- OPC UA server with encrypted interface
- Remote monitoring via the integrated web server
- SITOP Manager (free software download) supports the configuration and monitoring for PC-based systems (https://support.industry.siemens.com/cs/ww/de/view/109760673)
- User-friendly engineering as fully integrated in SIMATIC PCS 7, in SIMATIC STEP 7 and SIMATIC STEP 7 in the TIA Portal, S7 function blocks for integration in the user programs and WinCC faceplates

Ordering data

The following device options are available:

SITOP UPS1600 uninterruptible power supply	
Type	**Article number**
Input 24 V DC, Output 24 V DC / 10 A	6EP4134-3AB00-0AY0
Input 24 V DC, Output 24 V DC / 10 A With USB interface	6EP4134-3AB00-1AY0
Input 24 V DC, Output 24 V DC / 10 A With PROFINET (PN) interface	6EP4134-3AB00-2AY0
Input 24 V DC, Output 24 V DC/20 A	6EP4136-3AB00-0AY0
Input 24 V DC, Output 24 V DC/20 A With USB interface	6EP4136-3AB00-1AY0
Input 24 V DC, Output 24 V DC/20 A With PROFINET (PN) interface	6EP4136-3AB00-2AY0
Input 24 V DC, Output 24 V DC / 40 A	6EP4137-3AB00-0AY0
Input 24 V DC, Output 24 V DC / 40 A With USB interface	6EP4137-3AB00-1AY0
Input 24 V DC, Output 24 V DC / 40 A With PROFINET (PN) interface	6EP4137-3AB00-2AY0

2.2.1.4 PROFINET/Ethernet connection

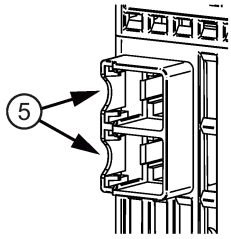

Figure 2-10 PROFINET/Ethernet connection

The Ethernet interface ⑤ corresponds to the standard full duplex up to 100 Mbit/s electrical (100BASE-TX) according to IEEE 802.3.

Properties of the Ethernet interface:

- Transfer rate 10/100 Mbit/s
- Two RJ45 sockets, i.e. integrated switch, for RJ45 connector
- Cable type 100Base-TX (CAT5)
- Autonegotiation
- Auto-crossover communication via TCP/IP and PROFINET

The strain relief (see Section PROFINET/Ethernet connector (Page 186)) is implemented using a Siemens IE FastConnect RJ45.

The physics of the Ethernet interface is implemented so that PROFINET IO according to standards IEC 61158 and IEC 61784-2 is possible. For PROFINET, conformance class B must be maintained as a minimum.

The Ethernet/PROFINET interface permits:

- Configuration and monitoring using the SITOP Manager
- Monitoring via the Web server
- Integration and communication of the DC-UPS with other automation components from Siemens and the open environment, e.g. IPC, PLC, HMI, OPC UA
- Firmware update of the device via SITOP Manager, web server or STEP 7

2.6 Dimensions and weight

2.6.1 SITOP UPS1600

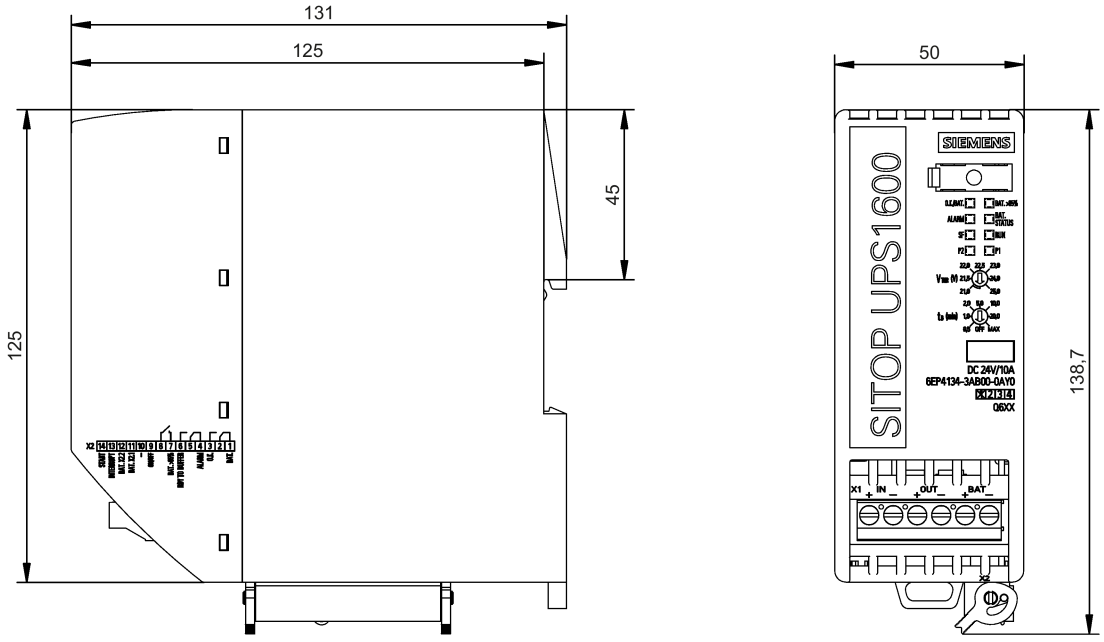

Figure 2-23 Dimension drawing 6EP4134-3AB00-0AY0, 6EP4134-3AB00-1AY0, 6EP4136-3AB00-0AY0, 6EP4136-3AB00-1AY0, 6EP4136-3AC00-0AY0

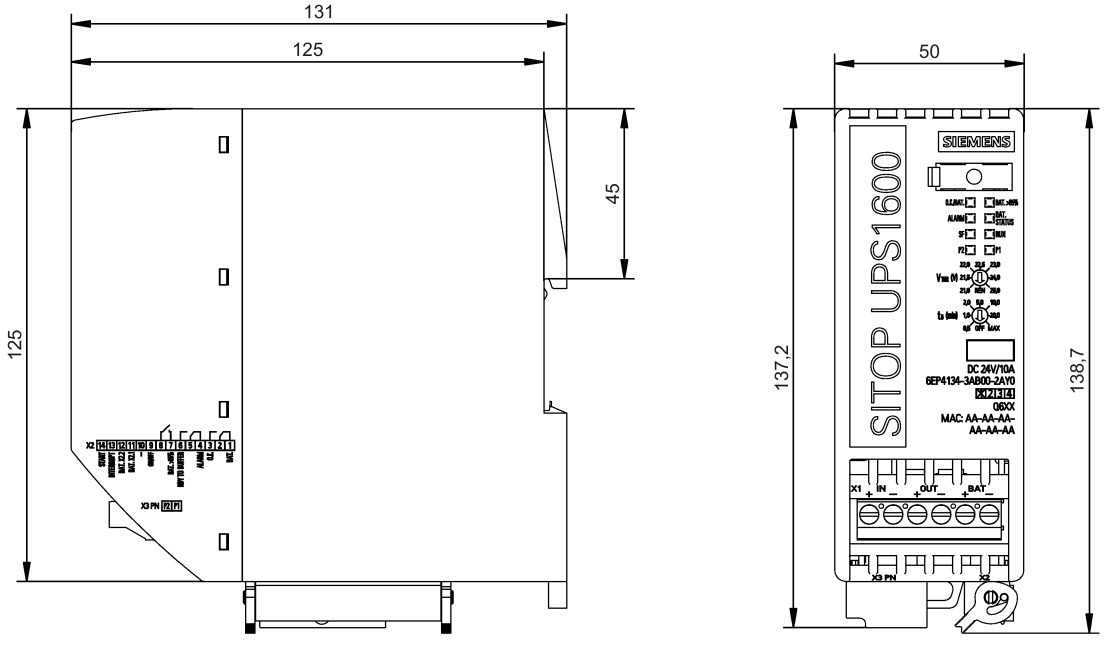

Figure 2-24 Dimension drawing 6EP4134-3AB00-2AY0, 6EP4136-3AB00-2AY0, 6EP4136-3AC00-2AY0

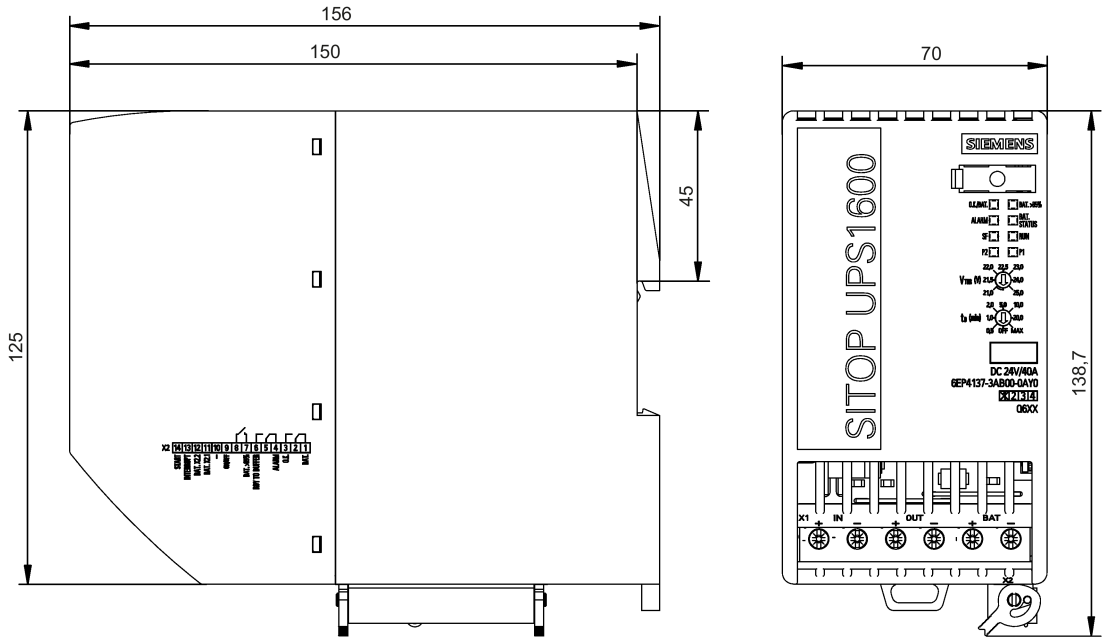

Figure 2-25 Dimension drawing 6EP4137-3AB00-0AY0, 6EP4137-3AB00-1AY0

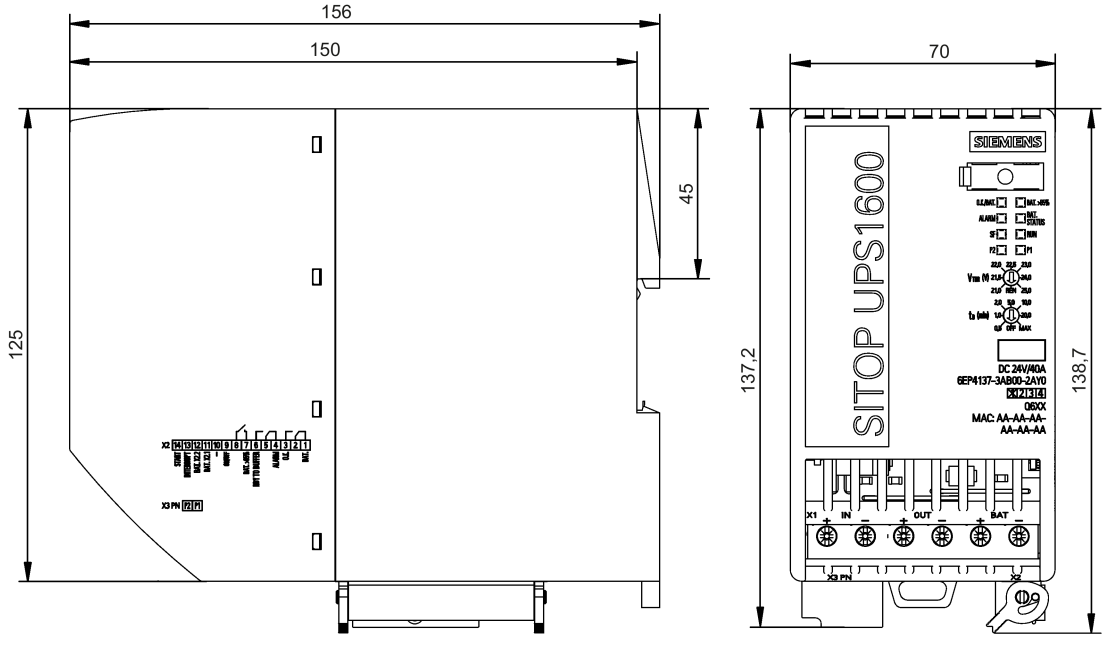

Figure 2-26 Dimension drawing 6EP4137-3AB00-2AY0

	6EP4134-3AB00-0AY0	**6EP4134-3AB00-1AY0**	**6EP4134-3AB00-2AY0**
Dimensions (W × H × D) in mm	50 × 125 × 125	50 × 125 × 125	50 × 125 × 125
Weight	Approx. 0.38 kg	Approx. 0.4 kg	Approx. 0.45 kg

	6EP4136-3AB00-0AY0 **6EP4136-3AC00-0AY0**	**6EP4136-3AB00-1AY0**	**6EP4136-3AB00-2AY0** **6EP4136-3AC00-2AY0**
Dimensions (W × H × D) in mm	50 × 125 × 125	50 × 125 × 125	50 × 125 × 125
Weight	Approx. 0.39 kg	Approx. 0.41 kg	Approx. 0.45 kg

	6EP4137-3AB00-0AY0	**6EP4137-3AB00-1AY0**	**6EP4137-3AB00-2AY0**
Dimensions (W × H × D) in mm	70 × 125 × 150	70 × 125 × 150	70 × 125 × 150
Weight	Approx. 0.65 kg	Approx. 0.65 kg	Approx. 0.7 kg

2.6.2 SITOP BAT1600

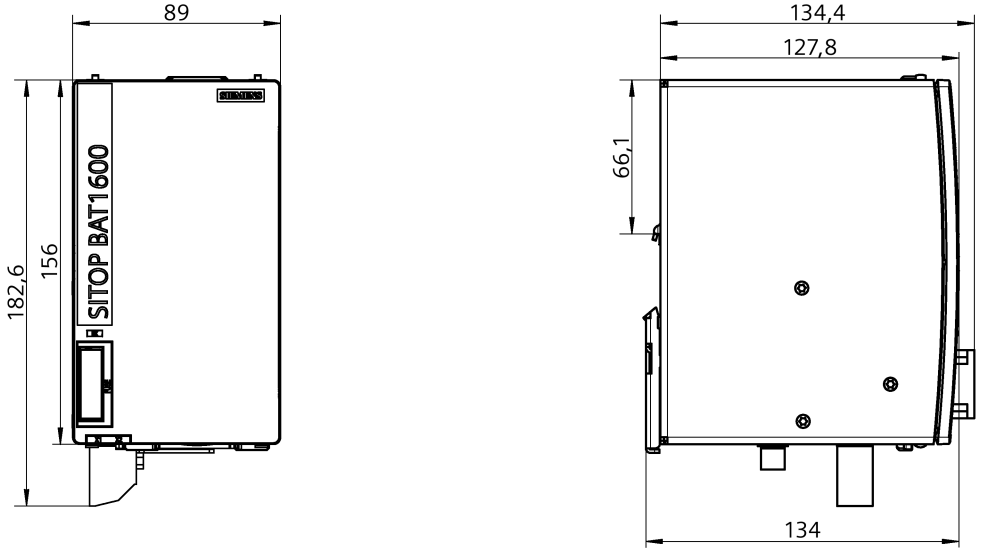

Figure 2-27 Dimension drawing 6EP4132-0JA00-0AY0 (2.5 Ah)

SITOP BAT1600 LiFePO4 battery module

Article number: 6EP4132-0JA00-0AY0 and 6EP4134-0JA00-0AY0

To achieve an optimum lifetime of the battery module, this should be stored for the shortest possible time in a dry and cool environment that is frost-free.

For long-term, standalone storage it should be noted that SITOP BAT1600 LiFePO4 battery modules are fully charged cyclically in order to avoid deep discharge of the installed lithium iron phosphate batteries. When stored at room temperature, the recommended recharge interval is approximately every 6 months; when stored at higher ambient temperatures, the recharge interval must be shortened to 3 months. At room temperature, the recommended charge parameters for a full charge are:

- Charge voltage 28.8 V, current limited to max. 0.2 CA (e.g.: 2.5 A LFP ... charge current = 0.5 A); charge duration min. 12 hours.

For long-term storage in an unused system - i.e. in a completely wired but deactivated state - then the application should be cyclically commissioned (approximately every 4 months) in order to avoid deep discharge of the installed lithium iron phosphate batteries. The recharge interval can be extended to approximately 6 months if the fuse in the battery module is removed. When stored at increased ambient temperatures, then the reduced recharge intervals listed above must always be applied. Information provided on the device packaging about post charging after leaving the factory must be taken into consideration.

Note

If the notes relating to correct storage and transport are not complied with, then the warranty becomes null and void. This means that battery modules cannot be exchanged as a result of defective LiFePO4batteries.

Note

For transport by air, it is legally stipulated that lithium iron phosphate batteries may only be charged to a maximum of 30 % of their nominal capacity. This is the reason that when transported by air, the maximum energy content of the SITOP BAT1600 LiFePO4 battery module is presently 30 % of the nominal capacity. As a consequence, we recommend that the SITOP BAT1600 LiFePO4 battery module is fully charged after a long period of standalone storage.

Before transporting and shipping the SITOP BAT1600 LiFePO4 battery module, the prewired plug-in terminals should be withdrawn and the fuse removed. **In addition, the internal minus conductors must be withdrawn from the batteries and the appropriate measures taken so that no short-circuit can occur between the battery poles!** In international transport legislation, lithium iron phosphate batteries are classified as "hazardous goods" according to UN 3480. The applicable national and international hazardous goods regulations must be carefully complied with corresponding to the type of transport selected!

Technical data

8

Note

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

8.1 Input data

8.1.1 SITOP UPS1600

	6EP4134-3AB00- ... (10 A)	6EP4136-3AB00- ... (20 A) 6EP4136-3AC00- ... (20 A Ex)	6EP4137-3AB00- ... (40 A)
Input voltage $U_{in\ rated}$/range	24 V DC/21 - 29 V		
Connection threshold for buffering	21.5 V DC ± 3 % (factory setting), setting range: 21 V DC, 21.5 V DC, 22 V DC, 22.5 V DC, 23 V DC, 24 V DC, 25 V DC or via software.		
• Remark	The connection (switch-in) threshold must be at least 0.5 V lower than the input voltage (measured at the input terminal under load). After reaching the minimum input voltage at the DC UPS module, the module cannot buffer for a maximum of 1.5 seconds.		
Input current $I_{in\ rated}$	Approx. 14 A at the maximum charge current (3 A)	Approx. 25 A at the maximum charge current (4 A)	Approx. 46 A at the maximum charge current (5 A)
Reverse polarity protection	Yes		

8.1.2 SITOP BAT1600

Charge current

- The charge current is limited by the maximum permissible charge current of the SITOP UPS1600 (see Chapter SITOP UPS1600 (Page 229))
- the charge current is adapted to the ambient temperature
- When a battery module is connected, the max. charge current: LFP 2 CA or Pb 0.25 CA
- For several battery modules connected in parallel, the charge current is multiplied by the number of batteries connected in parallel (max. 3 to 5 A).

Recommended end-of-charge voltage (standby use), dependent on the battery temperature

	6EP4133-0GA00-0AY0 (3.2 Ah) 6EP4133-0GD00-0AY0 (3.2 Ah Ex) 6EP4135-0GE00-0AY0 (12 Ah) 6EP4135-0GL00-0AY0 (12 Ah Ex) 6EP4137-0GE00-0AY0 (38 Ah)	**6EP4132-0JA00-0AY0 (2.5 Ah) 6EP4134-0JA00-0AY0 (7.5 Ah)**
At -10 °C	28.0 V	28.8 V
At 0 °C	28.0 V	28.8 V
At 10 °C	27.8 V	28.8 V
At 20 °C	27.3 V	28.8 V
At 30 °C	26.8 V	28.8 V
At 40 °C	26.6 V	28.8 V
At 50 °C	26.3 V	28.8 V
At 60 °C	-	-

8.1.3 SITOP UPS1100

Charge current

- The charge current is limited by the maximum permissible charge current of the SITOP UPS1600 (see Chapter SITOP UPS1600 (Page 231))
- When a battery module is connected, the charge current is max. 0.3 CA.
- For several battery modules connected in parallel, the charge current is max. 0.3 CA multiplied by the number of batteries connected in parallel.

Recommended end-of-charge voltage (standby use), dependent on the battery temperature

	6EP4134-0GB00-0AY0 (7 Ah)	**6EP4132-0GB00-0AY0 (2.5 Ah)**
At -10 °C	28.0 V	28.0 V
At 0 °C	28.0 V	28.0 V
At 10 °C	27.8 V	27.8 V
At 20 °C	27.3 V	27.3 V
At 30 °C	26.8 V	26.8 V
At 40 °C	26.6 V	26.6 V
At 50 °C	26.3 V	26.3 V
At 60 °C	-	26.0 V

8.2 Output data

8.2.1 SITOP UPS1600

	6EP4134-3AB00- ... (10 A)	**6EP4136-3AB00- ... (20 A)** **6EP4136-3AC00- ... (20 A Ex)**	**6EP4137-3AB00- ... (40 A)**
Output voltage for normal operation	Input voltage U_{in} approx. - 0.2 V		
Output voltage for buffer mode	28.8 V (full) - 18.5 V (empty)		
• Remark	Dependent on the charge status of the battery module and load		
Deep discharge protection	18.5 V (for lead batteries) or 20.5 V (for LiFePO4 batteries)		
Power-up characteristics	Start delay < 1 s Typical voltage increase: < 60 ms		
Output +BAT/-BAT for normal operation	I-U charging characteristic (initially fast charge current, then charge retention).		
• Remark	For a connected SITOP UPS1100 battery module max. 0.3 CA, for a SITOP BAT1600 PB max. 0.25 CA, and a SITOP BAT1600 LFP max. 2 CA, for several battery modules connected in parallel, the charge current should be multiplied by the number of batteries connected in parallel, but limited by the maximum permissible charge current of the SITOP UPS1600.		
End-of-charge voltage	Automatic temperature-controlled setting with SITOP BAT1600 or SITOP UPS1100 battery modules		
Output current – rated value	10 A	20 A	40 A
Power boost for 30 ms	30 A	60 A	120 A
Extra power for 5 s/min	15 A	30 A	60 A
• Remark	When using the 5 Ah SITOP UPS1100, Extra Power is permissible for 1 s/min.		
Charge current	Max. 3 A Automatic setting for SITOP BAT1600 / SITOP UPS1100; otherwise 0.3 A, 0.8 A or 3 A can be selected (by software or jumper (see Table 2-5 Charge current for SITOP UPS1600 without communication or SITOP UPS1600 USB/PN in the manual mode (VTHR ≠ REN) (Page 37)))	Max. 4 A Automatic setting for SITOP BAT1600 / SITOP UPS1100; otherwise 0.8 A, 1.75 A or 4 A can be selected (by software or jumper (see Table 2-5 Charge current for SITOP UPS1600 without communication or SITOP UPS1600 USB/PN in the manual mode (VTHR ≠ REN) (Page 37)))	Max. 5 A Automatic setting for SITOP BAT1600 / SITOP UPS1100; otherwise 0.8 A, 1.75 A or 4 A can be selected (by software or jumper (see Table 2-5 Charge current for SITOP UPS1600 without communication or SITOP UPS1600 USB/PN in the manual mode (VTHR ≠ REN) (Page 37)))
• Remark	The charge current can be automatically reduced if the charge current plus the load current at the SITOP UPS1600 results in an overload of the feeding power supply. The charge current can also be reduced if the ambient temperature of the SITOP UPS1600 is higher than 40 °C - or if the input voltage at the SITOP UPS1600 is less than 24 V. Derating: 10 A: 3 A→2 A 20 A: 4 A→3 A 40 A: 5 A→3 A		

8.4 Efficiency

	6EP4134-3AB00-0AY0 (10 A) **6EP4134-3AB00-1AY0 (10 A)**	**6EP4134-3AB00-2AY0 (10 A)**
Efficiency at $U_{in\ rated}$, $I_{out\ rated}$, approx.	97.5 %	97.3 %
Power loss at $U_{in\ rated}$, $I_{out\ rated}$, approx.	6 W	7 W

	6EP4136-3AB00-0AY0 (20 A) **6EP4136-3AB00-1AY0 (20 A)**	**6EP4136-3AB00-2AY0 (20 A)**
Efficiency at $U_{in\ rated}$, $I_{out\ rated}$, approx.	97.7 %	97.5 %
Power loss at $U_{in\ rated}$, $I_{out\ rated}$, approx.	10 W	11 W

	6EP4137-3AB00-0AY0 (40 A) **6EP4137-3AB00-1AY0 (40 A)**	**6EP4137-3AB00-2AY0 (40 A)**
Efficiency at $U_{in\ rated}$, $I_{out\ rated}$, approx.	98.5 %	98.3 %
Power loss at $U_{in\ rated}$, $I_{out\ rated}$, approx.	15 W	17 W

8.7 Mechanical system

8.7.1 SITOP UPS1600

	6EP4134-3AB00- ... (10 A)			**6EP4136-3AB00- ... (20 A)**		
	... -0AY0	**... -1AY0**	**... -2AY0**	**... -0AY0**	**... -1AY0**	**... -2AY0**
Connection system	Screw-type terminal					
Connections: DC input	IN+, IN-: 1 screw terminal each for 0.2 - 6 (4) mm² solid (finely stranded)					
Connections: DC output	OUT+, OUT-: 1 screw terminal each for 0.2 - 6 (4) mm² solid (finely stranded)					
Connections: Battery connection	BAT+, BAT-: 1 screw terminal each for 0.2 - 6 (4) mm² solid (finely stranded)					
Connections: Signal connector	X2 (1 - 14): 1 screw terminal each for 0.2 - 1.5 mm² solid/finely stranded					
Width of the housing	50 mm	50 mm	50 mm	50 mm	50 mm	50 mm
Height of the housing	138.7 mm	138.7 mm	138.7 mm	138.7 mm	138.7 mm	138.7 mm
Depth of the housing	125 mm	125 mm	125 mm	125 mm	125 mm	125 mm
Installation width	50 mm	50 mm	50 mm	50 mm	50 mm	50 mm
Mounting height	238.7 mm	238.7 mm	238.7 mm	238.7 mm	238.7 mm	238.7 mm
Weight, approx.	0.38 kg	0.4 kg	0.44 kg	0.39 kg	0.41 kg	0.45 kg
Product feature of the housing: housing that can be lined up next to one another	Yes					
Type of mounting: wall mounting	No					
Type of mounting: rail mounting	Yes					
Type of mounting: S7-300 standard rail mounting	No					
Mounting	Can be snapped onto standard TH35×7,5/15 mounting rails (EN 60715)					

Safety, approvals, EMC

9

9.1 Safety

	6EP4134-3AB00- ... (10 A), 6EP4136-3AB00- ... (20 A), 6EP4137-3AB00- ... (40 A) **6EP4132-0GB00-0AY0 (2.5 Ah), 6EP4134-0GB00-0AY0 (7 Ah)** **6EP4132-0JA00-0AY0 (2.5 Ah), 6EP4133-0GA00-0AY0 (3.2 Ah)** **6EP4134-0JA00-0AY0 (7.5 Ah), 6EP4135-0GE00-0AY0 (12 Ah)** **6EP4137-0GE00-0AY0 (38 Ah)**
Protection class	Class III
Degree of protection (EN 60529)	IP20

Environmental conditions

10

	6EP4134-3AB00- ... (10 A)	6EP4136-3AB00- ... (20 A) 6EP4136-3AC00- ... (20 A)	6EP4137-3AB00- ... (40 A)
Ambient temperature	-25 ... 70 °C for natural convection (self convection)	-25 ... 60 °C for natural convection (self convection) 15 A (derating) at 60° ... 70° C	-25 ... 60 °C for natural convection (self convection) 30 A (derating) at 60° ... 70° C
	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	Climatic class 3K3 according to EN 60721, 5 - 95 % no condensation		
Degree of pollution	2		
Mechanical stress in operation	Tested according to: • EN 60068-2-6 vibration, test Fc: 3.5 mm deflection in the range 5 - 9 Hz 1 g acceleration in the range 9 - 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 (≤ 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 6-20 Altitude derating (Page 205) Storage: • 1080 - 660 hPa (≤ 3500 m)		