

SIEMENS



Application Manual

SIVACON S4

Power distribution boards
up to 6300 A

Edition

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<https://www.siemens.de/lowvoltage/technical-support>

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SIVACON

Switchboards SIVACON S4 power distribution board




Application Manual

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Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

 DANGER
indicates that death or severe personal injury will result if proper precautions are not taken.
 WARNING
indicates that death or severe personal injury may result if proper precautions are not taken.
 CAUTION
indicates that minor personal injury can result if proper precautions are not taken.
NOTICE
indicates that property damage can result if proper precautions are not taken.


If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

 WARNING
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of Siemens Aktiengesellschaft. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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General

1.1 Danger notices

DE		GEFAHR	Gefährliche Spannung. Lebensgefahr oder schwere Verletzungsgefahr. Vor Beginn der Arbeiten Anlage und Gerät spannungsfrei schalten. Die Installations- und Wartungsarbeiten an diesem Gerät dürfen nur von einer autorisierten Elektrofachkraft ausgeführt werden.
EN		DANGER	Hazardous voltage. Will cause death or serious injury. Turn off and lock out all power supplying this device before working on this device. Installation and maintenance work on this device may only be carried out by an authorized electrician.
FR		DANGER	Tension électrique. Danger de mort ou risque de blessures graves. Mettre hors tension avant d'intervenir sur l'appareil. Les travaux d'installation et d'entretien de cet appareil doivent uniquement être réalisés par une personne qualifiée en électricité.
ES		PELIGRO	Tensión peligrosa. Puede causar la muerte o lesiones graves. Desconectar la alimentación eléctrica antes de trabajar en el equipo. Las tareas de instalación y mantenimiento de este equipo solo puede llevarlas a cabo un electricista autorizado.
IT		PERICOLO	Tensione pericolosa. Può provocare morte o lesioni gravi. Scollegare l'alimentazione prima di eseguire interventi sull'apparecchiatura. L'installazione e la manutenzione di questo apparecchio devono essere effettuati solo da un elettrotecnico autorizzato.
PT		PERIGO	Tensão perigosa. Perigo de morte ou ferimentos graves. Desligue a alimentação elétrica e proteja contra o religamento, antes de iniciar o trabalho no equipamento. Os trabalhos de instalação e manutenção neste equipamento somente podem ser realizados por electricistas autorizados.
TR		TEHLİKE	Tehlikeli gerilim. Ölüm tehlikesi veya ağır yaralanma tehlikesi. Çalışmalara başlamadan önce, sistemin ve cihazın gerilim beslemesini kapatınız. Bu cihazın montajı ve bakımı yalnız yetkili bir elektrik teknisyeni tarafından yapılmalıdır.
PY		ОПАСНО	Опасное напряжение. Опасность для жизни или возможность тяжелых травм. Перед началом работ отключить подачу питания к установке и к устройству. Работы по монтажу и техническому обслуживанию данного устройства должны производиться уполномоченным специалистом по электротехнике.
PL		ZAGROŻENIE	Niebezpieczne napięcie. Niebezpieczeństwo poważnych obrażeń lub utraty życia. Przed rozpoczęciem prac wyłączyć zasilanie instalacji i urządzenia energią elektryczną. Prace instalacyjne i konserwacyjne na tym urządzeniu może przeprowadzać wyłącznie posiadający odpowiednie kwalifikacje elektryk.
中文		危险	危险电压。可能导致生命危险或重伤危险。 操作设备时必须确保切断电源。该设备的安装和维护工作仅能由具备专业资格的电工完成。

1.1 Danger notices

DA		FARE	Farlig spænding. Livsfare eller risiko for slemme kvæstelser. Inden arbejdet påbegyndes skal anlægget og enheden gøres spændingsfri. Installationer og vedligeholdelser på dette apparat må kun gennemføres af en autoriseret elektriker.
FI		VAARA	Vaarallinen jännite. Vakava loukkaantumisvaara tai hengenvaara. Laitte ja laitteisto on kytkettävä jännitteettömiksi ennen töiden aloittamista. Tämän laitteen asennus- ja huoltotöitä saa suorittaa ainoastaan valtuutettu sähkötekniikko.
ET		OHT	Ohtlik pinge. Oht elule või raskete vigastuste oht. Enne tööde algust tuleb süsteemi ja seadme pinge välja lülitada. Seadme paigaldus- ja hooldustööd võib teha ainult atesteeritud elektrik.
BG		ОПАСНОСТ	Опасно напряжение. Опасност за живота или опасност от тежки телесни повреди. Преди започване на работа изключете захранването на инсталацията или устройството. Монтажът и техническото обслужване на това устройство се извършват единствено от оторизиран електротехник.
HR		OPASNOST	Opasni napon. Opasnost po život ili opasnost od teških ozljeda. Prije početka radova postrojenje i uređaj spojiti bez napona. Radove instalacije i održavanja na uređaju smije izvoditi samo ovlašteno stručno elektrotehničko osoblje.
EL		ΚΙΝΔΥΝΟΣ	Επικίνδυνη τάση. Κίνδυνος για τη ζωή ή σοβαρού τραυματισμού. Πριν από την έναρξη των εργασιών απομονώσετε την εγκατάσταση και τη συσκευή από την παροχή τάσης. Οι εργασίες εγκατάστασης και συντήρησης αυτής της συσκευής πρέπει να πραγματοποιούνται μόνο από εξουσιοδοτημένο ηλεκτρολόγο.
GA		CONTÚIRT	Voltag contúirteach. Baol go bhfaighfear bás nó tromghortú. Múch agus dícheangail gach foinse cumhachta a sholáthraíonn an gaireas seo sula ndéanfar obair air. Is ag leictreoir údaraithe amháin atá cead an gléas a shuiteáil agus obair chothabhála a dhéanamh air.
LV		BĪSTAMI	Bīstams spriegums. Letālu seku vai smagu traumu riski. Pirms uzsākt darbu, atslēdziet iekārtu un ierīci no barošanas. Šīs ierīces uzstādīšanu un tehniskās apkopes darbus drīkst veikt vienīgi pilnvarots elektrīķis.
LT		PAVOJUS	Pavojinga įtampa. Pavojus gyvybei arba sunkaus susižalojimo pavojus. Prieš darbų pradžią atjunkite sistemos ir prietaiso įtampą. Šio įrenginio įrengimo ir techninės priežiūros darbus leidžiama atlikti tik įgaliotam elektrikui.
MT		PERIKLU	Vultaġġ perikoluż. Riskju ta' mewt jew korriment serju. Itfi u sakkar il-provvista kollha tad-dawl li tkun qed tforni d-dawl lil dan it-tagħmir qabel ma taħdem fuq dan it-tagħmir. Ix-xoghlijiet ta' installazzjoni u manutenzjoni fuq dan it-tagħmir jistgħu jitwettqu biss minn elettriċista awtorizzat.
NL		GEVAAR	Gevaarlijke spanning. Levensgevaar of gevaar voor ernstig letsel. Schakel vóór aanvang van de werkzaamheden installatie en apparaat spanningsvrij. De installatie en onderhoudswerken aan dit toestel mogen enkel door een geautoriseerde elektricien uitgevoerd worden.
RO		PERICOL	Tensiune periculoasă. Pericol de moarte sau de accidentări grave. Înainte de începerea lucrărilor, deconectați instalația și aparatul de la tensiune. Lucrările de instalare și întreținere pentru acest dispozitiv pot fi efectuate doar de către un electrician autorizat.
SV		FARA	Farlig spänning. Livsfara eller risk för allvarliga personskador. Koppla anläggningen och apparaten spänningsfri innan du påbörjar arbetena. Installation och underhåll av denna apparat får endast utföras av en behörig elektriker.
SK		NEBEZPEČENSTVO	Nebezpečné napätie. Nebezpečenstvo ohrozenia života alebo vzniku ťažkých zranení. Pred začatím prác zariadenie a prístroj odpojte od napätia. Inštalácia a údržbárske práce na tomto prístroji môže vykonávať výlučne autorizovaný elektrikár.
SL		NEVARNOST	Nevarna napetost. Nevarnost za življenje ali nevarnost hudih poškodb. Pred začetkom dela je treba pri napravi in aparatu odklopiti napajanje. Inštalacijska in vzdrževalna dela na tej napravi sme izvesti samo pooblaščen električar.
CS		NEBEZPEČÍ	Nebezpečné napětí. Nebezpečí smrtelného nebo těžkého úrazu. Před zahájením prací odpojte zařízení a modul od napětí. Instalační a údržbářské práce smí na tomto přístroji provádět pouze kvalifikovaný elektrikář.
HU		VESZÉLY	Veszélyes feszültség. Életveszély vagy súlyos sérülésveszély. A munkák megkezdése előtt végezze el a berendezés vagy készülék feszültség-mentesítését. Ezen az eszközön a telepítéssel és a karbantartással kapcsolatos feladatokat kizárólag megfelelő felhatalmazással rendelkező villamossági szakember végezheti.
Technical Support:		Internet: http://www.siemens.com/lowvoltage/technical-support	

1.2 Terms and definitions

IEC 61439 - Low-voltage switchgear and controlgear assemblies

U_n	<p>Rated voltage</p> <p>The switchgear and controlgear assembly's manufacturer's specified maximum nominal voltage of the network for which the main circuits of the switchgear and controlgear assembly are designed.</p>
U_e	<p>Rated operating voltage (of a circuit of a switchgear and controlgear assembly)</p> <p>The switchgear and controlgear assembly manufacturer's specified voltage value for the switchgear and controlgear assembly or a circuit of a switchgear and controlgear assembly, effective value for alternating voltage or mean value for direct voltage, which, combined with the rated current, determines the usage.</p>
U_i	<p>Rated insulation voltage</p> <p>Withstand voltage (effective value) which is specified by the switchgear and controlgear assembly's manufacturer for the switchgear and controlgear assembly or a circuit of a switchgear and controlgear assembly and which specifies the defined (long-term) endurance of its insulation.</p>
U_{imp}	<p>Rated impulse withstand voltage</p> <p>Impulse withstand voltage value assigned by the manufacturer of the switchgear and controlgear assembly to a switchgear and controlgear assembly and circuit of a switchgear and controlgear assembly, which specifies the defined endurance of its insulation to transient overvoltages.</p>
I_{rated}	<p>Rated current</p> <p>The switchgear and controlgear assembly's manufacturer's specified value of the continuous current that can be carried without exceeding the specified temperature rise limits of the various parts of the switchgear and controlgear assembly under specified conditions.</p>
I_{pk}	<p>Rated peak withstand current</p> <p>The highest instantaneous value of short-circuit current specified by the manufacturer of the switchgear and controlgear assembly that can be withstood under defined conditions.</p>
I_{cw}	<p>Rated short-time withstand current</p> <p>The effective value of short-time alternating current or mean value of the short-time direct current specified by the manufacturer of the switchgear and controlgear assembly, given as current and time, which can be resisted under certain conditions.</p>
I_{cc}	<p>Rated conditional short-circuit current</p> <p>The value of prospective short-circuit current specified by the manufacturer of the switchgear and controlgear assembly which the circuit can withstand during the total break time of the short-circuit protective device under defined conditions.</p>
I_{nA}	<p>Rated current of the switchgear and controlgear assembly</p> <p>Rated current that can be distributed by a switchgear and controlgear assembly without exceeding the specified temperature rise limits of the various parts.</p>
I_{nc}	<p>Rated current of a circuit</p> <p>Rated current that a main circuit can carry when it is the only circuit in a cubicle of a switchgear and controlgear assembly that carries current.</p>
RDF	<p>Rated diversity factor</p> <p>Value calculated by dividing the rated operational current of the outgoing feeder-main circuit I_{ng} by the rated current I_{nc} of the same outgoing feeder main circuit, where I_{ng} and I_{nc} are determined from tests.</p>
I_{ng}	<p>Rated operational current</p> <p>Rated current that a main circuit can carry, taking into account the mutual thermal influences of the other circuits that are simultaneously loaded in the same cubicle of the switchgear and controlgear assembly.</p>

1.3 Siemens Industry Online Support

Information and service

At Siemens Industry Online Support you can obtain up-to-date information from our global support database:

- Product support
- Application examples
- Forum
- mySupport

Link: Siemens Industry Online Support (<https://support.industry.siemens.com/cs/de/en>)

Product support

You can find information and comprehensive know-how covering all aspects of your product here:

- **FAQs**
Answers to frequently asked questions
- **Manuals/operating instructions**
Read online or download, available as PDF or individually configurable.
- **Certificates**
Clearly sorted according to approving authority, type and country.
- **Characteristics**
For support in planning and configuring your system.
- **Product announcements**
The latest information and news concerning our products.
- **Downloads**
Here you will find updates, service packs, HSPs and much more for your product.
- **Application examples**
Function blocks, background and system descriptions, performance statements, demonstration systems, and application examples, clearly explained and represented.
- **Technical data**
Technical product data for support in planning and implementing your project

Link: Product support (<https://support.industry.siemens.com/cs/ww/en/ps>)

mySupport

The following functions are available in your personal work area "mySupport":

- **Support Request**
Search for request number, product or subject
- **My filters**
With filters, you limit the content of the online support to different focal points.
- **My favorites**
With favorites you bookmark articles and products that you need frequently.
- **My notifications**
Your personal mailbox for exchanging information and managing your contacts. You can compile your own individual newsletter in the "Notifications" section.
- **My products**
With product lists you can virtually map your control cabinet, your system or your entire automation project.
- **My documentation**
Configure your individual documentation from different manuals.
- **CAX data**
Easy access to CAX data, e.g. 3D models, 2D dimension drawings, EPLAN macros, device circuit diagrams
- **My IBase registrations**
Register your Siemens products, systems and software.

1.4 Support Request

After you have registered, you can use the Support Request form in the online support to send your question directly to Technical Support:

Support Request:	Internet (https://www.siemens.com/support-request)
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1.5 Siemens Industry Online Support app

Siemens Industry Online Support app

The Siemens Industry Online Support app provides you access to all the device-specific information available on the Siemens Industry Online Support portal for a particular article number, such as operating instructions, manuals, data sheets, FAQs etc.

The Siemens Industry Online Support app is available for Android and iOS:



Android



iOS

1.6 System overview

SIVACON S4 is a system for creating design-verified switchgear and controlgear assemblies in accordance with IEC 61439-1/2, which is used in the infrastructural power supply in administrative and utility buildings, in industrial and commercial buildings, as well as in public buildings, such as schools and shopping centers. The SIVACON S4 low-voltage power distribution board concept is characterized by high flexibility, practical solutions and economical use.



Figure 1-1 Front view of the SIVACON S4




The installation of the system, as well as its operation and maintenance, is intended exclusively for qualified electricians.

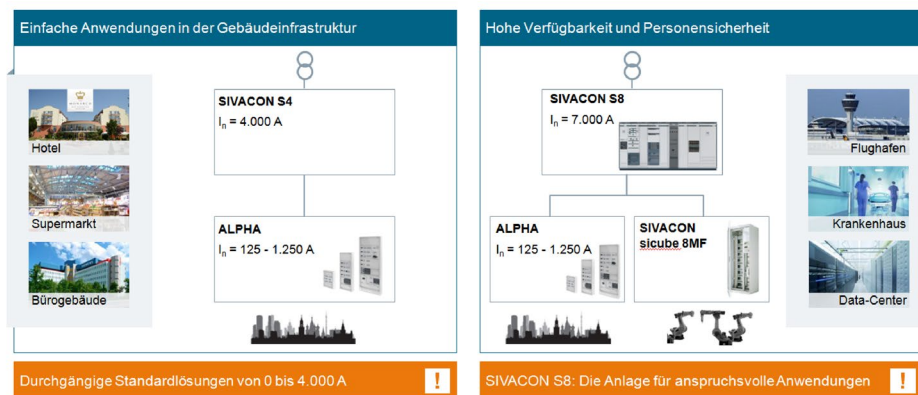
Using standardized, mass-produced assemblies, reflecting the building's requirements, and thanks to the great opportunity to combine SIVACON S4 module technology, most needs can be adequately met in the area of low-voltage power distribution.

Features at a glance

- System for creating design-verified switchgear assemblies in accordance with IEC 61439-1/2
- High degree of flexibility and easy implementation
- Attractive design, innovative ventilation and locking system
- Copper drawings for own production of connection modules
- Busbar systems up to I_N 4 000 A, I_{cw} 100 kA (1 s), I_p 220 kA
- With extended license key I_N 6 300 A, I_{cw} 100 kA (1 s), I_p 220 kA
- Form of internal separation up to 4b
- Innovative busbar concept, structured in conductors per phase, busbar concept



Siemens power distribution systems

Distribution boards ALPHA 160, 400, 630, 1250	Power distribution boards SIVACON S4	Power distribution boards SIVACON S8
		



Areas of application and possible applications

Power distribution boards compared

	 SIVACON S4	 SIVACON S8
Rated current MBB I_n		
<ul style="list-style-type: none"> Standard License upgrade 	630 – 4 000 A 630 – 6 300 A	1 250 – 7 000 A
Form of internal separation	4b	4b
Rated short-time withstand current	100 kA, 1 s	150 kA, 1 s
Installation	Single-front	Double-front
Cubicle heights	2 000 mm	2 000 mm 2 200 mm
System depths		
Main busbar top	400, 600, 800 mm	500, 800 mm
Main busbar rear	800, 1 000, 1 200 mm [NF]	600 mm [DIN]
Arcing fault protection systems	No	Operator and plant protection

1.7 CAx data

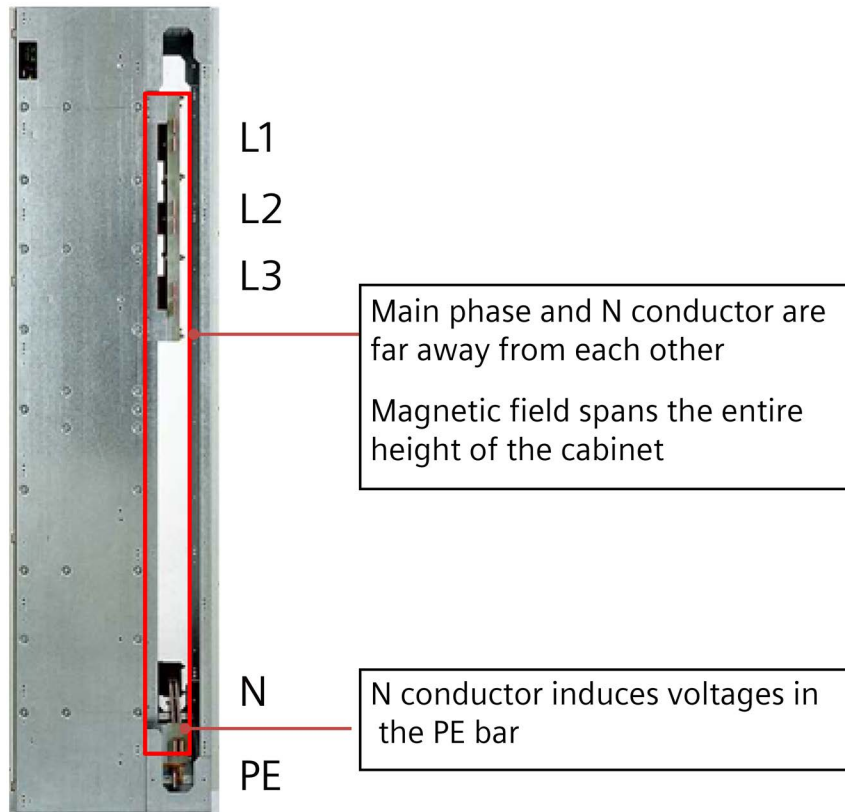
You can find the CAx data in the Siemens Industry Online Support (<https://support.industry.siemens.com/cs/ww/en/ps/>).

1. Enter the full article number of the desired device in the "Product" field, and confirm with the Enter key.
2. Click the "CAx data link."

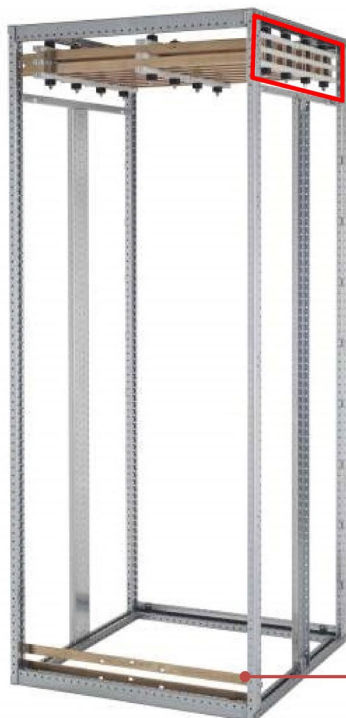
The screenshot shows the Siemens Industry Online Support search interface. At the top, there is a search bar with the text "Enter keyword..." and a magnifying glass icon. Below the search bar, there are three input fields: "Product" containing "3RV2011-4BA10", "Entry type" set to "Technical data (1)", and "Date" with "From" and "To" fields. A red box highlights the "Product" field. Below the search bar, there is a "Search product" button. The search results are displayed in a list. The first result is for product "3RV2011-4BA10" and is highlighted with a red box. The product description is: "CIRCUIT BREAKER, SCREW TYPE, 20 A, CIRCUIT BREAKER SIZE S2 FOR MOTOR PROTECTION, CLASS 10, A-RELEASE 14... 20A, N-RELEASE 20DA, SCREW TERMINAL, STANDARD BREAKING CAPACITY". Below the product description, there are navigation links: "> Product details", "> Technical data", and "> CAx data". The "CAx data" link is highlighted with a red box.

1.8 EMC-compatible version

The following example shows an unfavorable change to busbar systems with high interference effect



An EMC-compatible busbar arrangement reduces interference effects to a minimum



L1 – L3 and the N conductor are in one busbar package.

Size of the magnetic field is reduced to a minimum.

No voltage induction

Product-related information

EMC tests on SIVACON S4 were not performed and are not necessary as the requirements in accordance with IEC 61493-2 section J.9.4.2 a) and b) are complied with.

1.9 Recycling and disposal

For environmentally-friendly recycling and disposal of your old device, contact a company certified for the disposal of used electrical and electronic equipment, and dispose of the device as specified in the regulations for your particular country.

1.10 ESD Guidelines

ESD

All electronic devices are equipped with large-scale integrated ICs or components. Due to their design, these electronic elements are highly sensitive to overvoltage, and thus to any electrostatic discharge.

The acronym ESD has become the established designation for such electrostatic sensitive components/devices. This is also the international abbreviation for such devices.

ESD devices are identified by the following symbol:

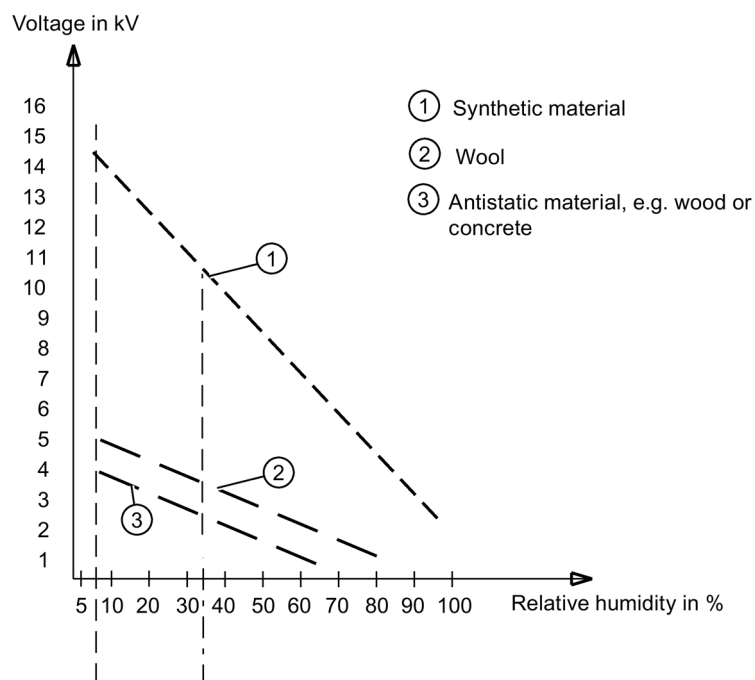


NOTICE
Electrostatic discharge
ESD devices can be destroyed by voltages well below the threshold of human perception. These static voltages develop when you touch a component or electrical connection of a device without having drained the static charges present on your body. The damage caused to a device by overvoltage is usually not immediately evident and is only noticed after an extended period of operation.

Electrostatic charging

Anyone who is not connected to the electrical potential of their surroundings can be electrostatically charged.

The diagram below shows the maximum electrostatic voltage which may build up on a person coming into contact with the materials specified in the diagram. These values correspond to IEC 801-2 specifications.



Basic protective measures against electrostatic discharge

- Make sure the grounding is good:

When handling electrostatic sensitive devices, ensure that your body, the workplace and packaging are grounded. In this way, you can avoid becoming electrostatically charged.

- Avoid direct contact:

As a general rule, only touch electrostatic sensitive devices when this is unavoidable (e.g. during maintenance work). Handle the devices without touching any chip pins or PCB traces. In this way, the discharged energy cannot reach or damage sensitive devices.

Discharge your body before taking any necessary measurements on a device. Do so by touching grounded metallic parts. Use only grounded measuring instruments.

1.11 Additional documentation

In addition to this manual, please also observe the following product documentation on the different individual topics.

Commissioning and maintenance

Document number	Contents
8PQ9801-5AA80	Operation and maintenance
8PQ9801-6AA65	Transportation and storage of switchboards
8PQ9801-6AA66	Installation and base mounting
8PQ9801-6AA67	Electrical and mechanical panel group

1.12 Certifications

General Declarations of Conformity

Document number	Contents
8PQ9801-7AA32	CE declaration acc. to IEC 61439
8PQ9801-7AA33	EAC certificate – Russia
8PQ9801-7AA34	CE Declaration of Conformity
8PQ9801-7AA35	ISO 9001 – Quality management system
8PQ9801-7AA72	Corrosion classes according to DIN EN ISO 12944-2:

VDE approval

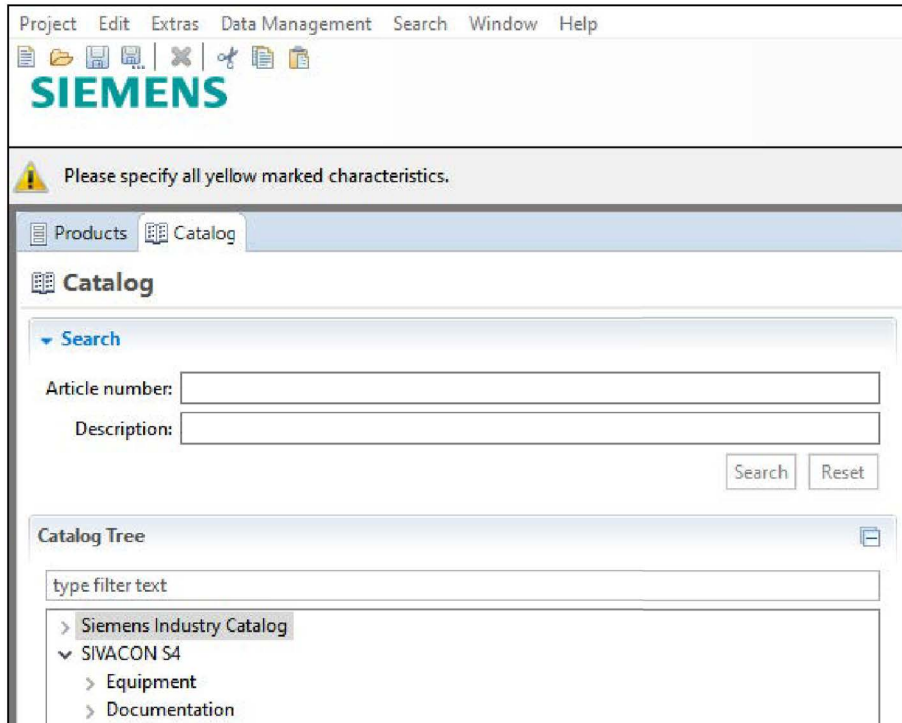
The proper performance of the design verification is independently verified and continuously updated by the VDE - Association of German Electrical Engineers. All approval documents are available to you to facilitate commissioning and electrical planning:

Document number	Contents
8PQ9801-8AA35	VDE mark approval
8PQ9801-8AA36	Cubicle versions
8PQ9801-8AA37	Technical data
8PQ9801-8AA41	Circuit breaker design 3WA – main busbar top
8PQ9801-8AA42	Circuit breaker design 3WA – main busbar bottom
8PQ9801-8AA43	Circuit breaker design 3WA – coupler
8PQ9801-8AA44	Outgoing feeder panel molded-case circuit breaker 3VA MCCB
8PQ9801-8AA45	Outgoing feeder panel molded-case circuit breaker 3VL MCCB
8PQ9801-8AA46	Outgoing feeder panel ACB 3WA
8PQ9801-8AA47	Outgoing feeder panel 3NP
8PQ9801-8AA48	Outgoing feeder panel 3NJ4
8PQ9801-8AA50	Verifications in accordance with IEC 61439-2
8PQ9801-8AA51	Test report
8PQ9802-8AA61	Main busbar system
8PQ9802-8AA62	Distribution busbar system
8PQ9802-8AA67	Outgoing feeder panel molded-case circuit breaker 3VM MCCB



Provision

All documents can be easily accessed via SIMARIS configuration.



1.13 Technical data


Technical data

Basic data

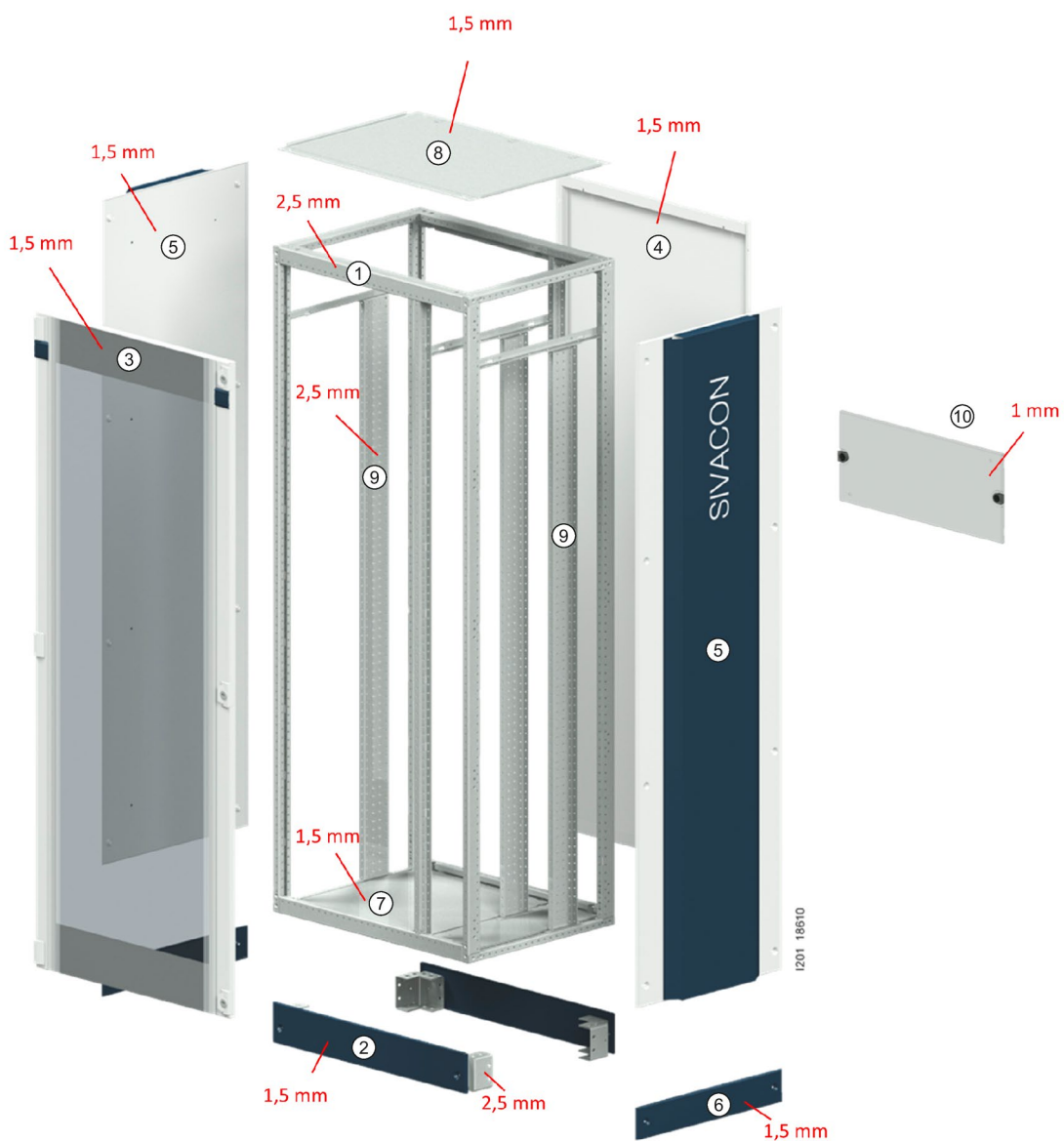
Installation conditions	Indoor installation	Ambient temperature in 24-hour average value	+35 °C
		Area of application	-5 °C ... +40 °C
Rated operating voltage (U _e)	Main circuit		Up to 690 V / 50 Hz
	Type of current		AC
Dimensioning Clearances and creepage distances	Rated impulse withstand voltage U _{imp}		Up to 12 kV
	Rated insulation voltage U _i Pollution degree		1 000 V 3
Busbars	Main busbar	Rated current	Up to 4000 A
		Rated peak withstand current I _{pk}	Up to 220 kA
		Rated short-time withstand current I _{cw}	Up to 100 kA, 1 s
	Field busbar cascaded	Rated current	Up to 1280 A
		Rated peak withstand current I _{pk}	Up to 65 kA
		Rated short-time withstand current I _{cw}	Up to 143 kA, 1 s
	Field busbar non-cascaded	Rated current	Up to 2810 A
		Rated peak withstand current I _{pk}	Up to 220 kA
		Rated short-time withstand current I _{cw}	Up to 100 kA, 1 s
	Field busbar 3NJ6 In-line design, (plugged-in)	Rated current	Up to 2100 A
		Rated peak withstand current I _{pk}	Up to 105 kA
		Rated short-time withstand current I _{cw}	Up to 50 kA, 1 s
Internal separation	IEC 61439-2	No separation	Form 1
		+ Busbar systems	Form 2b
		Creation of compartments of the devices	Form 3b
		+ Connections	Form 4b

General

1.13 Technical data

Surface treatment	Paint finish in accordance with DIN 43656	Sendzimir coated	
	Supporting structure components	Powder-coated	
	Doors	Powder-coated	
	Side panels	Powder-coated	
	Rear panel IP55	Sendzimir coated	
	Rear panel IP40	Sendzimir coated	
	Top plates	RAL 7035 light gray	
	Standard color	Blue green basic	
	Design elements	See RAL 5020 ocean blue	
Degree of protection	Acc. to IEC 60529, EN 60529	Ventilated	IP30, IP40
		With top plate upgrade kit	IP31, IP41
		Non-ventilated	IP55
Protection class	Acc. to DIN EN 61140	Class I: Grounding	
Mechanical strength	Acc. to IEC 62262	Type of cover	IK08
		Top plate	IK09
		Door, rear panel, side panel	IK10
Dimensions	Preferred dimensions acc. to DIN 41488	Height of supporting structure	2.000 mm
		Depths of cubicles	400, 600, 800 mm
			1 000, 1 200 mm
		Height of base (optional)	100, 200 mm

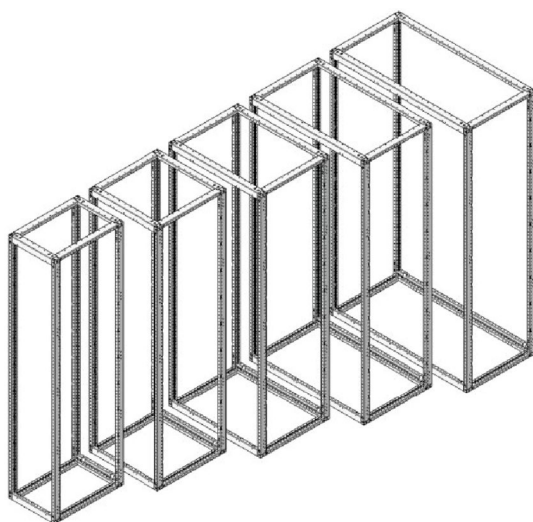
Material thicknesses



- ① Supporting structure
- ② Base
- ③ Cubicle and modular doors
- ④ Rear panel
- ⑤ Side panel

- ⑥ Base
- ⑦ Base plate
- ⑧ Top plate
- ⑨ Supporting structure
- ⑩ Covers

Dimensions of frame



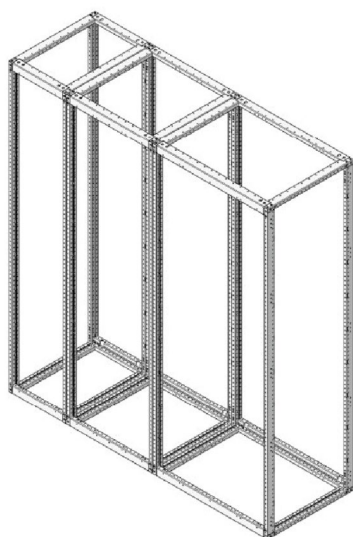
Widths [mm]

400 mm
600 mm
800 mm
1 000 mm
1 200 mm

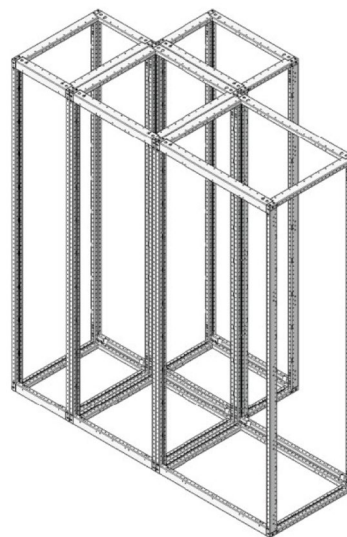
Depths [mm]

400 mm
600 mm
800 mm

Alignment options



Lateral

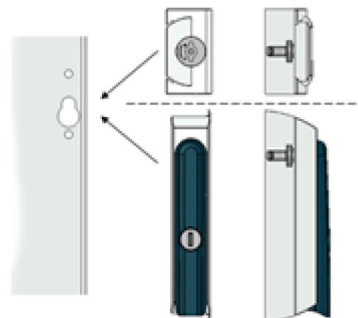


Rear

Door locks

Double-bit lock

- Symmetrical design
- Stop position can be changed later



Semi-cylindrical profile

- Non symmetrical
- Fixed stop cannot be converted



Static loads on enclosure parts

The following reference values serve as orientation for loads which are installed centrally on the respective components. Due to the numerous installation options, no guarantees can be given. In individual cases, please contact your contact person for an individual evaluation.

Functional unit		Variant		kg
Cover frame		Swivel-mounted		1.0
		Fixed mounting		5.0
Cover	Without hinge	Heights	50 – 300 mm	0.5
		Heights	350 – 550 mm	1.0
		Heights	600 – 800 mm	2.0
Mounting plate field		Inner door		2.5
		Mounting plate		20.0
Cubicle door	Widths		400 – 600 mm	10.0
	Widths		800 mm	5.0
	Widths		1 000 mm	2.5
Double door		Widths	1000 – 1200 mm	2.5
Compartment door		Heights		150 – 200 mm
		Heights		250 – 350 mm
		Heights		400 – 800 mm
Outer cover				10.0

1.14 CAD data provision

Detailed planning information is available for retrieval via the Siemens image database:

Siemens image database

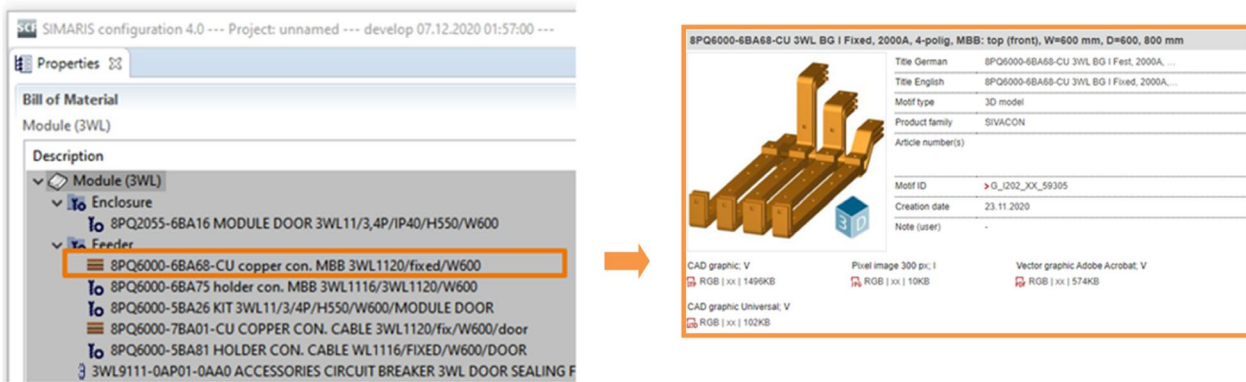
(<https://www.automation.siemens.com/bilddb/index.aspx?objecttype=60&usestructure=true&gridview=view1¤tpage=1&pagesize=12&showdetail=False&view=Search>)

The screenshot shows the Siemens Industry Image Database search results page. The page header includes the Siemens logo and navigation links: Image Database, Language, Contact, Help, and Site Explorer. The main content area displays search results for 'SIVACON S4 - Copper PE busbar'. The results are shown in a grid of 8 items, each with a 3D model icon and a title. The titles are: 'SIVACON S4 - Copper PE busbar 2x50x10', 'SIVACON S4 - Copper PE busbar 2x40x10', 'SIVACON S4 - Copper PE busbar 2x40x5', 'SIVACON S4 - Copper PE busbar 2x30x10', 'SIVACON S4 - Copper PE busbar 2x30x5', 'SIVACON S4 - Copper PE busbar 2x20x10', 'SIVACON S4 - Copper PE busbar 2x20x5', and 'SIVACON S4 - CU - Main busbar copperwork 4x50x10'. The page also features a search bar, navigation links, and a 'Refine your search' section with filters for '3D model', 'Product family', and 'Switchboards'.

In addition to the installation mechanics, all 3D copper assemblies can be obtained in common formats:

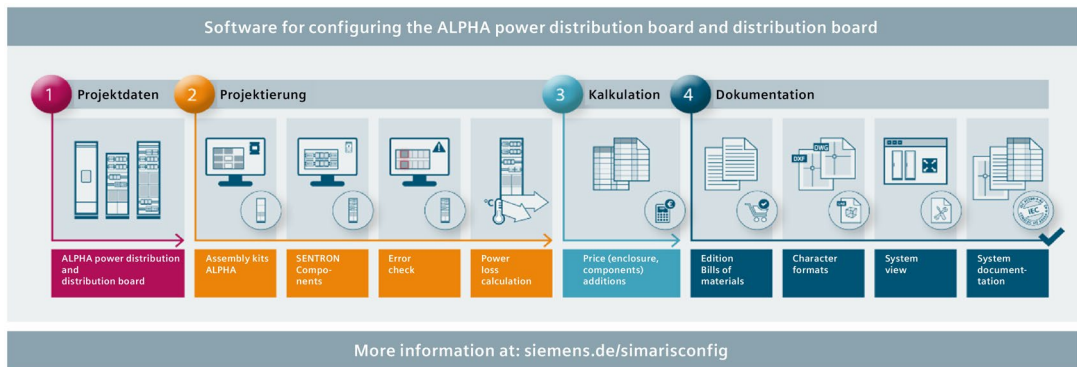
- Step
- U3D

For easy identification of the assemblies, simply use the parts list from SIMARIS configuration.



SIMARIS configuration

The free configuration software supports you in your entire process and workflow:



Siemens provides the SIMARIS configuration (SCF) software tool for configuration of the SIVACON S4 low-voltage switchboard. The software supports and accompanies the user from planning to manufacture of the switchboard.

The planning and design of a low-voltage switchboard is very complex. Even with the support of the SIMARIS configuration software tool, the expertise of the user continues to be of great importance.

This product information is intended to support user their work with the software tool. Supplementary information and data are provided. These documents cannot and should not replace the software tool and serve as support.

In order to enable the universal application of the tool, not all basic technical rules are represented in the software. The user is responsible for the correct technical planning and design of the switchboard.

Ambient conditions

2.1 Environmental conditions

Environmental conditions for switchboards

The external climate and the external environmental conditions (natural foreign substances, chemically active pollutants, small animals) have different effects on the switchboard. The effect depends on the climatic equipment of the switchboard room.

According to IEC 61439-1, the environmental conditions for low-voltage switchboards are classified in

- normal operating conditions (IEC 61439-1 section 7.1) and
- special operating conditions (IEC 61439-1 section 7.2).

SIVACON S4 low-voltage switchboards are intended for indoor use under the following operating conditions according to IEC 61493-1:

Environmental parameters	Lower limit	Upper limit	Measure
Ambient temperature	-5 °C	+ 40 °C + 35 °C (24-hour average value)	
Relative humidity	5 % ¹⁾	95 % ¹⁾	
Rate of temperature change	0.5 °C/min		
Height	Not defined	2 000 m	
Condensation	Yes - moderate condensation may occasionally occur due to temperature fluctuations (condensation)		Installation Control cabinet heating
Windblown precipitation	No		
Water (other than rain)	See special operating conditions		
Formation of ice	No		

¹⁾ in accordance with IEC 61439-1:2020

Other environmental parameters with their limit values based on IEC 60721-3-3:1994, 3K4	
Low absolute humidity	1 g/m ²)
High absolute humidity	29 g/m ²)
Low air pressure	70 kPA
High air pressure	106 kPA
Sunlight	700 W/m ²
Thermal radiation	None

In the event of a deviating classification of ambient conditions, these must already be evaluated before the offer is submitted.

Higher values are only permissible on request.

Conditions during transport, storage and installation

If the conditions during transport, storage and installation, e.g., the values for temperature or humidity, deviate from the values specified in the chapter "Normal operating conditions", the necessary measures must be agreed between the manufacturer of the switchboard and the user.

Refer to the operating instructions: Transportation and storage of switchboards 8PQ9801-6AA65

2.2 Installation altitudes

In principle, the equipment is designed for an installation altitude of up to 2 000 m above sea level.

NOTICE

For switchboards and equipment to be used at higher altitudes, it is necessary to take into account a reduction in the insulation strength, the switching capacity of the equipment and the cooling effect of the ambient air.

The switching capacity and current-carrying capacity of the equipment must be confirmed by the equipment manufacturer.

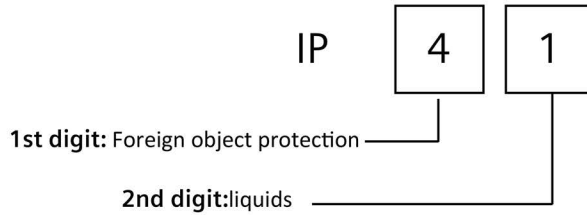
Altitude of the place of installation	Derating factor for load
Up to 2 000 m	1
Up to 2 500 m	0.93
Up to 3 000 m	0.88
Up to 3 500 m	0.83
Up to 4 000 m	0.79
Up to 4 500 m	0.76
Up to 5 000 m	0.70

For more information on installation and floor mounting, please refer to the operating instructions "Installation and base mounting 8PQ9801-6AA66".

Basics

3.1 IP degree of protection

Acc. to IEC 60528



Code		Foreign objects
1		50 mm
2		12 mm
3		2.5 mm
4		1.0 mm
5		Wire protection, dust-protected
6		Wire protection, dust-tight

Code	Protection against ingress of water	
1	Falling dripping water	
2	Protection against direct sprays of water (up to 15°) from the vertical	
3	Protection against direct sprays of water	
4	Protection against water sprayed from all directions	
5	Protection against water jets	
6	Protection against powerful water jets	

The following types of protection can be realized with SIVACON S4:

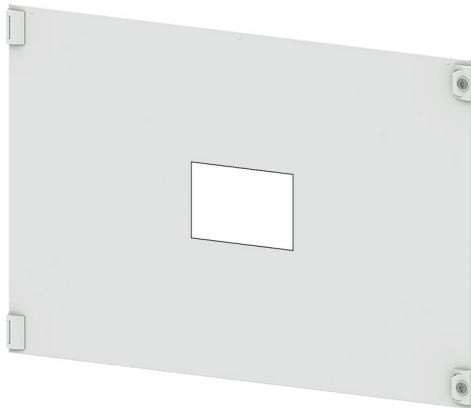
IP 40	IP x1	IP 55	IP 40
Ventilated	Top plate upgrade kit	Non-ventilated	Cable entry

When using 3NJ4 strips operated from the front through the compartment door, the degree of protection is reduced to IP 30 or IP 31.

Cutouts and door mounting components



When installing pushbuttons, indicator lights, measuring devices, etc., make sure that the degree of protection of the device used corresponds at least to that of the switchgear and controlgear assembly. If it is smaller, the degree of protection of the overall system is reduced.



At the cutting edges, corrosion protection must be restored by using a suitable paint system (e.g., BRILLUX).

3.2 Form of internal separation

Form of internal separation according to IEC 61439-2

The form of internal separation and higher degrees of protection must be agreed between the manufacturer of the switchgear and controlgear assembly and the user.

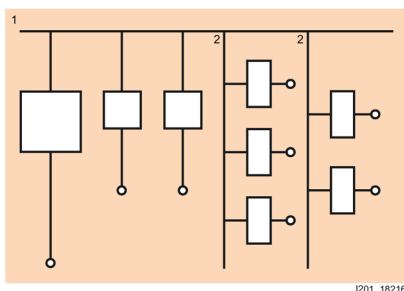
Power switchgear and controlgear assemblies may be subdivided to achieve one or more of the following conditions between functional units, separate compartments, or by enclosure:

- Protection against touching dangerous parts. The degree of protection must be at least IPXXB;
- Protection against ingress of solid foreign objects. The degree of protection must be at least IP2X.

COMMENT: IP2X degree of protection also covers IPXXB degree of protection.

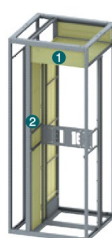
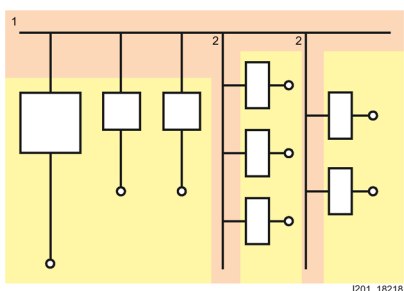
Separation may be provided using partitions or protective covers (made from metal or non-metal), insulation of exposed conductive parts, or integrated enclosure of equipment.

Within SIVACON S4 the following forms of internal separation are offered:



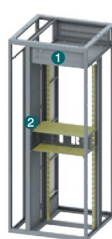
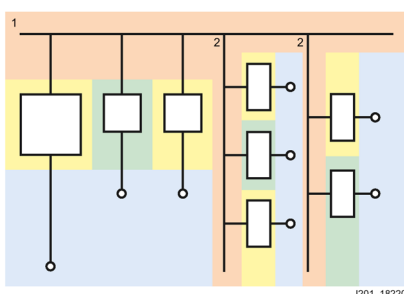
Outgoing feeder cubicle
Without internal separation

Form 1



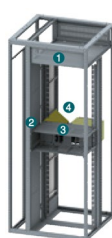
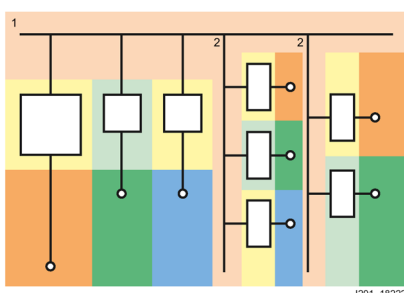
Outgoing feeder cubicle
+ separation of main busbar and field busbar

Form 2b





Outgoing feeder cubicle
- Separation of main busbar and field busbar
+ separation of main busbar and device compartments

Form 3b



Outgoing feeder cubicle
- Separation of main busbar and field busbar
- Separation of device compartments
+ separation of connection points

Form 4b

-  Functional units
-  Connection point
- ① Main busbars
- ② Field busbar

3.3 Power supply systems

Distribution system (network types) in accordance with IEC 60364-1 (DIN VDE 0100-300)

First letter: Earthing condition of the supplying current source

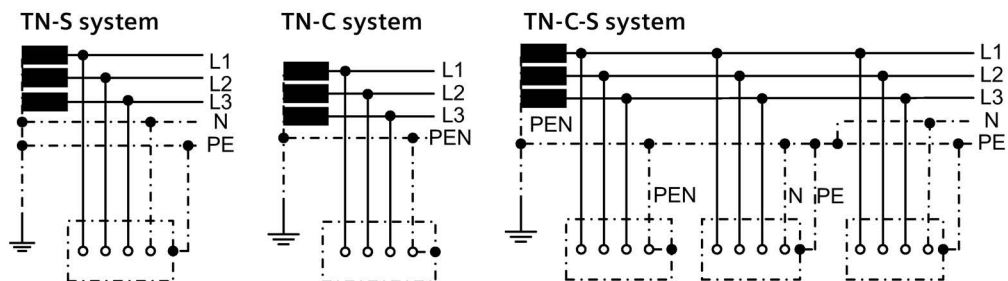
- T: Direct earthing of one point
- I: Either insulation of all active parts from earth or connection between a point and earth via an impedance

Second letter: Earthing condition of the exposed conductive parts in the electrical installation

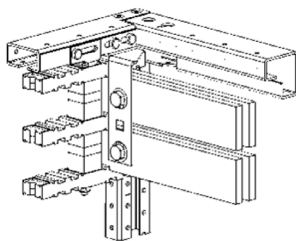
- T: Exposed conductive part is grounded directly, independently of any earthing for a power supply point
- N: Exposed conductive part linked directly with the system grounding, in alternating voltage networks, the grounded point is usually the star point

Other letters: arrangement of neutral conductor and protective conductor

- S: Neutral conductor and protective conductor function provided by separate conductors
- C: Neutral conductor and protective conductor functions combined in one conductor (PEN)

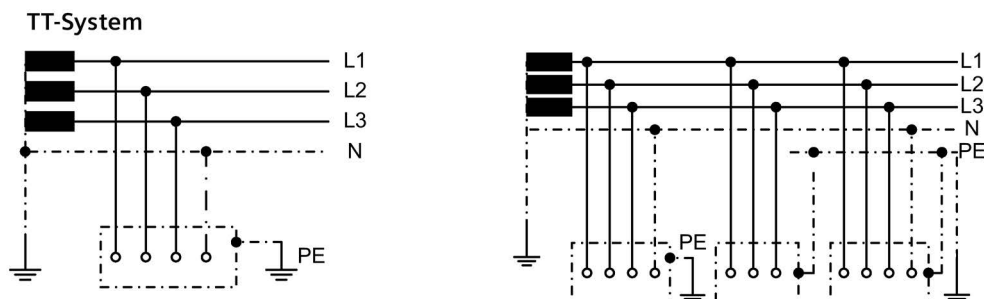


- TN-S: Neutral conductor and protective conductor functions are separated throughout the system
- TN-C: Neutral conductor and protective conductor functions are separated throughout the entire system
- TN-C-S: Combination between neutral conductor and protective conductor function In one part of the system they are combined, in the other part they are separated.



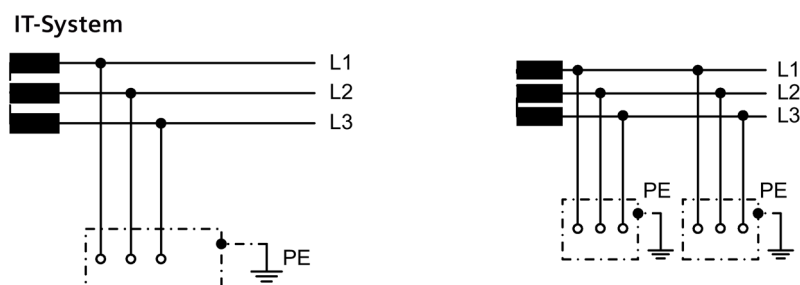
There is a type-tested PEN-conductor bridge available in order to create a TN-C system. This bridge connects the N-conductor to the supporting structure and is required **once per cubicle**.

TT system



In the TT system, one point is directly grounded; the exposed conductive parts in the electrical installation are connected to grounding, which are separate from the system grounding.

IT system



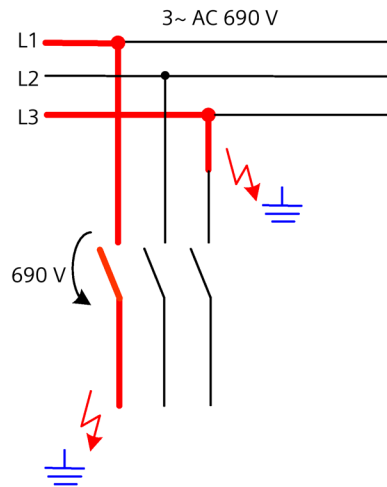
IT systems have no direct connection between active conductors and grounded parts. The exposed conductive parts of items of the electrical installation are grounded.

To determine the network configuration, the entire installation from the current source (transformer) to the electrical consumer must be considered. The low-voltage switchboard is only part of this installation.

It is therefore not possible to select a network configuration in the configuration tool.

Only the version of the main busbar is configured.

Errors in the IT system



The worst case fault that must be handled by the circuit breaker in the IT system is a double ground fault on the load and infeed side.

The full linked voltage of e.g., 690 V and at the same time the high short-circuit current are present at the main contact.

The standard IEC 60947-2 or EN 60947-2 "Low-voltage switchgear and controlgear Part 2: Circuit breakers" requires additional tests according to "IEC 60947-2 Annex H" for the use of circuit-breakers in ungrounded and impedance-grounded networks (IT systems).

For use in the IT network, the specifications for the circuit breakers must be observed.

Not all types and sizes can be used.

Circuit breaker 3 WA 1 000 V variants cannot be used. The use of these types must generally be requested as a special design.

3.4 Standard transformers

Values according to EN 60909 and VDE 0102

S_{rated}		U		400 V, 50 Hz		415 V, 50 Hz		690 V, 50 Hz	
		I_{rated}	I_{sc}	I_{rated}	I_k	I_{rated}	I_k		
kVA	%	A	kA	A	kA	A	kA		
63	4	91	2.5	88	2.4	53	1.4		
100	4	144	3.9	139	3.7	84	2.3		
125	4	180	4.9	174	4.7	105	2.8		
160	4	231	6.2	223	6.0	134	3.6		
200	4	289	7.8	278	7.5	167	4.5		
250	4	361	9.7	348	9.4	209	5.6		
315	4	455	12.3	438	11.8	264	5.6		
400	4	577	15.6	556	15.0	335	9.0		
500	4	722	19.4	696	18.7	418	11.3		
630	6	909	16.5	876	15.9	527	9.6		
800	6	1155	21.0	1113	20.2	669	12.2		
1 000	6	1443	26.2	1391	25.3	837	15.2		
1 250	6	1804	32.8	1739	31.6	1046	19.0		
1 600	6	2309	42.0	2226	40.5	1339	24.3		
2 000	6	2887	52.5	2782	50.6	1673	30.4		
2500	6	3608	65.6	3478	63.2	2092	30.4		
3150	6	4550	82.7	3470	63.0	2640	47.7		

S_{rated} Apparent power
 I_{rated} Rated current
 I_{sc} Initial symmetrical short-circuit current

3.5 Rated frequency 60 Hz

According to IEC 61439-1, 10.10.2.3.1, a derating of 5% results from a rated current of 800 A and higher when switching from 50 Hz to 60 Hz

NOTICE

Only the rated frequency of 50 Hz is supported in the software tool.

3.6 Short-circuit current-carrying capacity of the distribution busbars und functional units

A reduction of the short-circuit strength of the feeders with respect to the main busbars is permissible in accordance with IEC 61439-1, section 8.6.1:

8.6 Circuits and connections within switchgear and controlgear assemblies

8.6.1 Main circuits

...

Within a cubicle, the conductors (including the distribution busbars) between the main busbars and the infeed side of functional units, including the components of such units, may be rated for the reduced short-circuit stress that occurs on the output side of the short-circuit protection device of such unit, provided that such connections are so arranged that, under normal operating conditions, neither a short-circuit between line conductors and/or between phase conductors and protective conductors is to be expected.

Note

The above determination results from the fact that the distribution busbars, connecting bars and other feed lines to functional units branching off the main busbar are usually rated for much smaller currents than the main busbar. With small cross-sections which are sufficient from a heating point of view for the small feeder currents, it makes no sense to aim for the same dynamic and thermal short-circuit strength as for the main busbar.

Example

If a prospective short-circuit current of 100 kA is to be expected and a 3VA circuit-breaker is to be used, it must of course have a switching capacity of 100 kA, but will only let through a current with a peak value of approx. 50 kA, which corresponds to an effective value of only approx. 35 kA. Only this reduced current then stresses all conductors of the circuit for the very short switch-off time of the switch.

Summary

The dimensions of busbar systems must be designed to support correct operation and for errors. With regard to short-circuit strength, errors are considered outside the low-voltage switchgear and controlgear assembly.

The dimensions of busbar systems which are not protected by a current-limiting short-circuit protective device must reflect the rated short-time current phase current I_{cw} (1 s).

Busbar systems and conductors, which are designed in accordance with IEC 61439-1, 7.5.5.3 and protected by a current-limiting short-circuit protective device, may be rated for the short-circuit stress which is reduced by the inclusion of this device (details of the rated conditional short-time current I_{cc}).

3.7 Main busbar system

Equipment

The SIVACON S4 main busbar system offers a practical way of cascading rated currents, harmonized with the rated currents of standard transformers.

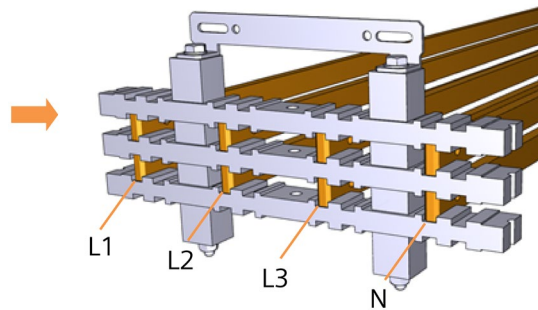
The basis for this is the universal busbar support for using rectangular copper sections.

Distribution and connecting busbars can be assembled without creating holes by using two, four or eight sub-conductors per phase.



Busbar arrangement

Arrangement of the phases in the system



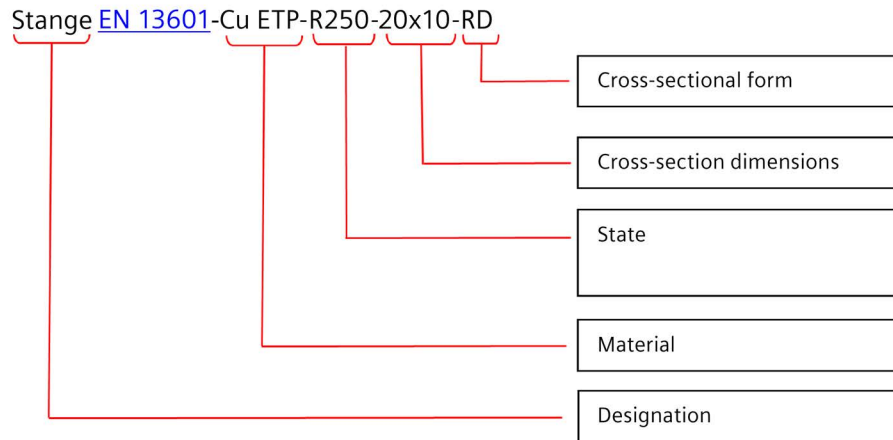
Surface treatment of copper busbars

Copper busbars should only be touched with cotton gloves in order to avoid marks.

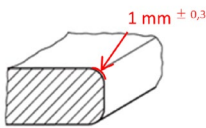
Wipe copper, silver-plated or tin-coated contact surfaces with a soft clean cloth.

If copper-contact marks appear, brush them to a distance of approx. 10 mm on either side using orbital grinders.

Raw material quality



Technical properties

Designation	Rod	
Material	Cu ETP	
State	R250 Tensile strength Yield strength	Rm = 250 N / mm ² Rp0.2 = 200 N / mm ²
Cross-section dimensions	20 x 10 mm 30 x 10 mm 40 x 10 mm 50 x 10 mm	
Cross-sectional form	RD Rounded edges 	

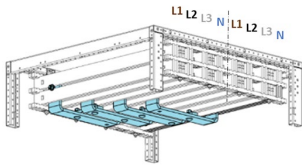
Compatible raw materials

Cross-section	Rod
20 x 10	EN 13601-Cu ETP-R250- 20x10 -RD
30 x 10	EN 13601-Cu ETP-R250- 30x10 -RD
40 x 10	EN 13601-Cu ETP-R250- 40x10 -RD
50 x 10	EN 13601-Cu ETP-R250- 50x10 -RD

Finishing

Method	Use in switchgear systems	Coating thicknesses	Additional information
Galvanic tin-plating Cu / Sn8 DIN 50965	Not recommended Danger: Whisker formation	Tin semi-gloss min. 8 µm max. 20 µm	Application is only permitted if the potential hazard risk due to whisker formation has been checked and excluded for the respective application. In order to reduce the risk of whisker formation, high current densities, overdosing of brighteners, low working temperatures and co-separation of hydrogen must be avoided. The use of chemical detachment processes ("demetallization") or mechanical detachment processes (grinding, scraping, scratching, blasting, etc.) for the removal of surface coatings that have already been applied using electroplating to workpieces (e.g. busbars or contact parts), for the processing of incorrectly galvanized workpieces or workpieces that have become unusable for further processing, is not allowed. A new, subsequent second galvanic coating of surface coatings that have already been applied using electroplating to workpieces (e.g. busbars or contact parts) is, in the case of defective workpieces after the application of removal processes (post-processing of surface coatings applied using electroplating) or if the layer thickness is too low, not allowed.
Galvanic tin-plating with lower nickel content Cu / Ni5Sn3 DIN 50965	Conditionally recommended Danger: Whisker formation	Tin semi-gloss min. 3 µm max. 10 µm Sulfamate nickel min. 5 µm max. 30 µm	Application is only permitted if the potential hazard risk due to whisker formation has been checked and excluded for the respective application. In order to reduce the risk of whisker formation, high current densities, overdosing of brighteners, low working temperatures and co-separation of hydrogen must be avoided. The use of chemical detachment processes ("demetallization") or mechanical detachment processes (grinding, scraping, scratching, blasting, etc.) for the removal of surface coatings that have already been applied using electroplating to workpieces (e.g. busbars or contact parts), for the processing of incorrectly galvanized workpieces or workpieces that have become unusable for further processing, is not allowed. A new, subsequent second galvanic coating of surface coatings that have already been applied using electroplating to workpieces (e.g. busbars or contact parts) is, in the case of defective workpieces after the application of removal processes (post-processing of surface coatings applied using electroplating) or if the layer thickness is too low, not allowed.
Galvanic silver coating Cu / Ag3	Recommended	Silver 99.9 % shiny Hardness: 80 – 120 HV min. 3 µm	-

3.8 Main busbar current compensation



Busbar systems Duplex IN > 3 200 A – 6 300 A

Required if sum of operational currents

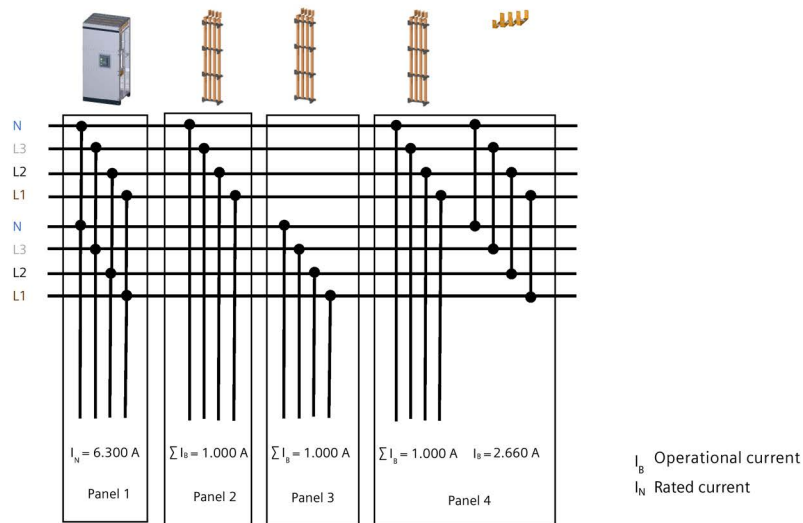
IP41 $\sum I_B > 2\,660\text{ A}$

IP55 $\sum I_B > 2\,400\text{ A}$

The following field is not a circuit-breaker panel (ACB, MCCB)

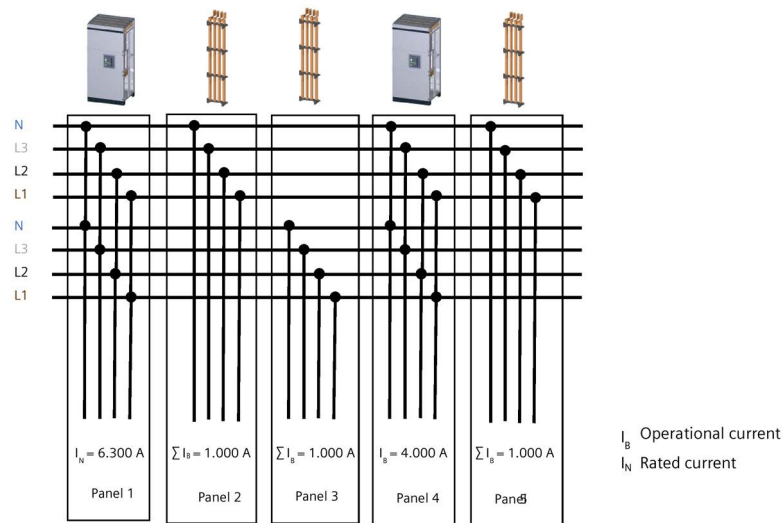
Example 1:

- Two IP41 outgoing feeder panels with $\sum I_B = 1\,000\text{ A}$
- Current compensation required in field 4



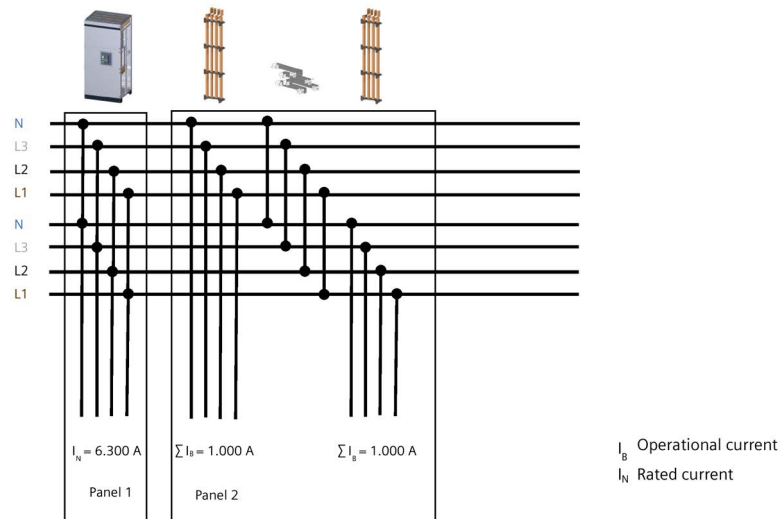
Example 2:

- Two IP41 outgoing feeder panels with $\sum I_B = 1\,000\text{ A}$
- Current compensation via 3WA outgoing circuit field 4



Example 3:


- Outgoing feeder panel with two field distribution busbars
- Current compensation takes place within distribution busbars



3.9 PE busbar system

Accessories – Current compensation

Max. additional power loss per panel 1 000 W


	800	2 870	2 810	2 740	2 660	2 600	2 520	2 450	1 000	8
---	-----	-------	-------	-------	--------------	-------	-------	-------	-------	---

Note:

The balance rails were tested in two arrays with the largest cross-sections available (2 x 2 [40 x 10] mm²). This means the balance rails can also be used for smaller cross-sections.

Accessories – Current compensation

Max. additional power loss per panel 1 000 W

	800	2 580	2 520	2 460	2 400	2 330	2 270	2 200	1 000	8
---	-----	-------	-------	-------	--------------	-------	-------	-------	-------	---

Note:

The balance rails were tested in two arrays with the largest cross-sections available (2 x 2 [40 x 10] mm²). This means the balance rails can also be used for smaller cross-sections.

3.9 PE busbar system

Dimensioning

SIMARIS configuration provides appropriate assistance for the correct dimensioning of the protective conductor.

The following options are available:

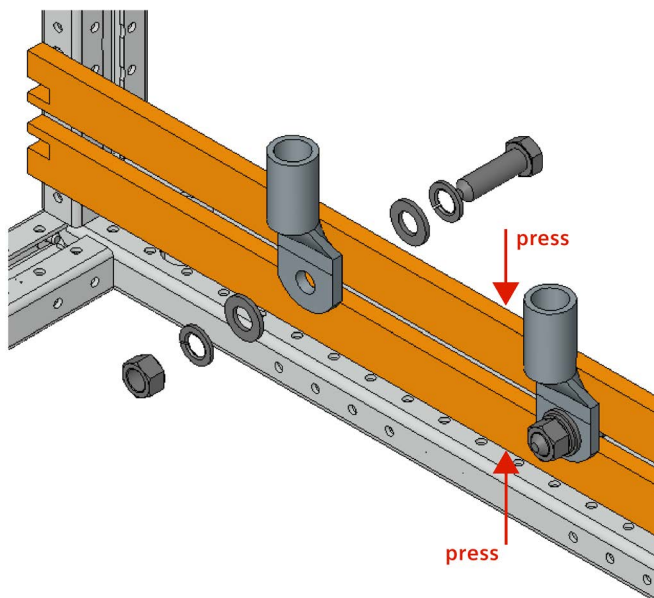
- 1) Dimensioning on the basis of IEC 61439-1, Table 5

Cross-sectional area of the line conductor S [mm ²]	Minimum cross-section of the corresponding protective conductor (PE, PEN) S _p [mm ²]
S ≤ 16	S
16 < S ≤ 35	16
35 < S ≤ 400	S / 2
400 < S ≤ 800	200
800 < S	S / 4

- 2) Dimensioning with the help of design verifications

Connection

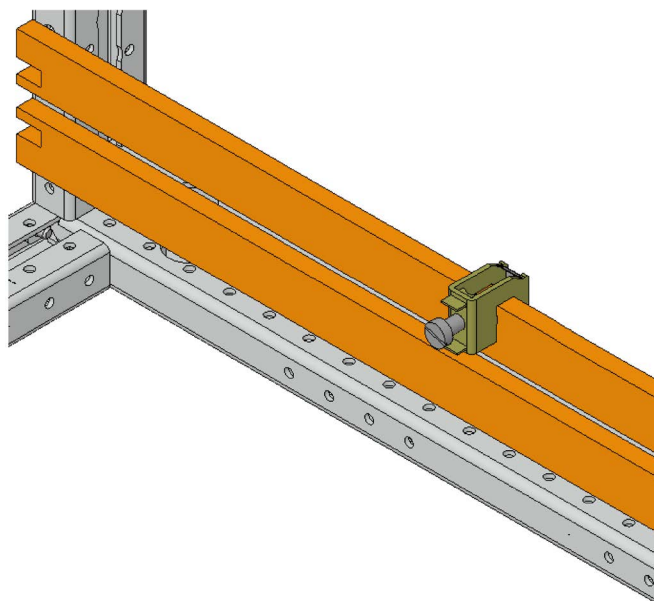
The PE cables are connected directly to the busbar as shown in the images below.



Cable lug

Connection is made in the space between the conductors per phase.

It is recommended to press the two copper bars together with a screw clamp during installation.



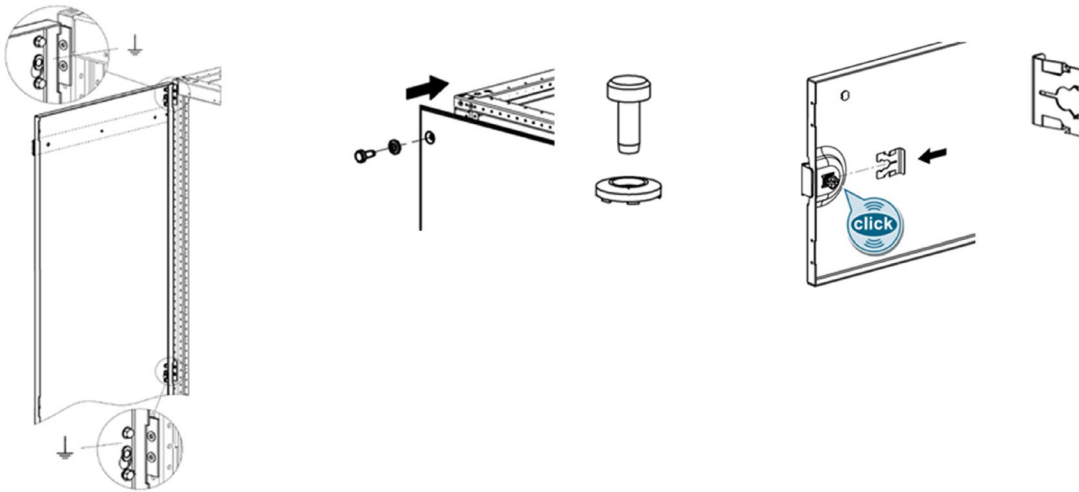
Plug-in connection terminal

Smaller cross sections can be attached with a plug-in connection terminal

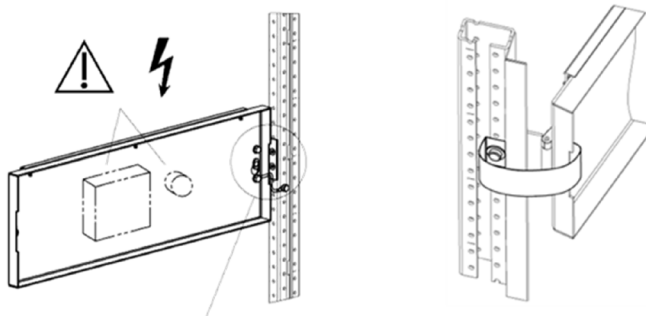
3.10 Grounding concept

Within the switchgear and controlgear assembly

The switchboard is designed to provide a conductive connection between all metal parts of the system when properly installed.



Door mountings require additional grounding measures, which are to be dimensioned as follows:




Rated operational current I_e A	Minimum cross-section for protective conductor S mm^2
$I_e \leq 20$	Cross-section of the line conductor
$20 < I_e \leq 25$	2.5
$25 < I_e \leq 32$	4
$32 < I_e \leq 63$	6
$63 < I_e$	10

Table 3 - Cross-section für protective conductors made from copper (8.4.3.2.2)

3.11 Cable connection

Conductor cross-section for internal wiring

Rated current I_n	Cable cross-sections (stranded)
A	 mm ²
8	1
12	1.5
20	2.5
25	4
32	6
50	10
65	16
85	25
115	35
150	50
175	70 or 2 x 35
225	95 or 2 x 50
250	120 or 2 x 50
275	2 x 50
300	2 x 70
350	2 x 95
375	2 x 95
400	2 x 95
450	2 x 150 or 3 x 70
500	2 x 150 or 3 x 95
630	2 x 185


Note: if not otherwise specified in the installation instructions of the assembly kits.

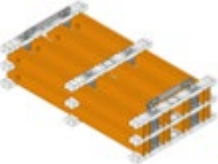


Laying cables and leads

Leads without short-circuit protection are potentially very hazardous and must conform to the conditions stipulated in IEC 60439-1, subsection 7.5.5.3. Either use leads which are specially protected by virtue of their insulation or increase the protection against a short circuit occurring by laying leads with basic insulation (IEC 60439-1, Table 5).

Control leads may not be laid in cable ducts.

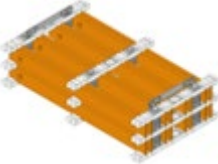


Connection media

 Multi-core cable connection

Application	Temperature range	Specification	Insulation
 <p>Main busbar system</p>	-55 °C to +135 °C	ETEF	7Y11 according to DIN VDE 0207-6
 <p>Distribution busbar system function Vertical main busbar</p>	-55 °C to +135 °C	EETF	7Y11 according to DIN VDE 0207-6
 <p>Distribution busbar system</p>	-40 °C to +90 °C	PVC (H05V2-K; H07V2-K)	T13 according to DIN VDE 0281-1

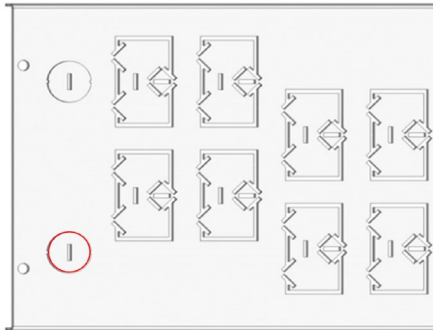


Connection of flexible busbars

Application	Temperature range	Specification	Insulation
 Main busbar system	-55 °C to +135 °C	Manufacturer nVent ERIFLEX Flexibar SUMMUM	Silicone
 Distribution busbar system function Vertical main busbar	-55 °C to +135 °C	Manufacturer nVent ERIFLEX Flexibar SUMMUM	Silicone
 Distribution busbar system	-40 °C to +90 °C	Manufacturer nVent ERIFLEX Flexibar Advanced	Thermoplastic elastomer

3.12 Control wiring

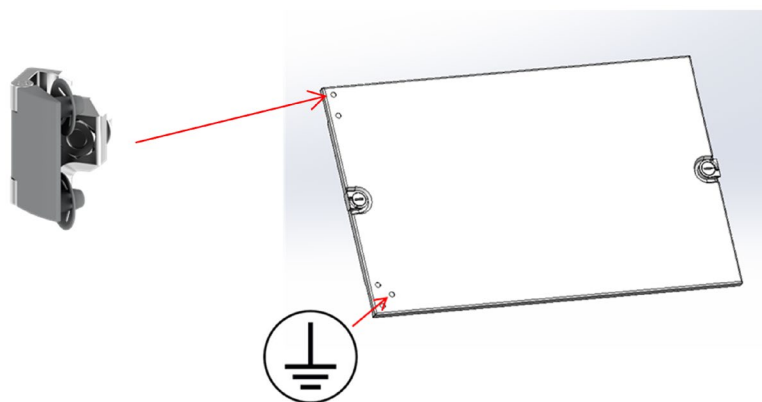
The following cut-outs for control cables are found in almost all separation components and mounting plates. These can be easily broken out with a screwdriver for cable feed-through:



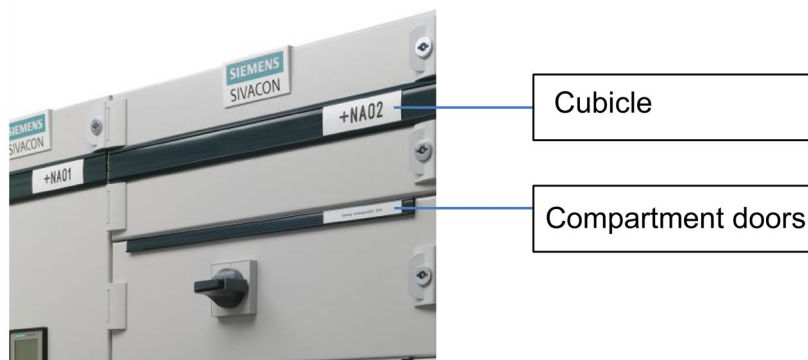
All cubicle doors are prepared for mounting internal door struts. The additionally available inner struts make it easy to organize the control wiring:



Internal covers can be equipped with a solid trim hinge. The covers are already prepared for this:



3.13 Cubicle marking



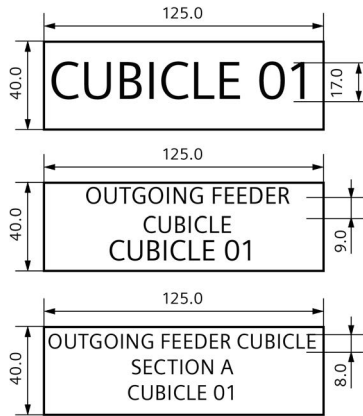
Suitable for inscription plates

- Printed carton with transparent cover
- Engraved Resopal 0.8 mm thickness

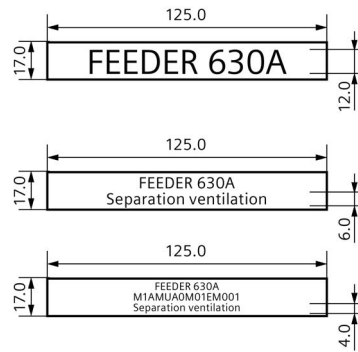
3.13 Cubicle marking

Inscription examples

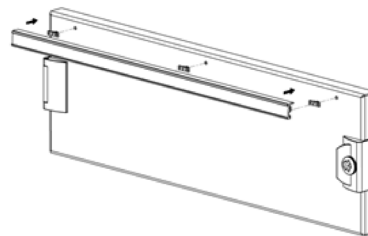
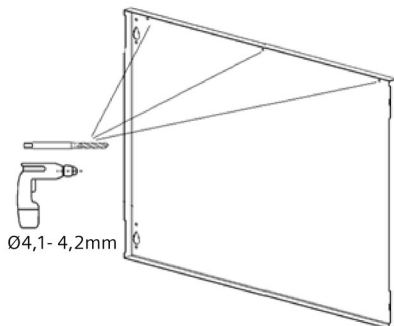
Cubicle



Compartment doors



All compartment doors are already equipped with knockouts on the inside. To mount the labeling strips, they only need to be provided with bore holes on the back:




Assembling

4.1 Tools and auxiliary equipment

Use high-quality tools and keep them maintained in accordance with the manufacturer's instructions.

In addition to general workshop equipment (e.g., hammer, tape measure, etc.), the following tools are required for the mechanical assembly of SIVACON S4:

- Battery screwdriver with an adjustable torque (4 Nm, 8 Nm)
- Torx T30, M6 x 50 mm
- Torx T30, M6 x 200 mm MLFB: 8PQ9400-0BA10
- A torque spanner with setting ranges up to 90 Nm
- Philips screwdriver, size 2
- Open-end spanners and hexagon-head attachment for the following standard threads according to ISO 4014 / ISO 4017

Thread	Width across flats 
M6	SW10
M8	SW13
M10	SW16
M12	SW18

4.2 Tools for copper processing

The following punching tools are required for replicating the type-tested busbar sets:

Stamp	Thread	Application
∅ 7.0	M6	Screw connection
∅ 7.4	M8	Thread-forming screw
∅ 14.0	M12	Screw connection
□ 9.0 x 9.0	M8	Screw connection
□ 11.0 x 11.0	M10	Screw connection
□ 11.0 x 16.0	M10	Screw connection
□ 12.5 x 12.5	M12	Screw connection
□ 32 x 8		Separating die

4.3 Personal protective equipment

To avoid cutting injuries from sheet metal parts, it is strongly recommended to wear protective gloves and safety shoes during all installation work:



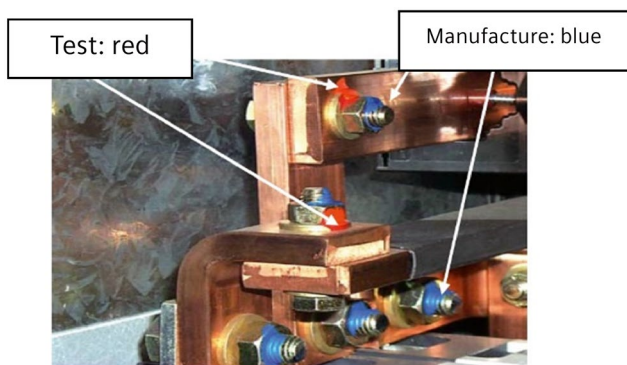
4.4 Bolted connections

Property class

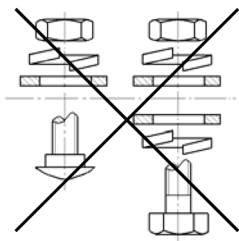
For connections, bolts of property class 8.8 must generally be used. This is the only way of ensuring that the product properties determined during type-testing are maintained over the product's expected useful life.

Color coding of torque-tested bolted connections

In order to ensure the properties determined in the type tests, compliance with the torque specifications during manufacture and testing is of decisive importance. This is ensured by color coding with dots of paint via two movable connection elements. This means that the coat of paint becomes visibly damaged if the bolted connection is moved later on. Once the bolted connection has been created, the production torque is applied with the torque wrench. The connection is then marked blue. The testing torque is lower than the production torque. Once it has been tested, the bolted connection is marked red.



Non-permissible bolted connections



The resilient effect of bolted connections with a spring lock washer conforming to DIN 128 is diminished at relatively low prestressing forces. This makes them ineffective as a means of securing the setting. The spring lock washer is also unable to prevent the hexagonal nut from coming loose. This combination of standard parts cannot be used.

4.5 Standard part connections

Notes

- Values invalid if not otherwise specified in the installation instructions of the assembly kits.
- Devices are to be connected at the torques which are specified in the operating instructions for the devices.

Copper and copper

Standard parts	Schematic diagram	References														
1x hexagon socket screw EN ISO 4014/4017 2x clamping washers DIN 6796 1 x hexagon nut EN ISO 4032		Tightening torque (Nm)														
		<table border="1"> <thead> <tr> <th>M4</th> <th>M5</th> <th>M6</th> <th>M8</th> <th>M10</th> <th>M12</th> <th>M16</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>8</td> <td>20</td> <td>40</td> <td>70</td> <td></td> </tr> </tbody> </table>	M4	M5	M6	M8	M10	M12	M16			8	20	40	70	
		M4	M5	M6	M8	M10	M12	M16								
				8	20	40	70									
Testing torque 85% of the tightening torque																
<table border="1"> <tbody> <tr> <td></td> <td></td> <td>6.8</td> <td>17</td> <td>34</td> <td>60</td> <td></td> </tr> </tbody> </table>			6.8	17	34	60										
		6.8	17	34	60											
1 x saucer-head bolt DIN 603 1x clamping washer DIN 6796 1x hexagonal nut, EN ISO 4032		Tightening torque (Nm)														
		<table border="1"> <thead> <tr> <th>M4</th> <th>M5</th> <th>M6</th> <th>M8</th> <th>M10</th> <th>M12</th> <th>M16</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td>20</td> <td>40</td> <td>70</td> <td></td> </tr> </tbody> </table>	M4	M5	M6	M8	M10	M12	M16				20	40	70	
		M4	M5	M6	M8	M10	M12	M16								
					20	40	70									
Testing torque 85% of the tightening torque																
<table border="1"> <tbody> <tr> <td></td> <td></td> <td></td> <td>17</td> <td>34</td> <td>60</td> <td></td> </tr> </tbody> </table>				17	34	60										
			17	34	60											

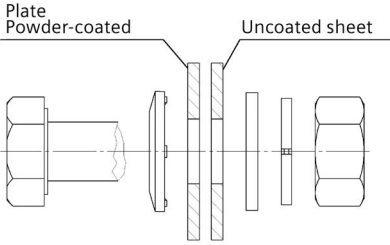
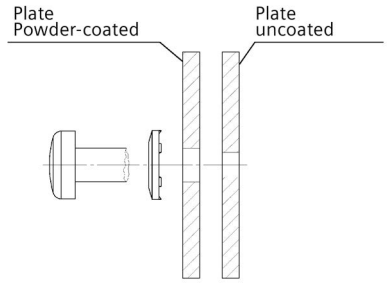
Grounding connections

Standard parts	Schematic diagram	References														
1x setbolt 1x contact washer SN 70093 1 x cable lug 1 x washer DIN EN ISO 7089 1x profile ring BN208 012-06 1x hexagonal nut, EN ISO 4032		Tightening torque (Nm)														
		<table border="1"> <thead> <tr> <th>M4</th> <th>M5</th> <th>M6</th> <th>M8</th> <th>M10</th> <th>M12</th> <th>M16</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>10</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	M4	M5	M6	M8	M10	M12	M16			10				
		M4	M5	M6	M8	M10	M12	M16								
				10												
<i>Testing torque 85% of the tightening torque</i>																
		8.5														
1x countersunk head screw SN 60062 1x contact washer SN 70093 1 x cable lug 1 x washer DIN EN ISO 7089 1x profile ring BN208 012-06 1x hexagonal nut, EN ISO 4032		Tightening torque (Nm)														
		<table border="1"> <thead> <tr> <th>M4</th> <th>M5</th> <th>M6</th> <th>M8</th> <th>M10</th> <th>M12</th> <th>M16</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>10</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	M4	M5	M6	M8	M10	M12	M16			10				
		M4	M5	M6	M8	M10	M12	M16								
				10												
<i>Testing torque 85% of the tightening torque</i>																
		8.5														

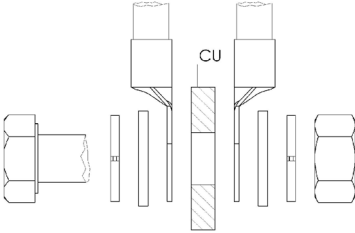
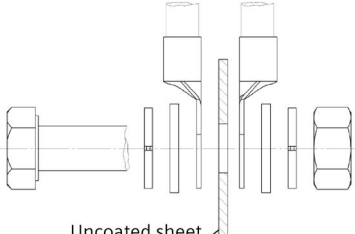
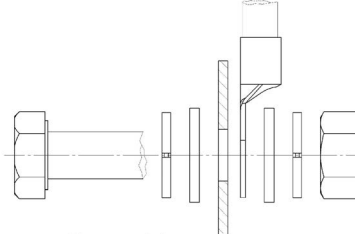
Steel and steel (zinc plated)

Standard parts	Schematic diagram	References														
1x hexagonal screw EN ISO 4014/4017 1x profile ring BN 208 012-06 2x washers EN ISO 7089 1x hexagonal nut, EN ISO 4032		Tightening torque (Nm)														
		<table border="1"> <thead> <tr> <th>M4</th> <th>M5</th> <th>M6</th> <th>M8</th> <th>M10</th> <th>M12</th> <th>M16</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>6</td> <td>8</td> <td>20</td> <td>40</td> <td></td> <td></td> </tr> </tbody> </table>	M4	M5	M6	M8	M10	M12	M16	3	6	8	20	40		
		M4	M5	M6	M8	M10	M12	M16								
		3	6	8	20	40										
<i>Testing torque 85% of the tightening torque</i>																
		2.5	5	6.8	17	34										
1 x self-tapping screw DIN 7500		Tightening torque (Nm)														
		<table border="1"> <thead> <tr> <th>M4</th> <th>M5</th> <th>M6</th> <th>M8</th> <th>M10</th> <th>M12</th> <th>M16</th> </tr> </thead> <tbody> <tr> <td>1.5</td> <td>3</td> <td>4</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	M4	M5	M6	M8	M10	M12	M16	1.5	3	4				
		M4	M5	M6	M8	M10	M12	M16								
		1.5	3	4												
<i>Testing torque 85% of the tightening torque</i>																
		1.2	2.5	3.4												

Steel and steel (coated)

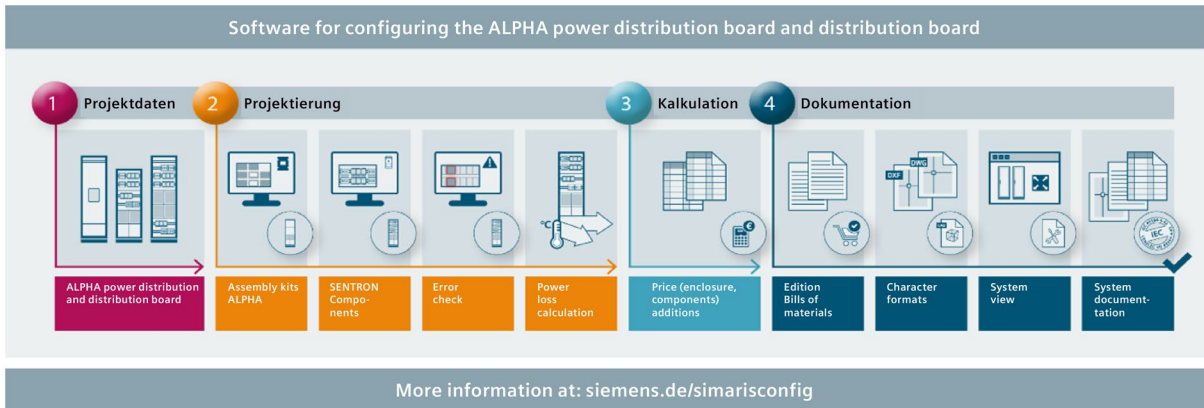
Standard parts	Schematic diagram	References						
1x hexagonal screw EN ISO 4014/4017 1x contact washer SN 70093 1x profile ring BN 208012-06 1 x washer DIN EN ISO 7089 1x hexagonal nut, EN ISO 4032		Tightening torque (Nm)						
		M4	M5	M6	M8	M10	M12	M16
		3	6	8	20	40		
		<i>Testing torque 85% of the tightening torque</i>						
2.5	5	6.8	17	34				
1 x self-tapping screw DIN 7500 1x contact washer SN 70093		Tightening torque (Nm)						
		M4	M5	M6	M8	M10	M12	M16
		1.5	3	4				
		<i>Testing torque 85% of the tightening torque</i>						
1.2	2.5	3.4						

Connection of cable lugs

Standard parts	Schematic diagram	References														
1x hexagonal screw EN ISO 4014/4017 2x profile rings BN208 012-06 2 x washers DIN EN ISO 7089 1x hexagonal nut, EN ISO 4032 2 x cable lugs		Tightening torque (Nm)														
		<table border="1"> <thead> <tr> <th>M4</th> <th>M5</th> <th>M6</th> <th>M8</th> <th>M10</th> <th>M12</th> <th>M16</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>10</td> <td>20</td> <td>40</td> <td>70</td> <td></td> </tr> </tbody> </table>	M4	M5	M6	M8	M10	M12	M16			10	20	40	70	
		M4	M5	M6	M8	M10	M12	M16								
				10	20	40	70									
Testing torque 85% of the tightening torque																
<table border="1"> <tbody> <tr> <td></td> <td></td> <td>8.5</td> <td>17</td> <td>34</td> <td>60</td> <td></td> </tr> </tbody> </table>			8.5	17	34	60										
		8.5	17	34	60											
1x hexagonal screw EN ISO 4014/4017 2x profile rings BN208 012-06 2 x washers DIN EN ISO 7089 1x hexagonal nut, EN ISO 4032 2 x cable lugs		Tightening torque (Nm)														
		<table border="1"> <thead> <tr> <th>M4</th> <th>M5</th> <th>M6</th> <th>M8</th> <th>M10</th> <th>M12</th> <th>M16</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>10</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	M4	M5	M6	M8	M10	M12	M16			10				
		M4	M5	M6	M8	M10	M12	M16								
				10												
Testing torque 85% of the tightening torque																
<table border="1"> <tbody> <tr> <td></td> <td></td> <td>8.5</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>			8.5													
		8.5														
1x hexagonal screw EN ISO 4014/4017 2x profile rings BN208 012-06 2 x washers DIN EN ISO 7089 1x hexagonal nut, EN ISO 4032 1 x cable lug		Tightening torque (Nm)														
		<table border="1"> <thead> <tr> <th>M4</th> <th>M5</th> <th>M6</th> <th>M8</th> <th>M10</th> <th>M12</th> <th>M16</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>10</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	M4	M5	M6	M8	M10	M12	M16			10				
		M4	M5	M6	M8	M10	M12	M16								
				10												
Testing torque 85% of the tightening torque																
<table border="1"> <tbody> <tr> <td></td> <td></td> <td>8.5</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>			8.5													
		8.5														

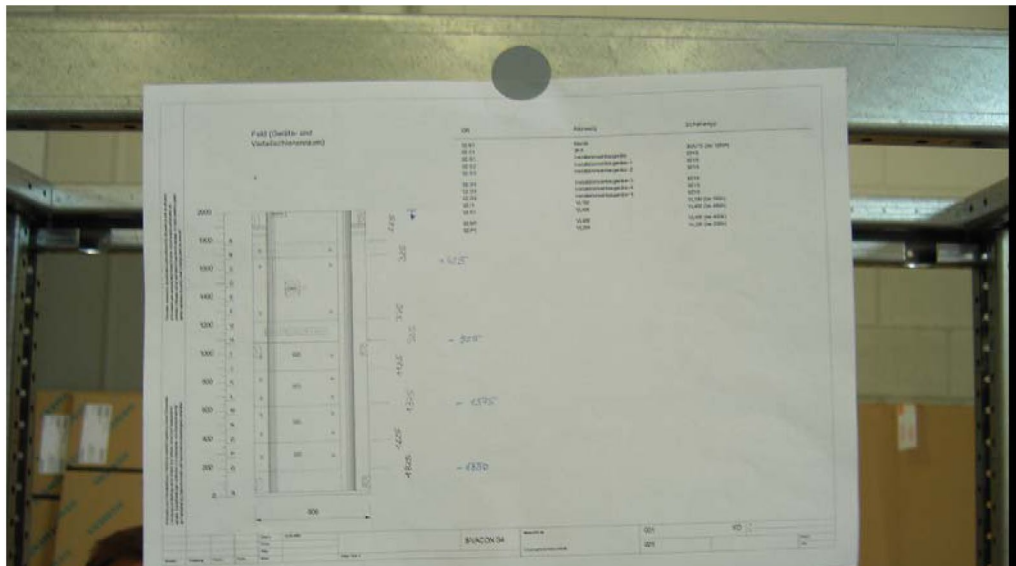
4.6 Mounting preparations

Project documentation from SIMARIS configuration



The configuration software offers extensive output options to support the assembly processes:

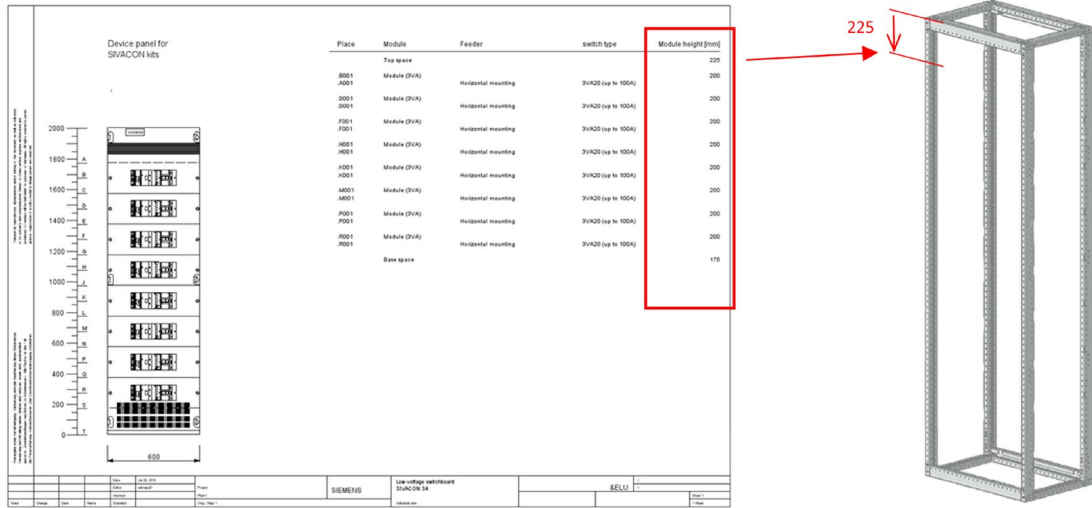
- Bills of materials
- Overview graphics of the entire system
- Busbars
- Equipment view per cubicle



4.6 Mounting preparations

Practical tip:

From the overview graphic you can see the module heights of the assembly kits. Mark them with a marker on the supporting structure:

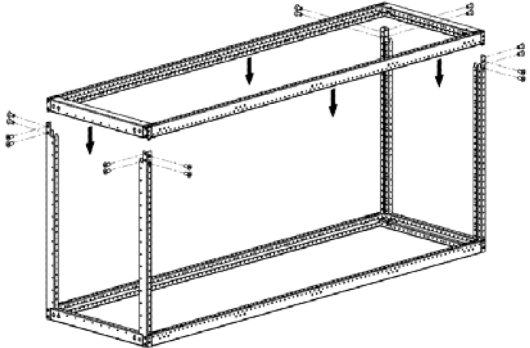
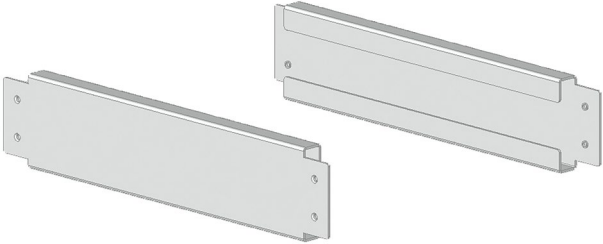
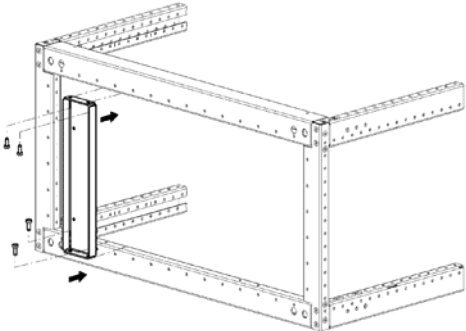


This measure makes it much easier for you to install the assembly kits at the correct mounting height and incorrect installation is avoided.

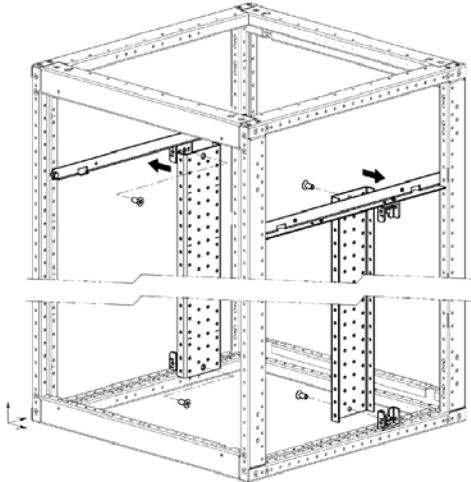
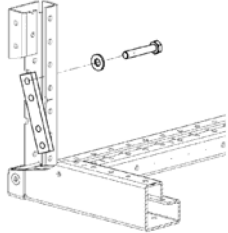
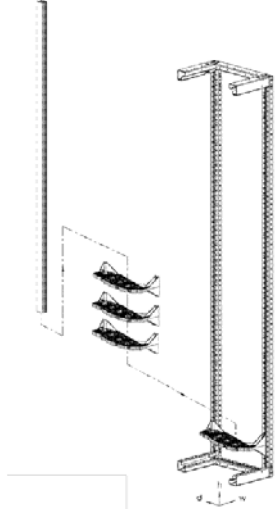
4.7 Mounting sequence

Procedure for installing the basic cubicle

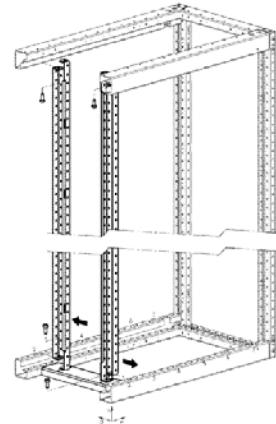
The following procedure describes installation using an example:

Installation of the supporting structure	
Installation of the base corners Optionally available transport reinforcements.	
Installation of the lower part of the supporting structure with a function compartment split of 600 mm + 200 mm	

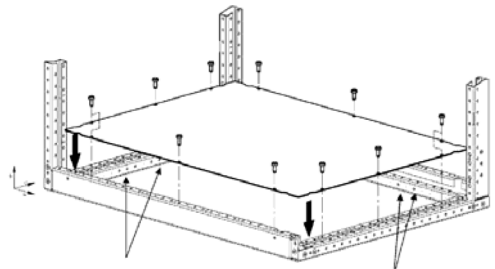
4.7 Mounting sequence

<p>Installation of supporting structure without a function compartment split</p>	
<p>Installation of the rack connection for PE busbars</p>	
<p>Installation of the supports for vertical distribution busbars (cascaded or non-cascaded), with due regard for spacing between supports and device connections</p> <p>Installation of the vertical distribution busbars</p>	

Installation of the supporting structure with a function compartment split of 600 mm + 200 mm

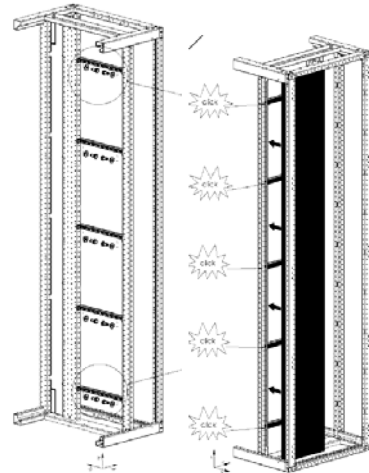


Installation of the base plate

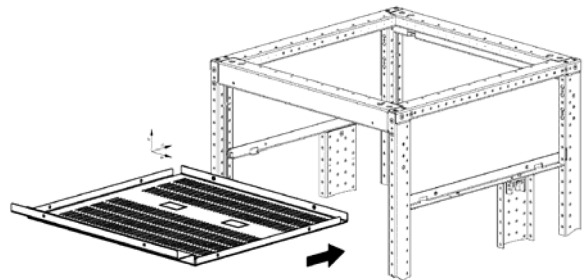


Installation of the supports for separation 2b for vertical distribution busbars with due regard for the arrangement of devices and minimum spacing

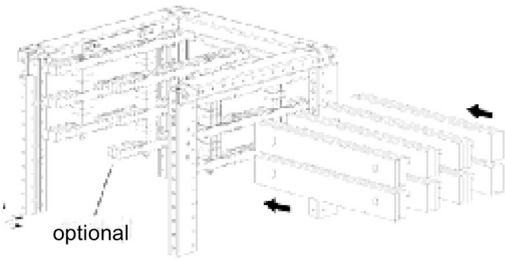
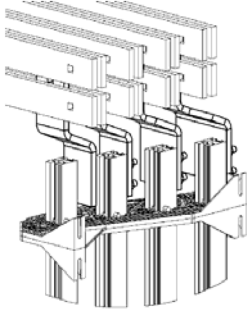
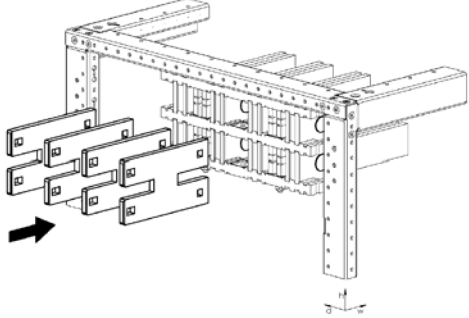
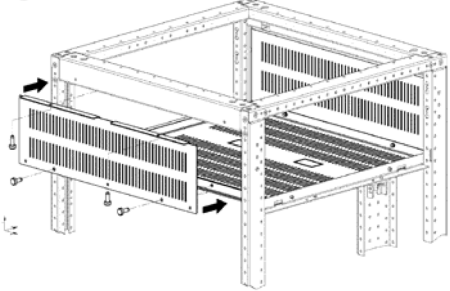
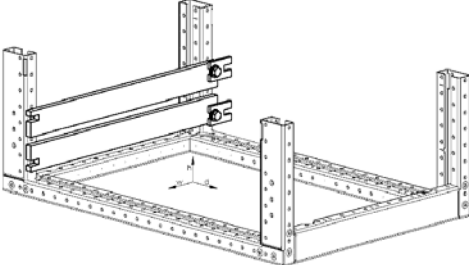
Installation of vertical separation 2b



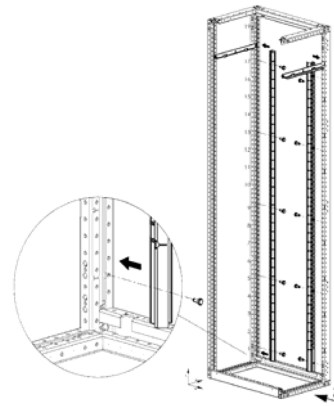
Installation of the lower part of horizontal separation 2b for main busbars



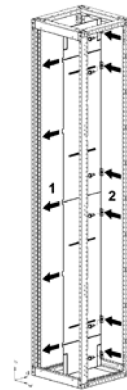
4.7 Mounting sequence

<p>Installation of the supports for the main busbar system</p> <p>Installation of the copper bars and installation of the bracing elements with due regard for permissible spaces</p>	
<p>Installation of the connection lugs Distribution busbar</p>	
<p>Installation of the connection lugs Main busbar</p>	
<p>Installation of the vertical parts of horizontal separation 2b for main busbars</p>	
<p>Installation of the PE buses</p>	

Installation of the push-on terminal strips in the form of internal separation
3 and 4



Installation of the cubicle partition



Commissioning

The following documentation "8PQ9801-5AA80 Operation and Maintenance" provides you with more information on fault-free commissioning of the switchgear and controlgear assembly. As an aid, you will find a practical protocol template, which facilitates the mechanical and electrical function test.

SIVACON S4

Inbetriebsetzungs- Protokoll (Muster)

Mechanische Prüfung von Niederspannungs- Schaltanlagen

1. Daten zur Identifizierung des geprüften Objektes:

Protokoll-Nr.

siehe Leistungsschild im linken Endfeld der Schaltanlage, Innenseite der Feld- oder oberen Fachtür

Kunde:
 Ort:
 Land:
 Schaltanlage oder Anlagenteil:
 Typ:
 Hersteller- Ident. (Werk) -Nr.:
 Bemessungs- Spannung:
 Bemessungs- Kurzzeitstrom:

2. Schaltraum

Raum- Ident.:

Lfd. Nr.	Inbetriebsetzungs- Schritt ausgeführt	Ja	Nein	Bemerkung
2.1	Der Raum kann ordnungsgemäß gegen unbefugten Zutritt gesichert (verschlossen) werden.			
2.2	Es wurden alle erforderlichen Maßnahmen getroffen, damit der Raum den örtlichen Sicherheitsbestimmungen entspricht. (Fluchtwege, Notbeleuchtung, Löscheinrichtungen, Hinweis Tafeln)			
2.3	Die Be- und Entlüftungsmaßnahmen funktionieren. (Klimaanlage funktionsfähig, Belüftungsöffnungen nicht verstellt)			
2.4	Die vorgesehenen Transporthilfen für schwere Geräte/ Einschübe sind in ordnungsgemäßem Zustand und in vorgesehener Zahl vorhanden.			
2.5.1	Das Anlagenzubehör ist entsprechend Dokumentation vollständig (z.B. Doppelbartschlüssel, Sicherungs- Griffzange, Lampengreifer, Betätigungs- werkzeuge für Einschub-Leistungsschalter und Einschübe)			
2.5.2	Das Anlagenzubehör ist in gutem Zustand			
2.5.3	Das Anlagenzubehör ist an geeigneter Stelle untergebracht (Gut erreichbar, übersichtlich angeordnet, geschützt gegen Beschädigung und Diebstahl)			
2.6	Hinweise auf den Standort der Anlagendokumentation sind an gut sichtbarer Stelle (z.B. am Werkzeugbrett) im Schaltraum vorhanden.			

3. Schaltanlage, Allgemeines

Lfd. Nr.	Inbetriebsetzungs- Schritt ausgeführt	Ja	Nein	Bemerkung
3.1	Die Schaltanlagendokumentation ist vollständig und geordnet am vorgegebenen Ablageort greifbar (z.B. Betriebsanleitungen der Schaltanlage und der zugehörigen Geräte, sowie Geräterlisten und Schaltpläne mit aktuellem Revisionsstand).			
3.2.1	Die Beschriftung der Schaltanlagenfelder ist vollständig (Anlagen- Feld- und Abzweigbezeichnungen).			
3.2.2	Alle Stecker, Klemmen und sonstige Kabelanschluss- Stellen sind richtig und vollständig beschriftet.			
3.2.3	Kennzeichnung der externen Anschlusskabel richtig und vollständig, sofern gefordert.			
3.2.4	Betriebsmittelkennzeichen sind vollständig.			
3.2.5	Sammelschienen Kennzeichnungen wurden ersetzt, wenn beschädigt (L1, L2, L3, N, PEN, L+, L-).			
3.3	Isolationsprüfung wurde durchgeführt, bei R > 1000Ω/V der Bemessungs- Betriebsspannung wurden Fehler lokalisiert und beseitigt.			
3.4	Revision der Schaltanlagendokumentation (sofern erforderlich) wurde durchgeführt und Kopienätze der revidierten Unterlagen an alle erforderlichen Organisationseinheiten und den Schaltanlagenhersteller verteilt.			


Main busbar top / bottom

5.1 Incoming feeder cubicle ACB

Cubicle design



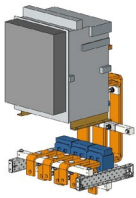
Connection

	Cable lug DIN 46235 $\leq 240 \text{ mm}^2$ M12
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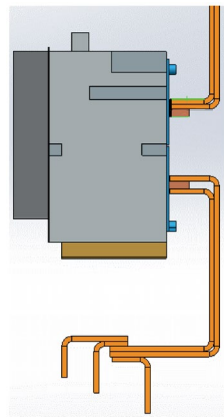
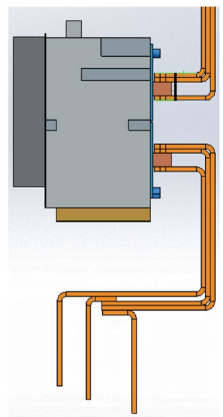
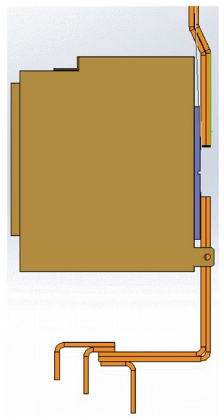
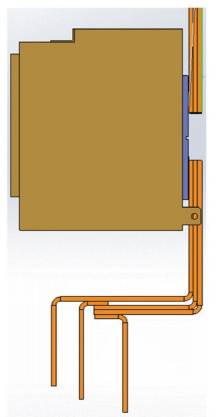
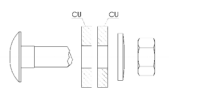
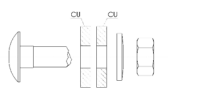
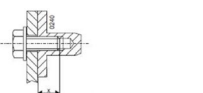
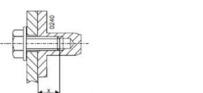
Maximum number of cables that can be connected per phase:

Size I		Size II		Size III	
Up to 1 000 A	1 250 A - 2 000 A	Up to 1 600 A	2 000 A - 3 200 A	Up to 4 000 A	5 000 A - 6 300 A
6	6	12	12	14	24

Installation of transformer

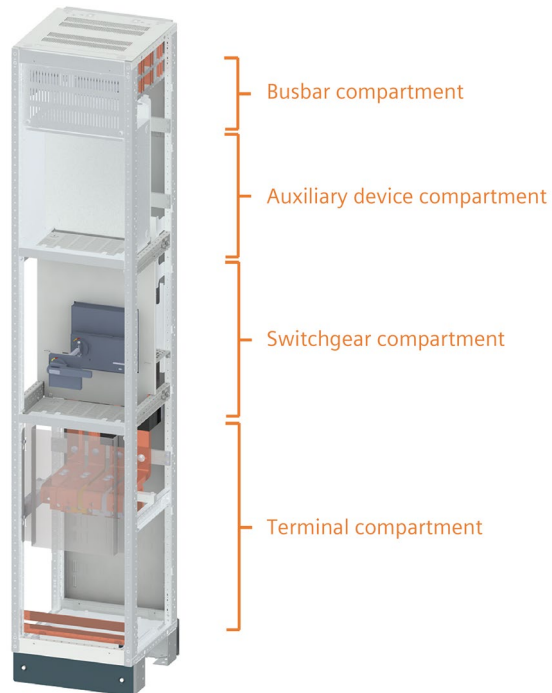
Mounting position Cable connection	Size	Switch	Rated current A	Type Supplier: MBS AG
	I	3WA1106	630	ASK 561.4
		3WA1108	800	ASK 561.4
		3WA1110	1 000	ASK 561.4
		3WA1112	1 250	ASK 561.4
		3WA1116	1 600	ASK 63.6
		3WA1120	2 000	ASK 63.6
	II	3WA1225	2500	ASK 105.6
		3WA1232	3200	ASK 105.6
	III	3WA1340	4 000	ASK 127.6
		3WA1350	5 000	ASK 127.6
3WA1363		6 300	ASK 127.6	

Device connection


				
Mounting design	Fixed mounting	Fixed mounting	Withdrawable unit	Withdrawable unit
Size	Size I	Size II	Size I	Size II
Combination of standard parts				
Type	Saucer-head bolt DIN 603	Saucer-head bolt DIN 603	Hexagon bolt EN ISO 4014	Hexagon bolt EN ISO 4014
Strength class	8.8	8.8	8.8	8.8
Standard part definition	M12 x 55	M12 x 80	M12 x 45	M12 x 55

5.2 Infeed panel MCCB

Cubicle design



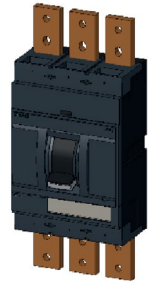

Connection:

	Cable lug DIN 46235 $\leq 240 \text{ mm}^2$ M12
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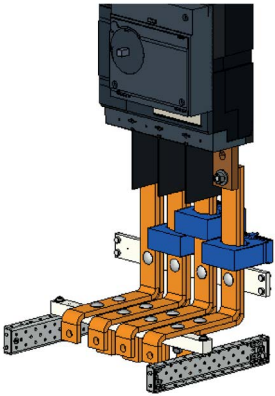
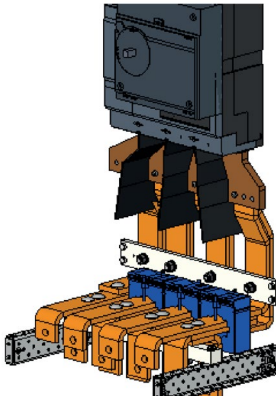
Maximum number of cables that can be connected per phase:

3VA15 Up to 1 000 A	3VA25 Up to 1 000 A	3VA26 Up to 1 250 A
4	4	6

Connection accessories

	Switch	Rated current [A]	Mounting design	Switch connection
	3VA15 3VA25	1 000 1 000	Fixed mounting	Connection extension
	3VA26	1 250	Fixed mounting	Bus connectors offset

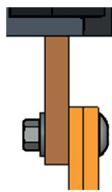
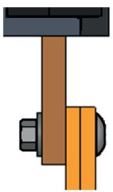
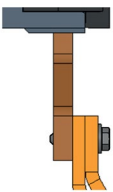



Installation of transformer

Mounting position Cable connection	Switch	Rated current [A]	Type (MBS AG)
	3VA15	1 000	ASK 561.4
	3VA25	1 000	ASK 561.4
	3VA26	1 250	ASK 561.4
			

3VA15, 3VA25

3VA26

Device connection

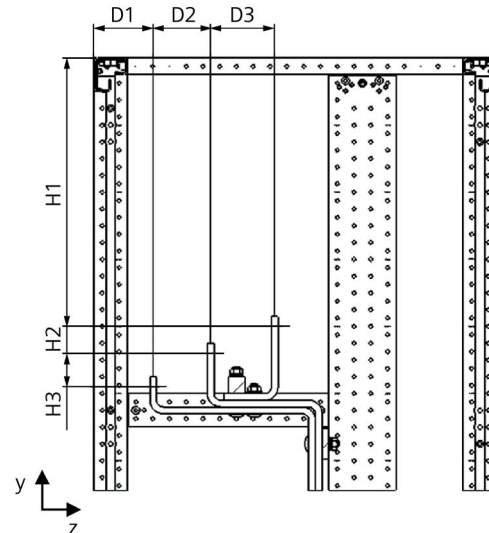
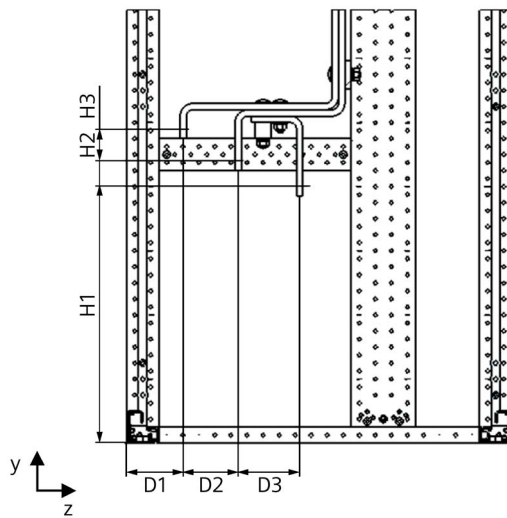
			
Size	3VA15	3VA25	3VA26
Rated current [A]	1 000	1 000	1 250
Mounting design	Fixed mounting	Fixed mounting	Fixed mounting
Combination of standard parts			
Screw	Saucer-head bolt DIN 603	Saucer-head bolt DIN 603	Hexagon bolt EN ISO 4014/4017
Strength class	8.8	8.8	8.8
Type	M12 x 50	M12 x 50	M10 x 40
Spring washer	DIN 6796	DIN 6796	DIN 6796
Hexagon nut	EN ISO 4032	EN ISO 4032	-

Connection dimensions for cable connection

Side view, cross-section

Cable connection at the bottom

Cable connection at the top



5.3 Coupling cubicle ACB

Switch	Rated current [A]	D1	D2	D3	H1	H2	H3
3VA15	1 000	120	90	-	430	40	-
3VA25	1 000	120	90	-	430	40	-
3VA26	1 250	84.5	72.5	87.5	400	40	50

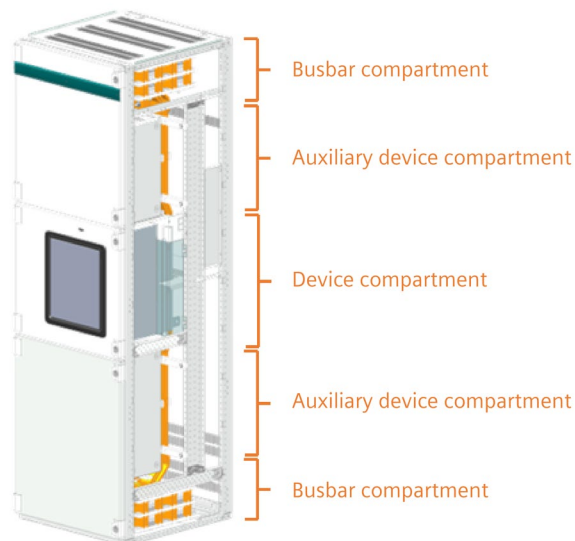
Insulation measures

Please refer to the following further documentation:

8PQ9803-2AA22	Switch insulation instruction
8PQ9801-5AA80	Operation and maintenance

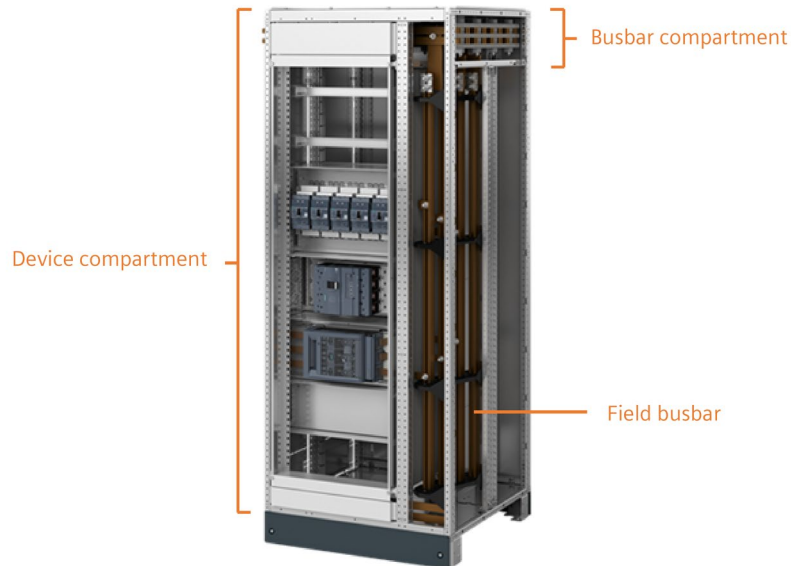
5.3 Coupling cubicle ACB

Cubicle design

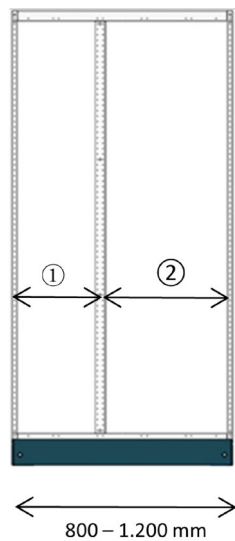


5.4 Outgoing feeder cubicle fixed-mounted version

Cubicle design



Formation of functional compartments



① **Distribution busbar**
System widths
 200 mm
 400 mm

② **Device compartment**
System widths
 600 mm
 800 mm

Distribution busbar systems

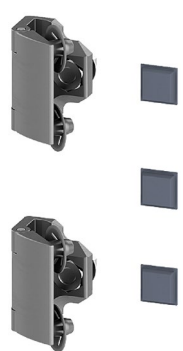
Cascaded
Non-cascaded

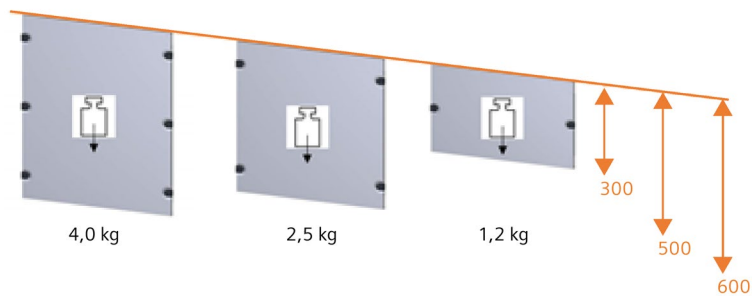
Assembly kits

3WA ACB
3VA MCCB
3NP1 fuse switch disconnecter
3NJ4 fuse switch disconnecter
Modular installation devices
Modular mounting plates

Trim hinge

8PQ2000-OBA08

	Cover height [mm]	Fitting weight [kg]	Number of hinges [quantity]
	150 - 300	1.2 kg	2
	350 - 500	2.5 kg	2
	550 - 600	4.0 kg	2 - 3
	650	4.5 kg	2 - 3
	800	5.5 kg	2 - 3



Typical outgoing feeder panel with 3VA molded-case circuit breaker




Front view

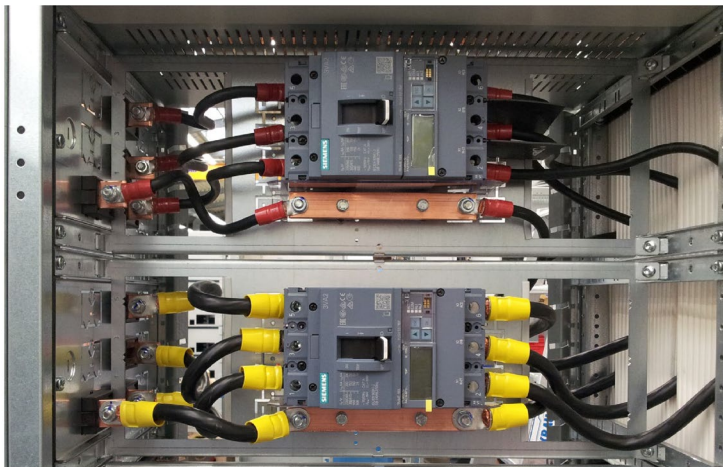


Rear view

Cable connection to 225 A

Rated current I_n	 Cable cross-sections (stranded) mm ²
A	
8	1
12	1.5
20	2.5
25	4
32	6
50	10
65	16
85	25
115	35
150	50
175	70 or 2 x 35
225	95 or 2 x 50

5.4 Outgoing feeder cubicle fixed-mounted version

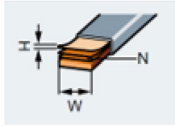


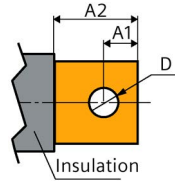
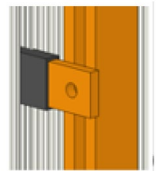

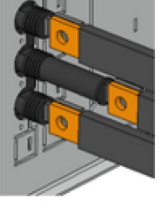
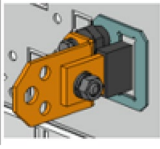
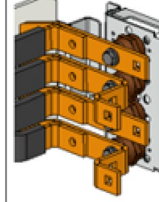
Cable connections in the compartment in form 3B with cable connection terminal



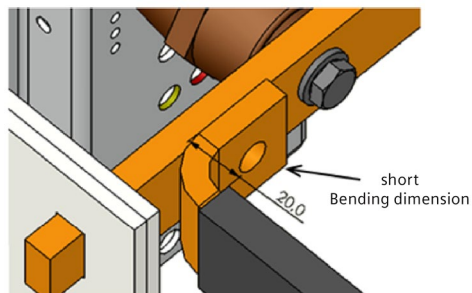
Connection to vertical busbar system

Connection to 630 A with flexible busbars

Rated current I_n	 <p>Flexible busbar</p>	
A	mm ²	N x H x W in mm
250	120	5 x 24 x 1
400	256	8 x 32 x 1
630	256	8 x 32 x 1

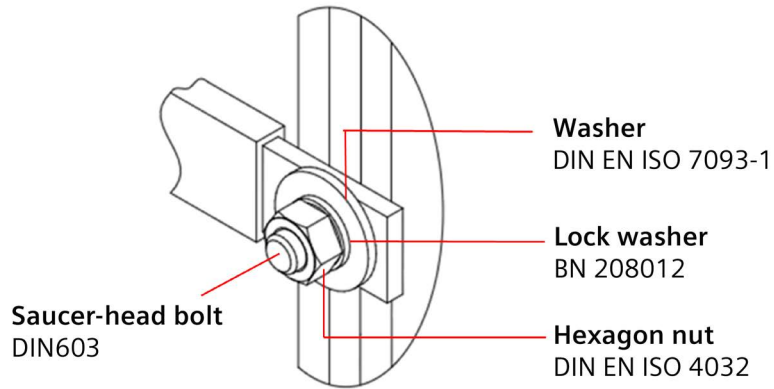
Connection dimensions for flexible busbar						
Switch	Dimension 	Device connection		Customer connection		Vertical busbar connection (cascaded) 
		Flat connector 	Rear terminal 	Front connection 	Rear terminal 	
3VA12	A1	10.0	12.0	10.0	15.0	18.0
	A2	20.0	30.0	30.0	①	40.0
	D	8.5	10.0	8.5	8.5	10.5
3VA22	A1	10.0	12.0	10.0	15.0	18.0
	A2	20.0	30.0	30.0	①	40.0
	D	8.5	10.0	8.5	8.5	10.5
3VA13, -14 3VA23, -24	A1	14.5	17.0	10.0	13.5	18.0
	A2	29.5	35.0	30.0	①	40.0
	D	10.5	12.5	8.5	10.5	10.5

① Insulation with short bending dimensions



Connection: Distribution busbar cascaded

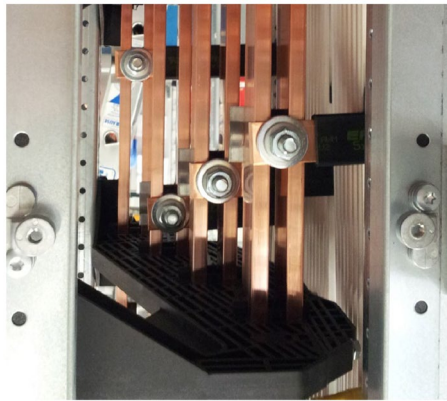
Combination of standard parts



Connections in the compartment in form 3B with terminals

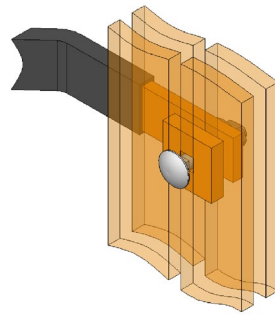
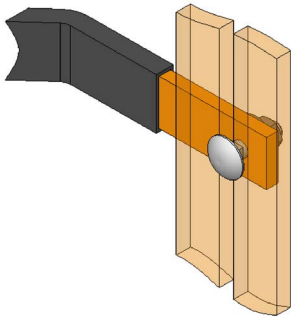


Customer connections

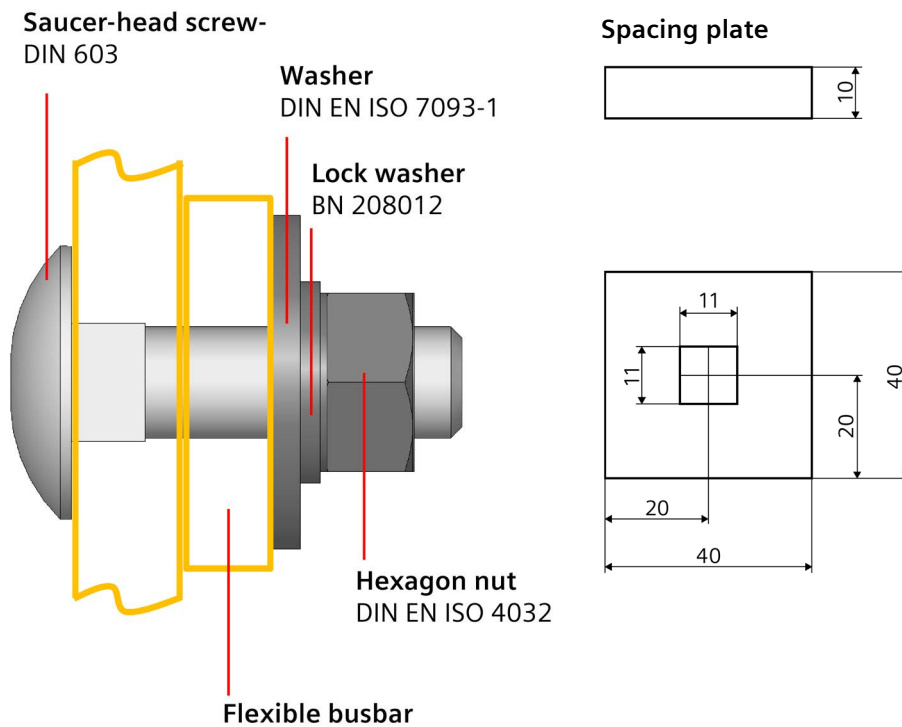


Connection to distribution busbar

Connection: Distribution busbar non-cascaded



Combination of standard parts

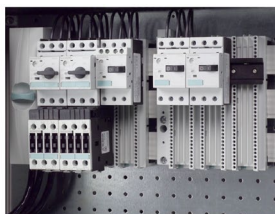


Torques

	M6	M8	M10	M12	M14	M16
Nm	13	30	60	110	174	274

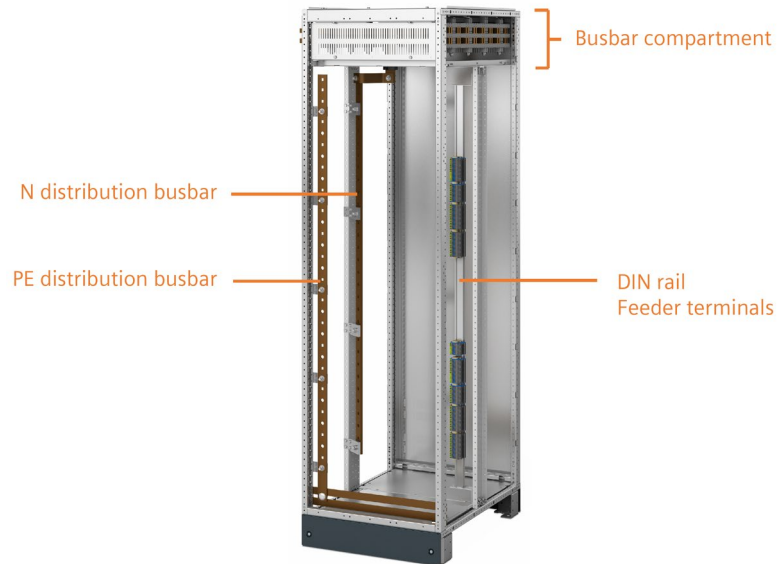
Modular mounting plates

The installation of control technology is carried out by means of modular depth-adjustable mounting plates. Example applications: SIRIUS motor starter, SIMATIC controllers, SITOP transformers.



5.5 Cable panel

Cubicle design



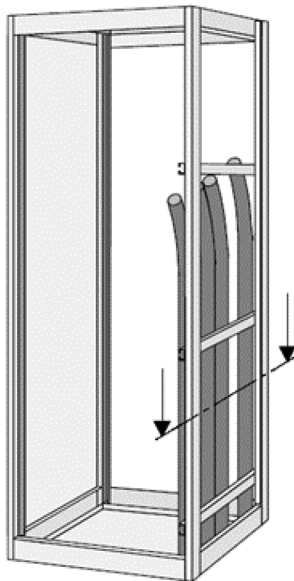
Cable fixing with C-type mounting bar

If necessary, single-core cables must also be tied together with cable tape between the cable brackets [L1, L2, L3, (N)].

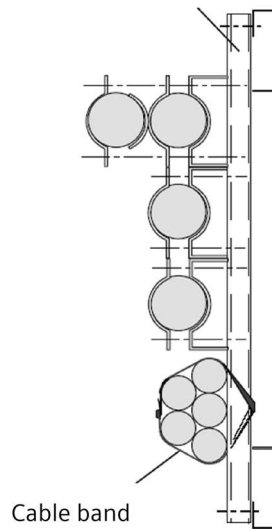
Cable clamps for single-core cables must be made from magnetizable material.

5.6 Mounting plate field

When fastening, shaping and cutting the cables to length, care must be taken to avoid unnecessary tensile or shear forces on the connection points.



C-type mounting bar



5.6 Mounting plate field

Cubicle design

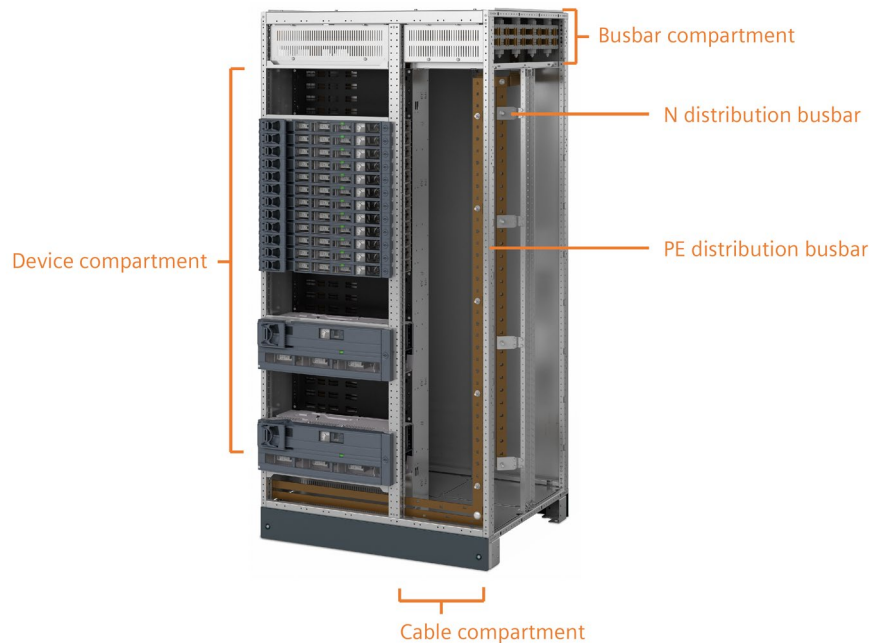


Static loads

Functional unit	Variant	kg
Cubicle equipment	Inner door	2.5
	Mounting plate	20.0
Cubicle door	Widths 400 ... 600 mm	10.0
	800 mm wide	5.0
	1000 mm wide	2.5
Double door	Widths 1000 ... 1200 mm	2.5

5.7 Outgoing feeder cubicle 3NJ6

Cubicle design



Configuration rule





Failure to comply with these instructions may lead to premature aging of fuses and uncontrolled tripping as a result of local overheating. All data refers to an ambient temperature of the switchboard of 35°C (24-hour average value).

Conversion factors for other ambient temperatures

Ambient temperature [°C]	20 °C	25	30	35	40	45	50	55
Conversion factor	1.1	1.07	1.04	1.0	0.95	0.9	0.85	0.8

Equipment rule: Total current of all feeders in the cubicle $\leq 2\,000\text{ A}$

Rated operational current I_{nc}	Size 00 / 1 / 2: $I_N \times 0.8$ Size 3: $I_N \times 0.715$
Rail arrangement:	Equipment in the cubicle, from top to bottom, decreasing from size 3 to size 00

	Continuous operating current at 35 °C	Required blanking covers Type: 3NJ6900-4CB00	
Size 3	$\geq 440\text{ A}$ to 450 A of the individual device	top: 2 x 50 mm bottom: 2 x 50 mm 1)	 <p>e.g., $I_N = 630\text{ A}$ $630\text{ A} \times 0.715 = 450\text{ A}$ = permissible continuous operating current</p>
	$< 440\text{ A}$ of the individual device	top: 1 x 50 mm bottom: 2 x 50 mm 1)	 <p>e.g., $I_N = 500\text{ A}$ $500\text{ A} \times 0.8 = 400\text{ A}$ = permissible continuous operating current</p>
Size 2	$\leq 320\text{ A}$ of the individual device	top: - bottom: 1 x 50 mm 1)	 <p>e.g., $I_N = 355\text{ A}$ $355\text{ A} \times 0.8 = 284\text{ A}$ = permissible continuous operating current</p>
Sizes 00 and 1 (Forming groups possible)	$\leq 400\text{ A}$ = total current of the fuse links group $\times 0.8$	top: - bottom: 2 x 50 mm per group 1)	 <p>$(\sum I_N) \times 0.8 \leq 400\text{ A}$ z. B. $I_{N1} = 80\text{ A}$, $I_{N2} = 125\text{ A}$, $I_{N3} = 125\text{ A}$, $I_{N4} = 160\text{ A}$ $(80\text{ A} + 125\text{ A} + 125\text{ A} + 160\text{ A}) \times 0.8 \leq 400\text{ A}$ $392 \leq 400\text{ A}$ = permissible continuous operating current</p>

1) Below the last rail in the cubicle there are only 50 mm blanking covers instead of 100 mm blanking covers or none required instead of 50 mm blanking cover. Blanking covers of adjacent rails are added up, each cover is only taken into account for the rail assigned to it.

Field busbar

The plug-in busbar system with line conductors L1, L2, L3 is located at the back of the cubicle. IP20 degree of protection is achieved by the optional touch protection with tap-off openings and the rails can be replaced under operating conditions.

Rated current

Cross-section [mm]	Rated current for different ambient temperatures [A]						
	20 °C	25 °C	30 °C	35 °C	40 °C	45 °C	50 °C
60 x 10	1680	1640	1 600	1 560	1520	1480	1430
80 x 10	2 260	2210	2155	2 100	2045	1985	1925

Short-circuit strength

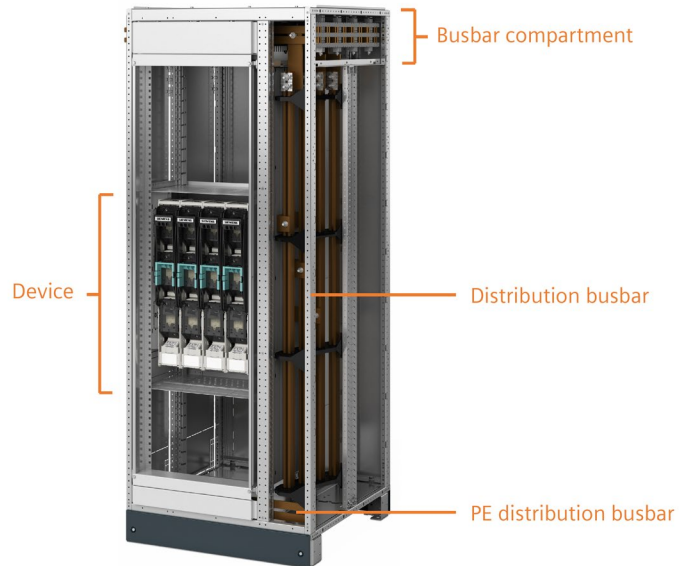
$$I_{pk} = 105 \text{ kA}$$

$$I_{cw} = 50 \text{ kA}, 1 \text{ s}^*$$

* rated conditional short-circuit current $I_{cc} = 100 \text{ kA}$

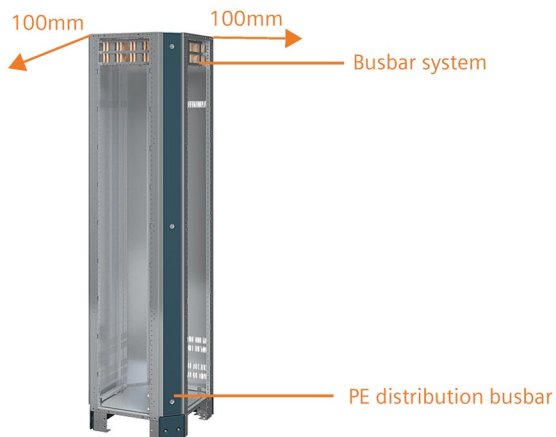
5.8 Outgoing feeder cubicle 3NJ4

Cubicle design



5.9 Corner cubicle

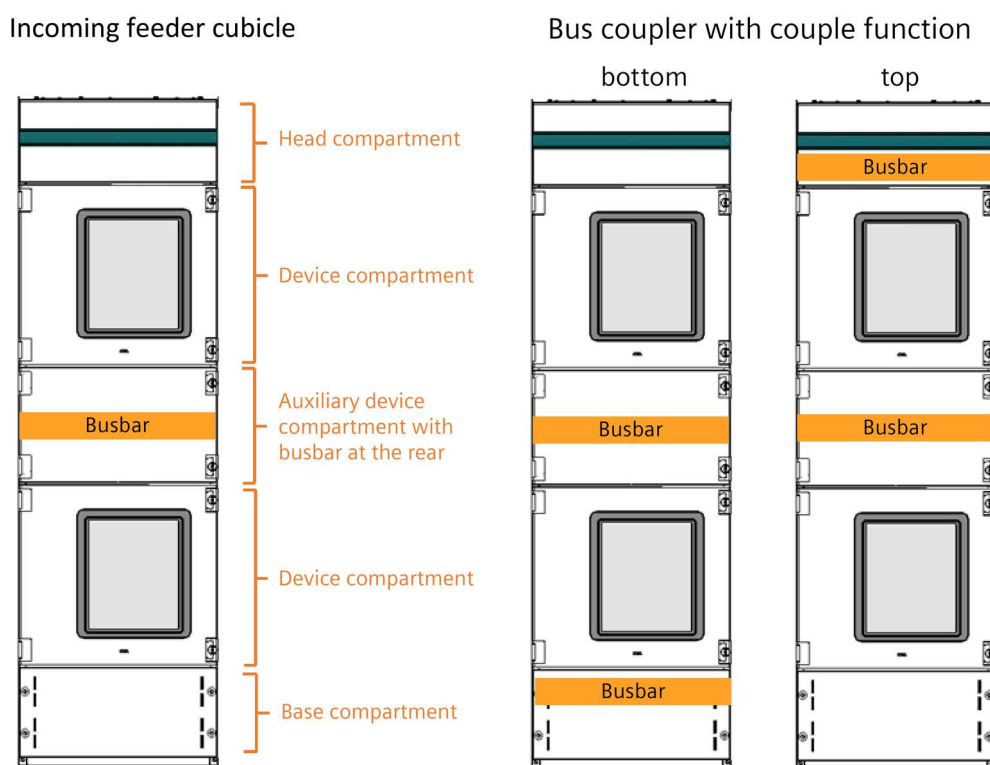
Cubicle design




Main busbar rear

6.1 Incoming feeder cubicle ACB, transversal coupler ACB

Cubicle design



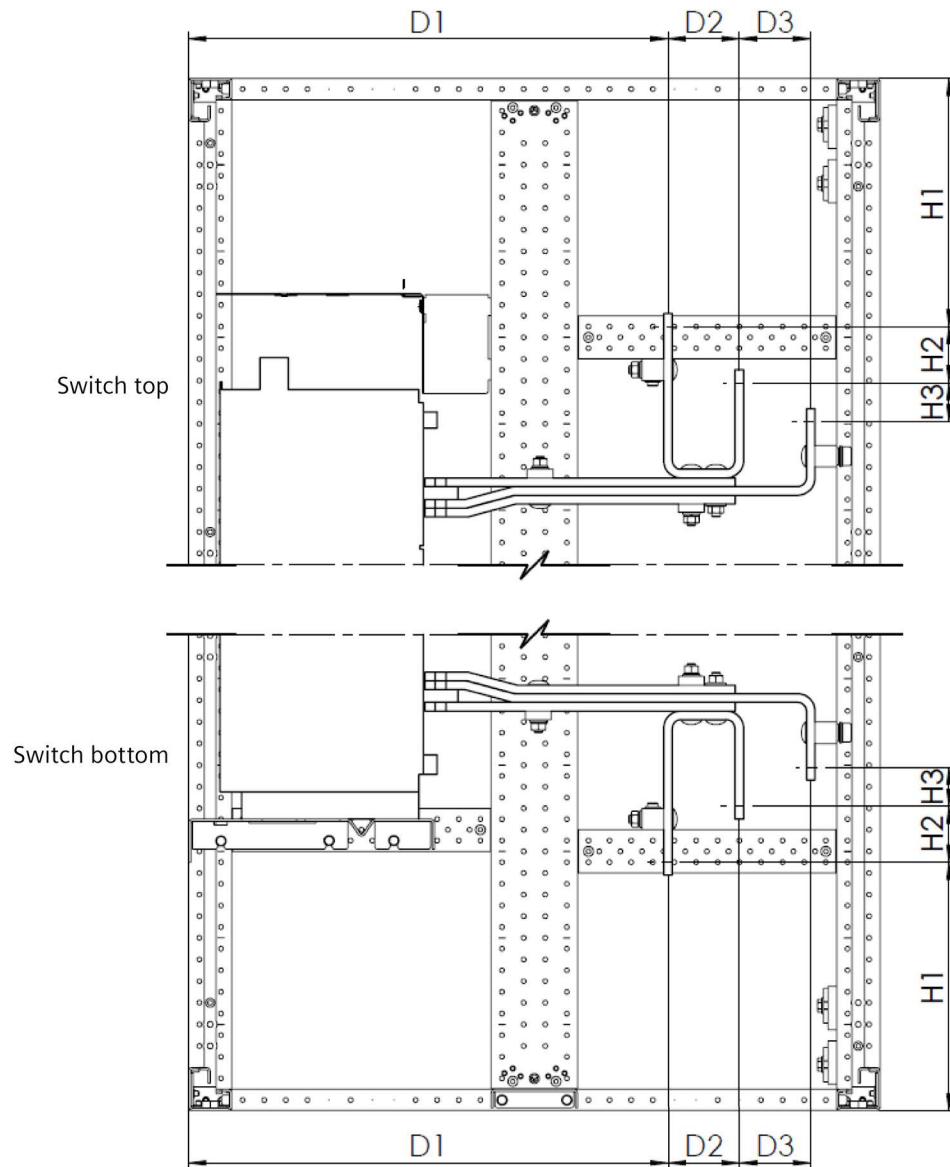
Connection:

	Cable lug DIN 46235 ≤ 240 mm ² M12
---	---

Maximum number of cables that can be connected per phase:

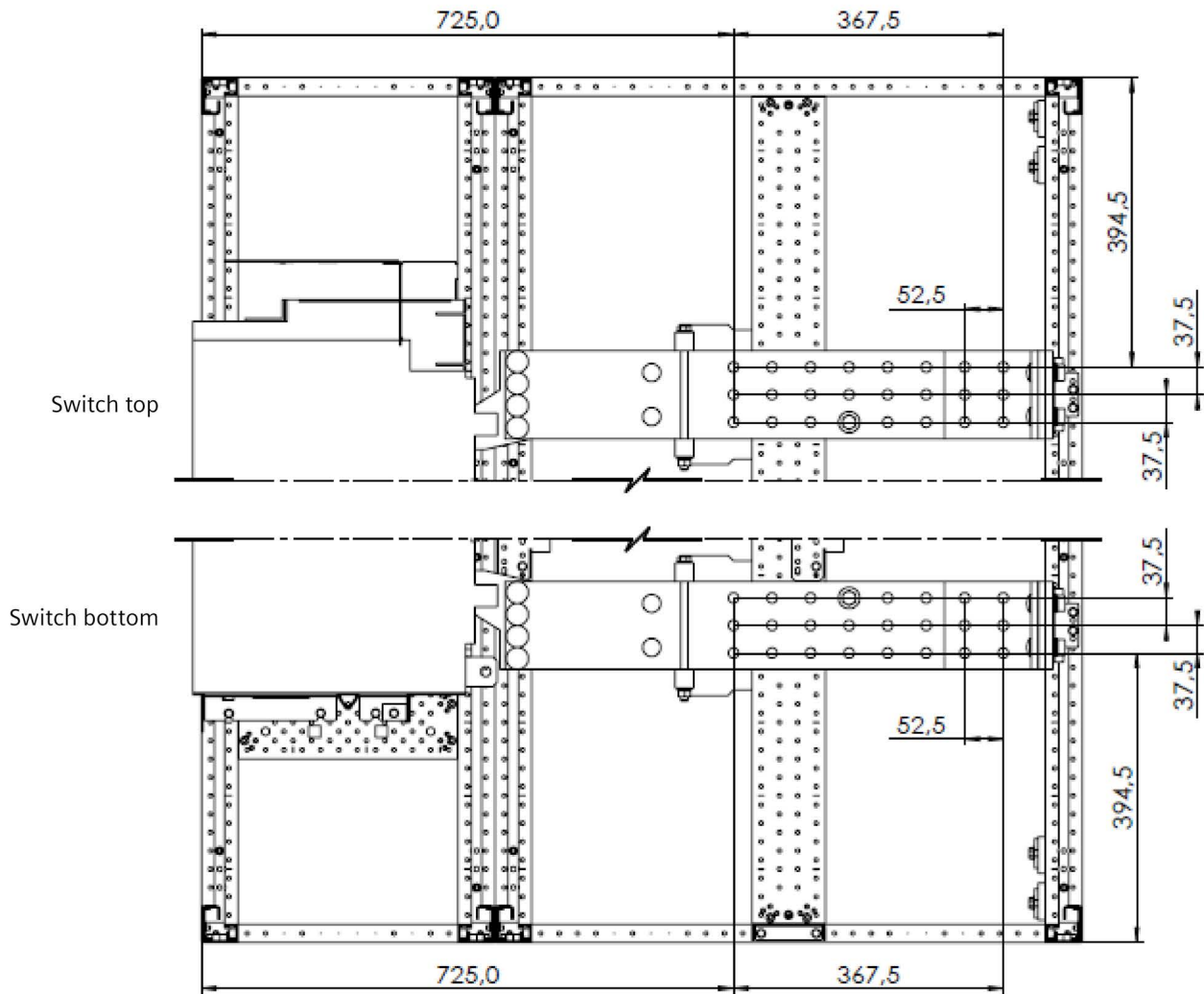
Size I		Size II	Size III		
Up to 1 000 A	1 250 – 2 000 A	2 500 – 3 200 A	Up to 4 000 A	Up to 5 000 A	Up to 6 300 A
4	6	12	14	24	28

Connection dimensions size I and size II



Switch	Breaker rated current [A]	D1	D2	D3	H1	H2	H3
3WA11	630, 800, 1 000	555	165	---	352.5	70	---
	1250 / 1600	555	82.5	82.5	352.5	35	35
	2 000	555	82.5	82.5	342.5	35	45
3WA12	2 500, 3 200	555	82.5	82.5	287.5	65	45

Connection dimensions size III

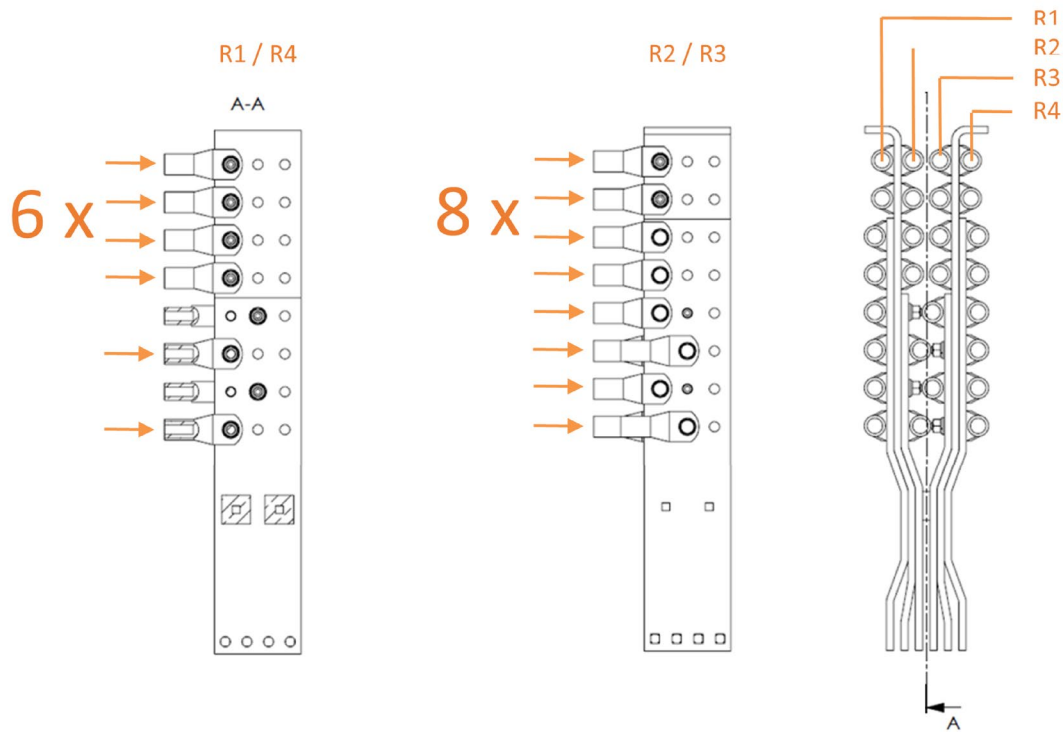


6.1 Incoming feeder cubicle ACB, transversal coupler ACB

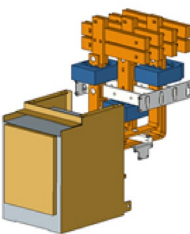
Cable connection 3WA1363

Arrangement of 28 cable lugs per phase L / N for cables up to 240 mm².

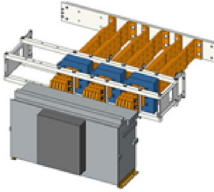
Representation of cable connection from above:



Installation of transformer

Mounting position Busbar connection	Size	Switch	Breaker rated current [A]	Type Supplier: MBS AG
	I	3WA1106	630	ASK 561.4
		3WA1108	800	ASK 561.4
		3WA1110	1 000	ASK 561.4
		3WA1112	1 250	ASK 561.4
		3WA1116	1 600	ASK 63.6
		3WA1120	2 000	ASK 105.6
	II	3WA1225	2500	ASK 105.6
		3WA1232	3200	ASK 105.6

6.1 Incoming feeder cubicle ACB, transversal coupler ACB

Mounting position Cable connection	Size	Switch	Breaker rated current [A]	Type Supplier: MBS AG
	III	3WA1340	4 000	ASK 127.6
		3WA1350	5 000	ASK 127.6
		3WA1363	6 300	ASK 127.6

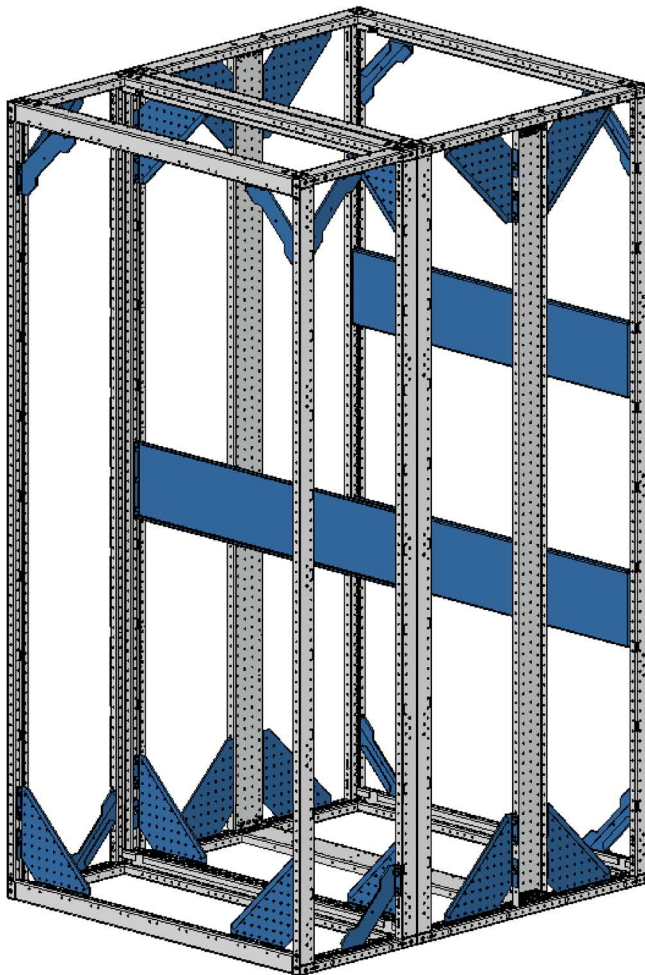
Mounting

Fixed-mounted circuit breakers or guide frames cannot be installed or removed later in the plant network.

Mounting sequence 3WA13

Note

Due to the heavy weight of the switches used, as well as the solid copper connection bars, it is necessary to reinforce the cubicle. A module cubicle reinforcement (see figure below) is available for this. This prevents the supporting structures from irreparably warping beyond their tolerance limits during installation and subsequent add-on parts, such as doors and rear panels, from no longer being able to be installed. The cubicle reinforcement must be installed before beginning with the installation of the switches and copper connection bars.



Maximum cubicle weight [kg]

Basis for determining weight:

6.1 Incoming feeder cubicle ACB, transversal coupler ACB

1x function coupling + 1x function infeed / outgoing feeder, largest MBB,
4-pole version, without 3WA, without auxiliary devices, without other accessories

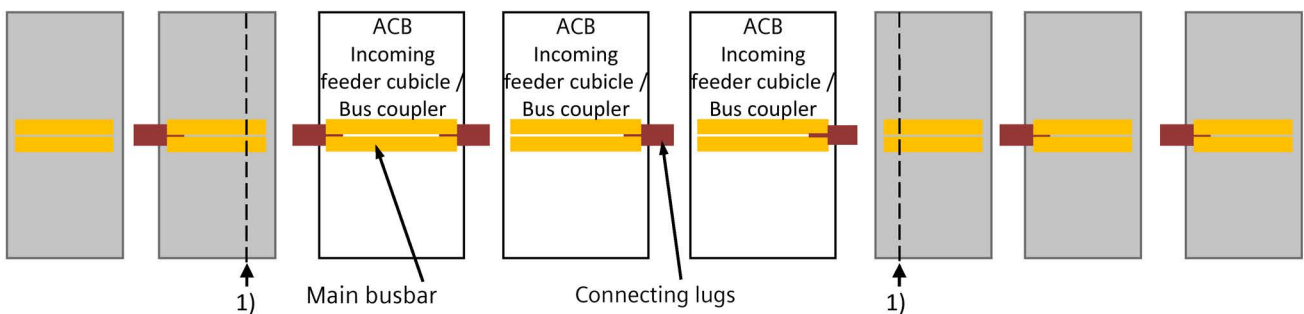
Feeders cubicle	Depth of cubicle [mm]					
	800		1 000		1 200	
	Fixed mounting	Withdrawable unit	Fixed mounting	Withdrawable unit	Fixed mounting	Withdrawable unit
2x 3WA1120	415	390	455	430	670	645
2x 3WA1232	580	540	620	580	930	890
2x 3WA1363	---	---	---	---	---	1950

Restrictions main busbar assembly ACB incoming feeder cubicle / transversal coupler with 3WA13

The reason for this is the inaccessibility of the bolted connections of the connecting lugs in these fields.

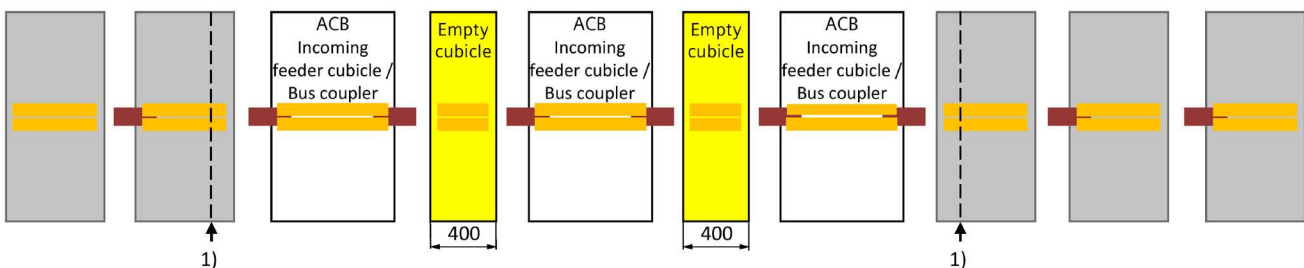
Solutions for mounting the main busbar assembly connecting lugs:

3-pole main busbar (L1, L2, L3, PE) with directly adjacent ACB cubicles with 3WA13



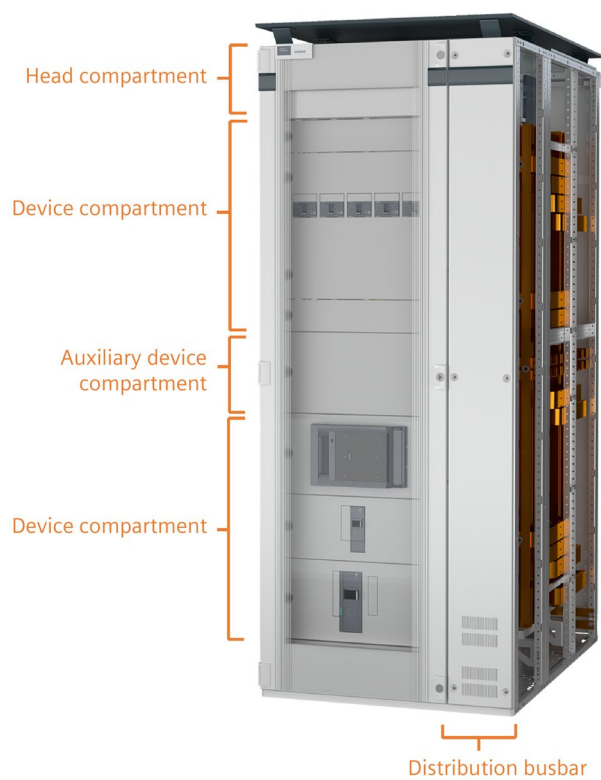
4-pole main busbar (L1, L2, L3, PE, N or L1, L2, L3, PEN) with directly adjacent ACB cubicles with 3WA13.

A 400 mm wide empty cubicle must be planned between the ACB cubicles for the main busbar assembly:



1) MBB assembly not possible if a distribution busbar directly adjoins this point in the 200 mm wide compartment, therefore a 400 mm wide distribution busbar compartment should be planned.

6.2 Outgoing feeder cubicle fixed-mounted version



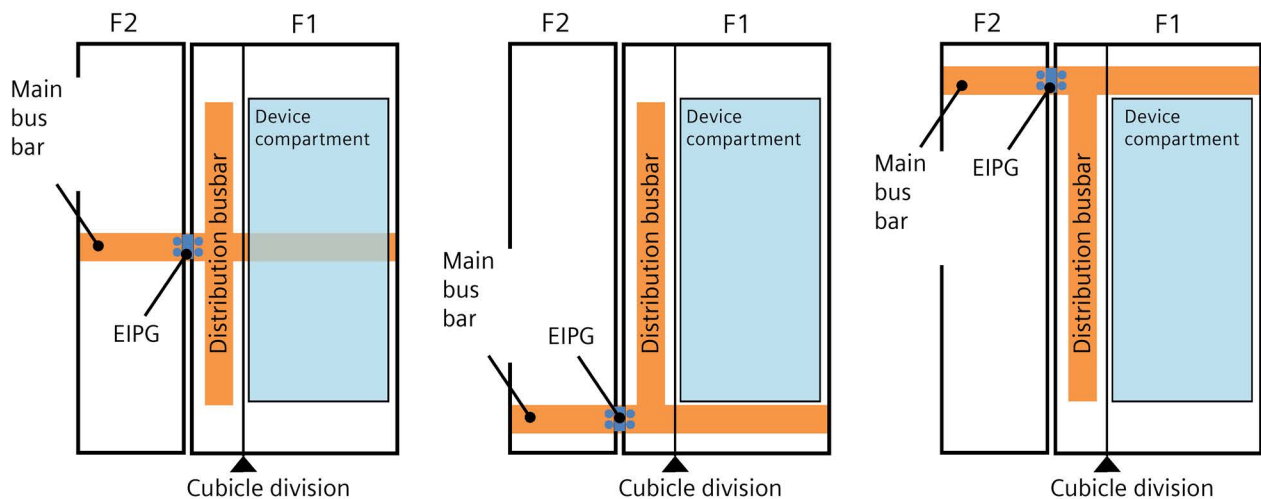
Outgoing feeder cubicle for S4 EBS + 1 functional compartment, device compartment cubicles for S4 EBS

Restrictions main busbar assembly for main busbar at back

Outgoing feeder cubicle for S4 EBS + 1 functional compartment with width 200 (distribution busbar compartment):

Electrically interconnected panel group with the help of MBB connecting lugs not possible.

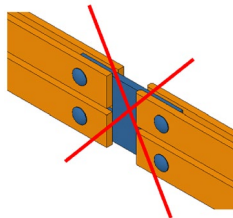
- Remedy: Use distribution bar cubicle with width of 400 or create a transport unit with continuous main busbar.



F1 Outgoing feeder cubicle for S4 EBS + 1 functional compartment

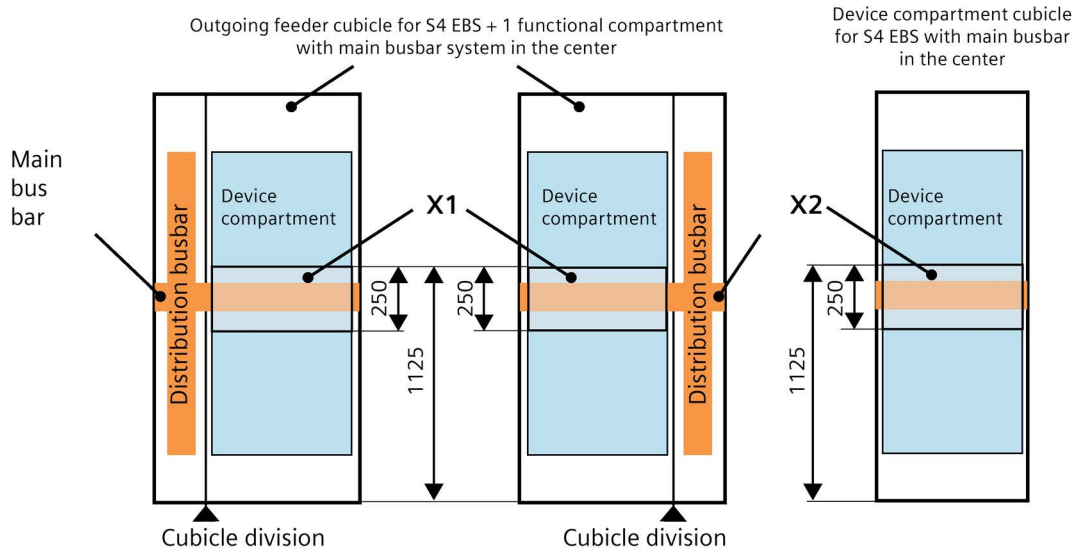
F2 Any adjacent cubicle

EIPG Electrically interconnected panel group with the help of MBB connecting lugs not possible!



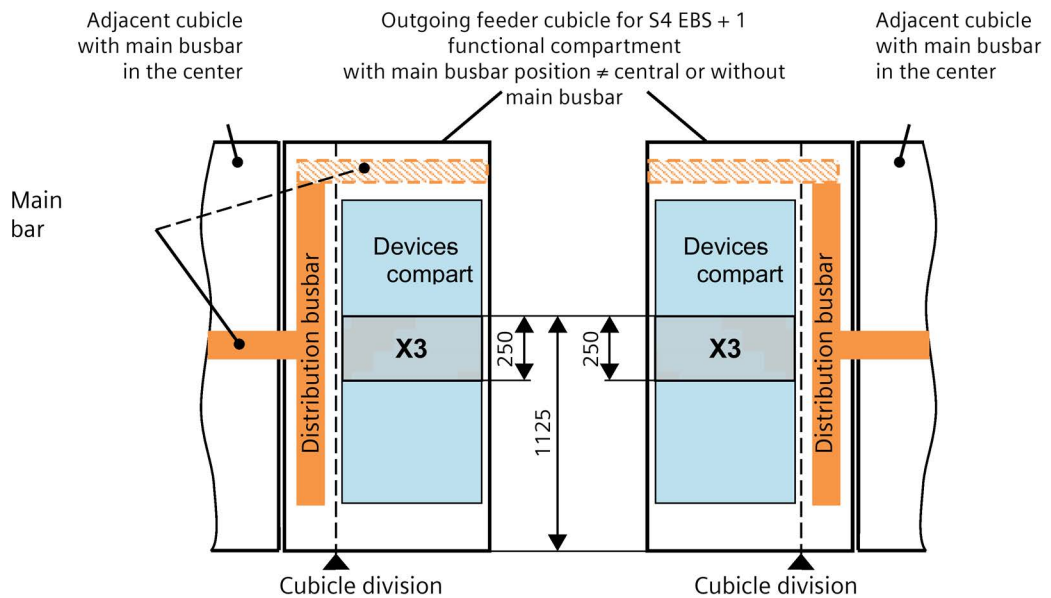
Restriction in relation to equipment

Individual cubicles

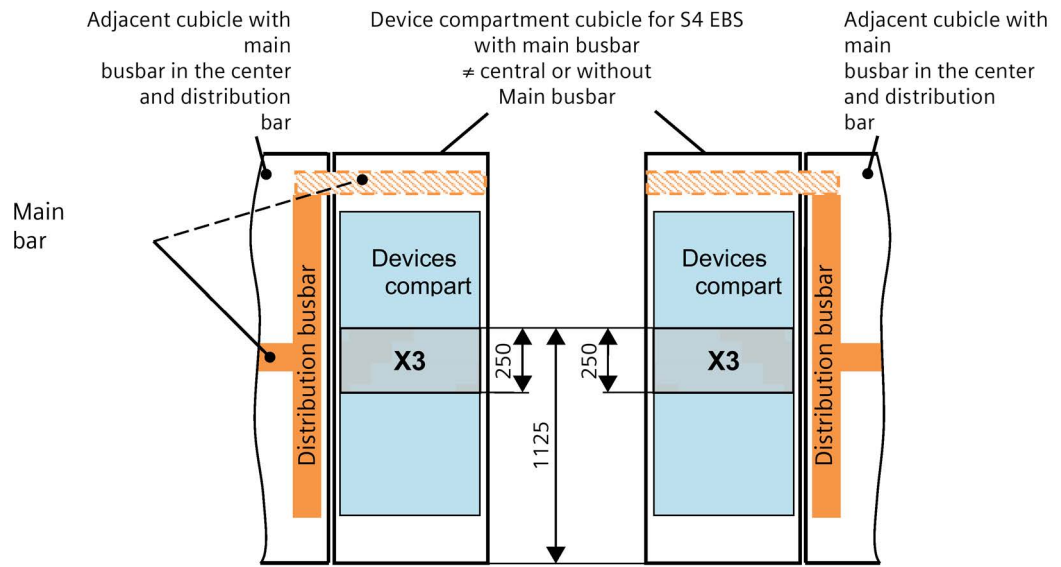


- X1 • Restricted distributed busbar connection, in particular with solid copper bars or flexibars
- The main busbar runs in depth 400, therefore no access from the rear is possible
- X2 • The main busbar runs in depth 400, therefore no access from the rear is possible

Compartments in the plant network



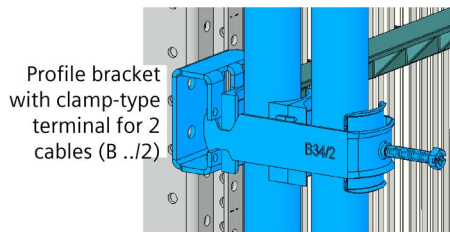
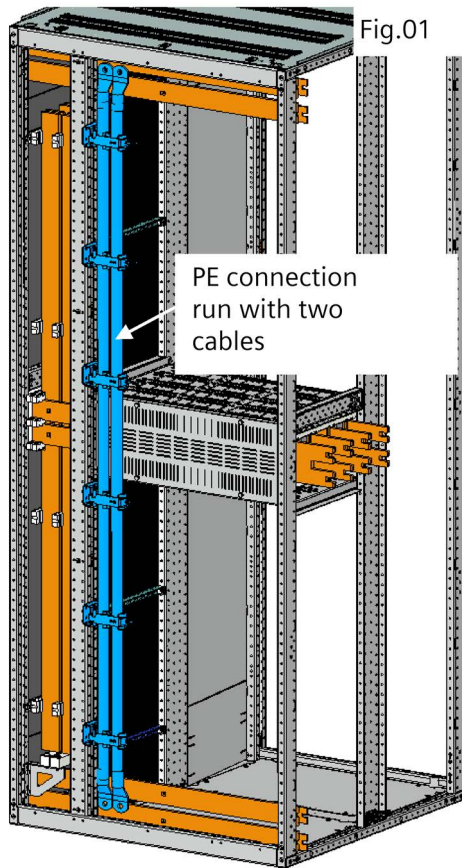
6.2 Outgoing feeder cubicle fixed-mounted version



- X3** • Restricted distributed busbar connection, in particular with solid copper bars or flexibars

6.3 PE connection

The connection is made with cables (Fig. 01). The cables are held in place with clamp-type terminals which are attached using profile brackets screwed to the supporting structure. A PE connection may consist of one or connection runs. One run comprises a maximum of two cables. If a PE connection consists of more than two cables, then 2 connection runs are required for a PE connection. These should be installed as close to each other as possible. 6 clamp-type terminals and a holder module 8PQ4000-2BA58 are required for each vertical PE connection run. The profile brackets of the holder module 8PQ4000-2BA58 are designed for the installation of type B clamp-type terminals with slot width 16-17 mm from NIEDAX. In addition, a counter-trough (GW) must be ordered for each clamp-type terminal and for clamp-type terminals for 2 cables (B .. /2) additionally a double-trough (DW) (Fig. 02). The use of clamp-type terminals for 3 cables (B .. /3) is not permitted. Number of connection runs per PE connection see Table 01 "Required cable cross-sections for a PE connection".



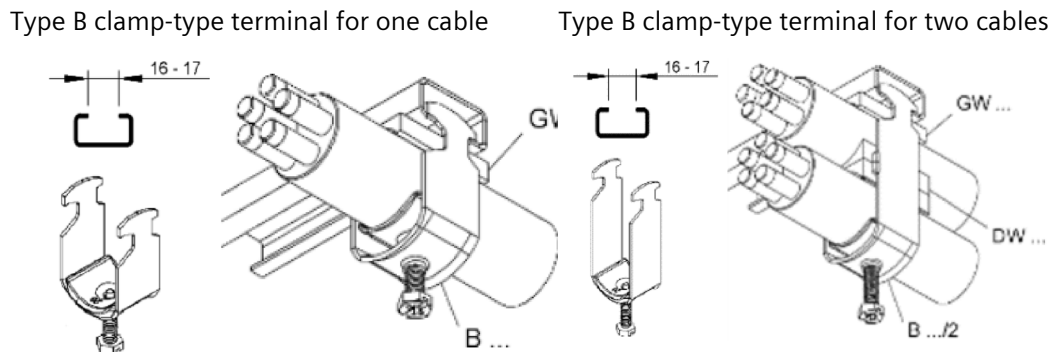


Table 01: Required cable cross-sections for a PE connection

MBB PE	Short-circuit strength I_{cw} [KA]	Quantity and cross-section PE connecting cables	Number of connection runs per PE connection
2x 20x5	Up to 65	1x 240 mm ²	1
2x 30x5	Up to 85	2x 150 mm ²	1
2x 40x5	Up to 100	3x 150 mm ²	2
2x 30x10	Up to 100	3x 240 mm ²	2
2x 40x10	Up to 100	4x 240 mm ²	2
2x 50x10	Up to 100	4x 240 mm ²	2

Cable type: H07V-K (insulating material PVC)

Cable length: 1 825 mm per cable

Examples of required material to create a PE connection:

1. MBB PE = 2x 20x5

PE connection from a connection run with a cable with cross-section 240 mm²

Outer cable diameter 24 mm (varies depending on the cable manufacturer)

Required fixing material: 1x 8PQ4000-2BA58
6 x hammer foot clamp-type terminals B 26 (single clamp)
6x counter-troughs GW 26

2. MBB PE = 2x 30x5

PE connection from a connection run with two cables with cross-section 150 mm²

Outer cable diameter 19 mm (varies depending on the cable manufacturer)

Required fixing accessories: 1x 8PQ4000-2BA58
6x hammer foot clamp-type terminals B 22/2 (double clamp)
6x counter-troughs GW 22
6x double-troughs DW 20

3. MBB PE = 2x 40x5

PE connection from two connection runs, 1 x two cables with cross-section 150 mm² and 1x cable with cross-section 150 mm²

Outer cable diameter 19 mm (varies depending on the cable manufacturer)

Required fixing accessories:

- 2x 8PQ4000-2BA58
- 6x hammer foot clamp-type terminals B 22/2 (double clamp)
- 6x hammer foot clamp-type terminals B 22 (single clamp)
- 12x counter-troughs GW 22
- 6x double-troughs DW 20

4. MBB PE = 2x 40x10

PE connection from two connection runs each with two cables with cross-section 240 mm² outer cable diameter 24 mm (varies depending on the cable manufacturer).

Required fixing accessories:

- 2x 8PQ4000-2BA58
- 12x hammer foot clamp-type terminals B 26/2 (double clamp)
- 12x counter-troughs GW 26
- 12x double-troughs DW 26

Hammer foot clamp-type terminals made from steel, hot-dip galvanized

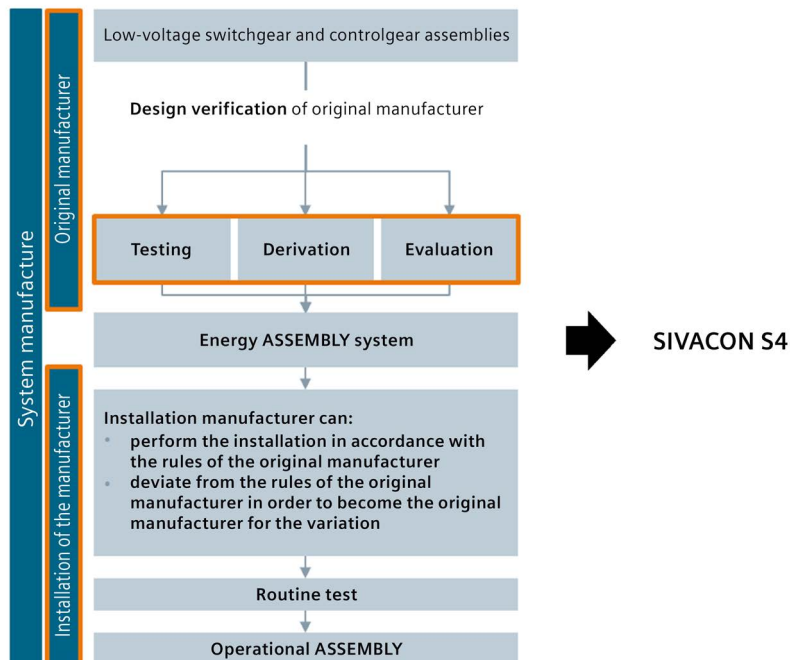
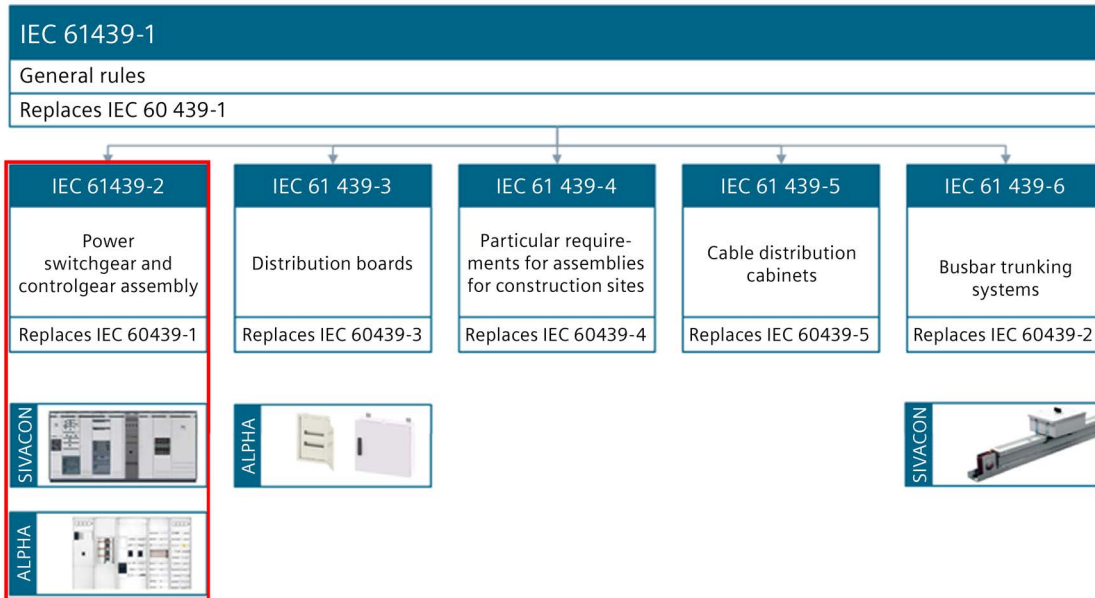
The following cubicle types are suitable for the installation of a PE connection.

- Empty cubicle
- Mounting plate field
- Cable connection compartment cubicle
- ALPHA DIN cubicle
- Device compartment cubicle (pay attention to the access to the feeder connections)
- Outgoing feeder cubicle for SIVACON assembly kits (pay attention to the access to the feeder connections)

The cubicle types incoming feeder cubicle ACB and transversal coupler ACB are not suitable for installation.

Standards and specifications

7.1 Overview



7.2 CE marking

NOTICE
In the case of modifications to the switchboard system, the installation manufacturer is responsible for the non-conformity of the adaptation.

7.2 CE marking

Low-voltage switchgear and controlgear assembly	IEC 61439-1/2 DIN EN 61439-1/2 VDE 0660 Part 600-1/2
Protection against electric shock	DIN EN 50274 VDE 0660 Part 514



The manufacturer has sole responsibility for applying the CE marking. By affixing this, the manufacturer confirms that the products conform to the requirements set out in all the EU directives which govern the product.

Low-voltage switchgear and controlgear assemblies are subject to the Low-Voltage Directive and to the EMC Directive.

The marking is mandatory for any products being marketed throughout the entire European Union.

With the Declaration of Conformity, the manufacturer of the operational switchboard confirms compliance with the requirements in the directive or standard specified in the declaration.

Template for standard-compliant CE marking of the switchgear and controlgear assembly

Hersteller der Schaltgerätekombination Assembly manufacturer Fabricant d'ensemble		①
IEC 61439-2 <small>Etikett / Label No. 8PQ999-9AA99</small>		
Typ Type Type	②	Baujahr Year Année de constr.
Nr. No. N°	④	⑤  ⑥ 
Felderzahl No. of sections Nombre de colonnes	⑦	Schutzart IP Enclosure Degré de protection
Bemessungsbetriebsspannung U _n Rated operational voltage Tension assignée d'emploi	⑨	Frequenz Hz Frequency Fréquence
Bemess. Strom Sammelschiene I _{nb} Rated current Main busbar Courant assigné Jeu de barre principal	①	Kurzzeitstrom I _{nc} Rated short-time Current Courant assigné de courte durée
③ GERMANY	④	ALLEMAGNE
Adresse Address Adresse	⑤	

- ① Manufacturer of switchgear and controlgear assembly (IEC 61439-1, para. 3.1.1)
- ② SIVACON S4 switchgear and controlgear assembly
- ③ Calendar year in which the system was manufactured, four-digit
- ④ System number
- ⑤ Symbol: Operation by skilled electricians
- ⑥ CE marking für manufacturer of the switchgear and controlgear assembly
- ⑦ Number of cubicles for which this rating plate applies
- ⑧ Degree of protection, e.g., IP41
- ⑨ Rated operational voltage U_e
- ⑩ Frequency in Hz
- ① Rated current busbar I_{nb}
- ② Short-time withstand current I_{nc}
- ③ Country of manufacturer, switchgear and controlgear assembly system
- ④ Country of manufacturer, switchgear and controlgear assembly system
- ⑤ Address

7.3 Routine test report

Manufacturers of operational switchgear and controlgear assemblies are obliged to maintain a routine test report in accordance with IEC 61439. Templates for this can be found in SIMARIS configuration.

SIEMENS

Protokoll für Stücknachweis (Stückprüfprotokoll)

- Energie-Schaltgerätekombination**
Bauartnachweis nach DIN EN 61439-1/-2 (VDE 0660-600-1/-2)
- Installationsverteiler**
Bauartnachweis nach DIN EN 61439-1/-3 (VDE 0660-600-1/-3)

Kunde: _____

Auftragsnummer: _____

Projekt: _____

Werkstatt: _____

Durchgeführte Nachweise:					
Lfd. Nr.	Prüfart	Inhalt der Prüfung	VDE 0660-600-1 Abschnitt	Ergebnis der Prüfung	Prüfer
1	S	Schutzart von Schränken/Gehäusen (Dichtungen, Abdeckungen)	11.2		
2	S/P	Luft- und Kriechstrecken	11.3		
3	S/P	Schutz gegen elektrischen Schlag und Durchgängigkeit der Schutzleiterkreise	11.4		
4	S	Einbau von Betriebsmitteln	11.5		
5	S/P	Innere elektrische Stromkreise und Verbindungen	11.6		
6	S	Anschlüsse für von außen eingeführte Leiter	11.7		
7	P	Mechanische Funktion (Betätigungselemente, Verriegelungen)	11.8		
8	P	Isolationseigenschaften	11.9		
		Eine Prüfung der betriebsfrequenten Isolationsfestigkeit muss an allen Stromkreisen übereinstimmend mit 10.9.2 für die Dauer von einer Sekunde durchgeführt werden. Die Prüfspannung für Schaltgerätekombinationen mit einer Bemessungsisolationsspannung zwischen 300-690 V beträgt 1.890 V AC. Die Prüfwerte für abweichende Bemessungsisolationsspannungen sind in Tabelle 8 der IEC 61439-1 zu finden.		Prüfspannungswert	
		Alternativ gilt für Schaltgerätekombinationen mit einer Schutzeinrichtung in der Einspeisung und einem Bemessungsstrom bis 250 A: Messung des Isolationswiderstandes mit einem Isolationsmessgerät bei einer Spannung von mindestens 500 V DC. Die Prüfung ist bestanden, wenn der Isolationswiderstand mindestens 1.000 Ω / V beträgt.		Isolationswiderstand	
				V AC	
				Ω /V	
9	P	Verdrahtung, Betriebsverhalten und Funktion	11.10		

S = Sichtprüfung
P = Prüfung mit mechanischen oder elektrischen Prüfgeräten

Monteur: Prüfer:

Datum: Datum:

Technische Änderungen vorbehalten • Stand: Juni 2015

1

SIEMENS

Checkliste zum Konformitätsbewertungsverfahren

Firma: _____

Auftrag: _____

Projekt: _____

Typ: _____

Stempel

Niederspannungs-Schaltgerätekombination oder Verteiler	
<input type="checkbox"/>	Energie-Schaltgerätekombination nach DIN EN 61439-2 (VDE 0660-600-2)
<input type="checkbox"/>	Installationsverteiler für die Bedienung durch Laien nach DIN EN 61439-3 (VDE 0660-600-3)
<input type="checkbox"/>	Installationskleinverteiler und Zählerplätze AC 400 V nach DIN VDE 0603-1
<input type="checkbox"/>
<input type="checkbox"/>	1. Technische Unterlagen
Geltungsbereich der Niederspannungsrichtlinie 2006/95/EG	
<input type="checkbox"/>	Listen oder andere Dokumentationen des ursprünglichen Herstellers für Niederspannungs-Schaltgerätekombinationen oder Verteiler (Wichtiger Inhalt: Name und Anschrift des ursprünglichen Herstellers sowie Typenbezeichnung, zutreffende Norm, Beschreibung des Erzeugnisses)
<input type="checkbox"/>	Montage- und Installationshinweise des ursprünglichen Herstellers
<input type="checkbox"/>	Schaltplan, Aufbauzeichnung, Stückliste
<input type="checkbox"/>	Durchführung des Stücknachweises nach DIN EN 61439-1 / VDE 0660-600-1. Prüfprotokoll für Stücknachweis ist Bestandteil der Unterlagen
Geltungsbereich der EMV-Richtlinie 2004/108/EG	
<input type="checkbox"/>	Ergänzung der technischen Unterlagen durch Herstellerunterlagen für alle elektronischen Einbaugeräte und Geräte, die Elektronik beinhalten (Montage- und Installationshinweise).
<input type="checkbox"/>	Konformitätserklärung des Geräteherstellers, mit der die Übereinstimmung des Produkts mit den Anforderungen der EMV-Richtlinie bestätigt wird. Ein Hinweis in den Begleitunterlagen ist gleichwertig und entsprechend aufzubewahren.
<input type="checkbox"/>	2. Erstellen der Konformitätserklärung (siehe Seite 3)
<input type="checkbox"/>	3. Anbringen der CE-Kennzeichnung (siehe Seite 3)

Konformitätsbewertungsverfahren durchgeführt:

.....
(Ort, Datum der Ausstellung).....
(Name und Unterschrift oder gleichwertige Kennzeichnung des Befugten)



Declaration of conformity

We,
(address)



declare on our sole responsibility that the product

- Meter panels
- Small distribution boards
- Power switchgear and controlgear assembly
- Distribution board for the operation by non-experts

Designation, type, catalog or order no.:

to which this declaration refers, conforms to and has been built according to the following standard(s).

Low-voltage switchgear and controlgear assembly or distributor	
<input type="checkbox"/>	Power switchgear and controlgear assembly according to EN 61439-2 (VDE 0660-600-2)
<input type="checkbox"/>	Distribution board for the operation by non-experts according to EN 61439-3 (VDE 0660-600-3)
<input type="checkbox"/>	Small distribution boards and meter panels 400 V AC according to DIN VDE 0603-1
<input type="checkbox"/>	
The specified product thus conforms to the standards of the following European directives:	
Low Voltage Directive 2006/95/EC	
<input type="checkbox"/>	EMC directive 2004/108/EC (e.g. for electronic equipment, installed in a controlgear assembly or distributor according to the series EN 61439-1 (VDE 0660-600)

Affixing the CE marking*: _____ (Date)_____

(Place, date of issue)

(Name and signature or equivalent identification of the party involved)

With this declaration of conformity, the manufacturer affirms compliance with the specified directives and standards.

This declaration of conformity corresponds to EN 17050-1 "General requirements for suppliers' declarations of conformity."
*) Visibly displayed in combination with manufacturer's identification on the low-voltage switchgear and controlgear assembly or on the distributor, also possibly only legible upon opening the door.

Legal information

8.1 Legal information

Errors excepted and subject to change without prior notice. The information provided in this document contains merely general, not full descriptions or characteristics of performance which in case of actual use do not always apply as described or conclusively, are for general informational purposes or which may change as a result of further development of the products.

An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract. No warranty is given as to the accuracy, completeness or timeliness of the information provided and the document does not constitute advice on the application of standards.

8.2 Cybersecurity information

Siemens provides products and solutions with industrial cybersecurity functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial cybersecurity concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

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Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Cybersecurity RSS Feed under <https://new.siemens.com/cert>.

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