

Safety in Its Perfect Form –

**Ground-Breaking Power Distribution Boards up to 4000 A**



sivacon

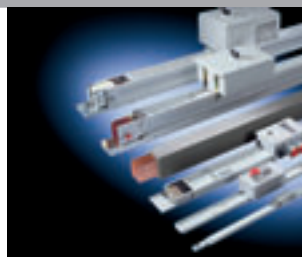
S8

## Master your power requirements we support you with our systems

High power volumes, countless consumers, maximum availability around the clock? No matter how turbulent your power distribution requirements – our integrated low-voltage power distribution products and systems support you by competently mastering your power requirements in all situations and throughout the entire service life of your power distribution system. Our matched and powerful components help you to reduce considerably your investment costs and risks. You will benefit from the components' modularity and intelligence over the complete utilization period and thus keep a tight control of your operating costs while maximizing system availability. As an essential component of the "Totally Integrated Power" concept by Siemens, we provide integrated power distribution solutions from the medium-voltage supply right to the socket outlet. Communication capability and software modules allow for efficient connection to industrial and building automation, which bears further significant saving potentials. With our systematic support, you needn't worry any longer about your power distribution. Our portfolio comprises the following ranges:

- SIMATIC powercontrol for optimum power management
- SIVACON power distribution boards and motor control centers
- SIVACON busbar trunking systems
- SENTRON switching and protection devices

Maximum safety and an appealing design are ideally combined in an efficient solution: With SIVACON® S8, the new generation of power distribution boards for consistent and simple power distribution applications up to 4000 A in functional and industrial buildings. In addition to numerous features for improved personal and system protection, the new design of the distribution board opens up completely new application areas.



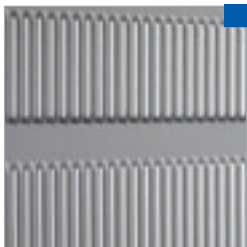
# SIVACON S8 – the attractive low-voltage power distribution board



Labeling system



Hinge/locking system



Ventilation system



*All details of the new generation of power distribution boards merge in shape and function*



Ventilation roof



Design side panel



Pivoted lever locking



Base

## Various options, numerous advantages

- Maximum system safety thanks to type-tested standard modules (TTA)
- Maximum personal safety thanks to arc-resistant locking system
- High-quality industrial design for precise integration in modern room concepts
- Space-saving erection surfaces from 400 x 500 mm
- Variable top or rear busbar positions
- Combination of different installation systems in one cubicle
- Flexible adjustment of the form of internal separation to individual requirements
- Easy subsequent door hinge adjustment thanks to universal hinge
- Ventilation system featuring a high efficiency degree and maintenance advantages
- Cable/busbar connection from the top, bottom or rear

## Extensively tested, safely distributed

SIVACON S8 is a type-tested low-voltage switchgear and controlgear assembly (TTA) whose physical properties were both dimensioned for operation as well as for fault situations in the test bay. Final type tests in accordance with IEC 60439-1 and DIN EN 60439-1 guarantee maximum operational and personal safety.

The standard SIVACON version features a test proof under arc conditions in accordance with IEC 61641 and VDE 0660 Part 500, Supplement 2. This degree of safety sets new standards.



	<b>Circuit breaker system</b>	<b>Universal installation system</b>	<b>3NJ6 in-line system</b>
<b>Installation system</b>	Fixed-mounted Withdrawable	Fixed-mounted with compartment doors Plug-in	Plug-in
<b>Functions</b>	Supply Feeder Coupling	Cable feeders	Cable feeders
<b>Rated current <math>I_n</math></b>	Up to 3200 A	Up to 630 A	Up to 630 A
<b>Connection position</b>	Front and rear	Front and rear	Front
<b>Cubicle width (mm)</b>	400/600/800/1,000	600*/1,000/1,200	1,000/1,200
<b>Internal separation</b>	Form 1, 2b, 3a, 4b	Form 2b, 4a, 4b	Form 3b, 4b
<b>Busbar position</b>	Rear/top	Rear/top	Rear/top

\* not with 3NJ6



	<b>Fixed-mounted system</b>	<b>3NJ4 in-line system</b>	<b>Reactive power compensation</b>
	Fixed-mounted with front covers	Fixed-mounted	Fixed-mounted
	Cable feeders	Cable feeders	Central compensation of reactive power
	Up to 630 A	Up to 630 A	Un-choked up to 600 kvar Choked up to 500 kvar
	Front	Front	Front
	1,000/1,200	600/800	800
	Form 1, 2b, 4a, 4b	Form 1, 2b	Form 1, 2b
	Rear/top	Rear	Rear/top/without

## Outstanding user-friendliness: Circuit breaker system

The infeed, tap-off and coupling cubicles of the circuit breaker system are equipped with SENTRON® 3WL air circuit breakers with withdrawable or fixed-mounted system or, alternatively, with SENTRON 3VL molded-case circuit breakers. As numerous consumers are generally installed downstream these cubicles are particularly important for the power distribution board's long-term operational and personal safety. SIVACON compactly and safely meets these requirements with the circuit breaker technology components.

- High safety thanks to type-tested standard modules (TTA)
- Test and isolated position with the door closed
- Cubicle dimensions matched to the circuit breaker size (400 mm width up to 1600 A, 600 mm width up to 3200 A)
- Optimum connection conditions for all nominal current ranges
- Cable/busbar connection from the bottom/top
- Type-tested SIVACON 8PS busway system connections



*With its compact design featuring a cubicle width of only 400 mm, SENTRON 3WL is perfectly suited for the nominal current range up to 1600 A*



### Ease of operation, maximum benefits: SENTRON 3WL

- Nominal current range from 630 A to 3200 A
- Free selection of infeed direction without restriction of the technical data
- High short-time current carrying capacity for time-selection short-circuit protection up to 400 msec guarantees safe operation of the unaffected system components
- Short-circuit protection with time-reduced selectivity control for very short delay times (50 msec), independent of the number of grading levels
- LCD operating current display on the control panel – without additional current meter and transformer

### Auxiliary equipment compartment

- Optimum space conditions for the auxiliary equipment support – also for comprehensive controls and locking systems
- The auxiliary equipment support can be separated from the power unit and removed for modifications



Removable auxiliary equipment support for fast modifications

### Equipment compartment

- Safe traversing of the circuit breaker with the door closed
- Maintenance position facilitates direct on-site inspection without having to remove the circuit breaker



SENTRON 3WL in maintenance position:  
Inspection without circuit breaker removal

### Cable or busbar compartment

- Optional cable or busbar connection from the top or bottom
- The nominal current-dependent connection compartment offers optimum connection conditions for cables and busbars
- Reduced mounting times thanks to optimum connection compartments



Nominal current-dependent connection compartment for optimum connection conditions

## Individual combination options: Universal installation system



As many applications require a space-optimized assembly of the power distribution board, various installation systems must be integrated in a cubicle. For these application cases, the SIVACON universal installation system offers high efficiency, safety and variability thanks to the combination of tap-off points in both fixed-mounted and plug-in 3NJ in-line system.

- High safety thanks to type-tested standard modules (TTA)
- Cable tap-offs up to 630 A with/without current measuring
- Combination of various installation systems (fixed-mounted, plug-in base and plug-in 3NJ in-line system)
- Modularly combinable function modules
- Add-on modules for demand-compliant separation of the functional compartments (up to form 4b)
- Operation front optionally with cubicle-high door or compartment doors
- Cable connection compartment with 400 mm or 600 mm width

*Universal installation system  
with fixed-mounted tap-offs  
(compartment door) combined  
with plug-in 3NJ6 in-line system*



### Vertical multi-terminal busbars

- Manifold connection options for cables, lines and busbars without drilling



Vertical multi-terminal busbars

### Compartmentalization

- Add-on module for individual comfort and safety requirements



Demand-compliant separation of functional compartments

### Patented connection terminals

- Internal separation up to form 4b



Patented connection terminals

## Comprehensive integration options: Fixed-mounted system with front covers



Several applications do not require the replacement of components under operating conditions or tolerate short downtimes. For these cases, the SIVACON fixed-mounted system with front covers offers maximum efficiency, safety and variability.

- High safety thanks to type-tested standard modules (TTA)
- Cable tap-offs up to 630 A with/without current measuring
- Modularly combinable function groups
- Innovative quick-release locking system for easy cover mounting
- Swivel covers and cover frames for improved commissioning and maintenance comfort
- Add-on modules for demand-compliant separation of the functional compartments (up to form 4b)
- Operation front with front covers, optionally with cubicle-high door
- Door with inspection pane for integration in modern room concepts
- Cable connection compartment with 400 mm or 600 mm width



*Fixed-mounted cubicle with front covers, including continuously adjustable equipment support for a uniform front level*

### Quick-release lock or swivel covers/ cover frames

- Innovative quick-release lock for easy and fast cover mounting
- Swivel covers for improved operating comfort
- Swivel cover frame for fast commissioning and easy maintenance



Quick-release lock for front cover mounting



Swivel frame

### Single or multiple tap-offs

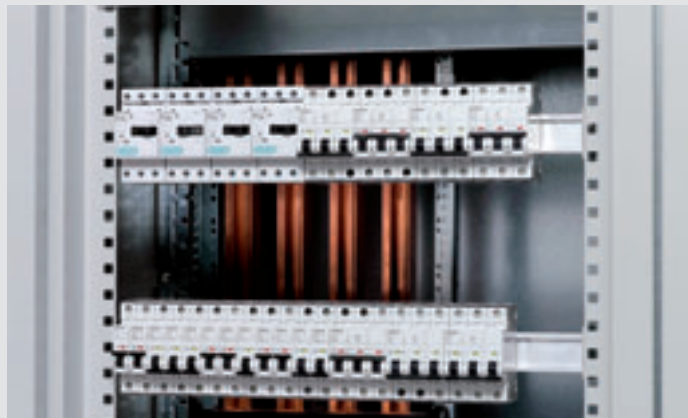
- Continuously adjustable equipment support for uniform front level
- Operation through the front cover
- Tap-offs with/without plug-in base



Multiple tap-offs with SENTRON 3VL

### Built-in installation devices

- Aluminum multi-profile rail for easy assembly of built-in installation devices



Built-in installation devices

## Efficient assembly: Fixed-mounted 3NJ4 in-line system



*In-line cubicle with 3NJ4 in-line fuse switch disconnectors and rapid mounting kits for built-in installation devices*

The cubicles for cable tap-offs in fixed-mounted system are equipped with switchable in-line fuse switch disconnectors, whose compact and modular design ensure an optimum efficiency of infrastructure applications.

- High safety thanks to type-tested standard modules (TTA)
- Cable feeders up to 630 A with/without current measuring
- Installation of up to 14 feeders per cubicle
- De-energized fuse replacement
- Doors optionally with/without cut-out
- Optional installation of rapid mounting kits or freely installable equipment supports
- Cubicle widths of 600 mm and 800 mm



## Fast retrofitting: Plug-in 3NJ6 in-line system

Switching devices featuring an in-line system with an incoming plug-in contact represent an economic alternative to the withdrawable system and facilitate easy and fast retrofitting and replacement works under operating conditions thanks to their modular design. For these applications, SIVACON stands for high efficiency, safety and flexibility.

- High safety thanks to type-tested standard modules (TTA)
- Incoming plug-in contact for fast replacement
- De-energized fuse replacement
- Switch disconnecter with double interruption for cable feeders up to 630 A
- Integrated current transformer (replaceable)
- Manual or motor-driven operating mechanism
- Accessories retrofittable by the customer
- High packing density – up to 35 feeders per cubicle
- Shock-hazard protection against the plug-in busbar system
- Cable connection compartment with 400 mm or 600 mm width
- Degree of protection up to IP41
- Feeder replacement possible without disconnection of the power distribution board



*In-line cubicle with 3NJ6 in-line switch disconnectors*

*3NJ6 switch disconnecter with fuses*



*Plug-in busbar system, test finger-proof (IP20B)*



# Convincing efficiency: Reactive power compensation

Reactive power forms in the mains due to inductive linear consumers, e.g. motors, transformers, reactors, and due to inductive non-linear consumers, e.g. power converters, welding devices, arc furnaces, rectifiers, AC and three-phase power controllers or UPS systems.

The cubicles for central reactive power compensation relieve transformers and cables, reduce transmission losses and save power costs. Depending on the consumer structure, the reactive power compensation is equipped with un-choked or choked capacitor modules.

## Controller module with electronic reactive power controller for door installation

- Multi-function display
- Automatic C/k value setting
- Settable target power factor from 0.8 ind to 0.8 cap
- Manual/automatic operation
- Display mains parameters U, I, f, power factor, P, S, Q harmonics

## Capacitor module (up to 200 kvar)

- Fuse switch disconnectors
- Capacitor contactors
- MKK capacitors
- Discharge devices
- Filter circuit reactors (choked)

## Switch disconnecter module

- Optionally available for central isolation of the installed capacitor modules



Cubicle for reactive power compensation 500 kvar



Capacitor module 100 kvar

## Optimum protection: Arc resistance

The test of low-voltage power distribution boards under arc conditions is considered a special test in accordance with IEC 61641 and VDE 0660 Part 500, Supplement 2. This test serves the estimation of the hazards to which persons may be subjected in case of arcs. Thanks to the test under arc conditions, already the SIVACON standard version offers the proof of personal safety.

### Assessment criteria

1. Doors, covers, etc. must not open.
2. Parts must not come loose.
3. Holes must not burn into the enclosure.
4. Indicators must not inflame.
5. The PE circuit for touchable enclosure parts must remain functioning.

### Add-on modules

For limiting the effects of an arc within the power distribution board:

- Restriction to one cubicle (arc barriers)
- Isolated main busbars (base-free design)



Roof plate with pressure relief in arc case



Arc barriers



Isolated main busbar

## Matched to your requirements



The modular technology – both in the individual cubicle as well as throughout the entire system – facilitates the optimum adjustability of power distribution boards to your individual requirements.

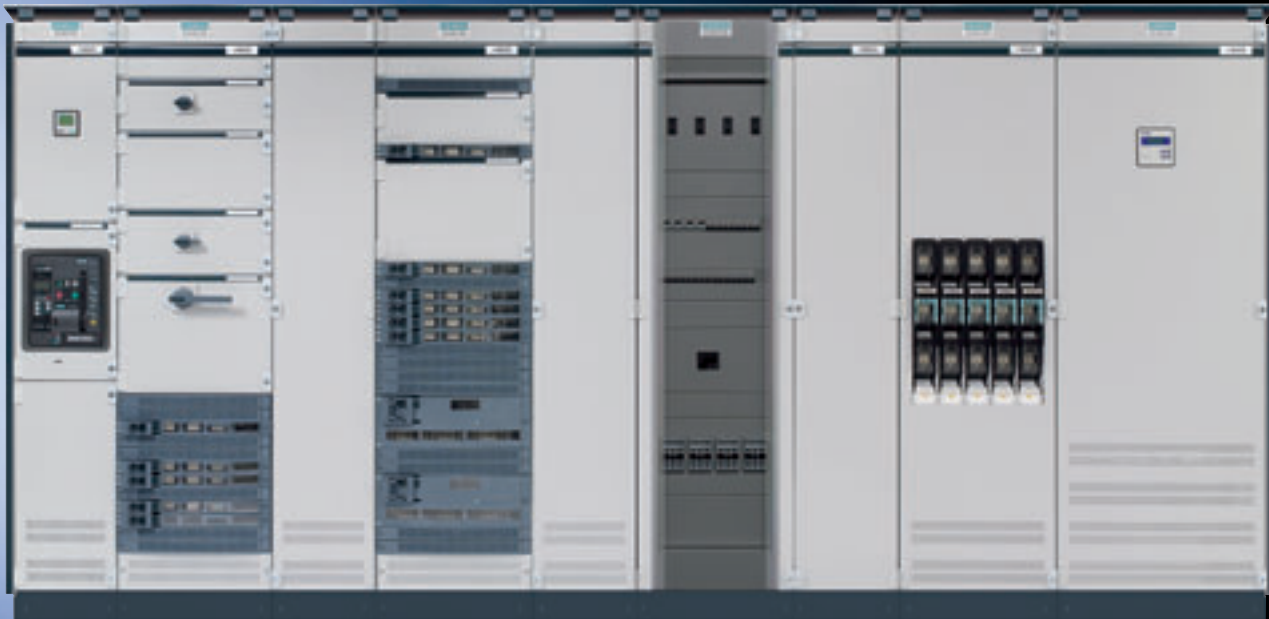
- Optional busbar position at the top or rear
- Individual equipment of equipment compartments, independent of busbar position and cubicle depth
- Requirement-oriented separation of functional compartments from form 1 to form 4 (DIN EN 60439-1)
- Fixed-mounted and plug-in system can be combined in one cubicle (universal installation system)

### Optimum adjustment to space conditions

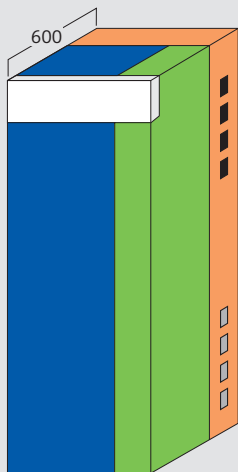
- Front- and rear-aligned assembly of all switching cubicle types
- Optional cable or busbar connection from the top, bottom or rear
- System height optionally 2,000 mm or 2,200 mm
- 100 mm or 200 mm base as add-on module

### Fast adjustment to new power requirements

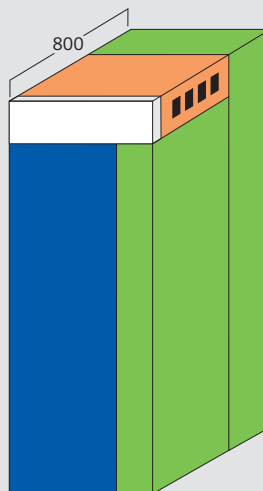
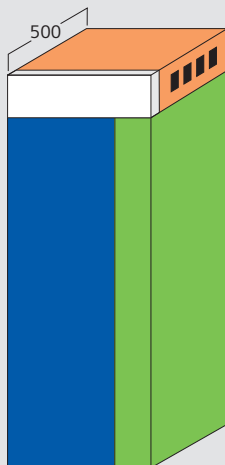
- Easy replacement or expansion of functional units
- Sound access to busbars
- Easy follow-up ordering and short delivery periods thanks to modular system



Main busbar rear  
(top/bottom)  
up to 4000 A



Main busbar top  
up to 3270 A



- Equipment compartment
- Cross wiring compartment
- Busbar compartment
- Cable/busbar compartment

## Embedded protection: Frame and enclosure



The frame – including all supporting cubicle elements – consists of stable screw-fastened sheet-steel profiles:

- Circumferential hole rows with 25 mm hole grid for individual expansions
- Patented door locking system for maximum personal safety
- Doors with simple or central locking
- Universal door hinge for easy door hinge adjustment
- Door opening angle up to 125° (180° with stand-alone assembly)
- Doors with double-bit fastener or pivoted lever lock
- Roof plates with pressure relief
- Frame heights optionally 2,000 mm or 2,200 mm
- 100 mm or 200 mm base as add-on module
- Standard cubicle-to-cubicle separation

### Surface treatment

- Sendzimir-galvanized frame parts, bases, rear panels and floor plates
- Doors, enclosures and base covers powder-coated in RAL 7035 light gray; design parts in blue green basic

### Material

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

- Frame, base: 2.5 mm
- Enclosure: 2.0 mm
- Doors: 2.0 mm

### Degrees of protection in acc. with IEC 60529

IP30, IP31, IP41 ventilated, IP54 non-ventilated



Door locking systems



Door hinge

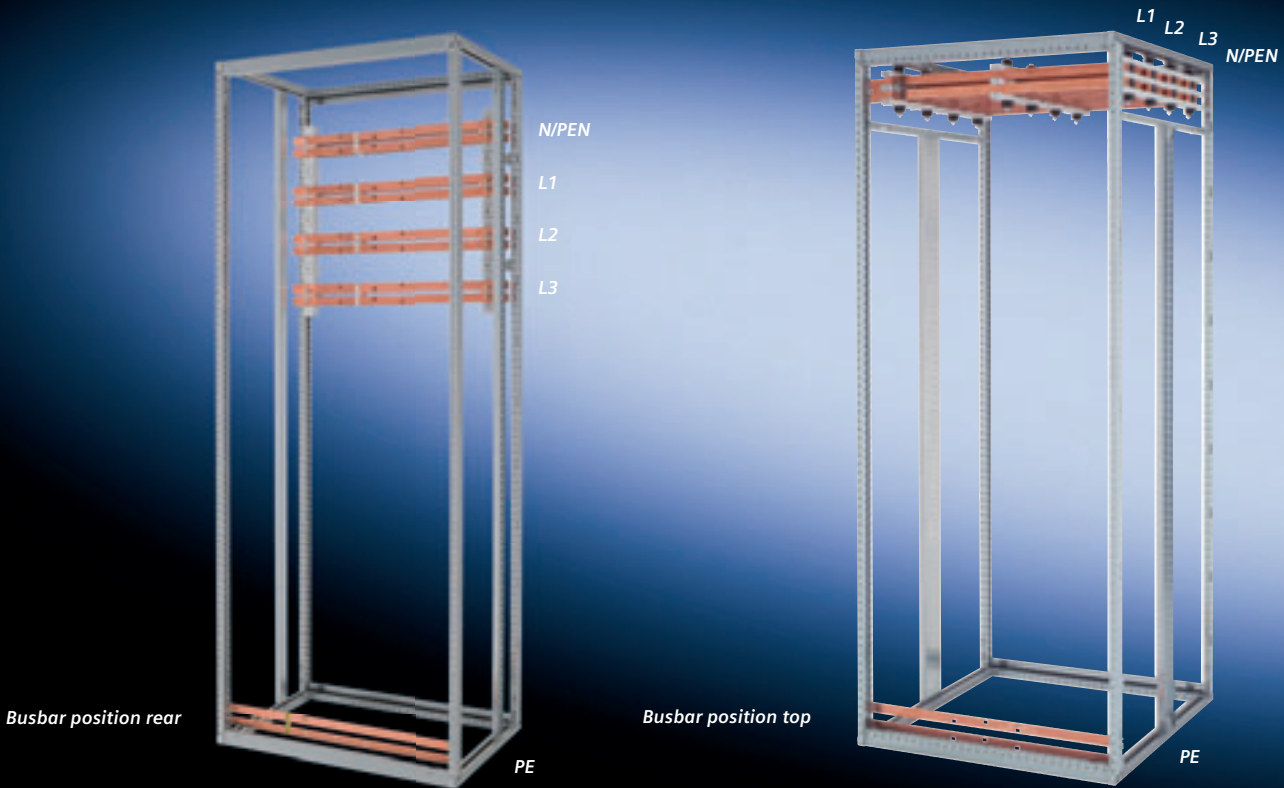


Roof plate



Floor plate with sliding sheet

## Completely variable: Busbar positions



Vertical PE and N conductor rails arranged in the cable connection compartment at the right



Shipping splits easily accessible from the front

Different switching tasks require individual realization options: Whether “simple” systems or comprehensive networks with transversal and longitudinal couplings: SIVACON combines efficient design with high-class quality.

- Top or rear busbar position
- Busbar systems for rated currents up to 4000 A
- Rated peak withstand current ( $I_{pk}$ ) up to 220 kA
- Two busbar systems can be integrated in the power distribution board
- Shipping splits easily accessible from the front or top
- Zero-maintenance busbar connections

### Add-on modules

- Arc barrier for limitation of arcs to the individual cubicle
- Isolated busbar systems (base-free design)

## At a glance: Technical data

Standards and regulations	Type-tested low-voltage switch-gear and controlgear assembly (TTA)	IEC 60439-1 DIN EN 60439-1 (VDE 0660 Part 500)	
	Behavior test during internal faults (arcs)	IEC 61641, VDE 0660 Part 500, Supplement 2 ( $U_e$ up to 440 V, $I_{CW}$ up to 50 kA, $t=100$ msec)	
	Protection against electric shock	DIN EN 50274, VDE 0660 Part 514	
Rated insulation voltage ( $U_i$ ) Rated operational voltage ( $U_e$ )	Main circuit Main circuit	1000 V up to 690 V	
Clearances and creepage distances	Rated impulse withstand voltage $U_{imp}$ Overvoltage category Pollution degree	12 kV IV 3	
Busbars (3-pole and 4-pole)	Main busbars horizontal	Rated current Rated peak withstand current ( $I_{pk}$ ) Rated short-time withstand current ( $I_{CW}$ )	up to 4000 A up to 220 kA up to 100 kA
	Busbars vertical for circuit breaker system	Rated current Rated peak withstand current ( $I_{pk}$ ) Rated short-time withstand current ( $I_{CW}$ )	up to 3200 A up to 220 kA up to 100 kA
	Busbars vertical for universal and fixed-mounted system	Rated current Rated peak withstand current ( $I_{pk}$ ) Rated short-time withstand current ( $I_{CW}$ )	up to 1200 A up to 110 kA up to 50 kA*
	Busbars vertical for 3NJ4 in-line system (fixed-mounted)	Rated current Conditional rated short-circuit current ( $I_{CC}$ )	up to 1600 A up to 50 kA
	Busbars vertical for 3NJ6 in-line system (plug-in)	Rated current Rated peak withstand current ( $I_{pk}$ ) Rated short-time withstand current ( $I_{CW}$ )	up to 2100 A up to 110 kA up to 50 kA*
Rated device currents		3WL/3CL circuit breakers Cable feeders	up to 3200 A up to 630 A
Internal separation	Form 1 to form 4	IEC 60439-1, Section 7.7, VDE 0660 Part 500, 7.7	
Surface treatment	(Coating acc. to DIN 43656) Rack parts, bases Doors Side panels Rear panels, roof plates Ventilation roof Standard color of powder-lacquered parts (coating thickness $100 \pm 25$ mm)	Sendzimir-galvanized Powder-coated Powder-coated Sendzimir-galvanized Powder-coated  RAL 7035, light gray Design parts: blue green basic	
IP degree of protection	In acc. with IEC 60529, EN 60529	IP30, IP31, IP40, IP41, IP54	
Dimensions	Preferred dimensions in acc. with DIN 41488	Height (without base): Width: Depth:	2,000, 2,200 mm 400, 600, 800, 1,000, 1,200 mm 500, 600, 800 mm

\* Conditional rated short-circuit current ( $I_{CC}$ ) = 100 kA

# Project checklist

Customer	Processor
Project	Telephone
Order No.	Fax
Delivery date	Date

## Standards and regulations

<input type="checkbox"/> IEC 60439-1/EN 60439-1 VDE 0660 Part 500	<input type="checkbox"/> IEC 61641/VDE 0660 Part 500, Supplement 2 arc resistance (standard 440 V, 50 kA, 100 msec)	<input type="checkbox"/> Arc barriers for limitation of arcs to the individual cubicle
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## Environmental conditions

Environmental class (interior climate)	<input type="checkbox"/> IR 1 [3K3]	<input type="checkbox"/> IR 2 [3K6]	<input type="checkbox"/> IR 3 [3K6]				
Ambient temperature (24-h average)	<input type="checkbox"/> 20 °C	<input type="checkbox"/> 25 °C	<input type="checkbox"/> 30 °C	<input type="checkbox"/> 35 °C	<input type="checkbox"/> 40 °C	<input type="checkbox"/> 45 °C	<input type="checkbox"/> 50 °C
Erection height above sea level	<input type="checkbox"/> ≤ 2,000 m		<input type="checkbox"/> other				
IP degree of protection against cubicle ventilated	<input type="checkbox"/> IP30	<input type="checkbox"/> IP31	<input type="checkbox"/> IP40	<input type="checkbox"/> IP41			
the interior cubicle non-ventilated	<input type="checkbox"/> IP54 (not 3NJ in-line system, reactive power compensation)						
the cable bottom	<input type="checkbox"/> IP00	<input type="checkbox"/> IP30	<input type="checkbox"/> IP40	<input type="checkbox"/> IP54			
	<input type="checkbox"/> manufacturer-provided		<input type="checkbox"/> customer-provided				
Aggravated operation conditions	<input type="checkbox"/> none		<input type="checkbox"/> chemical emissions				
Control cabinet heating	<input type="checkbox"/> no		<input type="checkbox"/> yes				

## Mains data / infeed data

Mains type	<input type="checkbox"/> TN-C	<input type="checkbox"/> TN-S	<input type="checkbox"/> IT	<input type="checkbox"/> TT
Design	<input type="checkbox"/> L1, L2, L3, PEN	<input type="checkbox"/> L1, L2, L3, PE + N		<input type="checkbox"/> other:
external connection	<input type="checkbox"/> 3-pole switchable	<input type="checkbox"/> 4-pole switchable		
Rated transformer power $S_r$	kVA	Rated short-circuit voltage $U_z$	%	
Rated operational voltage $U_e$	V	Frequency $f$	Hz	
Rated short-term withstand current $I_{cw}$	kA			

## Busbar system horizontal

Position	<input type="checkbox"/> top	<input type="checkbox"/> rear (top)	<input type="checkbox"/> rear (bottom)		
Rated current $I_n$	A	A	A		
Treatment CU	<input type="checkbox"/> blank	<input type="checkbox"/> silver-plated	<input type="checkbox"/> tin-plated		
	<input type="checkbox"/> isolated L1, L2, L3	<input type="checkbox"/> isolated L1, L2, L3, N			
Design AC L1, L2, L3 + ....	<input type="checkbox"/> PEN	<input type="checkbox"/> PE	<input type="checkbox"/> N	<input type="checkbox"/> PEN, N = 50 %	<input type="checkbox"/> PEN, N = 100 %

## Busbar system vertical

Treatment CU	<input type="checkbox"/> blank	<input type="checkbox"/> silver-plated	<input type="checkbox"/> tin-plated	<input type="checkbox"/> isolated to breaker (circuit breaker system)	
Design AC L1, L2, L3 + .....	<input type="checkbox"/> PEN	<input type="checkbox"/> PE	<input type="checkbox"/> N	<input type="checkbox"/> PEN, N = 50 %	<input type="checkbox"/> PEN, N = 100 %
Other conditions					

## Assembly and erection

Assembly type	<input type="checkbox"/> single-fronted	<input type="checkbox"/> double-fronted	
Restriction of total length	<input type="checkbox"/> without	<input type="checkbox"/> yes	mm
Max. net length per transport unit	<input type="checkbox"/> 2,400 mm	<input type="checkbox"/>	mm
Cable/busbar connection			
with incoming cubicles	<input type="checkbox"/> from the bottom	<input type="checkbox"/> from the top	<input type="checkbox"/> from the rear
with outgoing cubicles	<input type="checkbox"/> from the bottom	<input type="checkbox"/> from the top	<input type="checkbox"/> from the rear

## Cubicles

Internal separation in acc. with IEC 60439-1, DIN EN 60439-1, VDE 0660 Part 500, Section 7.7

Circuit breaker system	<input type="checkbox"/> form 1	<input type="checkbox"/> form 2b	<input type="checkbox"/> form 3a		<input type="checkbox"/> form 4b
Universal installation system		<input type="checkbox"/> form 2b		<input type="checkbox"/> form 4a	<input type="checkbox"/> form 4b
Fixed-mounted system	<input type="checkbox"/> form 1	<input type="checkbox"/> form 2b		<input type="checkbox"/> form 4a	<input type="checkbox"/> form 4b
Fixed-mounted 3NJ4 in-line system	<input type="checkbox"/> form 1	<input type="checkbox"/> form 2b			
Plug-in 3NJ6 in-line system				<input type="checkbox"/> form 3b	<input type="checkbox"/> form 4b
Reactive power compensation	<input type="checkbox"/> form 1	<input type="checkbox"/> form 2b			

Your local SIVACON technology partner:

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### Your advantage: SIVACON Technology Partners

*Our global SIVACON Technology Partners are selected qualified and permanently audited manufacturers of power distribution boards. They offer a bundled know-how of type-tested Siemens power distribution boards at conditions only available from local suppliers. Faster, more flexible and cost-effective*

SIVACON  
Technology by

SIEMENS

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