level of flexibility through the combination of high-rating outgoing feeders and modular installation devices

Safe and cost-efficient construction in fixed-mounted design with front covers



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

**If the replacement of components under operating conditions is not required, or if short downtimes are acceptable, then the fixed-mounted design with front covers offers a safe and cost-efficient solution.**



Installation of fuse switch disconnectors, circuit breakers, or modular installation devices

### Safe and cost-efficient

Individual functional assemblies can be combined in modular design as desired, therefore offering you all the flexibility that you need.

Additive modules enable functional compartments to be subdivided as required (up to form 4b). The cables are routed upwards at the right side of the cubicle in a cable compartment with a choice of width of either 400 mm or 600 mm. Cable brackets are provided here to prop up the cables.

### Flexible and space-saving

Vertical distribution busbars arranged at the rear left in the cubicle. The profile busbar or flat copper design allows for tap-offs in the smallest of grids. Connections to the distribution busbars by means of cables, wires, or busbars are also possible without any need for drilling or punching. This ensures maximum flexibility, even for later extensions.





The multi-profile busbar allows for easy mounting of modular installation devices.

### 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. The 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.

### Technical data

<b>Mounting design</b>	Fixed-mounted design with front covers
<b>Functions</b>	Cable feeders up to 630 A
<b>Type of connection</b>	front
<b>Cubicle width (mm)</b>	1,000, 1,200
<b>Internal separation</b>	Form 1, 2b, 3b, 4a, 4b
<b>Busbar position</b>	top, rear top and/or rear bottom



# In-line design, plug-in



## Your benefit

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

In-line design for applications with numerous cable feeders in a very confined space



Up to 35 outgoing feeders per cubicle for 3NJ62 switch disconnectors with fuses

**In-line switching devices with a plug-in contact on the supply/line side offer a cost-efficient alternative to the withdrawable design and, thanks to their modular design, allow for quick and easy modification or replacement under operating conditions.**



3NJ62 switch disconnectors with fuses feature single or double breaking as standard.

### Variable with plug-in design

The in-line 3NJ62 switch disconnectors with fuses are suitable for cable feeders up to 630 A.

Alternatively, SASILplus (JEAN MÜLLER) switch disconnectors with fuses can be used.

With up to 35 feeders per cubicle, the switching devices achieve a high packing density.

The cables are routed upwards at the right side of the cubicle in a cable compartment with a choice of width of either 400 mm or 600 mm. Cable brackets are provided here to prop up the cables.

### Safe and flexible

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



Plug-in busbar system, with test finger safety cover

### Compact with high functionality

The cable is connected directly at the device. The device forms the front closure. 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 and measuring devices can be integrated in the in-line system. Device compartments are available for individual equipping.

### 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
Busbar position	top, rear top and/or rear bottom

# In-line design, fixed-mounted



## Your benefit

- Space-saving thanks to compact design with up to 18 feeders per cubicle
- Consequent, cost-efficient installation
- Optional installation of freely assignable device holders or ALPHA small distribution boards for modular installation devices

Space-saving and cost-efficient switchboard installation in office complexes



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

**If the replacement of components under operating conditions is not required, or if short downtimes are acceptable, then the fixed-mounted in-line fuse switch disconnectors offer a safe and cost-efficient solution.**

### Compact and safe

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

Thanks to their compact design, they allow for optimal and cost-efficient applications in infrastructure.

Depending on the cubicle width, several switch disconnectors of size 00 to 3 can be installed. A mounting plate can be provided in the cubicle for the installation of additional auxiliary devices. Alternatively, an ALPHA small distribution board can be installed.

### Cost-efficient and adaptable

As a distribution busbar system, various cross-sections are available which are arranged horizontally at the rear inside the cubicle.

The protective conductor, 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.



With a wide range of connection options, the compact devices can be optimally fitted, even where space is limited.

### Flexible design

The switch disconnectors are fixed-mounted on the horizontal distribution busbar system. The cable is connected directly at the device. The cables can be routed into the cubicle from the top or the bottom.

A cubicle-height door provides the front closure. This door can be optionally fitted with a cutout area, which allows to operate the switching devices when the door is closed. Operation takes place directly at the device. The switch disconnectors can be fitted with up to three current transformers to enable feeder-related measurements.



3NJ4 fuse switch disconnectors with cable compartment for connection from the bottom

### 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
Busbar position	rear top, and/or rear bottom

# Reactive power compensation



## Your benefit

- More cost-efficient thanks to lower energy costs
- Efficient network dimensioning thanks to low reactive power
- Design verified integration, either directly to the switch-board or as a separate cubicle

Reactive power is caused by inductive loads such as motors.



Cubicle for the central reactive power compensation

**Cubicles for the central reactive power compensation relieve transformers as well as cables, and reduce transmission losses. In this way, reactive power compensation cubicles enable an economic power supply with efficient network dimensioning.**

### Cost-efficient overall system

In a network, reactive power is caused by inductive, linear consumer loads such as motors, transformers, or reactors, as well as by inductive, non-linear consumer loads such as converters, welding apparatuses, arc furnaces, or UPS systems. Depending on the consumer load structure, the reactive power compensation is equipped with choked or unchoked capacitor assemblies. 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 assembly (up to 200 kvar) with MKK capacitors has a fuse switch disconnector, capacitor contactors, discharge devices, and filter reactors. The switch disconnector assembly can optionally be used for the central safety isolation of the integrated capacitor assemblies.





Reactive power compensation cubicle for cost-efficient power supply



The capacitor assemblies can be used in choked or unchoked version.

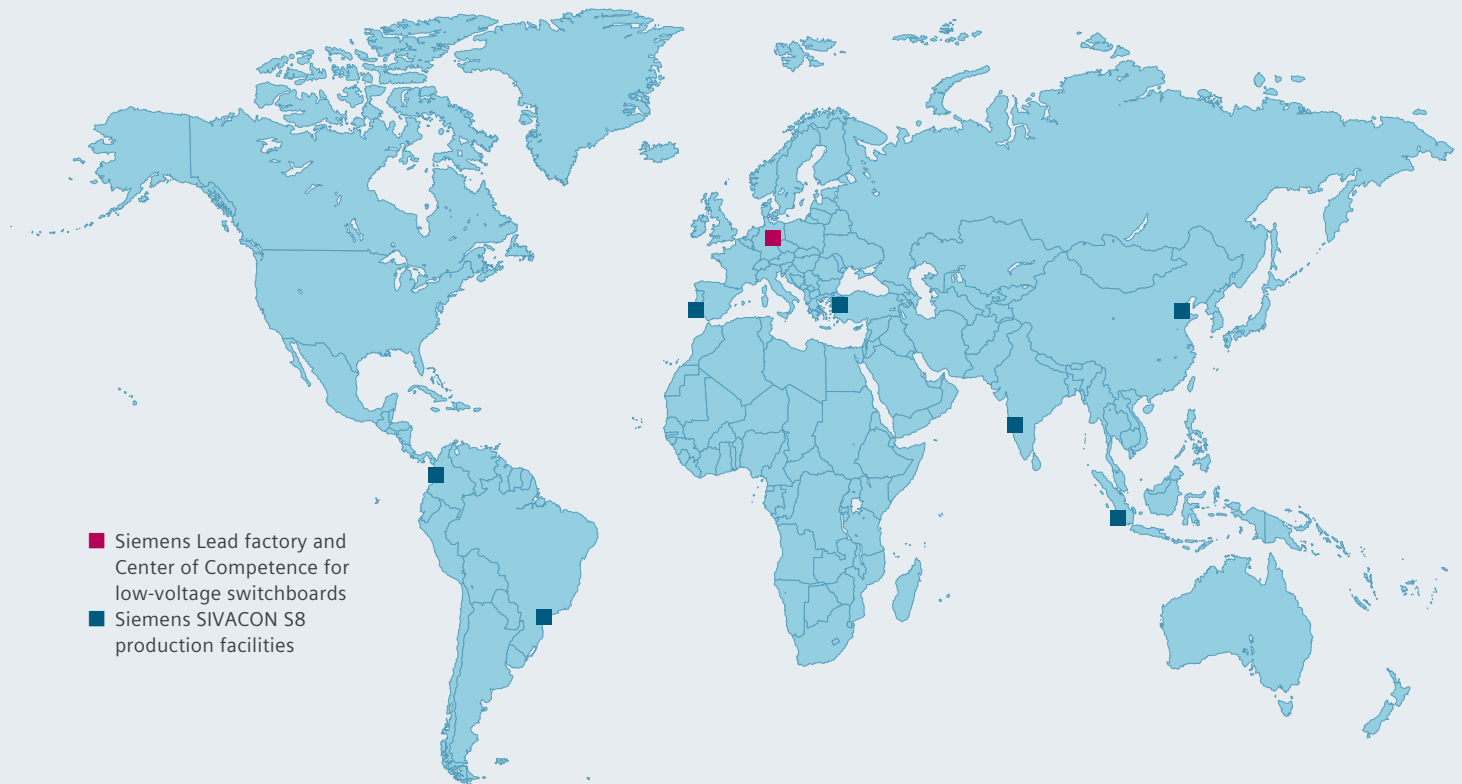
### Flexible design

The reactive power compensation cubicle can be integrated into the switchboard directly and with design verification. In this case, additional protection measures and cable connections between the switchboard and the reactive power compensation are not required when these are installed separately. The entire height of the device compartment is available for the installation of the controller, capacitor, or group-switch assemblies. The device compartment is closed by means of a cubicle-height door with ventilation openings.

### Technical data

<b>Mounting design</b>	Fixed-mounted design
<b>Functions</b>	Central compensation of reactive power
<b>Capacitor power</b>	unchoked up to 600 kvar, choked up to 500 kvar
<b>Degree of choking</b>	without, 5.67 %, 7 %, 14 %
<b>Type of connection</b>	front
<b>Cubicle width (mm)</b>	800
<b>Internal separation</b>	Form 1, 2b
<b>Busbar position</b>	without, top, rear top and/or rear bottom

# Comprehensive support from planning to maintenance



## Siemens SIVACON S8 production factories

The SIVACON S8 factory in Leipzig, Germany, and the S8<sup>plus</sup> production factories are also the global Siemens Center of Competence (CoC) for low-voltage switchboards, where sales, product management, research and development, engineering, production, and quality departments work seamlessly toward maximising customer benefits. The CoC is complemented by strategically placed SIVACON S8 factories around the world, using the same CAD system, software tools, and assembly standards to ensure the high quality of Siemens at every site. Our highly qualified world-wide teams of trained design-to-order experts work hand in hand with the SIVACON S8 research and development. Result: a high level of flexibility and optimal solutions for every customer requirement.

## Reliable local support

Local Siemens experts assist you around the world, providing 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.

Get in touch with your Siemens contact person and benefit from the intelligent SIVACON S8 and the innovations from the feature package SIVACON S8<sup>plus</sup>.

### **SIVACON S8 low-voltage switchboards on the Internet**

Our website offers you a broad range of promotional and technical information, as well as helpful tools for the SIVACON S8 low-voltage switchboards.

[siemens.com/sivacon-S8](https://www.siemens.com/sivacon-S8)

### **Comfortable planning: With the SIMARIS tools**

Planning electric power distribution for industrial plants, infrastructure, and buildings is becoming more and more complex. To help you, as an electrical planning engineer, to 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

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

### **Efficiency from planning to maintenance by using BIM data**

Within the scope of digitalisation, 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 on the Internet**

You will find an overview of the latest technical documentation available for SIVACON S8 low-voltage switchboard on our website (updated daily) at

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

### **Tender specification texts**

We offer a comprehensive range of specification texts to support you at

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



### **Build on a sound basis**

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 low-voltage switchboards.

[siemens.com/lowvoltage/training](https://www.siemens.com/lowvoltage/training)

### **Reliable local support**

Our local experts are there for you around the world, helping you to develop solutions for your energy supply, and providing you with specific expertise on project management and financial services. Important aspects of safety, logistics, and environmental protection are considered.

Technical experts from TIP Consultant Support offer support, especially for planning and conception of electrical power distribution systems.

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

# Technical data

## Standards and approvals

Standards and prescriptions	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	IEC/TR 61641 DIN EN 61439-2 Supplement 1 VDE 0660-600-2 Supplement 1
	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 Russia, Belarus, Kazakhstan China	CE Marking and EC Declaration of Conformity EAC (Eurasian Conformity)  CCC
	Det Norske Veritas Lloyds Register of Shipping	DNV GL Type Approval Certificate LR Type Approval Certificate
	Shell Conformity	"DEP Shell"

Technical data		
Rated operational voltage $U_e$	Main circuit	up to 690 V (rated frequency $f_n$ 50 Hz)
Clearances and creepage distances	Rated impulse withstand voltage $U_{imp}$	8 kV
	Rated insulation voltage $U_i$	1,000 V
	Degree of pollution	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
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 4
	BS EN 61439-2	up to Form 4 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
	Panel width	200, 350, 400, 600, 800, 850, 1,000, 1,200, 1,400 mm
	Depth (single front)	500, 600, 800, 1,000, 1,200 mm
Installation conditions	Indoor installation, ambient air temperature in the 24-h mean	+ 35 °C (– 5 °C to + 40 °C)



# Project checklist – Part 2

Project:

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Network data / infeed data							
Grid type	<input type="checkbox"/> TN-C	<input type="checkbox"/> TN-S	<input type="checkbox"/> TN-C-S	<input type="checkbox"/> IT	<input type="checkbox"/> TT		
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"/> L1, L2, L3, PE + N <input type="checkbox"/> ZEP (PEN + PE)		<input type="checkbox"/> Others:		
	<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"/> Tin-plated		
Design L1, L2, L3 + ...	<input type="checkbox"/> PEN	<input type="checkbox"/> PE	<input type="checkbox"/> N	<input type="checkbox"/> PEN, N = 50 %		<input type="checkbox"/> PEN, N = 100 %	
	<input type="checkbox"/> Others:						
Vertical busbar system / Distribution busbars							
Cu surface treatment	<input type="checkbox"/> Bare	<input type="checkbox"/> Silver-plated	<input type="checkbox"/> Tin-plated				
Design L1, L2, L3 + ...	<input type="checkbox"/> PEN	<input type="checkbox"/> PE	<input type="checkbox"/> N	<input type="checkbox"/> PEN, N = 50 %		<input type="checkbox"/> PEN, N = 100 %	
Internal separation							
Circuit-breaker design	<input type="checkbox"/> Form 1	<input type="checkbox"/> Form 2b	<input type="checkbox"/> Form 3a			<input type="checkbox"/> Form 4b	<input type="checkbox"/> Form 4 type 7
Universal mounting design				<input type="checkbox"/> Form 3b	<input type="checkbox"/> Form 4a	<input type="checkbox"/> Form 4b	<input type="checkbox"/> Form 4 type 7
Fixed-mounted design	<input type="checkbox"/> Form 1	<input type="checkbox"/> Form 2b		<input type="checkbox"/> Form 3b	<input type="checkbox"/> Form 4a	<input type="checkbox"/> Form 4b	
In-line design, plug-in				<input type="checkbox"/> Form 3b		<input type="checkbox"/> Form 4b	
In-line design, fixed-mounted	<input type="checkbox"/> Form 1	<input type="checkbox"/> Form 2b					
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"/> 0,9	<input type="checkbox"/> 0,8	<input type="checkbox"/> 0,7	<input type="checkbox"/> 0,6		
Notes							
<hr/>							
<hr/>							
<hr/>							

# Project checklist – Part 1

Customer							
Author							
Project				Telephone			
Factory ref. no.				Fax			
Delivery date				Date			
Standards and prescriptions							
<input checked="" type="checkbox"/> IEC 61439-1/2 / EN 61439-1/2 VDE 0660 Part 600-1/2		IEC/TR 61641/VDE 0660, arc resistance			<input type="checkbox"/> Level 2, limitation to one cubicle <input type="checkbox"/> Level 4, limitation to the place of origin		
		<input type="checkbox"/> Level 1, personnel safety <input type="checkbox"/> Level 3, limitation to functional compartment					
		<input type="checkbox"/> Insulated main busbar		<input type="checkbox"/> Arc barrier		<input type="checkbox"/> Arc detection system (ADS) <input type="checkbox"/> Arc quenching device (AQD)	
Communication, sensors, and power monitoring							
Preferred bus system		<input type="checkbox"/> PROFINET		<input type="checkbox"/> PROFIBUS DP		<input type="checkbox"/> Modbus RTU <input type="checkbox"/> 3VA line	
Power monitoring		<input type="checkbox"/>					
Temperature supervision <sup>1)</sup>		<input type="checkbox"/> Wired with PT100 or PT1000				<input type="checkbox"/> Wireless with IR sensors	
Position of the sensors		<input type="checkbox"/> On the main busbar at the joints of the transport unit <input type="checkbox"/> Customer connections of the circuit-breaker cubicles <input type="checkbox"/> Connection to main busbar in universal mounting design cubicle <input type="checkbox"/> Others:					
SIMARIS control <sup>1)</sup>		<input type="checkbox"/> System software for customer PC <input type="checkbox"/> With industry PC in the switchboard				<input type="checkbox"/> With central touch display on the switchboard	
Environmental conditions							
Operating conditions		<input type="checkbox"/> Standard (interior climate 3K4)		<input type="checkbox"/> Special		<input type="checkbox"/> Corrosive gases (for example, H <sub>2</sub> S)	
Ambient air temperature (24-h mean)		<input type="checkbox"/> 20 °C <input type="checkbox"/> 25 °C		<input type="checkbox"/> 30 °C <input type="checkbox"/> 35 °C		<input type="checkbox"/> 40 °C <input type="checkbox"/> 45 °C <input type="checkbox"/> 50 °C	
Site altitude above sea level		<input type="checkbox"/> ≤ 2,000 m		<input type="checkbox"/> Others: _____ m			
Adverse operating conditions		<input type="checkbox"/> None		<input type="checkbox"/> Earthquake-proof		<input type="checkbox"/> Ship/Offshore	
		<input type="checkbox"/> Others:					
Layout and installation							
Type of installation		<input type="checkbox"/> Single-fronted		<input type="checkbox"/> Back-to-back		<input type="checkbox"/> Double-fronted	
Connection inside the cubicle		<input type="checkbox"/> front		<input type="checkbox"/> rear			
Restriction of total length		<input type="checkbox"/> without		<input type="checkbox"/> yes		_____ mm	
Max. net length per transport unit		<input type="checkbox"/> 2,400 mm		<input type="checkbox"/> Others		_____ mm	
Cable/busbar entry							
Incoming feeder cubicles		<input type="checkbox"/> from bottom		<input type="checkbox"/> from top			
Outgoing feeder cubicles		<input type="checkbox"/> from bottom		<input type="checkbox"/> from top			
Degree of protection							
Ventilated cubicle		<input type="checkbox"/> IP30 <input type="checkbox"/> IP31		<input type="checkbox"/> IP40 <input type="checkbox"/> IP41		<input type="checkbox"/> IP43	
Non-ventilated cubicle						<input type="checkbox"/> IP54	
Towards the cable floor		<input type="checkbox"/> IP00 <input type="checkbox"/> IP30		<input type="checkbox"/> IP40 <input type="checkbox"/> IP54			
		<input type="checkbox"/> at the factory		<input type="checkbox"/> at the building site			

1) Option from the feature package SIVACON S8<sup>plus</sup>

**Beijing**

No. 7, Zhonghuan South Road,  
Wangjing, Chaoyang District, Beijing  
Tel: 400 616 2020

**Shanghai**

7F, Block A, Shanghai Siemens Center,  
No. 500, Dalian Road, Yangpu District,  
Shanghai  
Tel: 400 616 2020

**Guangzhou**

8~10F, Teem Tower, No. 208, Tianhe  
Road, Tianhe District, Guangzhou  
Tel: 0086 020 3718 2888

**Wuhan**

Room 2102, 21F, Poly Plaza, No. 99,  
Zhongnan Road, Wuchang District,  
Wuhan, Hubei  
Tel: 0086 027 8548 6688

**Xi'an**

3F, Block D, Zone I, Demonstration  
Outsourcing Base of Xi'an, No. 11, Jinye  
No.1 Road, High-tech District, Xi'an  
Tel: 0086 029 8831 9898

**Siemens Factory Automation  
Engineering Ltd. (SFAE)****SFAE Headquarter**

8/F, A1 Building, No.9 Jiuxianqiao East  
Rd., Chaoyang District,  
Beijing, 100015, P.R. China  
Tel: 0086 010 8459 7212  
0086 010 8459 7239  
0086 010 8430 7800

**SFAE Wuxi Branch**

No.15-14, Hanjiang Rd, Xinwu District,  
Wuxi, Jiangsu, 214028, P.R.China  
Tel: 0086 0510 6690 2565

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