SIEMENS

SITOP power supply

SITOP PSU8200 1ph

Equipment Manual

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SITOP PSU8200 24 V/5 A
6EP3333-8SB00-0AY0
SITOP PSU8200 24 V/10 A
6EP3334-8SB00-0AY0
SITOP PSU8200 24 V/20 A
6EP1336-3BA10
SITOP PSU8200 24 V/40 A
6EP3337-8SB00-0AY0

SITOP PSU8200 Ex 24 V/40 A
6EP3337-8SC00-0AY0

06.2023
A5E52952007-6-76

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.

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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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A5E52952007-6-76
Ⓟ 07/2023 Subject to change

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Overview



1-phase SITOP PSU8200 power supplies from the SITOP modular product line are high-performance, regulated technology power supplies for automated systems and machines.

In addition to the basic functions required, these low-profile power supply units have an outstanding overload behavior.

The key benefits of the product include:

- Suitable for connecting to almost any 1-phase line supply around the world
- AC and DC input voltages possible (only for 6EP1336-3BA10)
- Output voltage can be adjusted in the range 24 - 28 (28.8) V
- Power-Boost in operation with 3x rated current for 25 ms
- Extra-Power with 1.5x rated current for 5 seconds for switching on loads with a high inrush current
- Especially low width without requiring any lateral mounting clearances
- Ambient temperature -25 ... 70 °C (derating from 60 °C)
- Selectable short-circuit response (constant current or latching shutdown)
- A soft characteristic can be selected for a parallel connection (for uniform load distribution of power supply units of the same type)
- 3 LEDs are used to display the operating state
- Signaling contact "24 V O.K."

- Remote "ON/OFF" contact to switch the power supply output into a no-current condition (only for 6EP3333-8SB00-0AY0, 6EP3334-8SB00-0AY0 and 6EP1336-3BA10 (from PS 8))
- To increase the system availability, these reliable power supplies can be expanded using SITOP supplementary modules (redundancy module, selectivity module, buffer module), as well as SITOP DC-USV modules

Ordering data

The following device versions are available:

Regulated power supply unit SITOP PSU8200 1ph	
Type	**Order number**
1-phase 120/230 V AC input, 24 V / 5 A output	6EP3333-8SB00-0AY0
1-phase 120/230 V AC input, 24 V / 10 A output	6EP3334-8SB00-0AY0
1 and 2-phase AC or DC input, 24 V DC / 20 A output	6EP1336-3BA10
1 and 2-phase 120/230 V AC input, 24 V/40 A output	6EP3337-8SB00-0AY0

Regulated power supply unit SITOP PSU8200 1ph Ex	
Type	**Order number**
1 and 2-phase 120/230 V AC input, 24 V/40 A output	6EP3337-8SC00-0AY0

Accessories	
Type	**Order number**
Device identification labels 20 mm × 7 mm, Ti grey	3RT2900-1SB20

Validity

This manual provides information on the following products:

- SITOP PSU8200 1AC 24 V/5 A
  Article No.: 6EP3333-8SB00-0AY0
  Product state: 2
  Changes with respect to the previous version (PS 1): Ex approvals were removed
- SITOP PSU8200 1AC 24 V/10 A
  Article No.: 6EP3334-8SB00-0AY0
  Product state: 2
  Changes with respect to the previous version (PS 1): Ex approvals were removed
- SITOP PSU8200 1AC 24 V/20 A
  Article No.: 6EP1336-3BA10
  Product state: 8
  changes with respect to the previous version (PS 7):
  - Additional REMOTE contact
  - Range U_{out}: 24 ... 28 V
  - Increased startup delay and voltage rise time (it is not permissible that devices with ≤ PS 7 and PS 8 are connected in parallel)
- SITOP PSU8200 1AC 24 V/40 A
  Article No.: 6EP3337-8SB00-0AY0
  Product state: 2
  Changes with respect to the previous version (PS 1): Ex approvals were removed
- SITOP PSU8200 Ex 1AC 24 V/40 A
  Article No.: 6EP3337-8SC00-0AY0
  Product state: 1

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Safety instructions

1

1.1 General safety instructions

⚠ WARNING

Correct handling of the devices

When operating electrical devices, it is inevitable that certain components will carry dangerous voltages.

Therefore, failure to handle the units properly can result in death or serious physical injury as well as extensive property damage.

Only appropriately qualified personnel may work on or in the vicinity of this equipment.

Perfect, safe, and reliable operation of this equipment is dependent on proper transportation, storage, installation and mounting.

Before installation or maintenance work can begin, the system's main switch must be switched off and measures taken to prevent it being switched on again.

If this instruction is not observed, touching live parts can result in death or serious injury.

1.2 Safety instructions for hazardous zones

It is permissible that the following devices are used in hazardous zones:

Type	Order number
SITOP PSU8200 Ex 24 V/40 A	6EP3337-8SC00-0AY0

The device complies with ATEX directive 2014/34/EU: EN IEC 60079-0; EN 60079-7; EN IEC 60079-15
UKSI 2016: 1107: BS EN IEC 60079-0; BS EN 60079-7; BS EN IEC 60079-15
CCC: GB3836.1; GB3836.3; GB3836.8

UL: Suitable for Ex applications in CLASS I, DIVISION 2, GROUPS A, B, C and D - or in non-hazardous zones only; max. 2000 m

WARNING

UNDER NO CIRCUMSTANCES MAKE ANY VOLTAGE ADAPTATIONS OR CHANGE DIP SWITCH SETTINGS IN EXPLOSIVE ATMOSPHERES

WARNING

EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2

WARNING

EXPLOSION HAZARD – DO NOT CONNECT OR DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS

WARNING

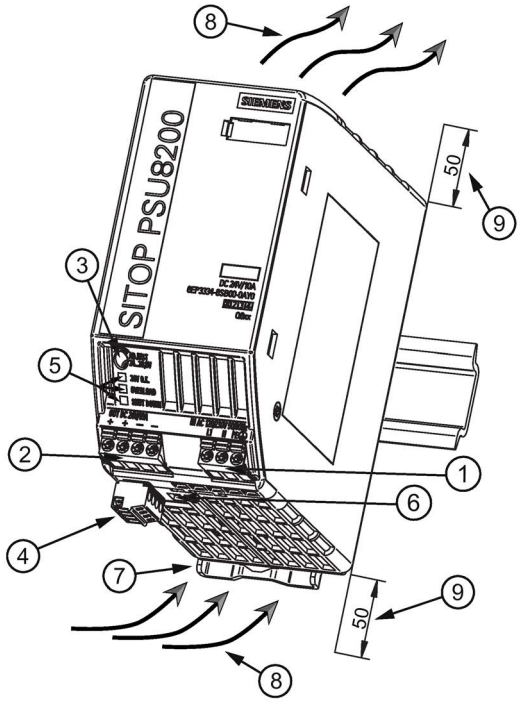
CHEMICALS CAN MEAN THAT RELAYS ARE NO LONGER PERFECTLY SEALED.

Description, device design, dimension drawing

2

2.1 Device description

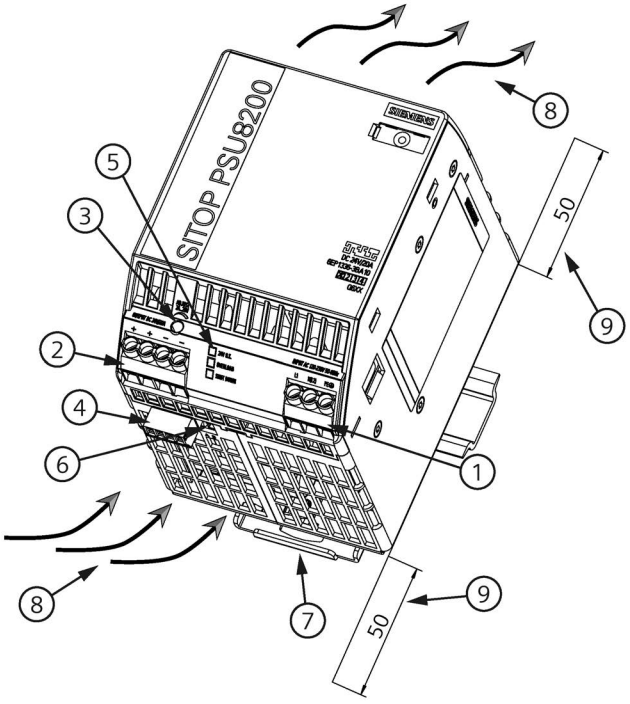
SITOP PSU8200 5 A 1ph and SITOP PSU8200 10 A 1ph are primary-clocked power supplies for connection to 1-phase AC line supplies. An electronically regulated DC voltage that can be set via a potentiometer is available at the output of the device. The output of the device is isolated, no-load proof and short-circuit proof. The LEDs indicate the operating state. The operating state of the device can be processed via the signaling contact. The device can be switched ON/OFF remotely using a remote contact.



① AC input
② DC output
③ 24 - 28.8 V potentiometer
④ Signaling contact (13, 14), remote contact (15, 16)
⑤ Indicator lights (24 V O.K., OVERLOAD, SHUT DOWN)
⑥ A/B selector switch
⑦ Mounting rail slider
⑧ Convection
⑨ Clearance above/below

Figure 2-1 Design (example: 6EP3334-8SB00-0AY0)

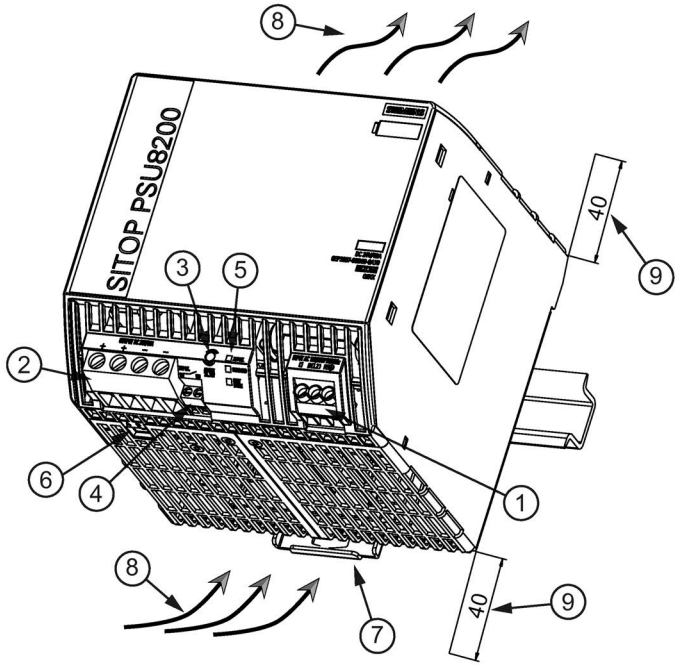
SITOP PSU8200 20 A 1ph is a primary-clocked power supply for connection to a 1-phase or 2-phase AC line supply or a DC supply. An electronically regulated DC voltage that can be set via a potentiometer is available at the output of the device. The output of the device is isolated, no-load proof and short-circuit proof. The LEDs indicate the operating state. The operating state of the device can be processed via the signaling contact. The device can be switched ON/OFF remotely using a remote contact.



① AC/DC input
② DC output
③ 24 - 28 V potentiometer
④ Signaling contacts (13, 14), remote (15, 16)
⑤ Indicator lights (24 V O.K., OVERLOAD, SHUT DOWN)
⑥ A/B selector switch
⑦ Mounting rail slider
⑧ Convection
⑨ Clearance above/below

Figure 2-2 Design 6EP1336-3BA10

SITOP PSU8200 40 A 1ph is a primary-clocked power supply for connection to a 1-phase or 2-phase AC line supply. An electronically regulated DC voltage that can be set via a potentiometer is available at the output of the device. The output of the device is isolated, no-load proof and short-circuit proof. The LEDs indicate the operating state. The operating state of the device can be processed via the signaling contact.



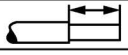
① AC input
② DC output
③ 24 - 28 V potentiometer
④ Signaling contacts (13, 14)
⑤ Indicator lights (24 V O.K., OVERLOAD, SHUT DOWN)
⑥ Selector switch
⑦ Mounting rail slider
⑧ Convection
⑨ Clearance above/below

Figure 2-3 Design 6EP3337-8SB00-0AY0 and 6EP3337-8SC00-0AY0

2.2 Connections and terminal designation

The line input terminals ① can be used to establish the connection to the supply voltage. The output terminals ② are used to connect to the loads to be supplied (see also Section Installation (Page 41)).

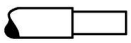
Connections and terminal designations for 6EP3333-8SB00-0AY0 and 6EP3334-8SB00-0AY0	
① Line input L1, N, PE	One screw terminal each
② Output "+"	2 screw terminals
② Output "–"	2 screw terminals
④ Signaling contact 13, 14	One screw terminal each
④ Remote contact 15, 16	One screw terminal each

	① + ②	④	③
	0,6 x 3,5 / PZ1 / PH1	0,4 x 2,5	0,6 x 3 / PZ1 / PH1 max. Ø 3,5 mm
	1 x 0,5 - 2,5 mm^2	1 x 0,14 - 1,5 mm^2	-
	1 x 0,5 - 2,5 mm^2	1 x 0,14 - 1,5 mm^2	-
	1 x 0,5 - 2,5 mm^2	1 x 0,25 - 1,5 mm^2	-
AWG	24 - 14	28 - 16	-
Nm	0,5 - 0,6 Nm	0,22 Nm	0,04 Nm *1)
	8 mm	7 mm	-

*1) Do not subject the end stop to higher loads

Figure 2-4 Terminal data for 6EP3333-8SB00-0AY0 and 6EP3334-8SB00-0AY0

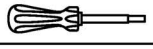
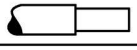
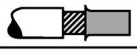
Connections and terminal designations for the 6EP1336-3BA10	
① Line input L1, N(L2), PE	One screw terminal each
② Output "+"	2 screw terminals
② Output "–"	2 screw terminals, from 15 A and higher, use both terminals
④ Signaling contact 13, 14	One screw terminal each
④ Remote contact 15, 16	One screw terminal each

	① + ②	④	③
	0,6 x 3,5 / PZ1 / PH1	1,0 x 5,5	0,6 x 3 / PZ1 / PH1 max. ∅ 3,5 mm
	1 x 0,2 - 6 mm²	1 x 0,14 - 1,5 mm²	-
	1 x 0,2 - 4 mm²	1 x 0,14 - 1,5 mm²	-
	1 x 0,25 - 4 mm²	1 x 0,25 - 1,5 mm²	-
AWG	24 - 10	28 - 16	-
Nm	0,5 - 0,6 Nm	0,22 Nm	0,04 Nm *1)
	8 mm	7 mm	-

*1) Do not subject the end stop to higher loads

Figure 2-5 Terminal data for 6EP1336-3BA10

Connections terminal designations for 6EP3337-8SB00-0AY0 and 6EP3337-8SC00-0AY0	
① Line input L1, N(L2), PE	One screw terminal each
② Output "+"	2 screw terminals
② Output "–"	2 screw terminals
④ Signaling contact 13, 14	One screw terminal each

	①	②	④	③
	0,6 x 3,5 / PZ1 / PH1	1,0 x 5,5 / PZ2 / PH2	0,6 x 3,5	0,4 x 2,5 / max. ∅ 3,5 mm
	1 x 0,5 - 4 mm²	1 x 0,5 - 16 mm²	1 x 0,05 - 2,5 mm²	-
	1 x 0,5 - 4 mm²	1 x 0,5 - 16 mm²	1 x 0,05 - 2,5 mm²	-
	1 x 0,5 - 4 mm²	1 x 2,5 - 16 mm² *2)	1 x 0,5 - 2,5 mm²	-
AWG	26 - 10	26 - 6	30 - 12	-
Nm	0,8 Nm	1,2 - 1,5 Nm	0,5 - 0,6 Nm	0,04 Nm *1)
	10 - 11 mm	12 mm	5,5 - 6,5 mm	-

*1) Do not subject the end stop to higher loads

*2) 16 mm² for square crimping, otherwise 10 mm²

Figure 2-6 Terminal data for 6EP3337-8SB00-0AY0 and 6EP3337-8SC00-0AY0

2.3 Potentiometer

The potentiometer ③ at the front of the device is used to adjust the output voltage. The output voltage is set to 24 V in the factory, and can be adjusted in the range 24 - 28.8 V (24 - 28 V for 6EP1336-3BA10, 6EP3337-8SB00-0AY0, 6EP3337-8SC00-0AY0); for example, to compensate voltage drops across long supply cables to the connected load.

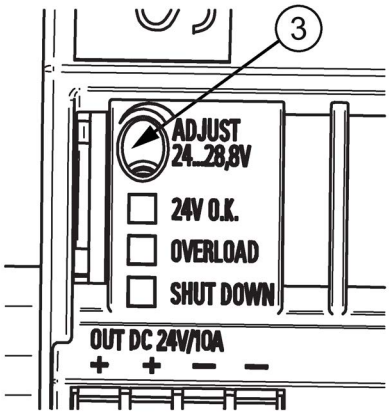


Figure 2-7 Potentiometer (example: 6EP3334-8SB00-0AY0)

NOTICE
Thermal overload possible When setting the output voltage > 24 V, it is not permissible that the rated output power $P_{out\ rated}$ is exceeded.

Note

It is only permissible to use an insulated screwdriver when actuating the potentiometer.

For information on actuating the potentiometer (screwdriver, torque), see Figure 2-5 Terminal data for 6EP1336-3BA10 (Page 15), Figure 2-6 Terminal data for 6EP3337-8SB00-0AY0 and 6EP3337-8SC00-0AY0 (Page 15), Figure 2-4 Terminal data for 6EP3333-8SB00-0AY0 and 6EP3334-8SB00-0AY0 (Page 14)

2.4 Status displays and signaling

	6EP3333-8SB00-0AY0 (24 V/5 A) **6EP3334-8SB00-0AY0 (24 V/10 A)**
Operating display ⑤	LED green for "24 V O.K." LED yellow for overload in operating mode "Constant current" LED red for latching shutdown in operating mode "Shut down"
Signaling contact (13, 14) ④	Relay contact (NO contact, contact rating (SELV (ES1) must be complied with) 30 V DC/1 A) for "24 V O.K."

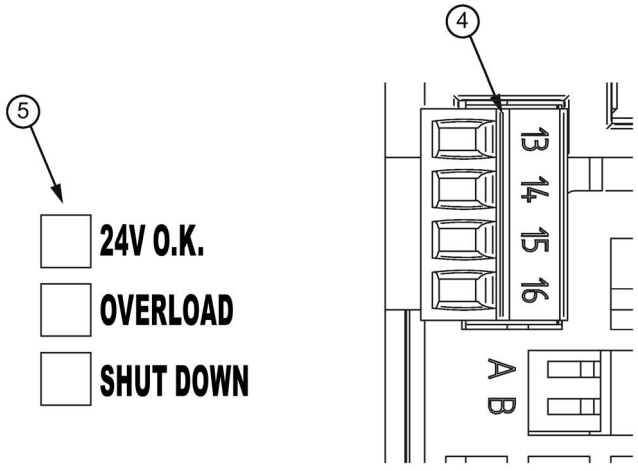


Figure 2-8 Operating display and signaling contact for 6EP3333-8SB00-0AY0 and 6EP3334-8SB00-0AY0

Signaling	**6EP3333-8SB00-0AY0 (24 V/5 A)** **6EP3334-8SB00-0AY0 (24 V/10 A)**
Green LED lit Signaling contact, contact 13 - 14 closed	Normal operation, output voltage > 20 V ± 0.5 V
LED off Signaling contact, contact 13 - 14 opened (quiescent position)	No supply voltage
Yellow LED lit Signaling contact, contact 13 - 14 opened (quiescent position)	Overload, output voltage < 20 V ± 0.5 V (only in the "constant current" mode)
Red LED lit Signaling contact, contact 13 - 14 opened (quiescent position)	Latching shut down or remote OFF

	6EP1336-3BA10 (24 V/20 A)
Operating display ⑤	LED green, lit for "24 V O.K."
	Yellow LED lit for overload condition (U_{out} < 20 V ± 0.5 V)
	Red LED lit for latching shutdown as a result of overload (only for selector switch B in the "ON" position)
Signaling contact ④	Relay contact (NO contact, contact rating (SELV (ES1) must be complied with) 30 V DC/1 A) for "24 V O.K."

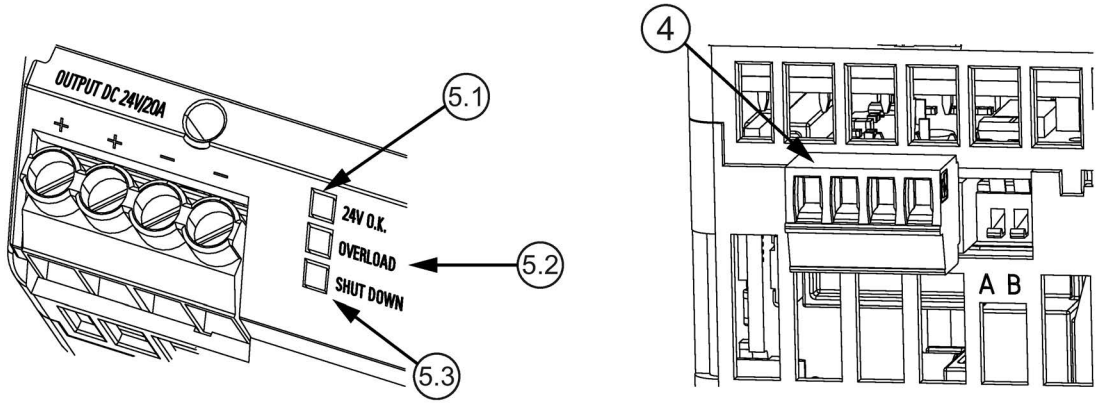


Figure 2-9 Operating display and signaling contact for 6EP1336-3BA10

Signaling	**6EP1336-3BA10 (24 V/20 A)**
LED green (5.1) off Signaling contact, contact 13 - 14 opened (quiescent position)	No supply voltage
Green LED (5.1) lit Signaling contact, contact 13 - 14 closed	Normal operation, output voltage > 20 V ± 0.5 V
Yellow LED (5.2) lit Signaling contact, contact 13 - 14 opened (quiescent position)	Overload (U_{out} < 20 V ± 0.5 V)
Red LED (5.3) lit Signaling contact, contact 13 - 14 opened (quiescent position)	Latching shutdown due to overload or remote OFF

	6EP3337-8SB00-0AY0 6EP3337-8SC00-0AY0 (24 V/40 A)
Operating display ⑤	LED green, lit for "24 V O.K."
	Yellow LED lit for overload condition (U_{out} < 20 V ± 0.5 V)
	Red LED lit for latching shutdown as a result of overload (only for selector switch B in the "ON" position) or for overtemperature
Signaling contact ④	Relay contact (NO contact, contact rating (SELV (ES1) must be complied with) 30 V DC/1 A) for "24 V O.K."

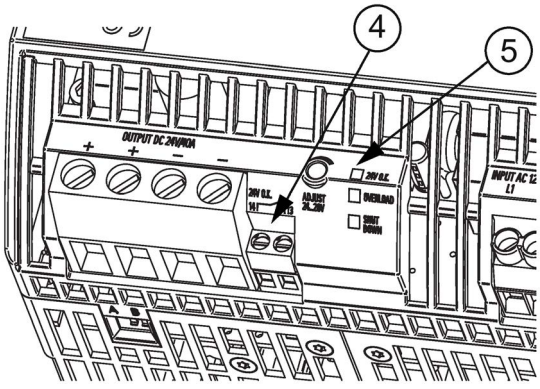
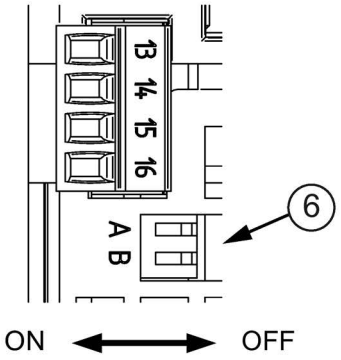


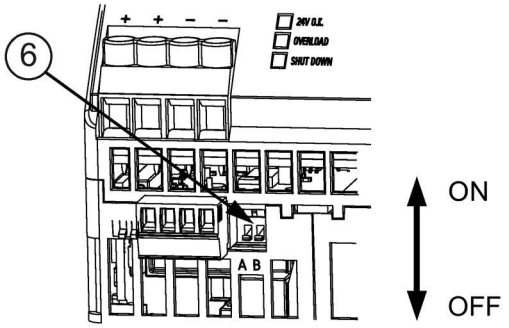
Figure 2-10 Operating display and signaling contact for 6EP3337-8SB00-0AY0 and 6EP3337-8SC00-0AY0

Signaling	**6EP3337-8SB00-0AY0 6EP3337-8SC00-0AY0 (24 V/40 A)**
Green LED off Signaling contact, contact 13 - 14 opened (quiescent position)	No supply voltage
Green LED lit Signaling contact, contact 13 - 14 closed	Normal operation, output voltage > 20 V ± 0.5 V
Yellow LED lit Signaling contact, contact 13 - 14 opened (quiescent position)	Overload (U_{out} < 20 V ± 0.5 V)
Red LED lit Signaling contact, contact 13 - 14 opened (quiescent position)	Latching shutdown due to overload or for overtemperature

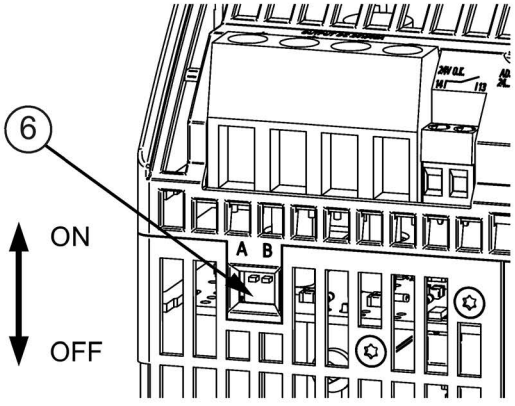
2.5 Change-over switch



6EP3333-8SB00-0AY0
6EP3334-8SB00-0AY0



6EP1336-3BA10



6EP3337-8SB00-0AY0
6EP3337-8SC00-0AY0

Figure 2-11 Selector switch

The two switches A and B are used to influence the output characteristic:

Switch	ON	OFF
A influences the output characteristic in the load range	**Parallel operation:** "Soft" characteristic curve (see, e.g. Figure 6-9 Output characteristic 6EP3333-8SB00-0AY0 parallel operation (Page 52)) for operating two or more devices in parallel: The output voltage falls with increasing output current (namely, also for the overcurrent pulse!). This means that for full output current the highest output voltage can normally no longer be attained.	**Single operation:** *Delivery state* "Hard" characteristic curve (see, e.g. Figure 6-8 Output characteristic 6EP3337-8SB00-0AY0 and 6EP3337-8SC00-0AY0 single operation (Page 51)) for normal operation (single operation): The output voltage is independent of the output current.
B influences the output characteristic in the overload range	**Latching shutdown:** If the output current rises above the rated value and above the current limit, the device reduces the output voltage (see, e.g. Figure 6-13 Output characteristic 6EP3333-8SB00-0AY0 latching shutdown (Page 53)). If the output voltage falls below 20 V, the device shuts down latching, the red LED lights up. This limit voltage of 20 V is independent of the set output voltage. The "Short-term overload current" feature is not available in this operating mode. 6EP3333-8SB00-0AY0 and 6EP3334-8SB00-0AY0 are reset using power supply OFF for a minimum of 60 s or remote OFF and ON at the remote contact. 6EP1336-3BA10 is reset by switching off the power supply for longer than 5 s. For 6EP3337-8SB00-0AY0 and 6EP3337-8SC00-0AY0, the devices are shut down when an overload condition occurs. A reset is initiated by switching off the line supply and then switching it on again after the red LED goes the dark. In order to also be able to charge large capacitances in this operating mode at the output, non-latching shutdown is performed during the first 10 seconds after switching on the power or after a remote on. During these first 10 s, the device responds for overload as if the switch is OFF.	**Constant current:** *Delivery state* If the output current rises above the rated value and above the current limit, the device reduces the output voltage. The yellow LED lights up if the output voltage falls below 20 V.

Condition when delivered: A-OFF; B-OFF

Note

Selector switches may only be activated when the device is switched off.

Note

For 6EP1336-3BA10, only devices with the same product state may be connected in parallel.

2.6 Remote contact

	6EP3333-8SB00-0AY0 (24 V/5 A) **6EP3334-8SB00-0AY0 (24 V/10 A)**	**6EP1336-3BA10 (24 V/20 A)**
Remote contact (15, 16) ④	Non-isolated input for remote ON/OFF switching of the power supply. Function: The device is remotely switched off when contacts 15 - 16 are short-circuited (R < 8 kΩ). If the power supply is shut down and latched in the "latching shutdown" mode as a result of an overload, then it can be restarted using remote OFF followed by remote ON.	

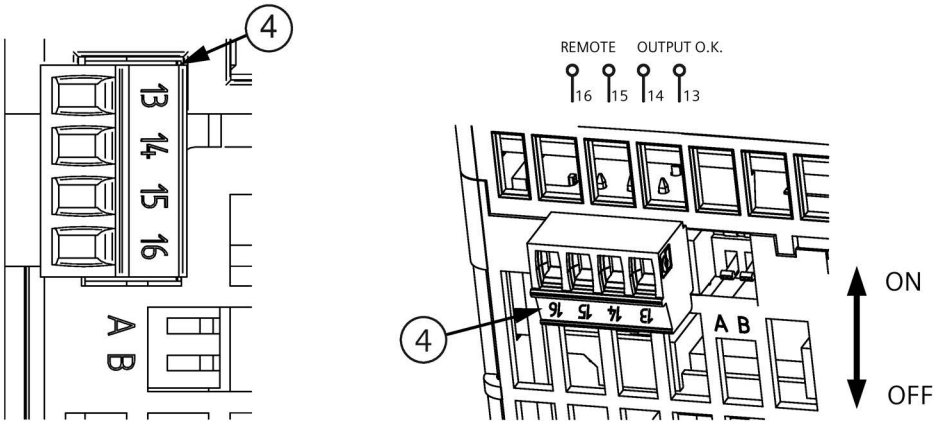


Figure 2-12 Remote contact for 6EP3333-8SB00-0AY0, 6EP3334-8SB00-0AY0 and 6EP1336-3BA10 (24 V/20 A)

2.7 Block diagram

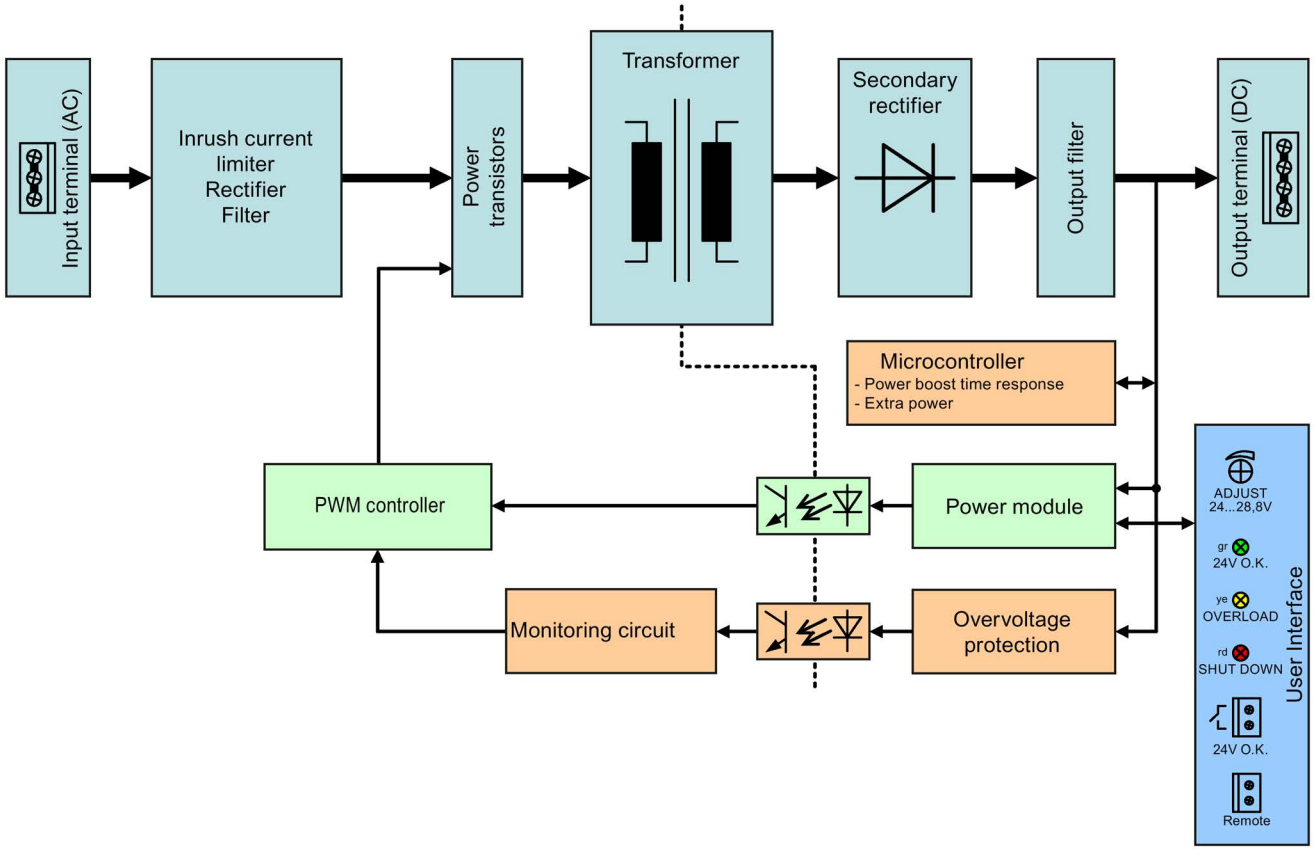


Figure 2-13 Block diagram for 6EP3333-8SB00-0AY0 and 6EP3334-8SB00-0AY0

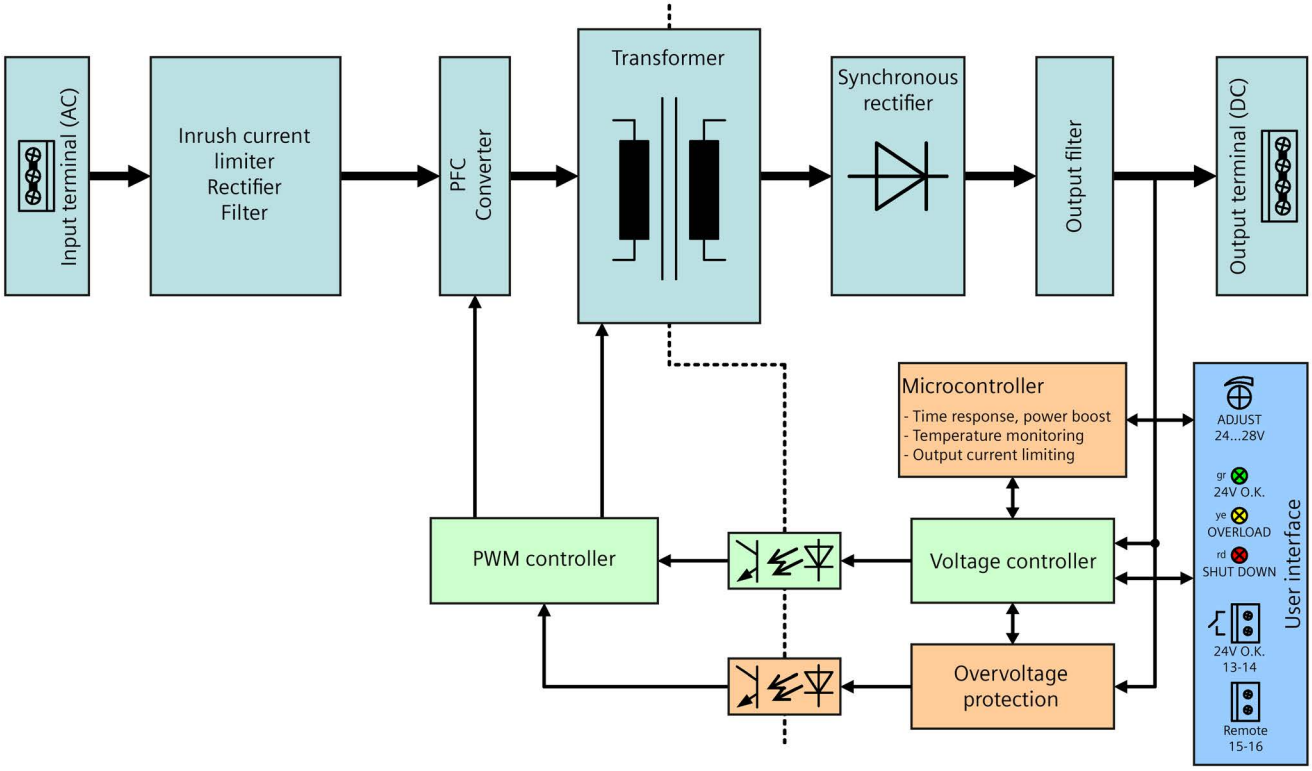


Figure 2-14 Block diagram for 6EP1336-3BA10

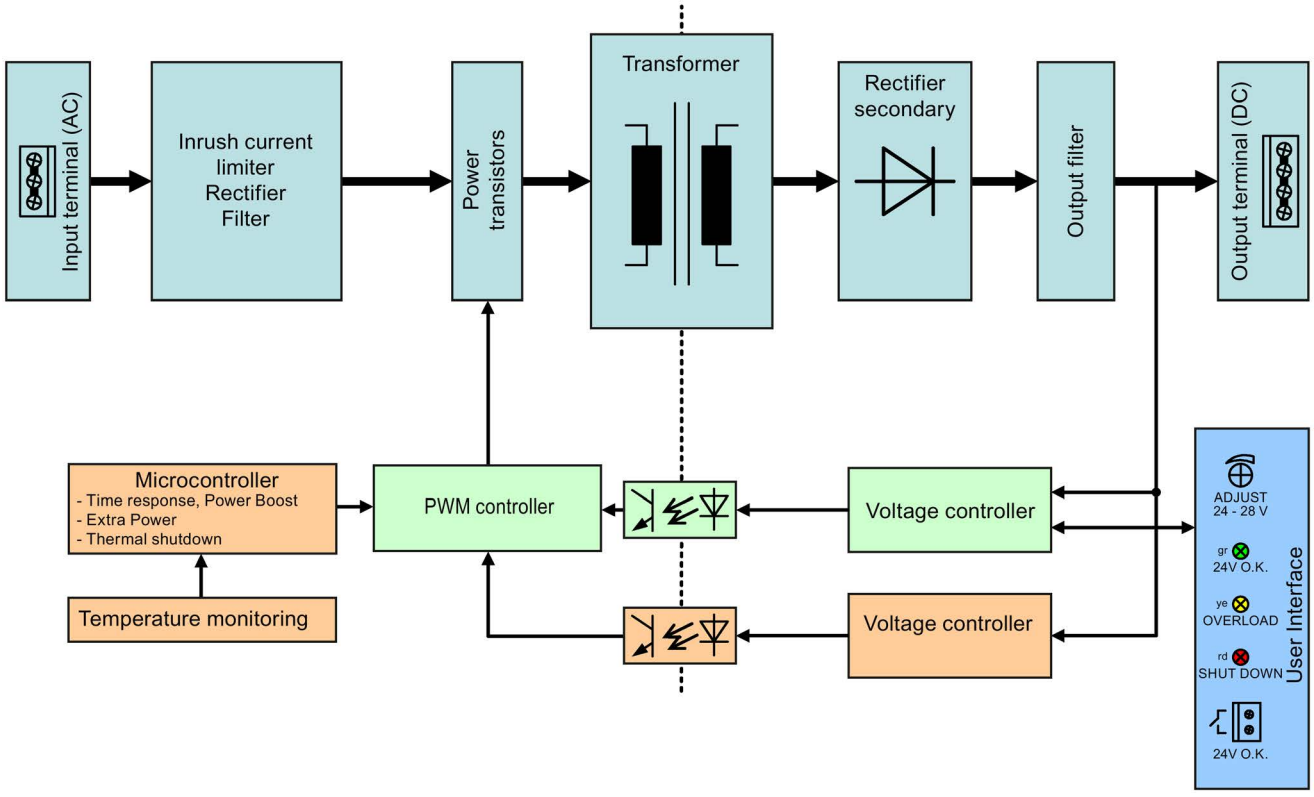


Figure 2-15 Block diagram for 6EP3337-8SB00-0AY0 and 6EP3337-8SC00-0AY0

2.8 Dimensions and weight

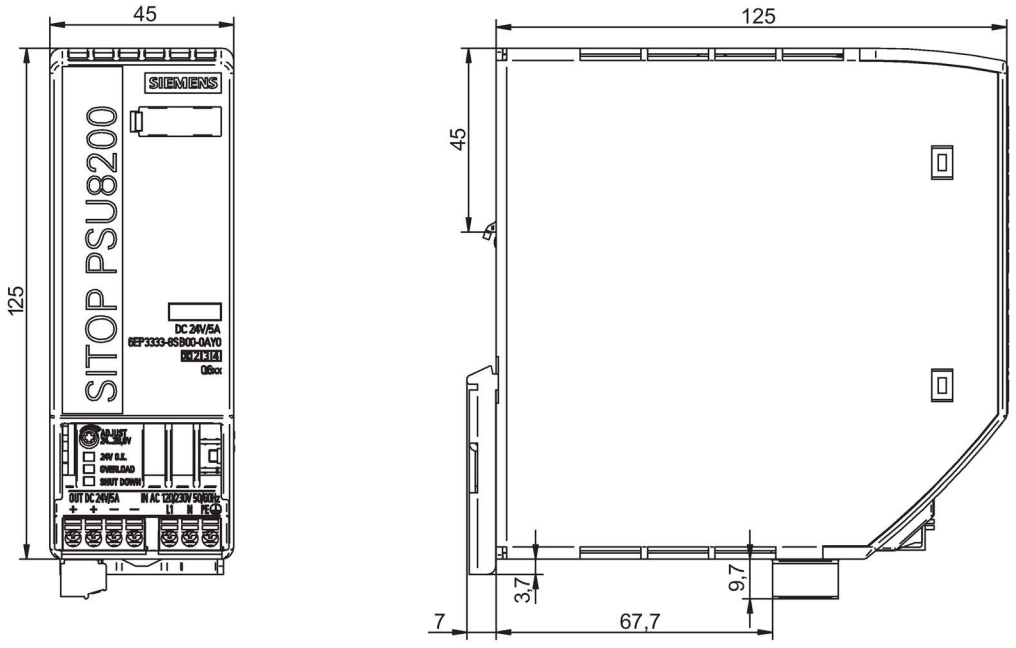


Figure 2-16 Dimension drawing 6EP3333-8SB00-0AY0

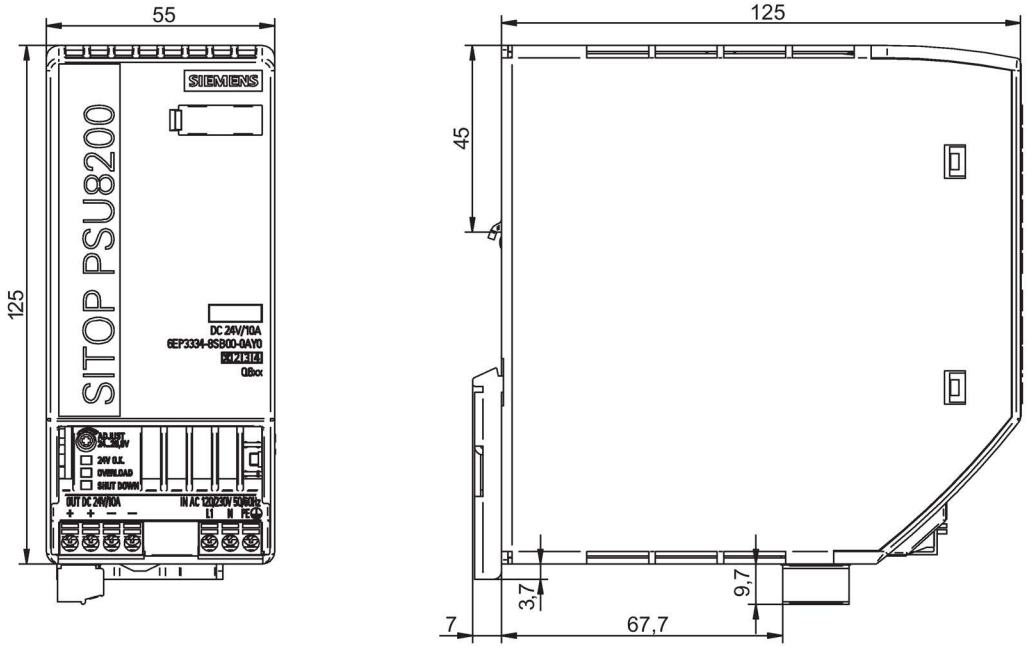


Figure 2-17 Dimension drawing 6EP3334-8SB00-0AY0

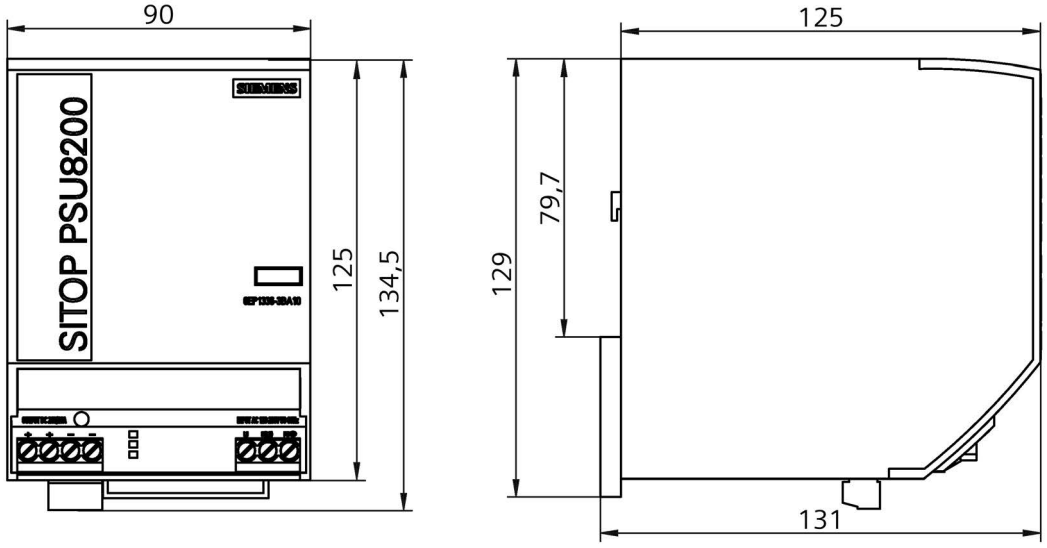


Figure 2-18 Dimension drawing 6EP1336-3BA10

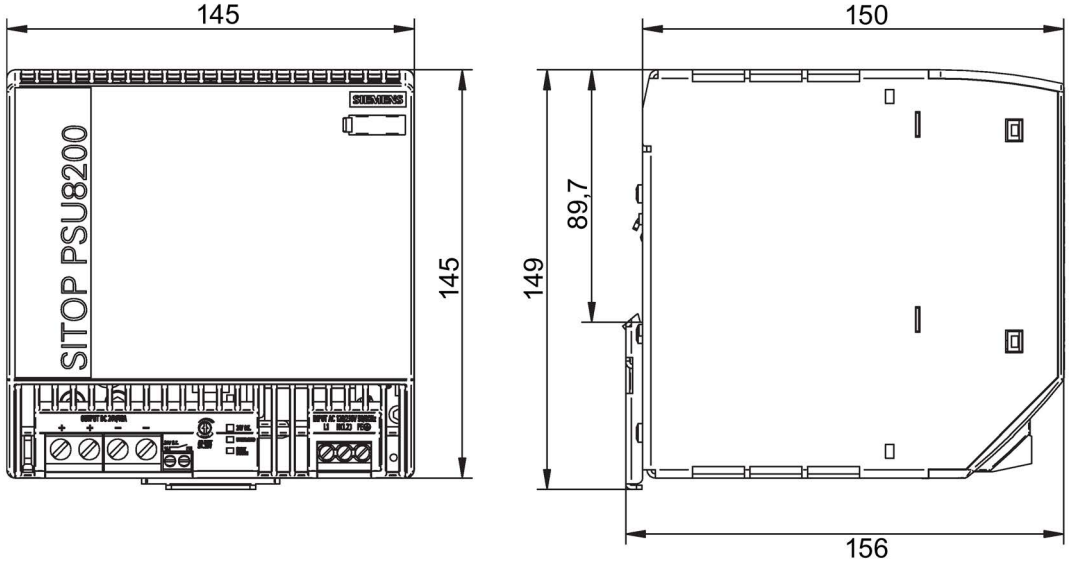


Figure 2-19 Dimension drawing 6EP3337-8SB00-0AY0 and 6EP3337-8SC00-0AY0

	6EP3333-8SB00-0AY0 (24 V/5 A)	**6EP3334-8SB00-0AY0 (24 V/10 A)**
Dimensions (W × H × D) in mm	45 × 125 × 125	55 × 125 × 125
Weight	approx. 0.8 kg	approx. 1.0 kg

	6EP1336-3BA10 (24 V/20 A)	**6EP3337-8SB00-0AY0 6EP3337-8SC00-0AY0 (24 V/40 A)**
Dimensions (W × H × D) in mm	90 × 125 × 125	145 × 145 × 150
Weight	approx. 1.2 kg	approx. 3 kg

Mounting/removal

3

⚠ WARNING

Installing the device in a housing or a control cabinet

The SITOP PSU8200 1ph power supply is a built-in device. It must be installed in a housing or control cabinet, to which only qualified personnel have access.

The device can be snapped onto a control cabinet on standard mounting rails (see Chapter Mechanical system (Page 61)).

Mounting

To mount the device, position it with the mounting rail guide at the upper edge of the standard mounting rail and press down to lock it into place. If it is too difficult to snap them into place, press the slider at the same time, as described under "Removal".

Removal

To remove, pull up the slider using a screwdriver and disengage the device at the bottom edge of the standard mounting rail. Then you can remove the device from the upper edge of the standard mounting rail.

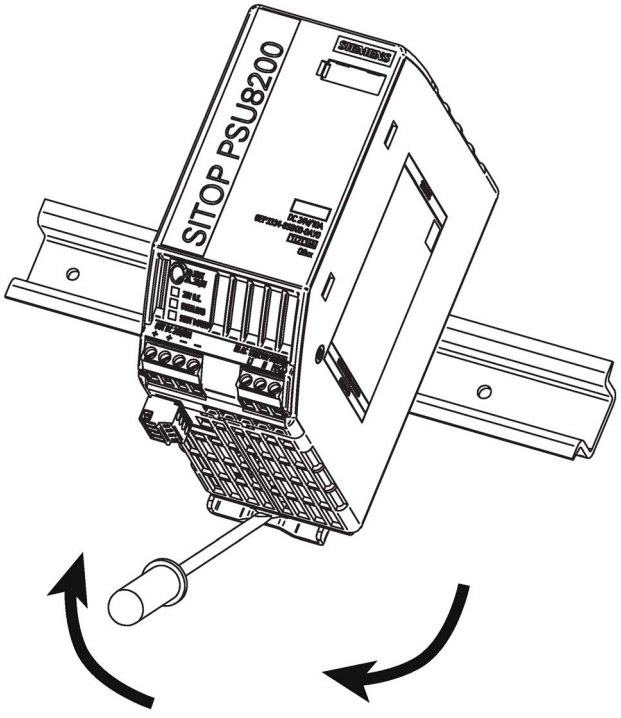


Figure 3-1 Mounting/removal (example: 6EP3334-8SB00-0AY0)

WARNING

Use in hazardous zones

If the device is to be used in a hazardous zone (II 3G Ex ec nC IIC T3 Gc) it must be installed in a distribution box with degree of protection IP54 or higher. This distribution box must comply with the requirements of IEC/EN 60079-0/GB3836.1.

Mounting position, mounting clearances

4

4.1 Standard mounting position

The device is mounted on standard mounting rails according to EN 60715. The device must be mounted vertically in such a way that the input terminals and the output terminals are at the bottom to ensure correct cooling.

A clearance of at least 40 mm or 50 mm should be maintained above and below the device (maximum depth of the cable duct, 50 mm).

No space is required at the side.

Output current as a function of the ambient temperature and mounting height

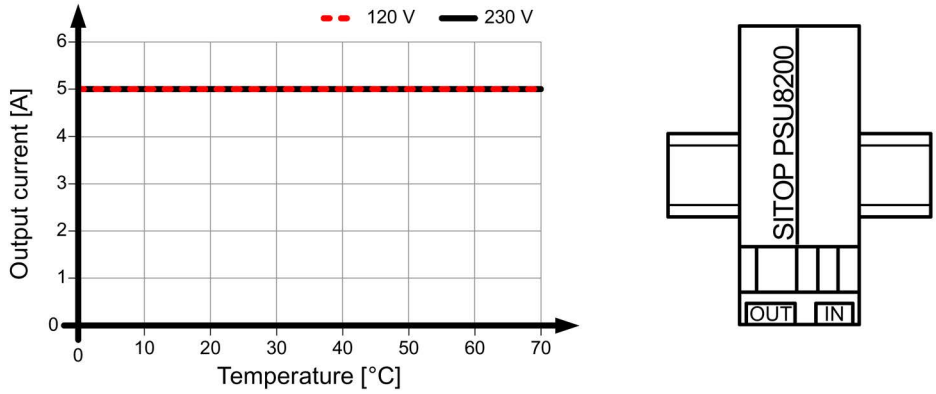


Figure 4-1 6EP3333-8SB00-0AY0 standard mounting position

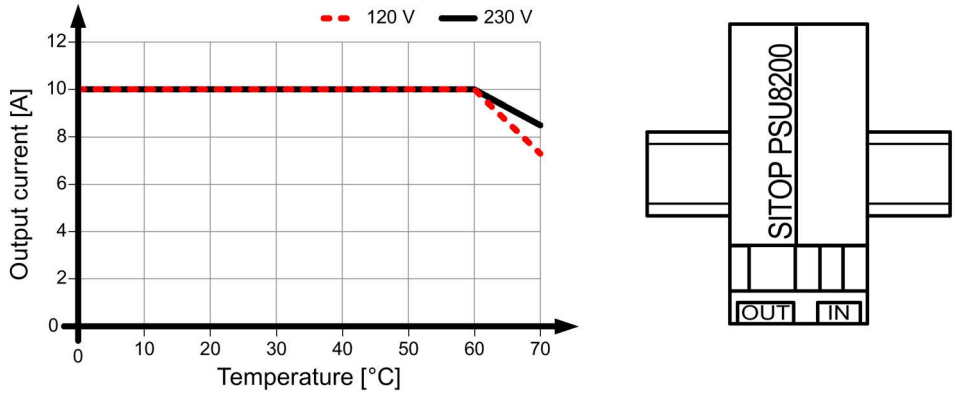


Figure 4-2 6EP3334-8SB00-0AY0 standard mounting position

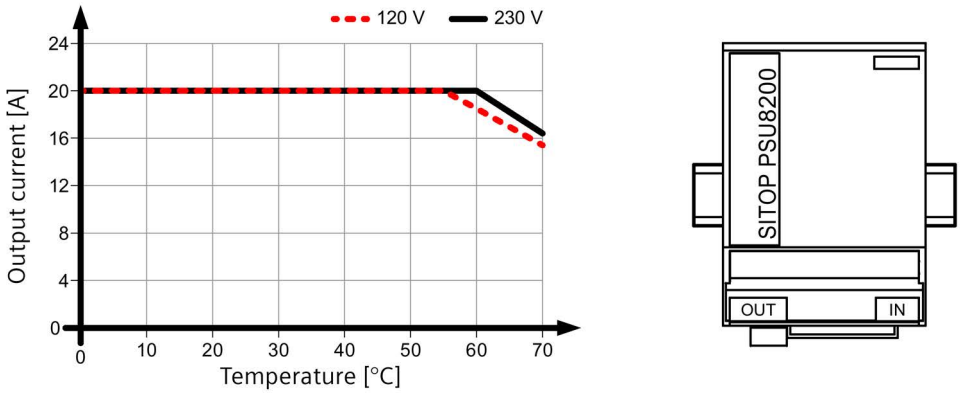


Figure 4-3 6EP1336-3BA10 standard mounting position

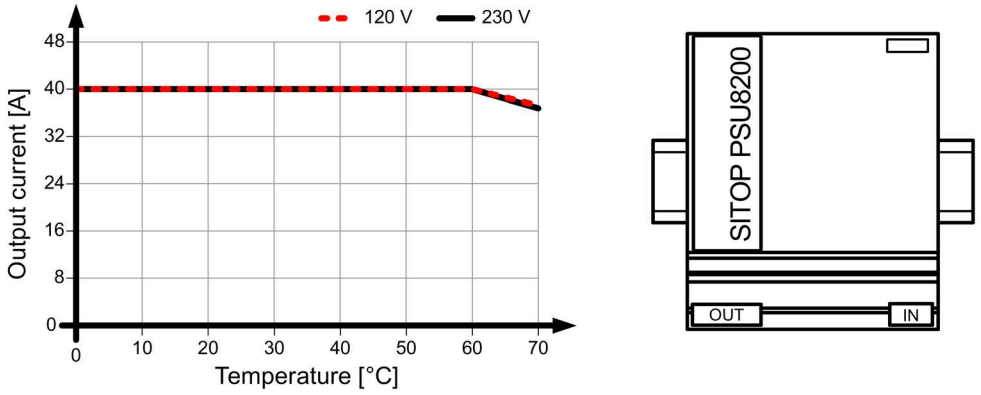


Figure 4-4 6EP3337-8SB00-0AY0 and 6EP3337-8SC00-0AY0 standard mounting position

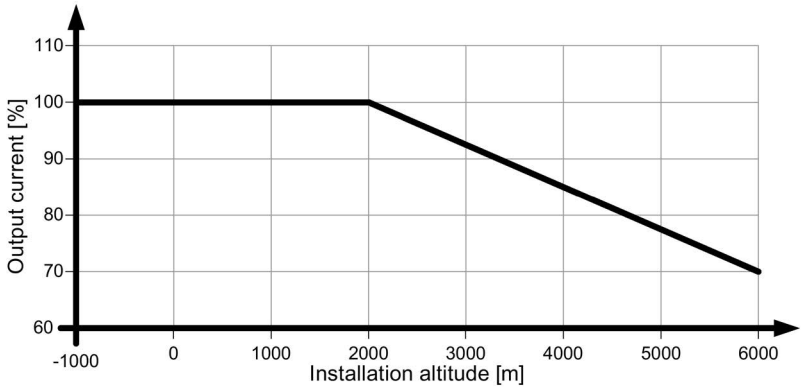


Figure 4-5 Mounting height derating

For details, see Ambient conditions (Page 71)

4.2 Other mounting positions

For mounting positions that deviate from the standard mounting position, derating factors (reduction of the output power or the permissible ambient temperature) must be observed in accordance with the following diagrams.

Note

In the case of mounting positions that deviate from the standard mounting position, reduced mechanical resistance of the devices against vibration and shock must be expected.

Particularly when installing on a vertically fastened standard mounting rail, additional measures may be required, e.g. to prevent the device from slipping on the standard mounting rail.

4.2.1 6EP3333-8SB00-0AY0

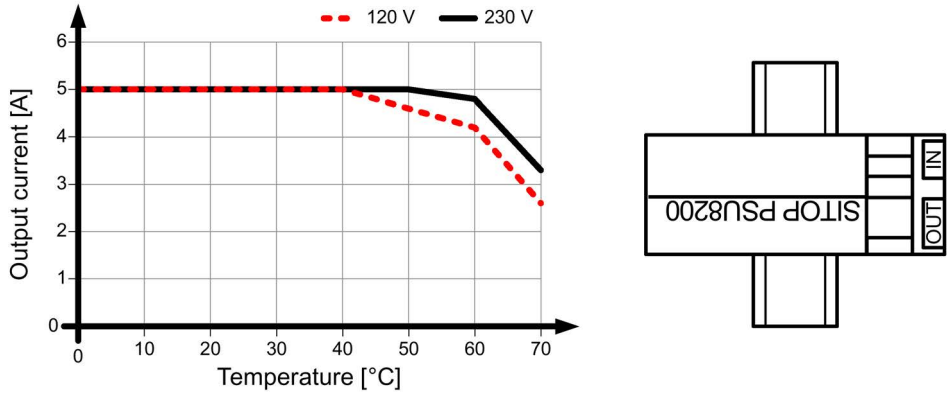


Figure 4-6 Mounting position (1)

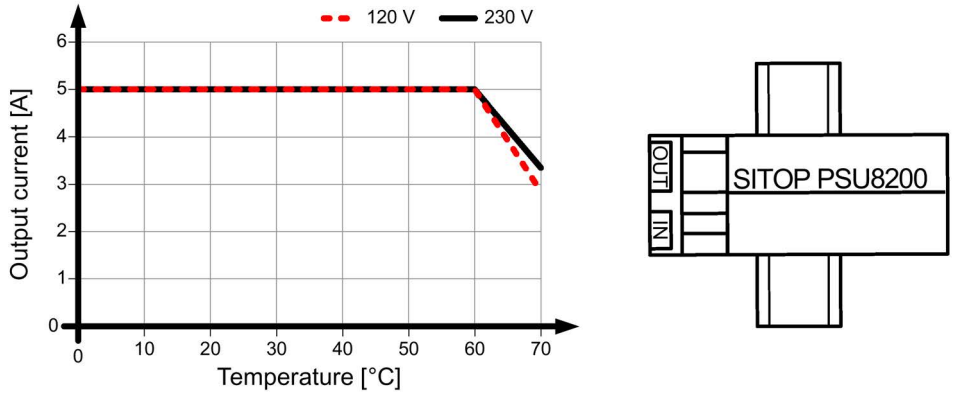


Figure 4-7 Mounting position (2)

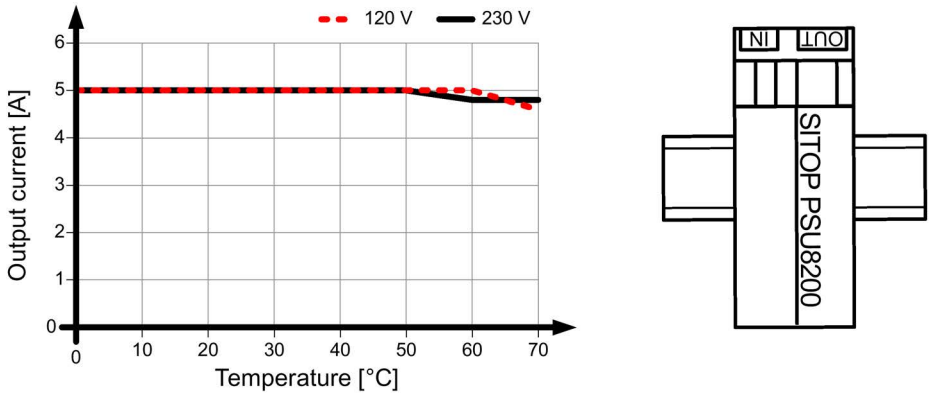


Figure 4-8 Mounting position (3)

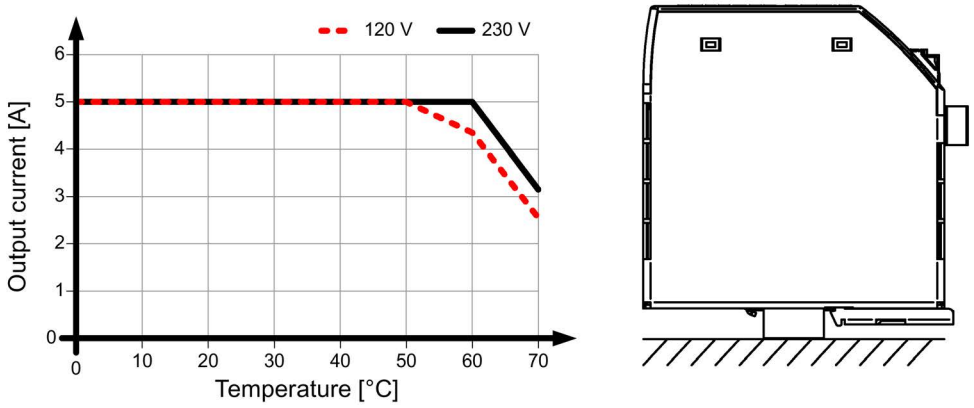


Figure 4-9 Mounting position (4)

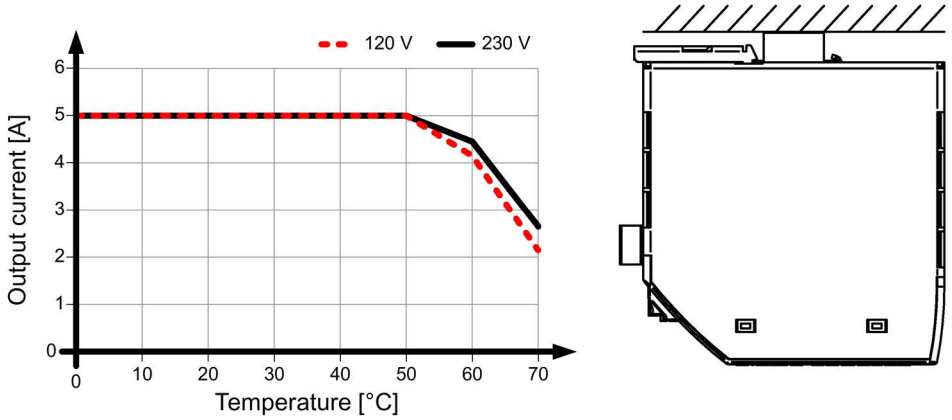


Figure 4-10 Mounting position (5)

4.2.2 6EP3334-8SB00-0AY0

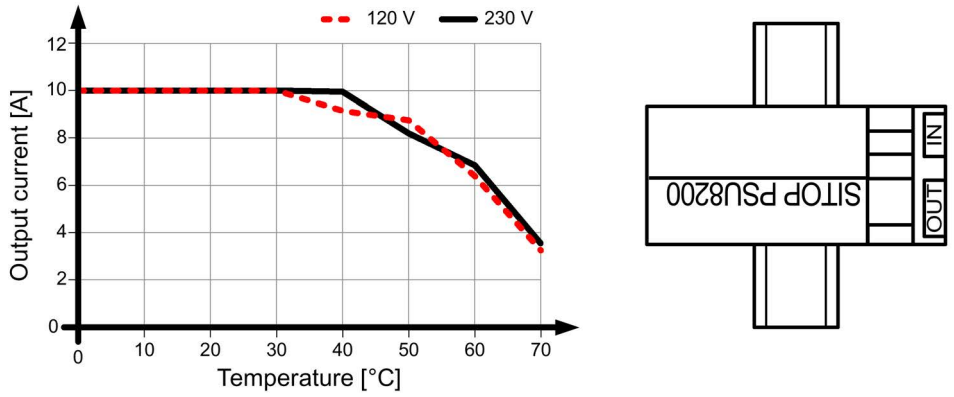


Figure 4-11 Mounting position (1)

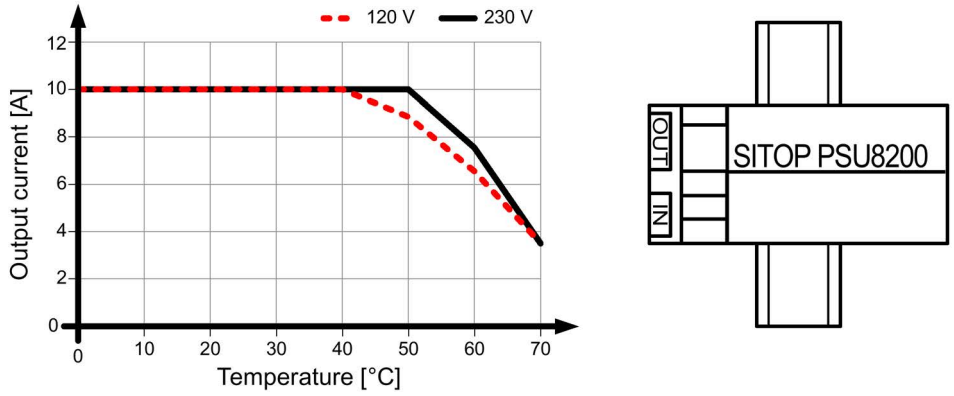


Figure 4-12 Mounting position (2)

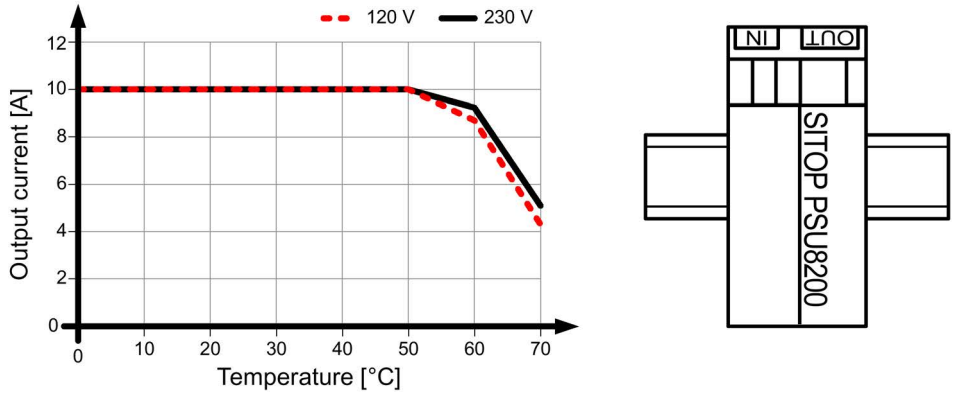


Figure 4-13 Mounting position (3)

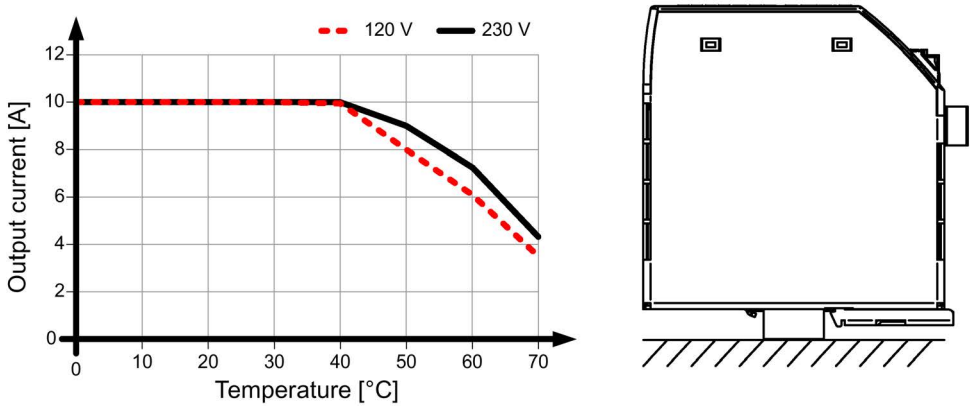


Figure 4-14 Mounting position (4)

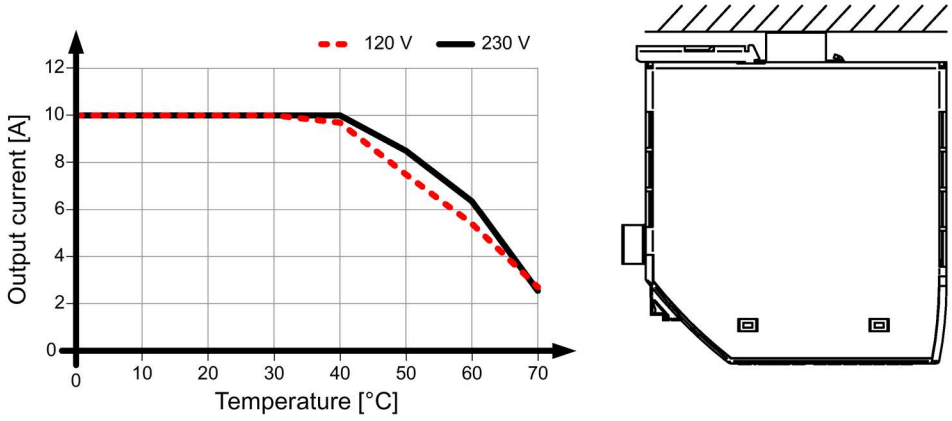
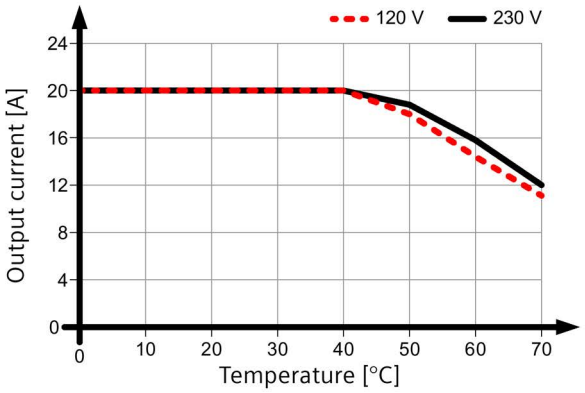


Figure 4-15 Mounting position (5)

4.2.3 6EP1336-3BA10



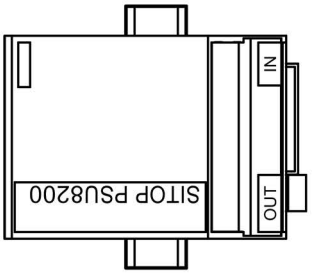
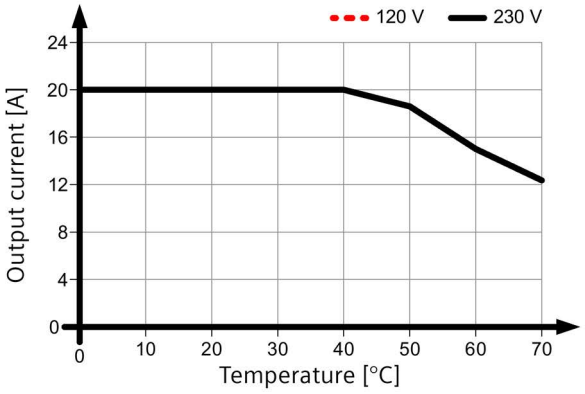


Figure 4-16 Mounting position (1)



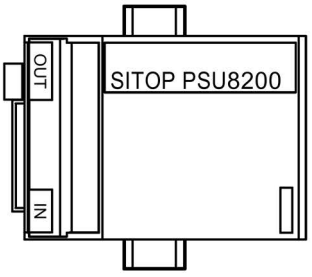
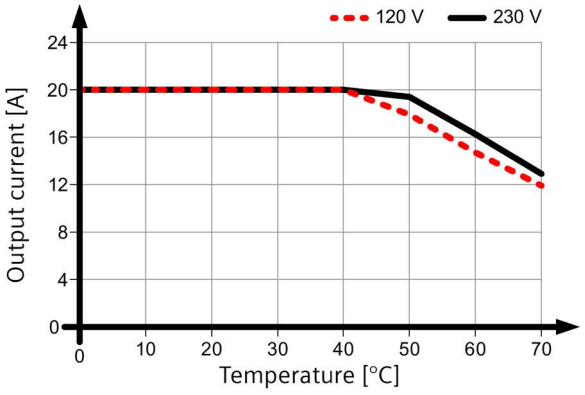


Figure 4-17 Mounting position (2)



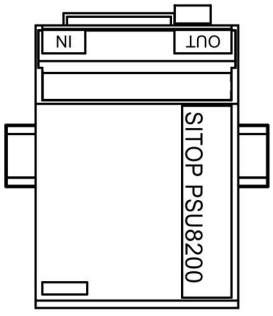


Figure 4-18 Mounting position (3)

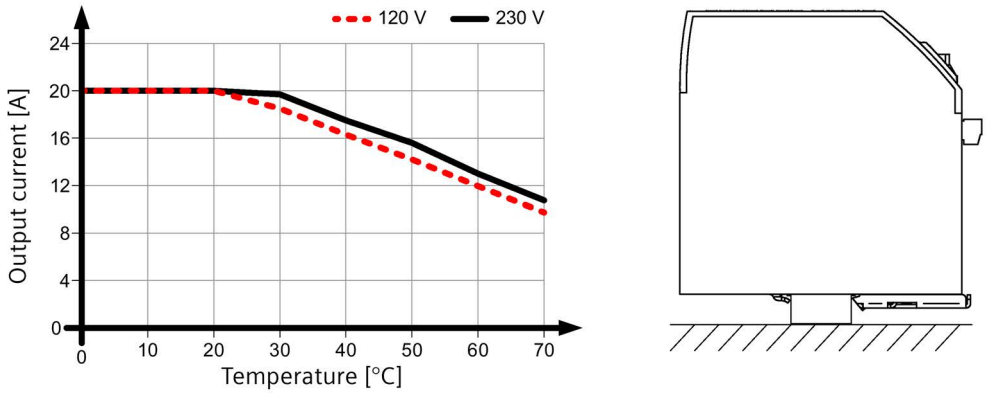


Figure 4-19 Mounting position (4)

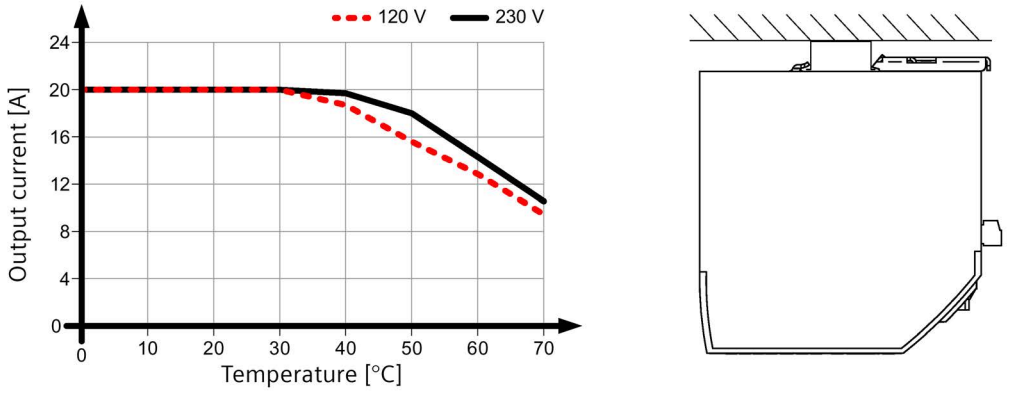


Figure 4-20 Mounting position (5)

4.2.4 6EP3337-8SB00-0AY0 and 6EP3337-8SC00-0AY0

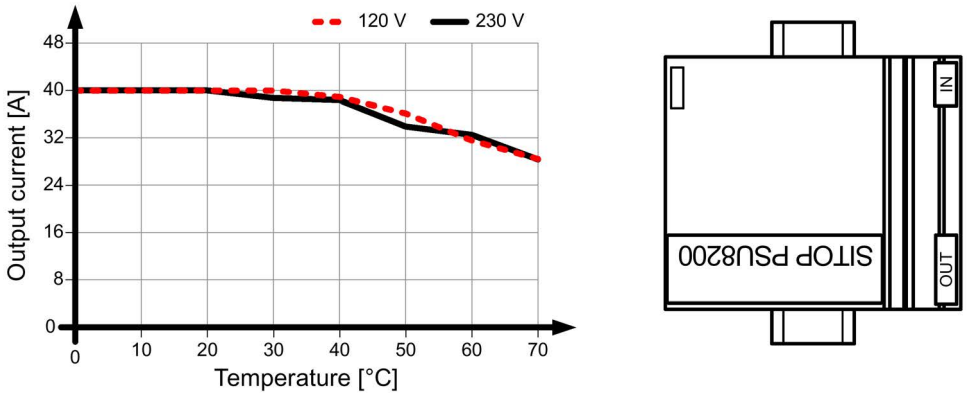


Figure 4-21 Mounting position (1)

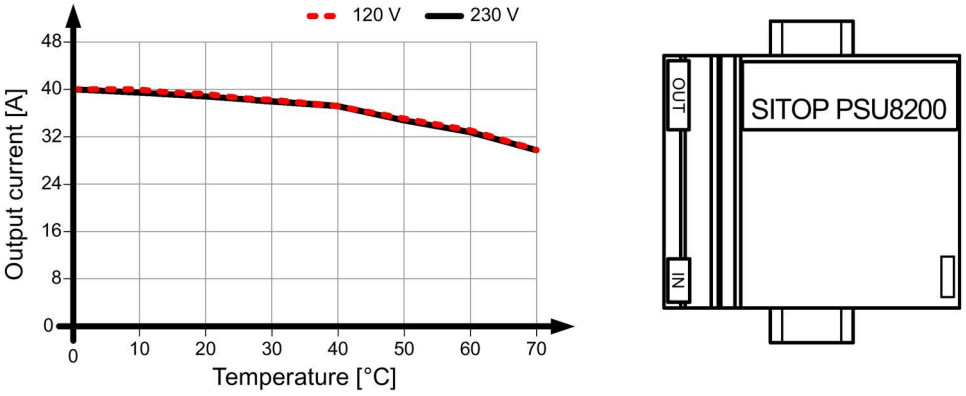


Figure 4-22 Mounting position (2)

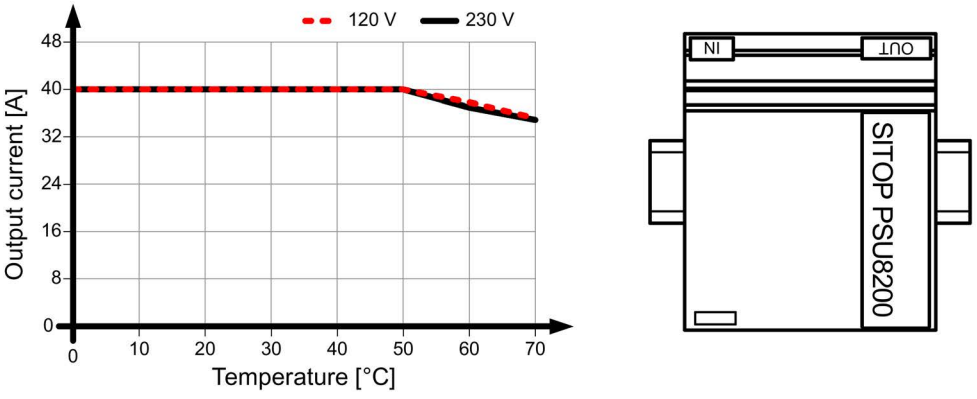


Figure 4-23 Mounting position (3)

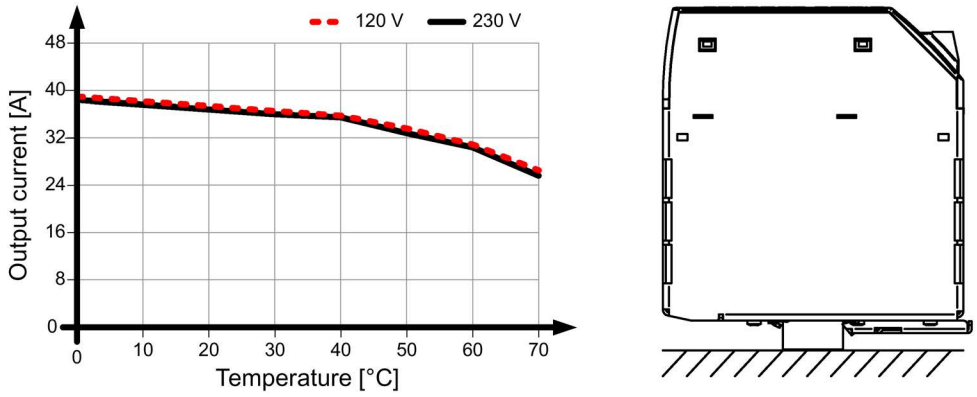


Figure 4-24 Mounting position (4)

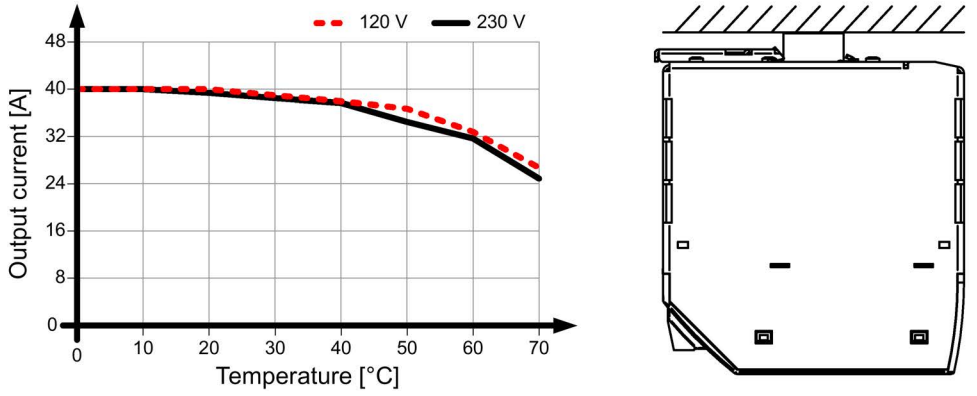


Figure 4-25 Mounting position (5)

Installation

5

WARNING

Hazard due to electric shock

Before installation or maintenance work can begin, the system's main switch must be switched off and measures taken to prevent it being switched on again. If this instruction is not observed, touching live parts can result in death or serious injury.

Copper wire approved for 90 °C should be used for wiring.
Use copper wire that as a minimum is approved for 80 °C for wiring 24 V/20 A devices.

5.1 Line-side connection

Power supplies SITOP PSU8200 1ph (6EP3333-8SB00-0AY0 and 6EP3334-8SB00-0AY0) are designed for connection to a 1-phase AC line supply with a rated voltage of 120/230 V AC, 50 - 60 Hz.



Figure 5-1 Line connection for 6EP3333-8SB00-0AY0 and 6EP3334-8SB00-0AY0

Power supply SITOP PSU8200 1ph (6EP1336-3BA10) is designed to be connected to a 1-phase AC line voltage or to 2 line conductors of three-phase line supplies (TN, TT or IT system according to IEC 60364-1) with a rated voltage of 120 - 230 V AC, 50 - 60 Hz or a DC voltage.

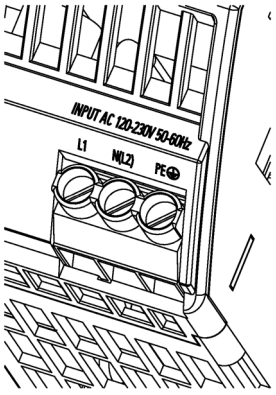


Figure 5-2 Line connection for 6EP1336-3BA10

Power supply SITOP PSU8200 1ph (6EP3337-8SB00-0AY0/6EP3337-8SC00-0AY0) is designed to be connected to a 1-phase AC line voltage or to 2 line conductors of three-phase line supplies (TN, TT or IT system according to IEC 60364-1) with a rated voltage of 120/230 V AC, 50 - 60 Hz.

The line supply is connected using terminals L1, N and PE (see Figure 5-1 Line connection for 6EP3333-8SB00-0AY0 and 6EP3334-8SB00-0AY0 (Page 41)) or L1, N(L2) and PE (Figure 5-2 Line connection for 6EP1336-3BA10 (Page 42)) and must be implemented according to IEC 60364.

A protective device (miniature circuit-breaker or circuit-breaker) and a disconnection unit to switch off the power supply must be provided. A ground-fault circuit interrupter is not permissible against indirect contact as the only protective measure. This applies for the complete line supply protected by the ground-fault circuit interrupter.

Protection

SITOP PSU8200 1ph	Line-side protection
6EP3333-8SB00-0AY0 (24 V/5 A)	**Recommended:** Miniature circuit breaker (IEC 898), characteristic C, 6 A
6EP3334-8SB00-0AY0 (24 V/10 A)	**Recommended:** Miniature circuit breaker (IEC 898), characteristic C, 10 A
6EP1336-3BA10 (24 V/20 A)	**Recommended:** Miniature circuit breaker for single-phase operation: 10 A, characteristic C; **required for two-phase operation:** Miniature circuit breaker two-pole coupled or circuit breaker for the US according to UL489, DIVQ: 3RV2711-1HD10 (120 V) or 3RV2711-1ED10 (230 V)
6EP3337-8SB00-0AY0 6EP3337-8SC00-0AY0 (24 V/40 A)	**Recommended:** Miniature circuit breaker for single-phase operation: 16 A, characteristic C; **required for two-phase operation:** Miniature circuit breaker two-pole coupled or circuit breaker for the US according to UL489, DIVQ: 3RV2421-4BA10 (120 V) or 3RV2411-1JA10 (230 V)

The protective conductor of the line supply must be connected at the PE terminal.

NOTICE
Country-specific regulations must be complied with when installing.

5.2 Output-side connection

Power supply SITOP PSU8200 1ph provides at its output an isolated (= non-grounded) SELV (ES1) output voltage (Safety Extra Low Voltage (Electrical energy source class 1)). The output of the power supply is no-load, overload, and short-circuit proof. If an overload occurs, the electronic current limiting function limits the output current to a maximum value (see Section Technical data (Page 45)).

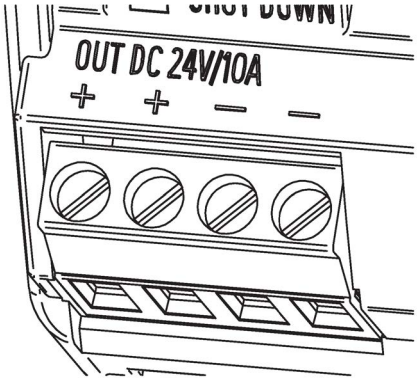


Figure 5-3 Output connection (example: 6EP3334-8SB00-0AY0)

The output voltage is connected via the + and - terminals at the output of the power supply (see Figure Output connection (example: 6EP3334-8SB00-0AY0) (Page 43)). Ensure that the output cables are dimensioned correctly for the maximum output current rms value and fused accordingly.

Note

If the safety concept of the plant or system specifies that the DC output circuit should be grounded (PELV, Protected Extra Low Voltage), then it is permissible that the output voltage of the SITOP power supply is grounded. In this case, ideally, the grounding at the output should be directly connected from terminal "-" of the power supply to a suitable connection point of the protective conductor system (PE) of the plant or system.

Technical data

6

Note

Technical data apply for a rated input voltage, rated load and 25 °C ambient temperature, if nothing else is specified.

6.1 Input

	6EP3333-8SB00-0AY0 (24 V/5 A)	**6EP3334-8SB00-0AY0 (24 V/10 A)**
Input	1-phase, AC	1-phase, AC
Rated voltage $U_{in\ rated}$	120/230 V	120/230 V
Rated voltage $U_{in\ rated}$ for DC	-	-
Voltage range for AC	85 - 132/170 - 264 V	85 - 132/170 - 264 V
• Remark	Automatic voltage switchover	Automatic voltage switchover
Voltage range for DC	-	-
• Remark		
Wide-range input	No	No
Line failure buffering at $I_{out\ rated}$, min at 230 V	35 ms	35 ms
Rated line frequency	50 - 60 Hz	50 - 60 Hz
Line frequency range	47 - 63 Hz	47 - 63 Hz
Input current at rated input voltage 120 V	2.1 A	4 A
Input current at rated input voltage 230 V	1.2 A	1.9 A
Inrush current limiting (25 °C), max.	10 A	10 A
I^2t, max	0.2 A^2s	0.3 A^2s
Integrated input fuse	Fuse T 3.15 A	Fuse T 6.3 A
Protection in the line feeder cable (IEC 898)	Recommended: Circuit breaker, characteristic C, 6 A	Recommended: Miniature circuit breaker characteristic C, 10 A

	6EP1336-3BA10 (24 V/20 A)	**6EP3337-8SB00-0AY0 6EP3337-8SC00-0AY0 (24 V/40 A)**
Input	1 and 2-phase AC or DC	1 and 2-phase AC
Rated voltage $U_{in\ rated}$	120 - 230 V	120/230 V
Rated voltage $U_{in\ rated}$ for DC	110 - 220 V	-
Voltage range for AC	85 - 275 V	85 - 132/170 - 264 V
Voltage range for DC	88 - 350 V	-
Derating:	For $U_{in} < 100$ V: $T_{u\ max} = 50$ °C $P_{out\ max}$ see Figure 6-2 Output derating for Pout max (Page 47) At 100 V < U_{in} < 170 V: $T_{u\ max} = 55$ °C $P_{out\ max} = 480$ W At $T_u = 60$ ... 70 °C: $P_{out\ max} = 340$ W	-
Wide-range input	Yes	No
Line failure buffering at $I_{out\ rated}$, min at 230 V	20 ms	25 ms
Rated line frequency	50 - 60 Hz	50 - 60 Hz
Line frequency range	47 - 63 Hz	45 - 65 Hz
Input current at a rated input voltage of 120 V AC	4.6 A	15 A
Input current at a rated input voltage of 230 V AC	2.5 A	9 A
Input current at rated input voltage 110 V DC	5.5 A	-
Input current at rated input voltage 220 V DC	2.8 A	-
Inrush current limiting (25 °C), max.	20 A	50 A
I^2t, max	5 A^2s	30 A^2s
Integrated input fuse	Fuse T 10 A	Fuse T 16 A
Protection in the line feeder cable (IEC 898)	Recommended miniature circuit breaker for single-phase operation: 10 A, characteristic C; required for two-phase operation: Miniature circuit breaker two-pole coupled or circuit breaker for the US according to UL489, DIVQ: 3RV2711-1HD10 (120 V) or 3RV2711-1ED10 (230 V)	Recommended miniature circuit breaker for single-phase operation: 16 A, characteristic C; required for two-phase operation: Miniature circuit breaker two-pole coupled or circuit breaker for the US according to UL489, DIVQ: 3RV2421-4BA10 (120 V) or 3RV2411-1JA10 (230 V)
Power consumption (active power) at full load	511 W	1055 W

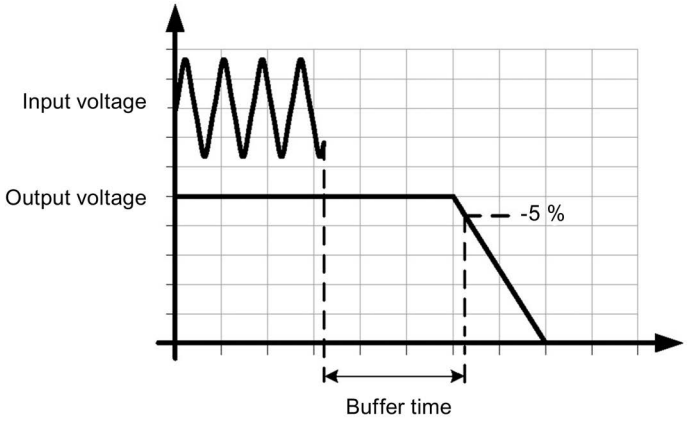


Figure 6-1 Power failure buffering

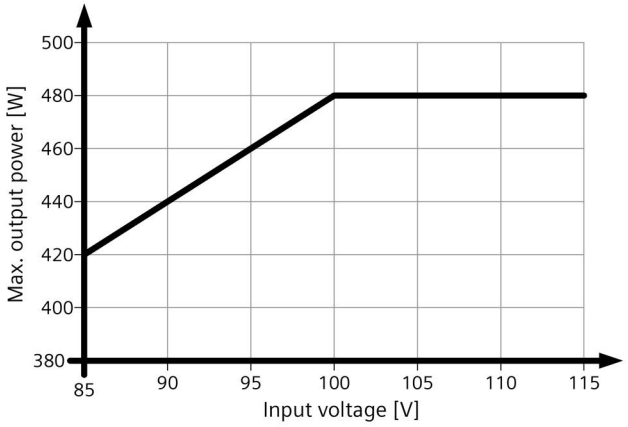


Figure 6-2 Output derating for $P_{out\ max}$

6.2 Output

	6EP3333-8SB00-0AY0 (24 V/5 A)	**6EP3334-8SB00-0AY0 (24 V/10 A)**
Output	Regulated, isolated DC voltage	Regulated, isolated DC voltage
Rated voltage $U_{out\ rated}$ DC	24 V	24 V
Total tolerance, static ±	3 %	3 %
Static line regulation, approx.	0.1 %	0.1 %
Static load regulation, approx.	0.2 %	0.3 %
Residual ripple in the load range Peak-peak, max.	50 mV	50 mV
Spikes peak-peak, max. (bandwidth, approx. 20 MHz)	200 mV	200 mV
Adjustment range	24 - 28.8 V	24 - 28.8 V
Output voltage can be adjusted	Yes	Yes
Output voltage setting	Via potentiometer	Via potentiometer
• Remark	Max. 120 W	Max. 240 W
Operating display	LED green for "24 V O.K."	LED green for "24 V O.K."
Signaling	Relay contact (NO contact, contact rating (SELV (ES1) must be complied with) 30 V DC/1 A) for "24 V O.K."	Relay contact (NO contact, contact rating (SELV (ES1) must be complied with) 30 V DC/1 A) for "24 V O.K."
Response when switching on/off	U_{out} overshoots by approximately 3 %	U_{out} overshoots by approximately 3 %
Starting delay, max.	1 s	1 s
Voltage rise, typ.	30 ms	70 ms
Rise time of the output voltage, max.	500 ms	500 ms
Rated current $I_{out\ rated}$	5 A	10 A
Current range	0 - 5 A	0 - 10 A
• Remark	for U_{in} < 100 V/< 200 V: 80 % $I_{out\ rated}$	60 ... 70 °C derating approx. 2 % $I_{out\ rated}$/K; for U_{in} < 100 V/< 200 V: 80 % $I_{out\ rated}$
Active power output, typ.	120 W	240 W
Constant overload current for a short circuit when powering up, typ.	6 A for 150 ms	12 A for 150 ms
brief overload (power boost)	15 A for 25 ms (per min)	30 A for 25 ms (per min)
Overload capability (extra power)	7.5 A for 5 s (per min)	15 A for 5 s (per min)
Can be connected in parallel to increase the power rating	Yes	Yes
• Remark	Switchable characteristic	Switchable characteristic
Number of devices that can be connected in parallel to increase the power rating, units	2	2
Output characteristic	See Figure 6-8 Output characteristic 6EP3337-8SB00-0AY0 and 6EP3337-8SC00-0AY0 single operation (Page 51)	See Figure 6-6 Output characteristic 6EP3334-8SB00-0AY0 single operation (Page 51)

	6EP1336-3BA10 (24 V/20 A)	**6EP3337-8SB00-0AY0 6EP3337-8SC00-0AY0 (24 V/40 A)**
Output	Regulated, isolated DC voltage	Regulated, isolated DC voltage
Rated voltage $U_{out\ rated}$ DC	24 V	24 V
Total tolerance, static ±	3 %	3 %
Static line regulation, approx.	0.1 %	0.1 %
Static load regulation, approx.	0.3 %	0.3 %
Residual ripple in the load range Peak-peak, max.	100 mV	100 mV
Spikes peak-peak, max. (bandwidth, approx. 20 MHz)	200 mV	240 mV
Adjustment range	24 - 28 V	24 - 28 V
Output voltage can be adjusted	Yes	Yes
Output voltage setting	Via potentiometer	Via potentiometer
• Remark	Max. 480 W	Max. 960 W
Operating display	LED green for "24 V O.K."	LED green for "24 V O.K."
Signaling	Relay contact (NO contact, contact rating (SELV (ES1) must be complied with) 30 V DC/1 A) for "24 V O.K."	Relay contact (NO contact, contact rating (SELV (ES1) must be complied with) 30 V DC/1 A) for "24 V O.K."
Response when switching on/off	No overshoot of U_{out} (Soft-Start)	U_{out} overshoots by approximately 3 %
Starting delay, max.	1.5 s	1.5 s
Voltage rise, typ.	250 ms	30 ms
Rise time of the output voltage, max.	280 ms	150 ms
Rated current $I_{out\ rated}$	20 A	40 A
Current range	0 - 20 A	0 - 40 A
• Remark	60 ... 70 °C derating $P_{out\ max}$ = 340 W	60 ... 70 °C derating 1 % $I_{out\ rated}$/K; derating for U_{in} < 120 V: See Figure 6-4 Output derating for 6EP3337-8SB00-0AY0 and 6EP3337-8SC00-0AY0 (Page 50)
Active power output, typ.	480 W	960 W
brief overload (power boost)	60 A for 25 ms (per min)	120 A for 25 ms (per min)
Overload capability (extra power)	30 A for 5 s (per min)	60 A for 5 s (pro min)
Can be connected in parallel to increase the power rating	Yes	Yes
• Remark	Characteristic that can be switched over, only devices with the same product state may be connected in parallel.	Switchable characteristic
Number of devices that can be connected in parallel to increase the power rating, units	2	2
Output characteristic	See Output (Page 48)	See Output (Page 48)

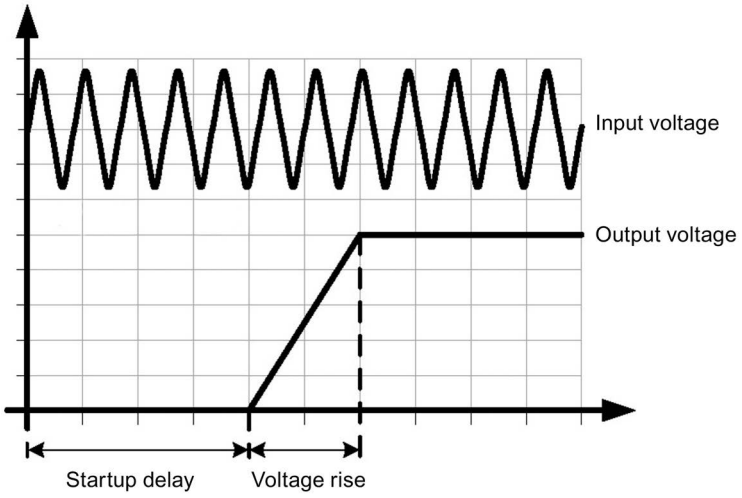


Figure 6-3 Starting delay/voltage rise

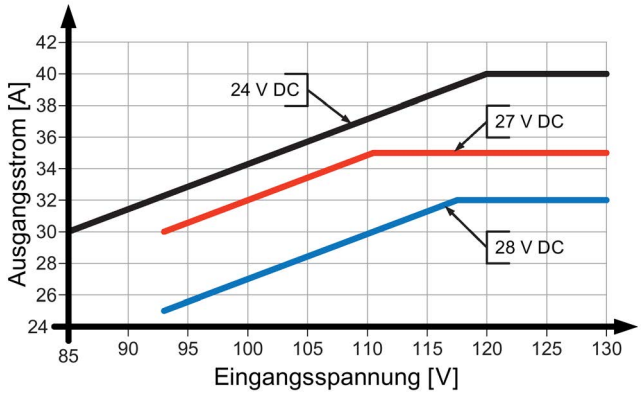


Figure 6-4 Output derating for 6EP3337-8SB00-0AY0 and 6EP3337-8SC00-0AY0

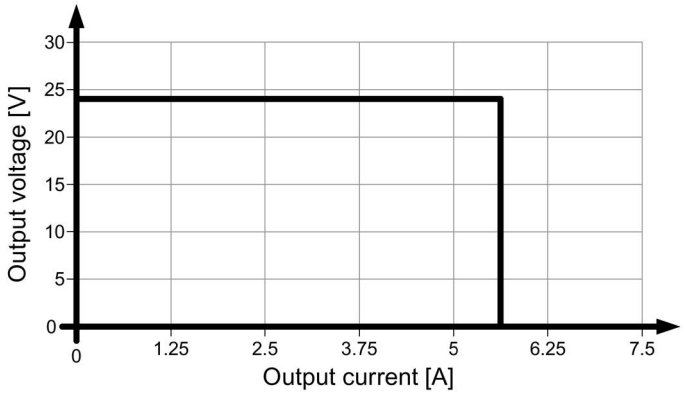


Figure 6-5 Output characteristic 6EP3333-8SB00-0AY0 single operation

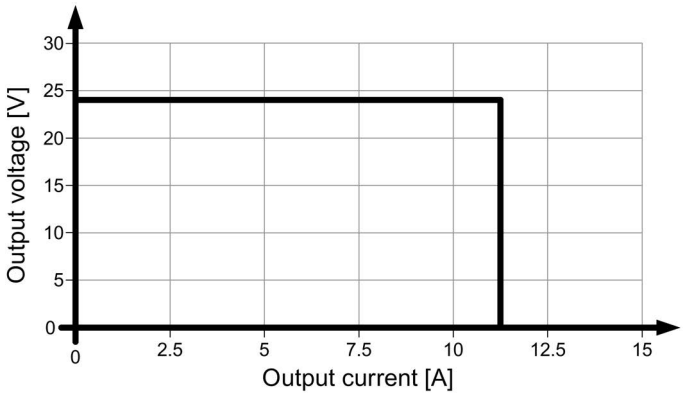


Figure 6-6 Output characteristic 6EP3334-8SB00-0AY0 single operation

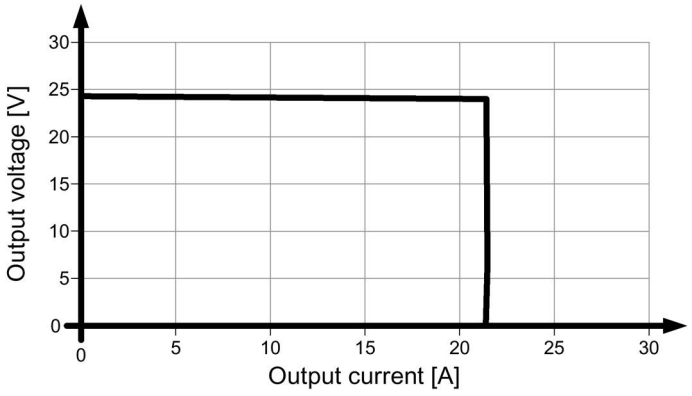


Figure 6-7 Output characteristic 6EP1336-3BA10 single operation

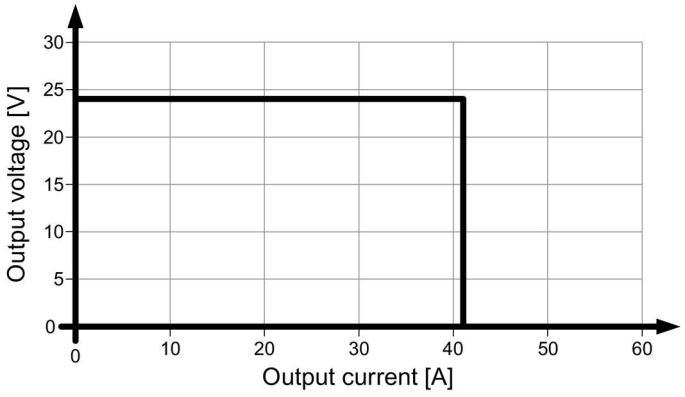


Figure 6-8 Output characteristic 6EP3337-8SB00-0AY0 and 6EP3337-8SC00-0AY0 single operation

The device supplies a constant output voltage until the current limit is reached. In the event of an overload, the output current and the output voltage are reduced.

Selector switch A on (parallel operation):

The output voltage falls with increasing output current.

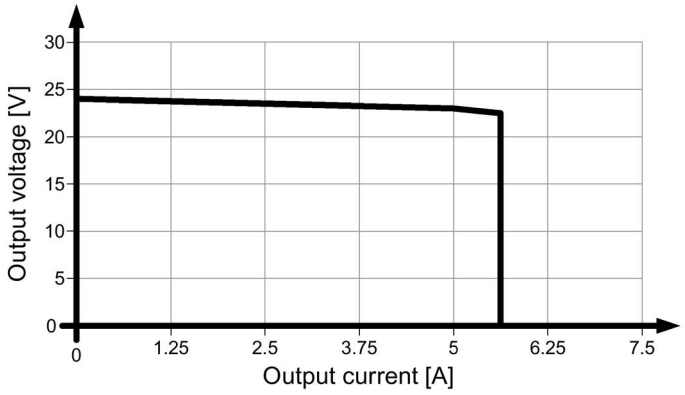


Figure 6-9 Output characteristic 6EP3333-8SB00-0AY0 parallel operation

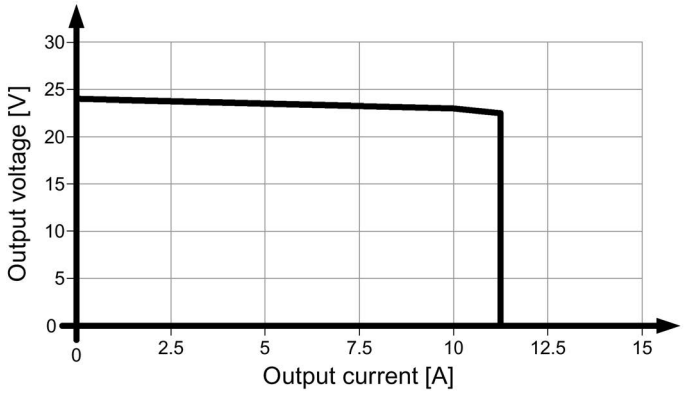


Figure 6-10 Output characteristic 6EP3334-8SB00-0AY0 parallel operation

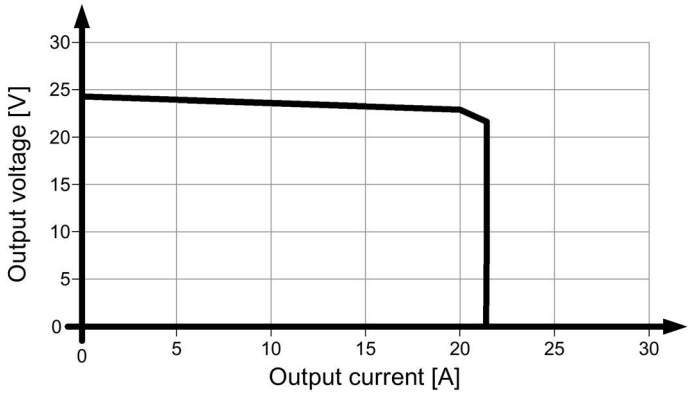


Figure 6-11 Output characteristic 6EP1336-3BA10 parallel operation

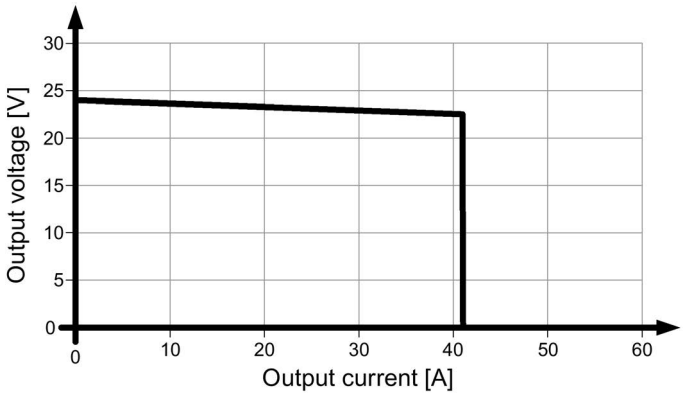


Figure 6-12 Output characteristic 6EP3337-8SB00-0AY0 and 6EP3337-8SC00-0AY0 parallel operation

Selector switch B on (latching shutdown):

The device is shutdown if the overload lasts longer than 100 ms. 6EP3333-8SB00-0AY0 and 6EP3334-8SB00-0AY0 are reset using power supply OFF for a minimum of 60 s or remote OFF and ON at the remote contact. 6EP1336-3BA10 is reset using power supply OFF for a minimum of 5 s or remote OFF and ON at the remote contact. 6EP3337-8SB00-0AY0 and 6EP3337-8SC00-0AY0 are reset using power supply OFF and ON again after the red LED has gone dark.

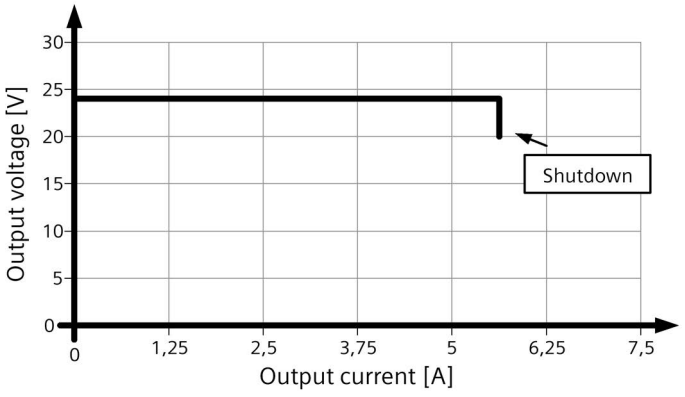


Figure 6-13 Output characteristic 6EP3333-8SB00-0AY0 latching shutdown

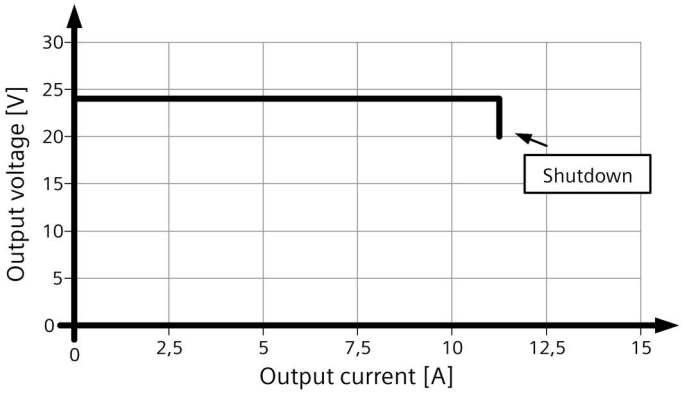


Figure 6-14 Output characteristic 6EP3334-8SB00-0AY0 latching shutdown

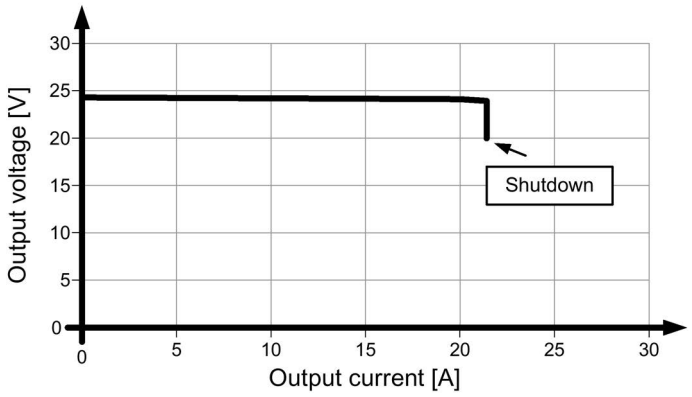


Figure 6-15 Output characteristic 6EP1336-3BA10 latching shutdown

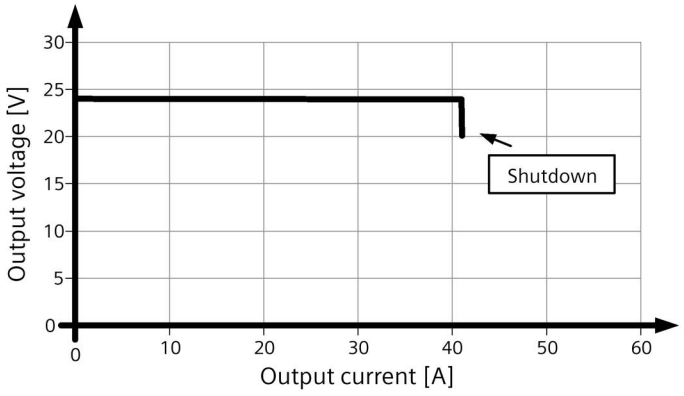


Figure 6-16 Output characteristic 6EP3337-8SB00-0AY0 and 6EP3337-8SC00-0AY0 latching shutdown

6.3 Efficiency

	6EP3333-8SB00-0AY0 (24 V/5 A)	6EP3334-8SB00-0AY0 (24 V/10 A)
Efficiency at $U_{out\ rated}$, $I_{out\ rated}$, approx.	93 %	94 %
Power loss at $U_{out\ rated}$, $I_{out\ rated}$, approx.	9 W	18 W
No-load operation power loss, approx.	1.5 W	1.5 W
Power loss in the "latching shutdown" state	1.2 W	1.2 W

	6EP1336-3BA10 (24 V/20 A)	6EP3337-8SB00-0AY0 (24 V/40 A) 6EP3337-8SC00-0AY0 (24 V/40 A)
Efficiency at $U_{out\ rated}$, $I_{out\ rated}$, approx.	94 %	92 %
Power loss at $U_{out\ rated}$, $I_{out\ rated}$, approx.	31 W	82 W
No-load operation power loss, approx.	3.3 W	7 W
Power loss in the "latching shutdown" state	2.5 W	3 W

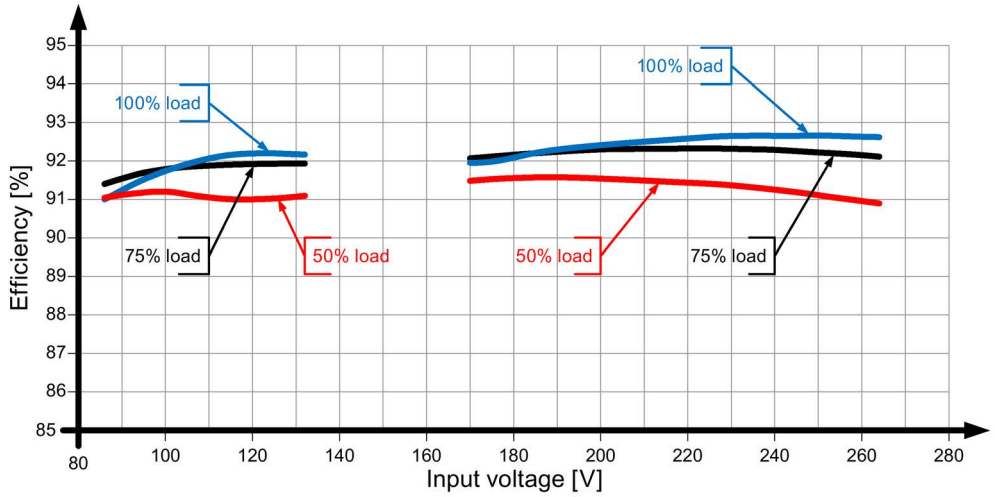


Figure 6-17 Efficiency 6EP3333-8SB00-0AY0

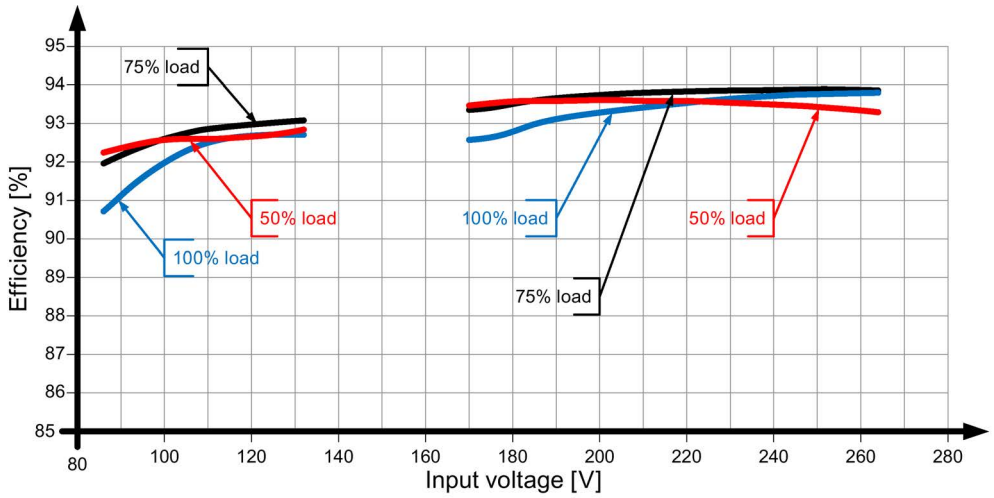


Figure 6-18 Efficiency 6EP3334-8SB00-0AY0

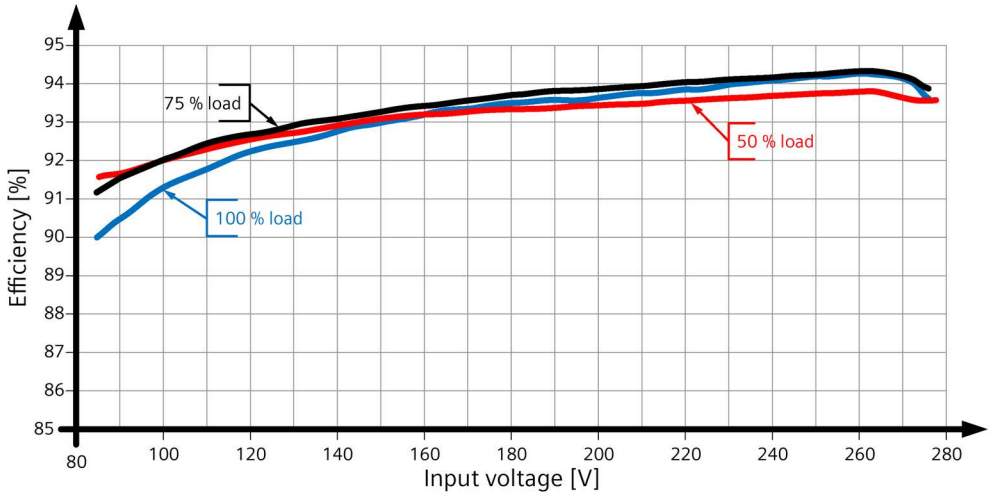


Figure 6-19 Efficiency 6EP1336-3BA10

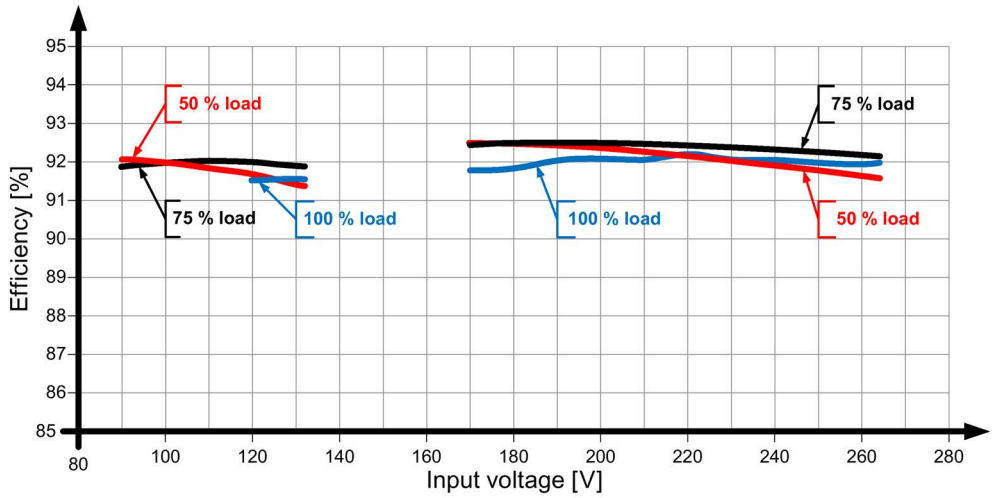


Figure 6-20 Efficiency 6EP3337-8SB00-0AY0 and 6EP3337-8SC00-0AY0

6.4 Closed-loop control

	6EP3333-8SB00-0AY0 (24 V/5 A)	**6EP3334-8SB00-0AY0 (24 V/10 A)**	**6EP1336-3BA10 (24 V/20 A)**	**6EP3337-8SB00-0AY0 6EP3337-8SC00-0AY0 (24 V/40 A)**
Dyn. line regulation ($U_{in\ rated}$ ± 15 %), max.	0.1 %	0.1 %	1 %	1 %
Dyn. load regulation (I_{out}: 50/100/50 %), U_{out} ± typ.	2 %	4 %	1 %	1 %
Load step regulation time 50 to 100%, typ.	250 µs	250 µs	1 ms	1 ms
Load step regulation time 100 to 50%, typ.	500 µs	500 µs	1 ms	1 ms
Regulation time, max.	1 ms	1 ms	5 ms	5 ms
Dyn. load regulation (I_{out}: 10/90/10 %), U_{out} ± typ.	2 %	4 %	2 %	2 %
Load step regulation time 10 to 90 %, typ.	250 µs	250 µs	1 ms	1 ms
Load step regulation time 90 to 10 %, typ.	500 µs	500 µs	1 ms	1 ms

6.5 Protection and monitoring

	6EP3333-8SB00-0AY0 (24 V/5 A)	**6EP3334-8SB00-0AY0 (24 V/10 A)**
Output overvoltage protection	< 33 V	< 33 V
Current limitation, typ.	6 A	12 A
Property of the output: short-circuit proof	Yes	Yes
Short-circuit protection	Optional constant current characteristic curve or latching shutdown	Optional constant current characteristic curve or latching shutdown
Continuous short-circuit current: rms value, typ.	6 A	12 A
• Remark	Overload capability 150 % $I_{out\ rated}$ up to 5 s/min	Overload capability 150 % $I_{out\ rated}$ up to 5 s/min
Overload / short-circuit indicator	Yellow LED for "overload", red LED for "latching shutdown"	

	6EP1336-3BA10 (24 V/20 A)	**6EP3337-8SB00-0AY0 6EP3337-8SC00-0AY0 (24 V/40 A)**
Output overvoltage protection	< 31.8 V	< 32 V
Current limitation, typ.	21.5 A	41 A
Property of the output: short-circuit proof	Yes	Yes
Short-circuit protection	Optional constant current characteristic approx. 21.5 A or latching shutdown	Optional constant current characteristic approx. 41 A or latching shutdown
Continuous short-circuit current: rms value, typ.	21.5 A	41 A
• Remark	Overload capability 150 % $I_{out\ rated}$ up to 5 s/min	Overload capability 150 % $I_{out\ rated}$ up to 5 s/min
Overload / short-circuit indicator	Yellow LED for "overload", red LED for "latching shutdown"	Yellow LED for "overload", red LED for "latching shutdown"

6.6 MTBF

	6EP3333-8SB00-0AY0 (24 V/5 A) **6EP3334-8SB00-0AY0 (24 V/10 A)**	**6EP1336-3BA10 (24 V/20 A)**	**6EP3337-8SB00-0AY0** **6EP3337-8SC00-0AY0 (24 V/40 A)**
Mean Time Between Failures	SN29500: > 1200000 h at 40 °C, rated load, 24 h operation	SN29500: > 583500 h at 40 °C, rated load, 24 h operation	SN29500: > 800000 h at 40 °C, rated load, 24 h operation

6.7 Mechanical system

	6EP3333-8SB00-0AY0 (24 V/5 A)	**6EP3334-8SB00-0AY0 (24 V/10 A)**
Connection system	Screw-type terminal	Screw-type terminal
Connections: Line input	L1, N, PE: 1 screw terminal each for 0.2 - 2.5 mm² solid (finely stranded)	L1, N, PE: 1 screw terminal each for 0.2 - 2.5 mm² solid (finely stranded)
Connections: Output	+, -: 2 screw terminals each for 0.2 - 2.5 mm² solid (finely stranded)	+, -: 2 screw terminals each for 0.2 - 2.5 mm² solid (finely stranded)
Connections: Aux. contact	13, 14; 15, 16 (signaling contact; remote contact): 1 screw terminal each for 0.14 - 1.5 mm²	13, 14; 15, 16 (signaling contact; remote contact): 1 screw terminal each for 0.14 - 1.5 mm²
Width of the housing	45 mm	55 mm
Height of the housing	125 mm	125 mm
Depth of the housing	125 mm	125 mm
Mounting width	45 mm	55 mm
Mounting height	225 mm	225 mm
Weight, approx.	0.8 kg	1.0 kg
Product feature of the housing: housings can be lined up next to one another	Yes	Yes
Type of mounting: Wall mounting	No	No
Type of mounting: Rail mounting	Yes	Yes
Type of mounting: S7-300 rail mounting	No	No
Mounting	Can be snapped onto standard TH35 × 7.5/15 mounting rails (EN 60715)	Can be snapped onto standard TH35 × 7.5/15 mounting rails (EN 60715)

	6EP1336-3BA10 (24 V/20 A)	**6EP3337-8SB00-0AY0 6EP3337-8SC00-0AY0 (24 V/40 A)**
Connection system	Screw-type terminal	Screw-type terminal
Connections: Line input	L, N(L2), PE: 1 screw terminal each for 0.2 - 6 (4) mm² solid (finely stranded)	L, N(L2), PE: 1 screw terminal each for 0.2 - 6 (4) mm² solid (finely stranded)
Connections: Output	+, -: 2 screw terminals each for 0.2 - 6 (4) mm² solid (finely stranded)	+, -: 2 screw terminals each for 0.5 - 16 mm² solid (finely stranded)
Connections: Aux. contact	13, 14; 15, 16 (signaling contact; remote contact): 1 screw terminal each for 0.14 - 1.5 mm²	13, 14 (signaling contact): 1 screw terminal each for 0.14 - 1.5 mm²
Width of the housing	90 mm	145 mm
Height of the housing	125 mm	145 mm
Depth of the housing	125 mm	150 mm
Mounting width	90 mm	145 mm
Mounting height	225 mm	225 mm
Weight, approx.	1.2 kg	3.1 kg
Product feature of the housing: housings can be lined up next to one another	Yes	Yes
Type of mounting: Wall mounting	No	No
Type of mounting: Rail mounting	Yes	Yes
Type of mounting: S7-300 rail mounting	No	No
Mounting	Can be snapped onto standard TH35 × 7.5/15 mounting rails (EN 60715)	Can be snapped onto standard TH35 × 15 mounting rails (EN 60715)

6.8 Accessories

	6EP3333-8SB00-0AY0 (24 V/5 A) **6EP3334-8SB00-0AY0 (24 V/10 A)** **6EP1336-3BA10 (24 V/20 A)** **6EP3337-8SB00-0AY0 (24 V/40 A)** **6EP3337-8SC00-0AY0 (24 V/40 A)**
Electrical accessories	Buffer module, redundancy module
Mechanical accessories	Device identification labels 20 mm × 7 mm, Ti grey 3RT2900-1SB20

6.9 Dimension drawing

See Section Dimensions and weight (Page 26)

CAD data that can be downloaded from the Internet:

6EP3333-8SB00-0AY0
(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G_KT01_XX_00963)

6EP3334-8SB00-0AY0
(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G_KT01_XX_00966)

6EP1336-3BA10
(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G_KT01_XX_00385)

6EP3337-8SB00-0AY0
(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G_KT01_XX_01213)

6EP3337-8SC00-0AY0
(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G_KT01_XX_01904)

Safety, approvals, EMC

7

7.1 Safety

	6EP3333-8SB00-0AY0 (24 V/5 A) 6EP3334-8SB00-0AY0 (24 V/10 A)	6EP1336-3BA10 (24 V/20 A)	6EP3337-8SB00-0AY0 (24 V/40 A) 6EP3337-8SC00-0AY0 (24 V/40 A)
Primary/secondary galvanic isolation	Yes		
Electrical isolation	SELV (ES1) output voltage U_{out} according to EN 61204-7	SELV (ES1) output voltage U_{out} according to EN 61204-7 Transformer according to EN 61558-2-16	
Protection class	Class I		
Degree of protection (EN 60529)	IP20		
Leakage current, typ.	1 mA		40 A device 0.1 mA
Leakage current, max.	3.5 mA		40 A device 0.1 mA
Test voltage	See Table 7-1 Test voltage for 6EP3333-8SB00-0AY0 and 6EP3334-8SB00-0AY0 (Page 66)	See Table 7-2 Test voltage for 6EP1336-3BA10 (Page 67)	See Table 7-3 Test voltage for 6EP3337-8SB00-0AY0 and 6EP3337-8SC00-0AY0 (Page 67)

7.2 Test voltage

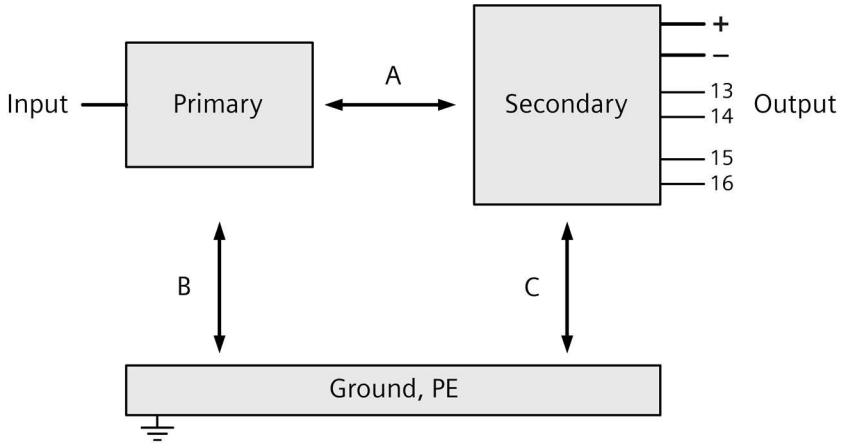


Figure 7-1 Test voltage diagram

Only the manufacturer can perform the type test and production test; users can also perform the field test.

Preconditions for performing the field test:

Tests (A) & (B)

- Connect the input terminals with one another
- Connect the output terminals, signaling contact, remote contact and PE with one another

Test (C)

- Connect the output terminals, signaling contact and remote contact with one another and measure with respect to PE

Table 7- 1 Test voltage for 6EP3333-8SB00-0AY0 and 6EP3334-8SB00-0AY0

	Test time	**Prim ↔ sec (A)**	**Prim ↔ PE (B)**	**Sec ↔ PE (C)**
Type test	60 s	4000 V DC	2500 V DC	-
Production test (routine test)	1 s	2560 V DC*)	2250 V DC	860 V DC
Field test	1 s	2560 V DC	2250 V DC	860 V DC

*) All components for primary (line side) with respect to secondary (load side) are type-tested with at least 4000 V DC and 100% of the components are subject to a routine test with at least 3600 V DC.

Remark:
Tripping current for DC measurement: max. 10 mA

Table 7- 2 Test voltage for 6EP1336-3BA10

	Test time	**Prim ↔ sec (A)**	**Prim ↔ PE (B)**	**Sec ↔ PE (C)**
Type test	60 s	4000 V DC	2500 V DC	-
Production test (routine test)	1 s	3600 V DC	2250 V DC	850 V DC
Field test	1 s	3600 V DC	2250 V DC	850 V DC

Remark:
Tripping current for DC measurement: max. 10 mA

Table 7- 3 Test voltage for 6EP3337-8SB00-0AY0 and 6EP3337-8SC00-0AY0

	Test time	**Prim ↔ sec (A)**	**Prim ↔ PE (B)**	**Sec ↔ PE (C)**
Type test	60 s	4000 V DC	2500 V DC	-
Production test (routine test)	1 s	3300 V DC	2560 V DC	850 V DC
Field test	1 s	3300 V DC	2560 V DC	850 V DC

Remark:
Tripping current for DC measurement: max. 10 mA

7.3 Approvals

	6EP3333-8SB00-0AY0 (24 V/5 A) **6EP3334-8SB00-0AY0 (24 V/10 A)**	**6EP1336-3BA10 (24 V/20 A)**	**6EP3337-8SB00-0AY0 (24 V/40 A)**	**6EP3337-8SC00-0AY0 (24 V/40 A)**
CE marking	Yes, (2014/35/EU, 2014/30/EU and 2011/65/EU)			Yes, (2014/35/EU, 2014/30/EU, 2011/65/EU and 2014/34/EU)
CB certificate	Yes			
CB scheme	IEC 62368-1			
UL/cUL approval	cULus-listed (UL 508, CSA C22.2 No. 107.1), File E197259			
cCSAus approval	Yes, CSA C22.2 No. 62368-1, UL 62368-1			
Explosion protection	-	-	-	Yes
ATEX approval	-	-	-	II 3G Ex ec nC IIC T3 Gc (EPS 21 ATEX 1 294 X)
IECEex approval	-	-	-	ja (IECEx EPS 21.0086X)
cULus HazLoc approval	-	-	-	ja (E330455)
CCC HazLoc approval	-	-	-	II 3G Ex ec nC IIC T3 Gc (2023322303005006)
UKCA HazLoc approval	-	-	-	II 3G Ex ec nC IIC T3 Gc (EPS 21 UKEX 1 294 X)
SEMI F47	Yes			
Marine approvals	DNV, ABS			
UKCA marking	Yes			
RCM approval	Yes			
EAC approval	Yes			
SONCAP certificate	Yes			
BIS certificate	-	Yes		

7.4 EMC

		6EP3333-8SB00-0AY0 (24 V/5 A) **6EP3334-8SB00-0AY0 (24 V/10 A)**
Electrostatic discharge	EN 61000-4-2	8 kV contact, 8 kV air
Electromagnetic fields	EN 61000-4-3	80 - 1000 MHz 25 V/m 1000 - 2700 MHz 10 V/m
High-speed transient disturbance variables (burst)	EN 61000-4-4	4 kV at line supply connections 2 kV at the DC output
Surge voltages	EN 61000-4-5	3 kV symmetrical at the line connections 6 kV unsymmetrical at the line connections 500 V symmetrical/unsymmetrical at DC output cables
High-frequency fields	EN 61000-4-6	10 V; 0.15 - 80 MHz
Magnetic fields	EN 61000-4-8	30 A/m; 50 Hz
Voltage dips	EN 61000-4-11	-
Voltage interruptions	EN 61000-4-11	-
Emitted interference	EN 55032	Class B
Line harmonics limit	EN 61000-3-2	Class A
Generic standards	EN 61000-6-2	Immunity for industrial environments
	EN 61000-6-3	Emission for residential areas

		6EP1336-3BA10 (24 V/20 A)	**6EP3337-8SB00-0AY0 (24 V/40 A)** **6EP3337-8SC00-0AY0 (24 V/40 A)**
Electrostatic discharge	EN 61000-4-2	8 kV contact, 8 kV air	
Electromagnetic fields	EN 61000-4-3	80 - 1000 MHz 25 V/m 1000 - 2700 MHz 10 V/m	
High-speed transient disturbance variables (burst)	EN 61000-4-4	4 kV at line supply connections 2 kV at the DC output	
Surge voltages	EN 61000-4-5	3 kV symmetrical at the line connections 5 kV unsymmetrical at the line connections 500 V symmetrical/unsymmetrical at DC output cables	
High-frequency fields	EN 61000-4-6	10 V; 0.15 - 80 MHz	
Magnetic fields	EN 61000-4-8	30 A/m; 50 Hz	
Voltage dips	EN 61000-4-11	100 % for 20 ms, 60 % for 200 ms, 30 % for 500 ms	
Voltage interruptions	EN 61000-4-11	100 % for 5000 ms	
Emitted interference	EN 55022	Class B	
Line harmonics limit	EN 61000-3-2	Class A	-
Generic standards	EN 61000-6-2	Immunity for industrial environments	
	EN 61000-6-3	Emission for residential areas	Interference emission for residential areas (without IEC 61000-3-2)

Ambient conditions

8

	6EP3333-8SB00-0AY0 (24 V/5 A) **6EP3334-8SB00-0AY0 (24 V/10 A)** **6EP1336-3BA10 (24 V/20 A)** **6EP3337-8SB00-0AY0 (24 V/40 A)** **6EP3337-8SC00-0AY0 (24 V/40 A)**
Ambient temperature	-25 ... 70 °C for natural convection (self convection)
	Tested according to: • EN 60068-2-1 cold • EN 60068-2-2 dry heat • EN 60068-2-78 humid heat, constant • EN 60068-2-14 temperature change
Transport and storage temperature	-40 ... 85 °C Tests (packed for shipping) according to: • EN 60068-2-1 cold • EN 60068-2-2 dry heat • EN 60068-2-30 humid heat, cyclic
Humidity class	Climate class 3K3 according to EN 60721, 5 - 95 % no condensation
Degree of pollution	2
Mechanical stressing during operation	Tested according to: • EN 60068-2-6 vibration, test Fc: 7 mm deflection in the range 5 - 8.4 Hz 2 g acceleration in the range 8.4 - 150 Hz • EN 60068-2-27 shock, test Ea: acceleration 150 m/s^2 , test duration 11 ms
Damaging gases	Tested according to: • EN 60068-2-42 sulfur dioxide • EN 60068-2-43 hydrogen sulfide
Atmospheric pressure	Operation: • 1080 - 795 hPa (-1000 - 2000 m) • For operation at altitudes of 2000 m up to 6000 m above sea level: output must be derated by -7.5% / 1000 m or the ambient temperature must be reduced by 5 K / 1000 m, see Figure 4-5 Mounting height derating (Page 32) • Overvoltage category: II up to 2000 m (EN 61204-7) I from 2000 m up to 6000 m (EN 61204-7) Storage: • 1080 - 660 hPa (-1000 - 3500 m)

Applications

9

9.1 Parallel connection to increase the power rating

To increase the power rating, power supplies of the same type can be directly connected in parallel.

The following must be observed:

- The cables connected to each power supply at terminals "+" and "-" must have identical lengths and the same cable cross-sections (or the same impedance) up to a common external connection point (terminal strip) if possible.
- The power supplies connected in parallel must be switched on simultaneously with a common switch in the line feeder cable (e.g. with the main switch available in control cabinets).
- The output voltages measured in no-load operation for the power supplies that are not yet connected in parallel should not deviate more than a maximum of 50 mV. This usually corresponds to the factory setting. If the output voltage is changed, you should connect the "-" terminals and then, in no-load operation, measure the voltage difference between the "+" terminals that have not yet been connected. The voltage difference should not exceed 50 mV.
- Switch selector switch "A" (see Figure 2-11 Selector switch (Page 20)) to "Parallel operation".

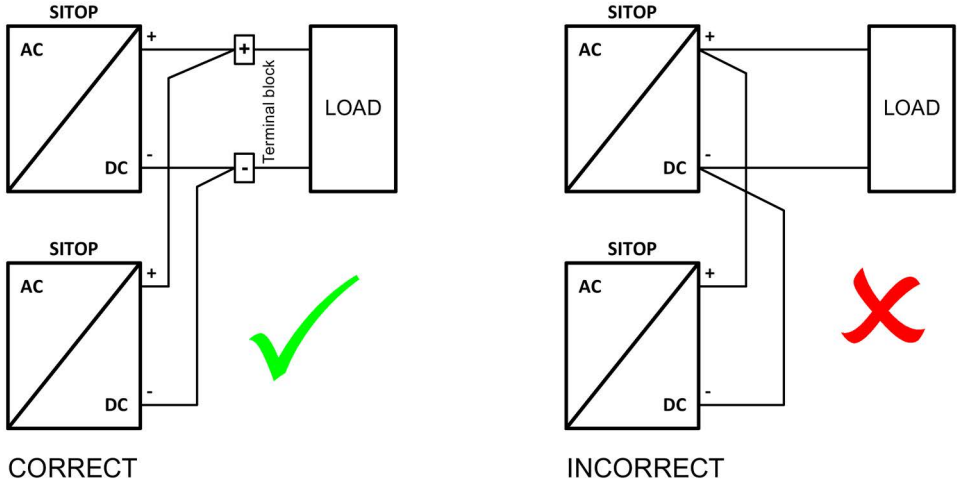


Figure 9-1 Parallel connection

Note

It is not permissible to take into account simultaneous overload capability (Extra-Power 150% for 5 s/min) of several power supplies connected in parallel when configuring the power supply system.

NOTICE

Protective circuit for the parallel connection of more than two power supplies

When connecting more than two power supplies in parallel, additional measures must be taken to prevent high reverse currents in the event of a secondary device fault. For this purpose, a suitable protective circuit (e.g. decoupling diode or DC-capable circuit breaker) must be installed between each "+" terminal of the power supply and the common connection point.

9.2 Parallel connection for redundancy

Connecting several 24 V power supplies in parallel for redundancy purposes is required if especially high demands are placed regarding the availability of a reliable 24 V power supply. Using the SITOP PSE202U redundancy module, two power supplies of the same type up to 20 A can be decoupled (Figure 9-2 Redundant configuration with two power supplies and SITOP PSE202U redundancy module (Page 75)). When one of the devices fails, then the other automatically takes over the power supply. If one of the power supplies fails, then this is signaled using an LED on the redundancy module as well as an isolated relay contact.
For higher output currents, each power supply must be connected to a redundancy module (Figure 9-3 Redundant configuration with two power supplies and two SITOP PSE202U redundancy modules (Page 75)). When dimensioning the system, it must be ensured that n+1 redundant connected power supplies can handle the total power requirement of the remaining n power supplies.

Note

For a high reliability of the supply, it is recommended that the redundant switched power supplies are fused separately on the line-side and, if possible, be connected to different line supplies.

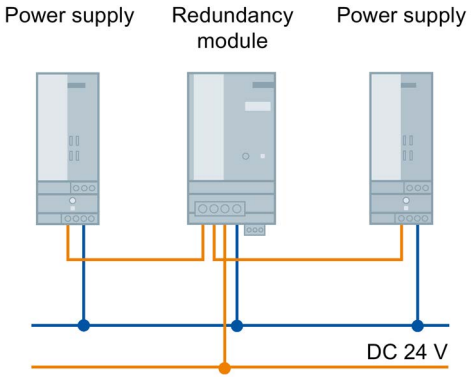


Figure 9-2 Redundant configuration with two power supplies and SITOP PSE202U redundancy module

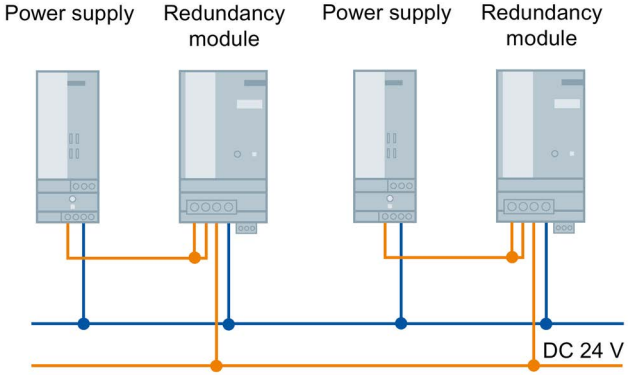


Figure 9-3 Redundant configuration with two power supplies and two SITOP PSE202U redundancy modules

You can find additional information at:

Manual SITOP Expansion Modules
(https://support.industry.siemens.com/cs/ww/en/view/109768676)

9.3 Series connection for increased voltage

To achieve an output voltage of 48 V DC, two 24 V SITOP power supplies of the same type can be connected in series.

Depending on the grounding point of the secondary output voltages, voltages of +48 V, ±24 V or -48 V can be realized.

Note

For additional details, see Catalog KT 10.1 Chapter 15 Technical information and configuring (see (https://support.industry.siemens.com/cs/ww/de/view/109745655)).

WARNING

SELV (ES1) in the case of fault, not guaranteed

When connecting two power supplies in series, SELV (ES1) according to EN 61204-7, cannot be guaranteed in the case of a fault.

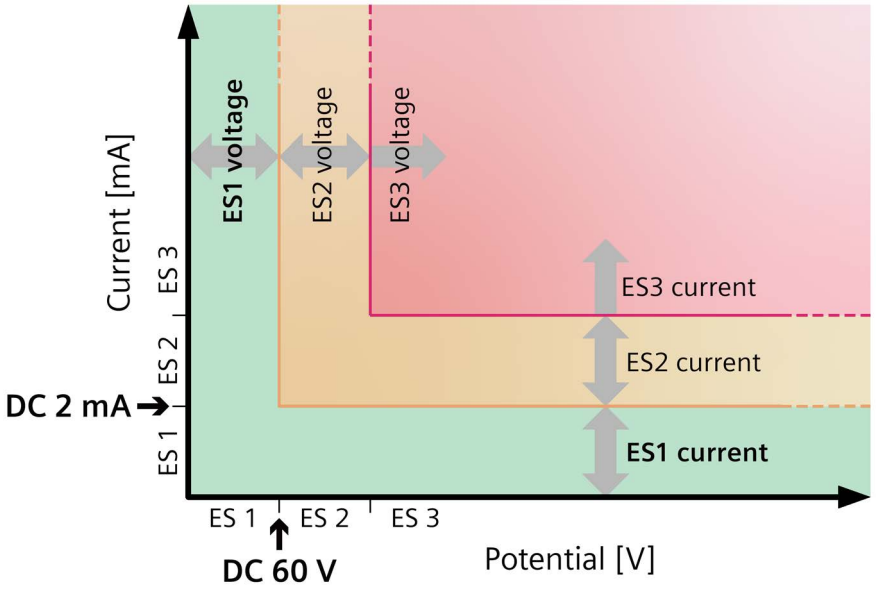


Figure 9-4 Representation of the ES limit values for voltage and current

To guarantee safe and reliable operation of the power supplies in all operating states, for the series circuit, the subsequent wiring using two redundancy modules SITOP RED1200 is recommended.

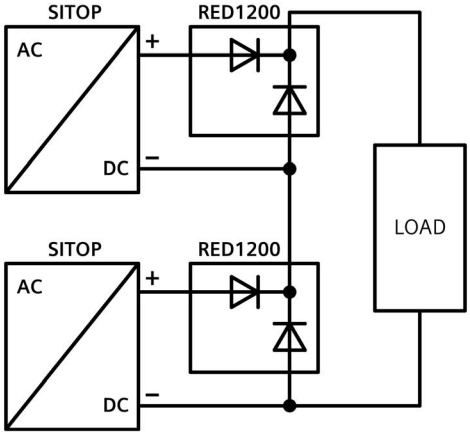


Figure 9-5 Series connection

9.4 Overload protection in the 24 V output circuit

If an overload occurs, the electronic current limiting function of the 24 V power supply limits the output current to a maximum value (see Section Technical data (Page 45)). The output cables are protected against a thermal overload if they are dimensioned corresponding to the maximum rms output current, or protected using additional components (for example, miniature circuit breaker, fuses).

However, a load circuit that fails as a result of overload, for instance, should frequently be reliably and quickly identified and specifically switched off before the power supply goes into current-limiting mode (in current-limiting mode, the supply voltage would also be reduced for all of the remaining 24 V loads).

The SITOP PSE200U selectivity module with 4 outputs (versions with adjustable output current range for each output from 0.5 - 3 A and 3 - 10 A) is available for this purpose; this monitors the 24 V branches for overload and short circuit (Figure 9-6 Electronic protection of 24 V loads using the SITOP PSE200U selectivity module (Page 79)). Brief current peaks, e.g. as a result of a high inrush current, are permitted, and branches with a longer overload are switched into a no-current condition. This is also ensured for cables in a high-ohmic condition and for short circuits that slowly develop over time.

When an output fails, the fault is signaled using a group signal contact or as a single channel signal, and the branch of the module involved is displayed using an LED.

For variants with single-channel signaling, function blocks for evaluation purposes are available for SIMATIC S7-1200/1500/300/400, for STEP 7 Classic and TIA Portal at no charge.

You can find additional information at:

Manual SITOP selectivity modules
(https://support.industry.siemens.com/cs/ww/en/view/108989004)

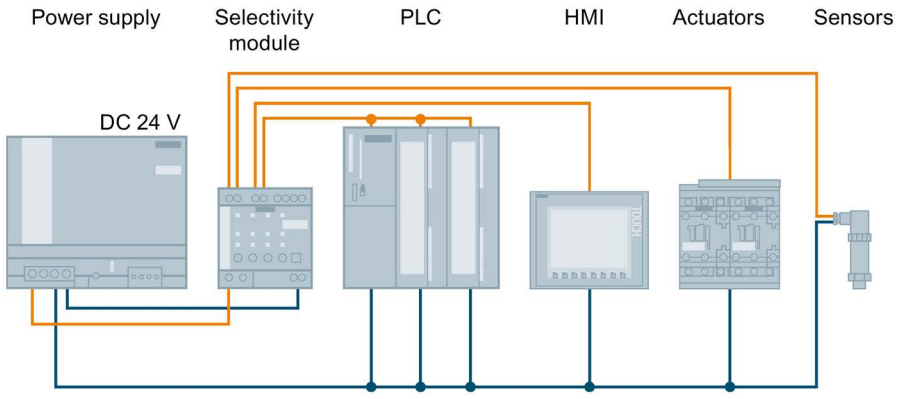


Figure 9-6 Electronic protection of 24 V loads using the SITOP PSE200U selectivity module

9.5 Protection against short-time voltage dips

For a drop in the line-side supply voltage, the 24 V power supply still maintains the output voltage for a short time in the millisecond range (see Chapter Technical data (Page 45)).

For line supplies that manifest frequent brief voltage dips, in order to increase the power supply reliability, it may make sense to increase the line buffering time in the device using an additional SITOP PSE201U buffer module.

The SITOP PSE201U buffer module, based on electrolytic capacitors, is connected in parallel to the power supply output (Figure 9-7 Buffering brief power failures using the SITOP PSE201U buffer module (Page 80)). The buffer time is 200 ms at 40 A up to 1.6 s for a load current of 5 A. This time can be increased a multiple number of times by connecting buffer modules in parallel; the maximum buffer time is 10 s.

You can find additional information at:

Manual SITOP expansion modules
(https://support.industry.siemens.com/cs/ww/en/view/109768676)

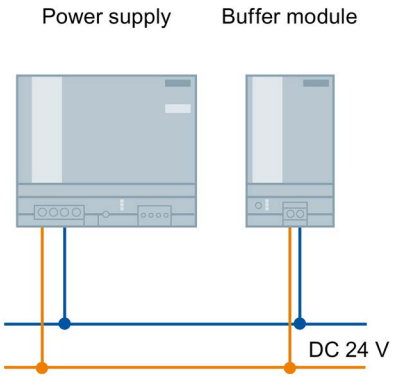


Figure 9-7 Buffering brief power failures using the SITOP PSE201U buffer module

9.6 Protecting against longer power failures

Sudden and longer failures of the line supply voltage can result in undefined states and significant danger as a result of the associated failure of the plant or system control. The SITOP power supply product portfolio includes various DC-UPS solutions to prevent the failure of the 24 V power supply voltage.

Power supply failures up into the minutes range can be buffered using the maintenance-free SITOP UPS500 DC-UPS modules based on capacitors (Figure 9-8 24 V buffering to allow the saving of process data and controlled shutdown of PCs (Page 81)).

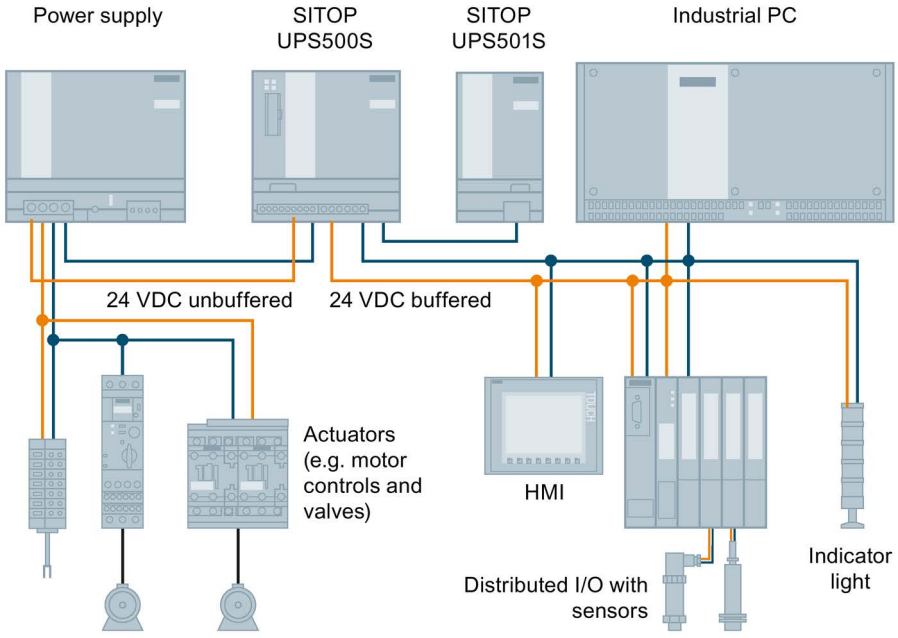


Figure 9-8 24 V buffering to allow the saving of process data and controlled shutdown of PCs

Using the free-of-charge SITOP DC-UPS software tool, DC-UPS systems can be simply integrated into PC-based automation solutions. This supports further processing of the status signals and safely running down the PC.

You can find more information at:

Manual, DC UPS with capacitors
(https://support.industry.siemens.com/cs/ww/en/ps/18042/man)

Using the SITOP UPS1600 DC UPS and battery modules SITOP BAT1600 or SITOP UPS1100, buffer times in the range of hours can be implemented. Intelligent battery management using Energy Storage Link automatically detects the energy storage device, and ensures optimum temperature-controlled charging and continuous monitoring. The UPS1600 with its digital inputs/outputs as well as optional USB interface or Ethernet/PROFINET port can be flexibly integrated into the widest range of automation applications.

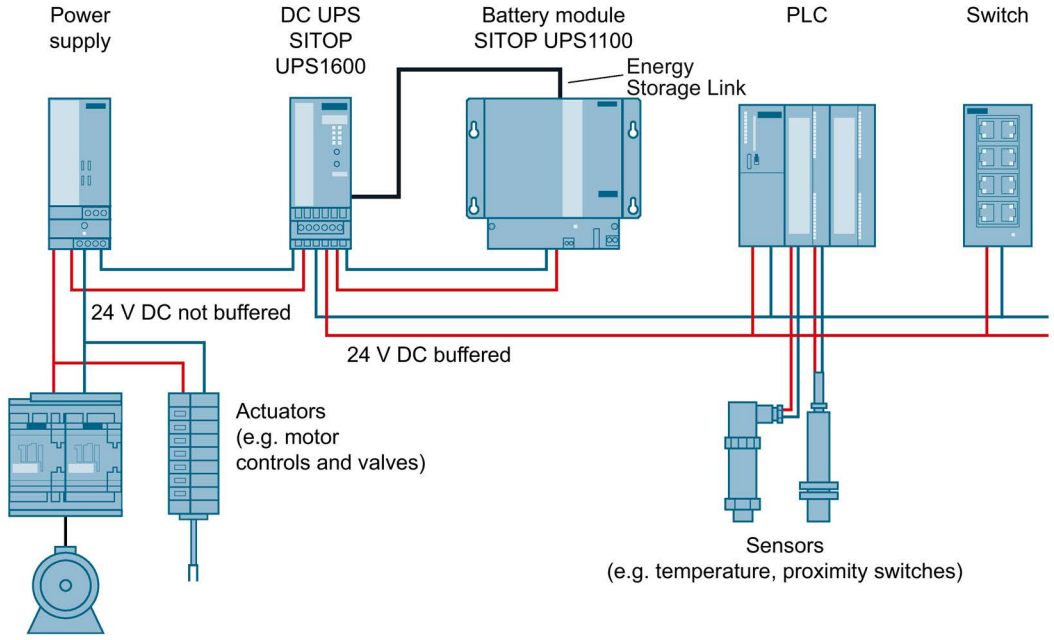


Figure 9-9 24 V buffering with SITOP UPS1600 to maintain communication, signaling functions, sensor measured values and position values

For open, PC-based automation systems, configuration and monitoring is realized using the free-of-charge SITOP Manager, or for devices with an older software release, using PC software SITOP UPS Manager (compatibility list, see DC-UPS Manual SITOP UPS1600/BAT1600/UPS1100 (https://support.industry.siemens.com/cs/ww/en/view/84977415)). This allows PC responses to the operating states of the DC UPS to be freely selected – and offers comprehensive diagnostic functions.

For TIA-based automation systems, the UPS1600 is engineered using the TIA Portal. Special function blocks for SIMATIC S7-300/400/1200 and S7-1500 are available at no charge, and make it easy to integrate operating and diagnostics information into STEP 7 user programs. Preconfigured UPS faceplates for WinCC visualization can be downloaded at no charge.

You can find more information at:

Manual DC-USV SITOP UPS1600/BAT1600/UPS1100 (https://support.industry.siemens.com/cs/ww/en/view/84977415)

Environment

10

The devices are in conformance with RoHS.

Only substances in conformance with PWIS are used (paint-wetting impairment substances).

Disposal guidelines



Packaging and packaging aids can and should always be recycled. The product itself may not be disposed of as domestic refuse.

Service & Support

11

Service & Support Portal

On the main support page, you can find a wealth of useful information about the range of services we offer, documents, downloads and much more:
Industry Online Support (https://support.industry.siemens.com)

Technical support

You can access technical support through the following communication channels:

- Internet:
  Web form for support request (http://www.siemens.com/SupportRequest)
- Smartphone:
  Siemens Industry Online Support App
  (https://new.siemens.com/global/en/products/software/mobile-apps/industry-online-support.html)

Technical documentation on the Internet

Operating instructions and manuals for SITOP are available in the Internet:
Operating instructions/manuals (https://www.siemens.com/sitop-manuals)

SITOP power supply homepage

Current information about our power supplies is available in the Internet at the SITOP home page:
SITOP (http://www.siemens.com/sitop)

Texts for invitation to tender

You can find invitation to tender texts for SITOP power supplies here:
Link to the portal (http://www.siemens.de/ausschreibungstexte)

CAx data

You can find 2D-/3D data, devices circuit diagrams according to IEC and ANSI as well as EPLAN macros as download in the Internet:
Siemens image database (http://www.siemens.com/sitop-cax)

Request all CAx data via the CAx download manager:
CAx shopping cart (http://www.siemens.com/cax)

TIA Selection Tool

Simply and quickly select the optimum power supply, add-on modules and DC-UPS:
TIA Selection Tool cloud (http://www.siemens.com/tst-powersupply)

In addition, the 24 V load view in the TIA Selection Tool allows you to simply select the power supply for your particular project as the current demand of the automation products being supplied is automatically calculated.
Download the TIA Selection Tool (http://www.siemens.de/tia-selection-tool-standalone)

Online catalog and ordering system

The online catalog and the online ordering system are available through the Industry Mall homepage:
Industry Mall (http://www.siemens.com/industrymall/de)

Contact persons

If you have any questions regarding the use of our products, then contact the Siemens contact person in your regional Siemens sales office.

You can find these addresses as follows:

- Internet (http://www.automation.siemens.com/partner)
- Industry Mall (http://www.siemens.com/industrymall/de)