SIEMENS

SITOP power supplies

SITOP UPS1600 / UPS1100

Manual

SITOP UPS1600 10 A
6EP4134-3AB00-0AY0
6EP4134-3AB00-1AY0
6EP4134-3AB00-2AY0

SITOP UPS1600 20 A
6EP4136-3AB00-0AY0
6EP4136-3AB00-1AY0
6EP4136-3AB00-2AY0

SITOP UPS1600 40 A
6EP4137-3AB00-0AY0
6EP4137-3AB00-1AY0
6EP4137-3AB00-2AY0

SITOP UPS1100
Battery module 1.2 Ah
6EP4131-0GB00-0AY0
Battery module 2.5 Ah
6EP4132-0GB00-0AY0
Battery module 3.2 Ah
6EP4133-0GB00-0AY0
Battery module 5 Ah
6EP4133-0JB00-0AY0
Battery module 7 Ah
6EP4134-0GB00-0AY0
Battery module 12 Ah
6EP4135-0GB00-0AY0

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Legal information

Warning notice system

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

⚠ DANGER

indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠ WARNING

indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠ CAUTION

indicates that minor personal injury can result if proper precautions are not taken.

NOTICE

indicates that property damage can result if proper precautions are not taken.

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

Qualified Personnel

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

Proper use of Siemens products

Note the following:

⚠ WARNING

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

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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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Overview

Description

The DC-UPS modules augment the SITOP 24 V power supply units for uninterruptible rated currents up to 40 A from the UPS1100 battery modules based on maintenance-free lead or LiFePo batteries. SITOP UPS1600 with its integrated electronics automatically detects the battery type that it charges with the optimum temperature-controlled charging characteristic curve. The intelligent battery management monitors all relevant data, also for parallel-connected battery modules. The Ethernet/PROFINET interface is used to output the battery status and various actual values, such as voltage and current. Thanks to the integrated web server, remote diagnosis is also possible.

The low profile SITOP UPS1600 DC-UPS module provides a dynamic overload behavior, for example, to switch on industrial PCs. The high charging current quickly restores the buffer readiness after a supply system failure. And for the deployment in stand-alone operation, the UPS can be activated from the battery for missing supply system voltage, e.g. to start the generators.

The key benefits of the product include:

- Compact SITOP UPS1600 24 V/10 A, 20 A and 40 A DC-UPS modules with digital inputs/outputs, optional with USB or two Ethernet/PROFINET interfaces
- SITOP UPS1100 24 V/1.2 Ah, 2.5 Ah, 3.2 Ah, 7 Ah and 12 Ah battery modules with maintenance-free lead-gel batteries or 5 Ah with LiFePo batteries and integrated electronics; intelligent battery management with automatic detection of the battery modules and selection of the optimum, temperature-controlled charging characteristic curve; monitoring of the operating readiness, battery supply cable, aging and charging state.
- All diagnostic data and alarm messages are available via USB and Ethernet/PROFINET
- High dynamic overload capability: 3-fold rated current for 30 ms and 1.5-fold rated current for 5 seconds per minute
- High charging currents
- Start from battery modules for missing supply system voltage

- Remote monitoring with integrated web server
- SITOP UPS Manager (free software download) supports the configuration and monitoring for PC-based systems
- Complete integration in TIA: User-friendly engineering in the TIA Portal, S7 function blocks for integration in user programs and WinCC faceplates

Ordering data

The following device options are available:

SITOP UPS1600 uninterruptible power supply	
Type	**Order 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

SITOP UPS1100 battery module	
Type	**Order number**
Battery module 1.2 Ah	6EP4131-0GB00-0AY0
Battery module 2.5 Ah	6EP4132-0GB00-0AY0
Battery module 3.2 Ah	6EP4133-0GB00-0AY0
Battery module 5 Ah	6EP4133-0JB00-0AY0
Battery module 7 Ah	6EP4134-0GB00-0AY0
Battery module 12 Ah	6EP4135-0GB00-0AY0

Accessories	
Type	**Order number**
Device identification labels 20 mm × 7 mm, pastel turquoise	3RT1900-1SB20

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Safety instructions

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⚠ 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.

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For the secure operation of Siemens products and solutions, it is necessary to take suitable preventive action (e.g. cell protection concept) and integrate each component into a holistic, state-of-the-art industrial security concept. Third-party products that may be in use should also be considered. You can find more information about industrial security under: http://www.siemens.com/industrialsecurity

To stay informed about product updates as they occur, sign up for a product-specific newsletter. You can find additional information on this at: http://support.automation.siemens.com.

Description, device design, dimension drawing 2

2.1 Device description

2.1.1 SITOP UPS1600

The SITOP UPS1600 10 A, 20 A and 40 A are built-in devices of the SITOP series for mounting on TH35-15/7.5 standard mounting rails (EN 60715). When installing the SITOP UPS1600 devices and SITOP UPS1100 battery modules, the relevant DIN/VDE regulations or country-specific regulations (e.g. VDE 0510 Teil 2 / EN 50272-2) must be carefully complied with.

See Section Installation (Page 149)

In combination with the SITOP UPS1100 battery modules, they are used to buffer the load current from the 24 V load power supplies of the SITOP series.
With their high dynamic overload capability up to the 300% rated current for 30 ms or up to the 150% rated current for 5 seconds per minute, they are suitable for applications with programmable logic controllers (PLCs) and industrial PCs, because they permit high switch-on currents even in buffer operation.

The input of the SITOP UPS1600 DC-UPS module must be connected with the output of the supplying 24 V DC power supply unit. The UPS1100 battery module is connected to the BAT terminals. The loads to be buffered are supplied via the output of the SITOP UPS1600 DC-UPS module with the voltage connected at the input.

The Energy Storage Link is new. This is an additional two-wire connection between the SITOP UPS1600 base device and the coded SITOP UPS1100 battery modules.
Furthermore, the base device detects and manages as many as six battery modules and selects the optimum, temperature-controlled charging characteristic curve. The latter provides the basis for a long service life of the battery modules. The Energy Storage Link also monitors the operational readiness as well as the supply cables (wire breakage) and the charge state (voltage, current) of the rechargeable batteries.
The connection to the SITOP UPS1100 battery module is checked every 20 seconds (for voltage, reverse polarity protection). A test with a defined load of the lead or LiFePo batteries is also performed automatically every four hours (basic setting).
Battery modules of other type series and manufacturers can also be used, although with limited diagnostic functions, such as the display of the charging current or the end-of-charge voltage and without the possibility of temperature-controlled charging.

In the event of failure of the 24 V DC supply voltage or voltage dip below the set switch-in threshold, the loads are supplied by switching over to the battery module. Buffering is realized until the line supply returns or until the buffer time, set using the rotary coding switch, has expired. If the buffer time has been set to MAX, then shutdown is realized when the exhaustive discharge threshold is reached.

Using the output voltage interrupt function you can select as to whether the output voltage is interrupted once the set buffer time expires if, in the meantime, the input voltage returns.

(Delivery state: the output voltage is not interrupted). For devices without interface, the interruption lasts 5 s. For devices with interface, the interruption duration can be adjusted.

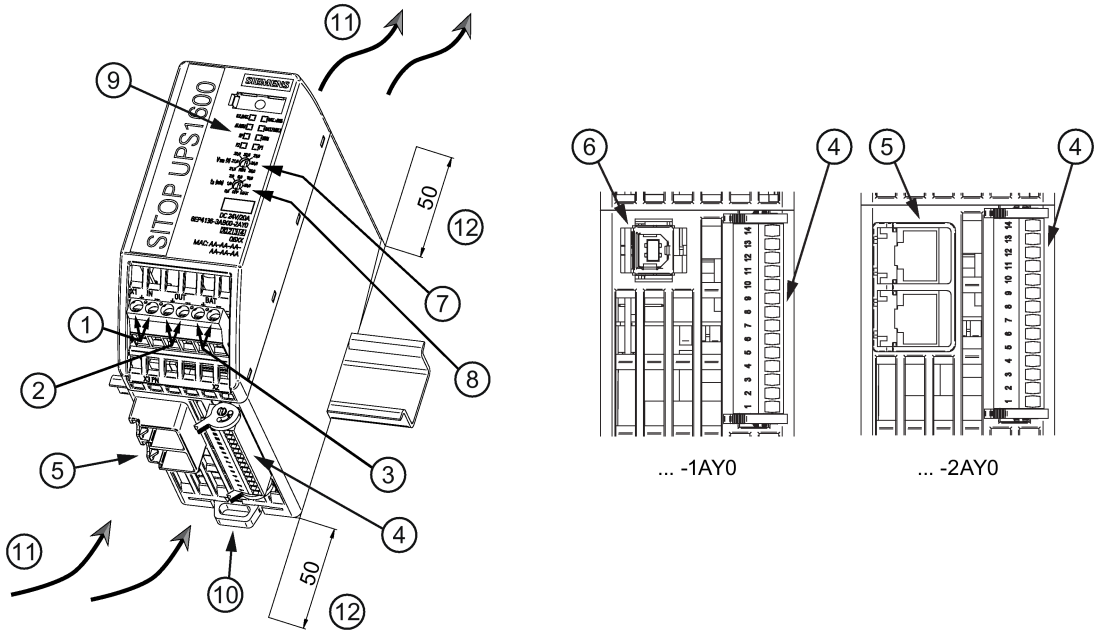
For the "Maximum buffer time" setting, the output voltage is only interrupted by the UPS Manager. In this case, the rotary coding switch "Connection threshold" must be set to REN.

Rotary switches can be used to set the battery module switch-in threshold and the buffer time. The charging current for the battery modules is set automatically, and can be changed using the interface (only for types -1AY0 and -2AY0), as well as via the signal connector.

Eight LEDs, two potential-free changeover contacts and one floating NO contact indicate the SITOP UPS1600 status.

The USB interface (only -1AY0) or PROFINET/Ethernet interface (only -2AY0) handles the communication to the PC/controllers.
For details, see Sections Connections and terminal designation (Page 17) and Operator controls (Page 22).

Operating data and diagnostic data can be transferred using two integrated Industrial Ethernet/PROFINET ports and visualized or further processed externally as an alternative to the proven USB connection. An integrated web server allows authorized users to export relevant data remotely via a web browser without requiring any additional software to be installed on the remote system. When delivered, the web server is not active (applies from version V2.1 and higher). Using the two rotary coding switches, the web server can be activated, and a temporary Internet address assigned, see SITOP UPS1600 (Page 22).
The free-of-charge SITOP UPS Manager, which runs on Windows XP and Windows 7 systems (32 and 64 bit), allows full access. This allows the overall DC-UPS installation to be configured and monitored easily using a PC. The software tool provides many possibilities for the visualization of operating and diagnostic information, such as in the form of alarm lists or easily understandable trend diagrams which, for example, provide a view of the chronological change of the charging current or load current of the DC-UPS at a glance.
The SITOP UPS1600 is fully integrated in Totally Integrated Automation (TIA), the Siemens open system architecture for integrated automation solutions. The engineering is performed in the TIA Portal and reduces to just a few clicks for the user. The UPS modules can be selected directly in the hardware catalog and transferred into the graphic network representation.
For applications without network connection, the SITOP UPS1600 is available in the variants with USB interface or digital inputs/outputs.
For stand-alone operation, the DC-UPS can be activated without input voltage from the battery, for example, to start a generator via a directly supplied controller. (see Chapter Jumper variants (Page 23))



① DC input X1
② DC output X1
③ BAT X1
④ Signal connector X2
⑤ PROFINET (Ethernet) interface X3 (only for ... - 2AY0)
⑥ USB interface X3 (only for ... - 1AY0)
⑦ Rotary coding switch, switch-in threshold
⑧ Rotary coding switch, buffer time
⑨ Signaling (LEDs)
⑩ DIN rail slider
⑪ Convection
⑫ Clearance above/below

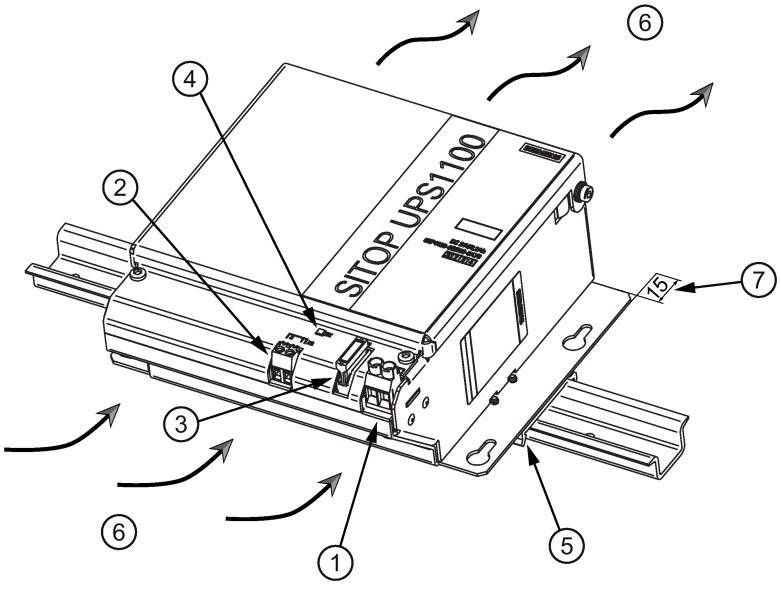
Image 2-1 SITOP UPS1600 design (example 6EP4136-3AB00-2AY0)

2.1.2 SITOP UPS1100

The SITOP UPS1100 battery modules consist of a battery holder with two maintenance-free, closed lead or LiFePO batteries with terminals for the connection cables to the SITOP UPS1600 uninterruptible power supply. The UPS1100 contains a printed-circuit board for monitoring the battery functions and the communication with the SITOP UPS1600. A green LED lights continually to indicate that there is a communication connection to the SITOP UPS1600. The LED flashes when the batteries are being replaced or for faults and alarms.

Up to 6 SITOP UPS1100 of the same type can be connected in parallel with a SITOP UPS1600.

When replacing a battery, see Chapter Battery replacement (Page 153).



① DC input X1
② Signal terminal X2
③ Fuses F1/F2 (F2 only for 7 Ah and 12 Ah)
④ Signaling (LED)
⑤ Mounting rail holder (not for the 7 Ah and 12 Ah versions)
⑥ Natural convection
⑦ Clearance above

Image 2-2 SITOP UPS1100 design (example 6EP4133-0GB00-0AY0)

Note

For the UPS1100, clearance is required above it in order to open the cover. Clearance below is not required for thermal reasons - however, space is required to feed in the cable.

2.2 Connections and terminal designation

2.2.1 SITOP UPS1600

2.2.1.1 Power terminals

The input terminals ① can be used to establish the connection to the supply voltage. The output terminals ② are used to connect to the supplied loads.

Cables must be used that are suitable for at least 90° C (only when UL508 must be complied with).

The UPS1100 battery modules are connected via BAT ③.

(see also Chapter Installation (Page 149))

Connections and terminal designations (see Image 2-1 SITOP UPS1600 design (example 6EP4136-3AB00-2AY0) (Page 15))	
① DC input IN+, IN-	One screw terminal each
② DC output OUT+, OUT-	One screw terminal each
③ BAT+, BAT-	One screw terminal each
④ Signal connector	Connector with 14 screw terminals
⑤ PROFINET (Ethernet) connection	RJ45 plug-in contact (only for ...-2AY0)
⑥ USB connection	USB-B plug-in contact (only for...-1AY0)

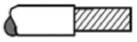
	① + ② + ③	④	⑦ + ⑧
	SZS 0,6 x 3,5	SZS 0,6 x 3,5	SZS 0,4 x 2,5
	1 x 0,2 - 6 mm^2 (90 °C)	1 x 0,2 - 1,5 mm^2	-
	1 x 0,2 - 4 mm^2 (90 °C)	1 x 0,2 - 1,5 mm^2	-
AWG	24 - 10	28 - 14	-
Nm	0,5 - 0,6 Nm	0,2 - 0,25 Nm	-
	8 mm	6 mm	-

Image 2-3 Terminal data SITOP UPS1600 10 A, 20 A

	① + ② + ③	④	⑦ + ⑧
	PZ1/SZS 0,8 x 4,5	SZS 0,4 x 2,5	SZS 0,4 x 2,5
	1 x 0,5 - 16 mm^2	1 x 0,2 - 1,5 mm^2	-
	1 x 0,5 - 10 mm^2	1 x 0,2 - 1,5 mm^2	-
AWG	20 - 6	28 - 14	-
Nm	1,2 - 1,5 Nm	0,2 - 0,25 Nm	-
	11 mm	6 mm	-

Image 2-4 Terminal data SITOP UPS1600 40 A

2.2.1.2 Signal terminal

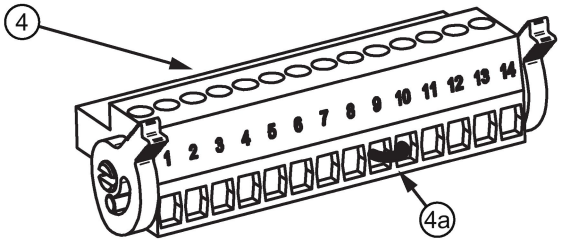


Image 2-5 Signal connector

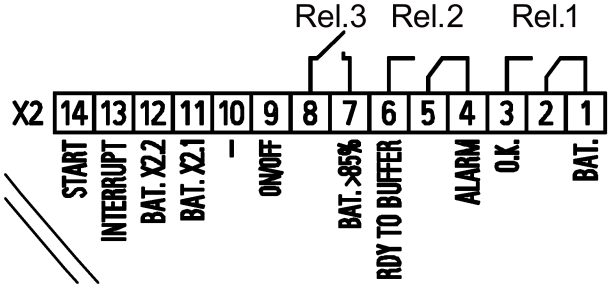


Image 2-6 Signal connector connection schematic

Pin	Terminal designation	Function
1	BAT.	**24 V DC OK / BAT**
2	-	REL1 (changeover contact): Energized state: Normal operation Quiescent state: Buffer mode or off
3	OK	
4	ALARM	**Ready for buffer operation / alarm**
5	-	REL2 (changeover contact): Energized state: Buffer mode is possible Quiescent state: Not ready for buffering Cycle 0.25 Hz: Defective battery
6	RDY TO BUFFER	
7	BAT. > 85 %	**Battery > 85%**

Pin	Terminal designation	Function
8	-	REL3 (NO contact): Energized state: Buffering of the selected buffer time is possible, or charge state >85%
9	ON/OFF	On/Off (buffer operation permitted/prevented)
10	-	-
11	BAT. X2.1	Battery communication or charging current setting
12	BAT. X2.2	Battery supply or charging current setting
13	INTERRUPT	Interrupt (interruption of the output voltage)
14	START	Start from the battery

Relay contact: Maximum contact rating 30 V DC / 1 A or 125 V AC / 0.3 A

The jumper (4a) (see Image 2-5 Signal connector (Page 18)) between pin 9 and 10 is necessary to operate the device in buffer mode.

Delivery state: Jumper between pin 9 and 10

2.2.1.3 USB port

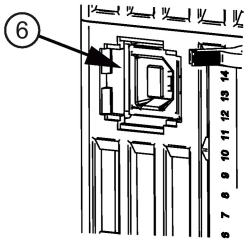


Image 2-7 USB port

The USB interface (type B) ⑥ fully conforms to the USB 2.0 standard (12 MBd). Strain relief (see Section USB connector (Page 140)) is implemented using a defined cable/connector (Y-Con USB - Yamaichi).

2.2.1.4 PROFINET/Ethernet connection

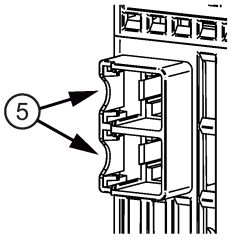


Image 2-8 PROFINET/Ethernet connection

Ethernet interface ⑤ corresponds to the standard full duplex with 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)
- Auto negotiation
- Auto crossover communication via TCP/IP and PROFINET

The strain relief (see Section PROFINET/Ethernet connector (Page 141)) 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 UPS 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
- Firmware update of the device via UPS Manager, web server or STEP 7

2.2.2 SITOP UPS1100

2.2.2.1 Power terminals

Input terminals ① and signal terminal ② can be used to establish the connection to SITOP UPS1600. (also see Chapter Installation (Page 149)).

Connections and terminal designations (see Image 2-2 SITOP UPS1100 design (example 6EP4133-0GB00-0AY0) (Page 16))	
① DC input +, -	One screw terminal each
② Signal terminal 1, 2	One screw terminal each

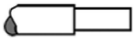
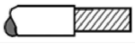
	①	②
	SZS 0,6 x 3,5	SZS 0,6 x 3,5
	1 x 0,2 - 6 mm^2	1 x 0,14 - 4 mm^2
	1 x 0,2 - 4 mm^2	1 x 0,14 - 2,5 mm^2
AWG	24 - 10	22 - 12
Nm	0,5 Nm	0,5 - 0,7 Nm
	8 mm	6,5 mm

Image 2-9 Terminal data for 6EP4131-0GB00-0AY0, 6EP4132-0GB00-0AY0, 6EP4133-0GB00 and 6EP4133-0JB00-0AY0

	①	②
	SZS 1,0 x 5,5	SZS 0,6 x 3,5
	1 x 0,5 - 16 mm^2	1 x 0,14 - 4 mm^2
	1 x 0,5 - 16 mm^2	1 x 0,14 - 2,5 mm^2
AWG	26 - 6	22 - 12
Nm	1,2 - 1,5 Nm	0,5 - 0,7 Nm
	12 mm	6,5 mm

Image 2-10 Terminal data for 6EP4134-0GB00-0AY0 and 6EP4135-0GB00-0AY0

2.3 Operator controls

2.3.1 SITOP UPS1600

2.3.1.1 Rotary coding switch, switch-in threshold

The switch-in threshold can be set using the rotary coding switch ⑦ on the device front between 21.0 V and 25.0 V (21 - 21.5 - 22 - 22.5 - 23 - 24 - 25 volt). The delivery state is 22.5 V

For devices with an interface (…-1AY0, …-2AY0), the coding switch has an additional REN position. If this is selected, the software settings (for the switch-in threshold and the backup time) apply rather than the hardware settings. In the switch position REN, the connection X2.13 (INTERRUPT - reset after buffer operation) of the signal terminal (see Section Signal terminal (Page 18)) has no effect.

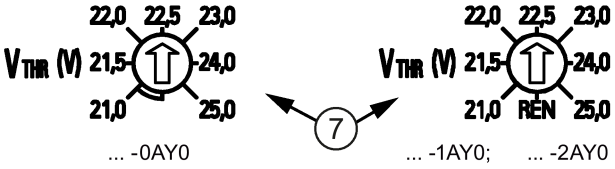


Image 2-11 Rotary coding switch, switch-in threshold

Note

It is only permissible to operate the rotary switch using an insulated screwdriver.

For notes on actuating the rotary coding switch (screwdriver, torque), see Image 2-3 Terminal data SITOP UPS1600 10 A, 20 A (Page 17).

2.3.1.2 Rotary coding switch, backup time

The buffer time is set using the rotary coding switch ⑧ on the device front between 30 seconds and MAX in steps of 0.5 minute (30 s), 1 minute, 2 minutes, 5 minutes, 10 minutes, 20 minutes and MAX. The MAX setting means that buffering is realized for as long as possible. The device only shuts down when the battery has discharged down to the stop buffering voltage (factory setting, 18.5 V). Delivery state is MAX.

The rotary coding switch has an additional setting OFF (see following diagram). If this is selected and the additional threshold rotary coding switch is not set to REN, then buffering is deactivated.

If the buffer time is to be set using the software (only for devices with an interface (…-1AY0, …-2AY0)) (possible setting range, see Section Parameterizing SITOP UPS1600 (Page 70)), the rotary coding switch for the connection threshold (see Section Rotary coding switch, switch-in threshold (Page 22)) must be set to REN.

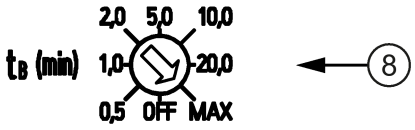


Image 2-12 Rotary coding switch, buffer time

Note

It is only permissible to operate the rotary switch using an insulated screwdriver.

For notes on actuating the rotary coding switch (screwdriver, torque), see Image 2-3 Terminal data SITOP UPS1600 10 A, 20 A (Page 17).

2.3.1.3 Jumper variants

On/Off (pin 9)

The wire jumper on the signal connector ④ between pin 9 and pin 10 (see Image 2-5 Signal connector (Page 18)) is used to enable/disable the buffer mode.

Buffer operation is only possible if the ON/OFF wire jumper is connected. The ON/OFF wire jumper has priority over the position of the switch-in threshold rotary coding switch. Delivery state: Wire jumper is connected between pin 9 and 10

As a consequence, buffer operation can be enabled or prevented using a floating contact (e.g. a contact in the plant or system). The contact is switched instead of the ON/OFF wire jumper. (Note: The contact in the switched-on state must have a resistance of < 10 Ohm, contact load must be a minimum of 15 V / 5 mA)

Note

The external circuit must meet the requirements relating to SELV circuits according to EN60950-1.

Changes are also effective in the buffer mode.

Table 2- 1 With interface (up to firmware release less than V1.20)

Rotary coding switch, buffer time	Rotary coding switch, connection thresh-old	Wire jumper ON/OFF with respect to -	Result
OFF	21 - 25	Yes	Buffering not permitted
0,5 - MAX	21 - 25	Yes	Buffer mode permitted (buffer time corresponding to the settings or maxi-mum buffer time)

Rotary coding switch, buffer time	Rotary coding switch, connection threshold	Wire jumper ON/OFF with respect to -	Result
OFF, 0,5 - MAX	21 - 25	No	Buffering not permitted
OFF, 0,5 - MAX	REN	Not relevant	The software settings apply

Table 2- 2 With interface (from firmware release V1.20 and higher)

Rotary coding switch, buffer time	Rotary coding switch, connection threshold	Wire jumper ON/OFF with respect to -	Result
OFF	21 - 25	Yes	Buffering not permitted
0,5 - MAX	21 - 25	Yes	Buffer mode permitted (buffer time corresponding to the settings or maximum buffer time)
OFF, 0,5 - MAX	21 - 25, REN	No	Buffering not permitted
OFF, 0,5 - MAX	REN	Yes	The software settings apply

Table 2- 3 With interface (from firmware release V2.1)

Rotary coding switch buffer time	Rotary coding switch switch-in threshold	Wire jumper ON/OFF with respect to -	Result
OFF	21 - 25	Yes	Buffering permitted
0,5 - MAX	21 - 25	Yes	Buffer mode permitted (buffer time corresponding to the settings or maximum buffer time)
OFF, 0,5 - MAX	21 - 25 REN	No	Buffering not permitted
0,5 - MAX	REN	Yes	The software settings apply
OFF	REN	Not relevant	The web server can be activated, and a temporary Internet address assigned (precondition: IP address is 0.0.0.0 (when delivered))

Table 2- 4 Without interface

Rotary coding switch, buffer time	Rotary coding switch, connection threshold	Wire jumper ON/OFF with respect to -	Result
OFF	21 - 25	Not relevant	Buffering not permitted
0,5 - MAX	21 - 25	Yes	Buffer mode permitted (buffer time corresponding to the settings or maximum buffer time)
0,5 - MAX	21 - 25	No	Buffering not permitted

Interruption of the output voltage (pin 13)

A wire jumper on the signal connector ④ between pin 13 and pin 10 is used to enable/disable the interruption of the output voltage, after the set buffer time expires, for the parameterized time (default value 5 seconds) when the line supply returns during the buffer time. The default value can only be changed for devices with USB or Ethernet/PROFINET interface.

To prevent data losses, PCs must be shut down in time before the buffer time ends. If the input voltage returns after the shutdown has already started, the SITOP UPS1600 terminates the buffer mode and transitions into normal operation. The PC will be shut down, however, it is not switched off. PCs, which do not have an on/off switch, can only be rebooted by switching off the power and switching on again. When the "Interrupt output voltage" jumper is inserted, the UPS generates this pulse.

Start from the battery (pin 14)

The start from the battery is initiated by connecting pin 14 to pin 10. This jumper must not provide a permanent connection, but must be controlled using a button. The input is designed so that a single lamp with a permissible supply voltage of between 12 and 30 V and 8 to 15 mA can be switched in series to the switching contact. If the button is actuated when the input voltage is not available, and if buffering is permitted, then the UPS goes into the buffer mode. The UPS1600 shuts down if, at the end of the selected buffer time, an input voltage is still not available.

The SITOP UPS1600 starts in normal operation if the input voltage is available.

This can occur if the UPS was remotely shut down via the interface.

Charge current setting (pin 10 / 11 / 12)

For uncoded batteries, the size of the charge current can be changed by placing jumpers between terminals X2.10 (-) and X2.11 or X2.12. These settings are only effective if the "Connection threshold" rotary coding switch is not set to REN.

Table 2- 5 Charge current

SITOP UPS1600 10 A	SITOP UPS1600 20 A and 40 A	Terminal X2.11	Terminal X2.12
0.3 A	0.8 A	open	open
0.8 A	1.75 A	open	connected with X2.10
Max.	Max.	connected with X2.10	open

Remark
The charge current can be automatically reduced if the charge current plus the load current at the UPS1600 results in an overload of the feeding power supply. The charge current can also be reduced if the ambient temperature of the UPS1600 is higher than 40 °C - or if the input voltage at the 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

2.3.2 SITOP UPS1100

2.3.2.1 Buttons for battery replacement

For the SITOP UPS1100, below the cover there is a button ⑧ for battery replacement.

Battery change, see Battery replacement (Page 153)

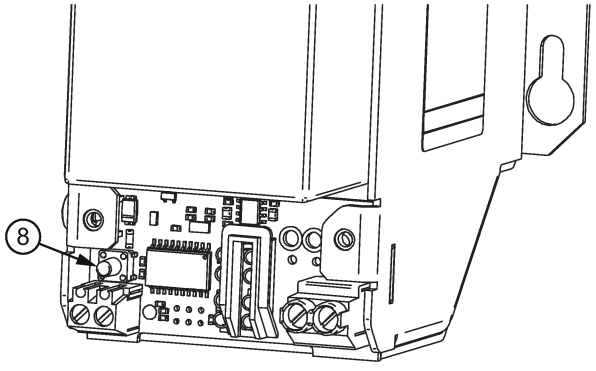


Image 2-13 Buttons for battery replacement

2.4 Operating displays and signaling

2.4.1 SITOP UPS1600

2.4.1.1 LEDs

	6EP4134-3AB00- ... **6EP4136-3AB00- ...** **6EP4137-3AB00- ...**
Status display	LED 1: Operating mode DC-UPS LED 2: Charge state LED 3: Buffer readiness LED 4: Battery test LED 5: for PROFINET-specific diagnostic displays LED 6: for PROFINET-specific diagnostic displays LED 7: Connection status Ethernet port 1 LED 8: Connection status Ethernet port 2
• Remark	LEDs 7 and 8 are only active for... -2AY0

LEDs	**Labeling, just the same as at the housing**	**Description**
LED 1	O.K./BAT.	Operating mode DC-UPS
LED 2	BAT. > 85 %	Charge state
LED 3	ALARM	Ready for buffering
LED 4	BAT. FAULT	Battery test
LED 5	SF	for PROFINET-specific diagnostic displays
LED 6	RUN	for PROFINET-specific diagnostic displays
LED 7	P2	Connection status Ethernet port 1
LED 8	P1	Connection status Ethernet port 2

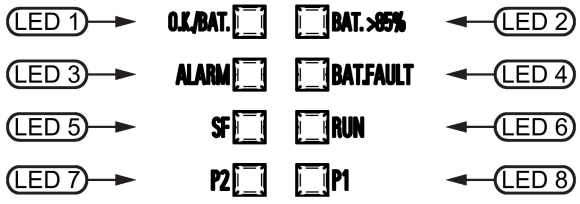


Image 2-14 Operating displays

Legend:

○	LED off
●	LED lights up
✷ 0.5/3	LED flashes in the interval: 0.5 s on - 3 s off

LED 1 (O.K./BAT)

Signaling		6EP4134-3AB00- ... 6EP4136-3AB00- ... 6EP4137-3AB00- ...
○	Off	DC-UPS off
●	Red	DC-UPS defect (severe hardware fault)
✷	Flashing red (0.5/0.5)	Firmware update
✷	Flashing red (1/1)	Software corrupted
✷	Flashing yellow (0.5/0.5)	Critical temperature reached, overtemperature or overvoltage at the input.
✷	Flashing yellow (0.5/3)	Buffer mode, output off
●	Yellow	Buffer mode, output on
✷	Flashing green (0.5/3)	DC-UPS OK, output off
●	Green	DC-UPS OK, output on

LED 2 (BAT>85 %)

Signaling		6EP4134-3AB00- ... 6EP4136-3AB00- ... 6EP4137-3AB00- ...
✷	Flashing green (0.5/0.5)	Firmware update
○	Off	Battery charge state <85 %
●	Green	Battery charge state >85 %

LED 3 (alarm)

Signaling		6EP4134-3AB00- ... 6EP4136-3AB00- ... 6EP4137-3AB00- ...
●	Red	Output off for 45 seconds because of overcurrent, overtemperature or buffer operation not possible
○	Off	Buffer operation possible

LED 4 (battery/BAT.Fault)

Signaling		6EP4134-3AB00- ... 6EP4136-3AB00- ... 6EP4137-3AB00- ...
○	Off	Battery O.K. or uncoded battery modules connected or buffer time rotary coding switch at position MAX
✷	Flashing yellow (0.5/0.5)	Battery outside the permitted temperature range
●	Red	Battery defective
●	Yellow	Selected buffer time cannot be attained

LED 5 and LED 6 (PROFINET LEDs)

Signaling				6EP4134-3AB00-2AY0 6EP4136-3AB00-2AY0 6EP4137-3AB00-2AY0
LED 5 (SF)		LED 6 (RUN)		
○	Off	○	Off	No connection to a PROFINET IO controller
○	Off	✷	Flashing green (0.5/0.5)	Configuration by the PROFINET IO controller
○	Off	●	Green	Application started successfully, module O.K.
●	Red	●	Green	Application started successfully, module not O.K.
✷	Flashing red (0,1/0,1)	●	Green	Application in progress, diagnosis can be called
✷	Flashing red (0.5/0.5)	✷	Flashing green (0.5/0.5)	Self-test running (flashing alternately every 3 s)
✷	Flashing red (0.5/0.5)	○	Off	DCP requires device identification (LED flashes for 3 seconds)
✷	Flashing red (0.5/0.5)	✷	Flashing green (0.5/0.5)	Firmware update

LEDs 5 and 6 are active only for ... -2AY0.

LED 7 (Ethernet LED / P2)

Signaling		6EP4134-3AB00-2AY0 6EP4136-3AB00-2AY0 6EP4137-3AB00-2AY0
○	Off	Device not connected with controller
●	Green	Device connected with controller, no activity
◐	Green/orange alternately	Device connected with controller, send/receive data (RX/TX)

LED 7 is active only for ... -2AY0

LED 8 (Ethernet LED / P1)

Signaling		6EP4134-3AB00-2AY0 6EP4136-3AB00-2AY0 6EP4137-3AB00-2AY0
○	Off	Device not connected with controller
●	Green	Device connected with controller, no activity
◐	Green/orange alternately	Device connected with controller, send/receive data (RX/TX)

LED 8 is active only for ... -2AY0

2.4.1.2 Relay outputs

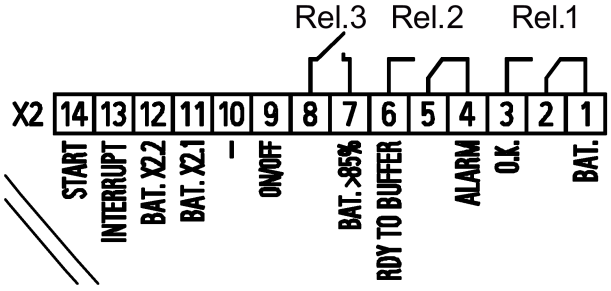


Image 2-15 Signal connector connection schematic

REL1 (changeover contact):
Energized state: Normal operation (X2.2 - X2.3)
Deenergized state: Buffer mode or off

REL2 (changeover contact):
Energized state: Buffer operation is possible (X2.5 - X2.6)
Deenergized state: Not ready for buffering
Cycle 0.25 Hz: Battery defective or set buffer time is not reached.

REL3 (NO contact):
Energized state: Buffering of the selected buffer time is possible, or charge state > 85 %.

2.4.2 SITOP UPS1100

2.4.2.1 LEDs

	6EP4131-0GB00-0AY0 (1.2 Ah) **6EP4132-0GB00-0AY0 (2.5 Ah)** **6EP4133-0GB00-0AY0 (3.2 Ah)** **6EP4133-0JB00-0AY0 (5 Ah)** **6EP4134-0GB00-0AY0 (7 Ah)** **6EP4135-0GB00-0AY0 (12 Ah)**
Status display	LED battery

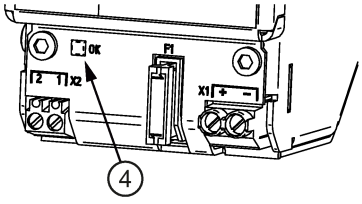


Image 2-16 6EP4131-0GB00-0AY0 example

Table 2- 6 LED ④ battery

Signaling		**6EP4131-0GB00-0AY0 (1.2 Ah)** **6EP4132-0GB00-0AY0 (2.5 Ah)** **6EP4133-0GB00-0AY0 (3.2 Ah)** **6EP4133-0JB00-0AY0 (5 Ah)** **6EP4134-0GB00-0AY0 (7 Ah)** **6EP4135-0GB00-0AY0 (12 Ah)**
✷	Flashing green (0.5/0.5)	Error or alarm, battery replacement initiated
○	Off	Battery off, no communication
●	Green	Battery OK

2.5 Block diagram

2.5.1 SITOP UPS1600

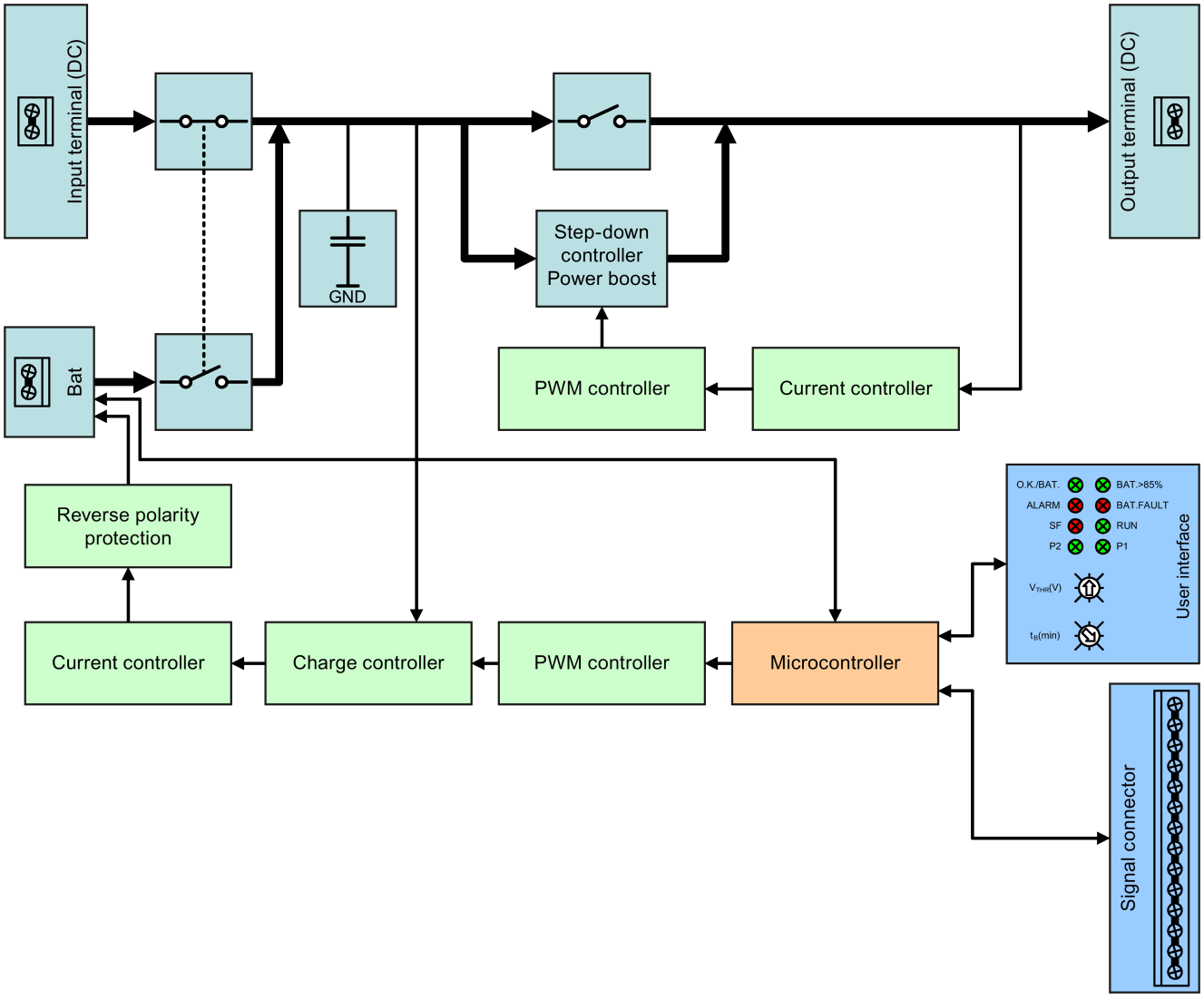


Image 2-17 Block diagram SITOP UPS1600

2.5.2 SITOP UPS1100

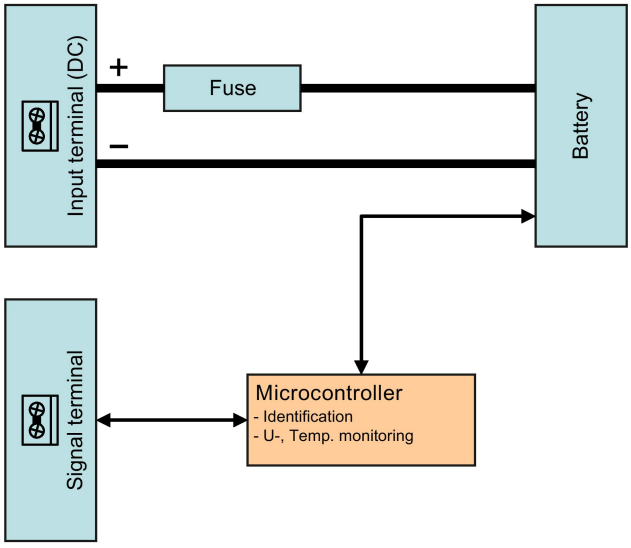


Image 2-18 Block diagram SITOP UPS1100

2.6 Dimensions and weight

2.6.1 SITOP UPS1600

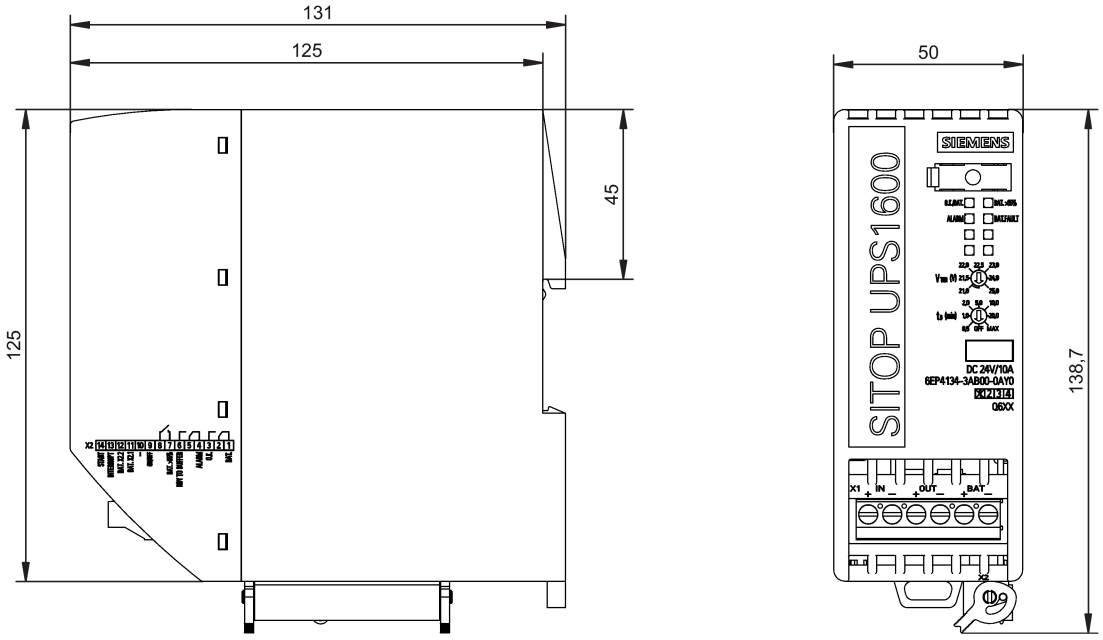


Image 2-19 6EP4134-3AB00-0AY0, 6EP4134-3AB00-1AY0, 6EP4136-3AB00-0AY0,6EP4136-3AB00-1AY0 dimensioned drawing

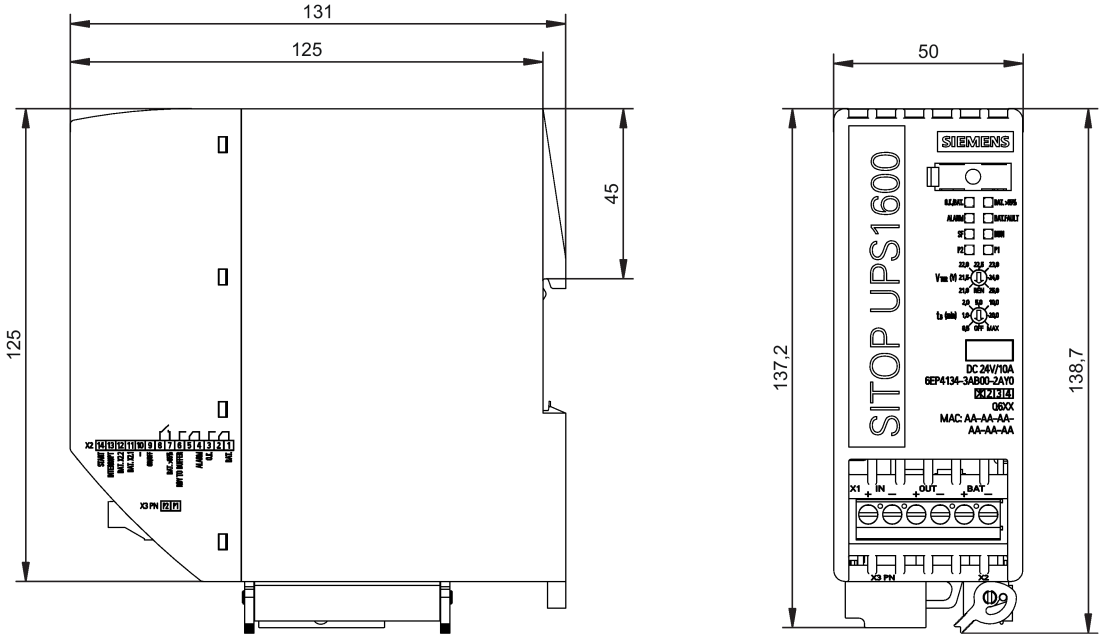


Image 2-20 6EP4134-3AB00-2AY0, 6EP4136-3AB00-2AY0 dimensioned drawing

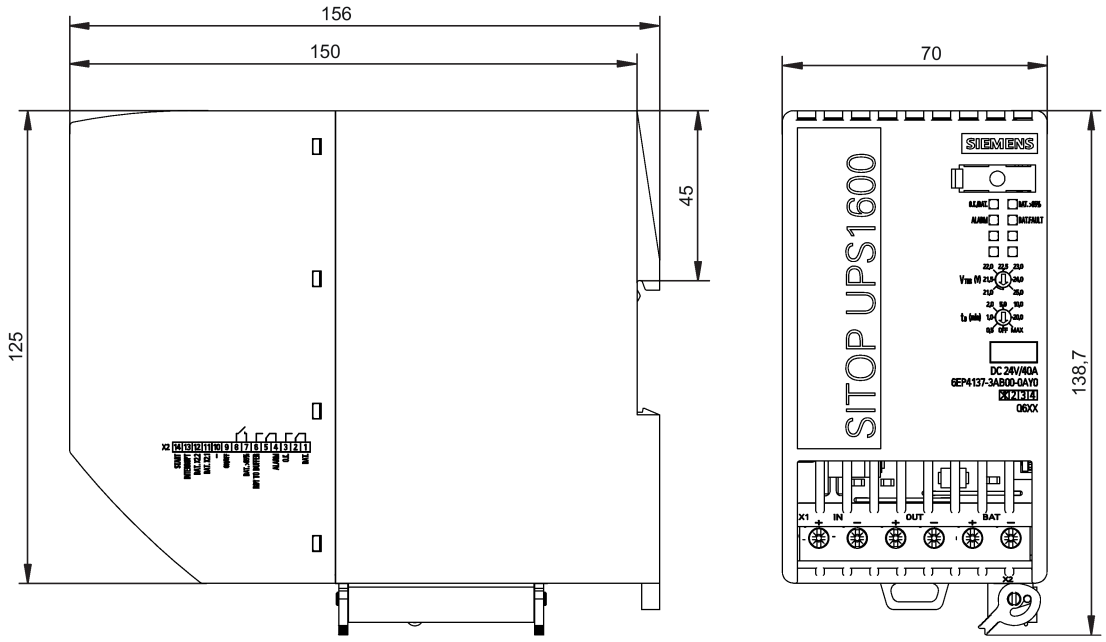


Image 2-21 Dimension drawing 6EP4137-3AB00-0AY0, 6EP4137-3AB00-1AY0

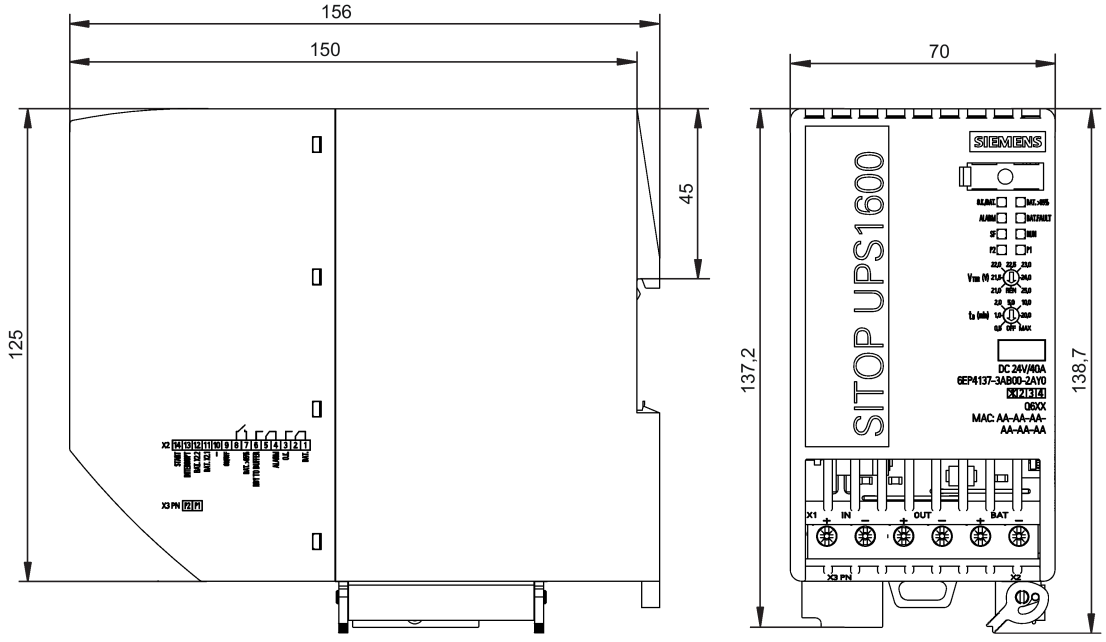


Image 2-22 Dimension drawing 6EP4137-3AB00-2AY0

	6EP4134-3AB00-0AY0	6EP4134-3AB00-1AY0	6EP4134-3AB00-2AY0
Dimensions (W × H × D) in mm	50 × 138.7 × 125	50 × 138.7 × 125	50 × 138.7 × 125
Weight	Approx. 0.38 kg	Approx. 0.4 kg	Approx. 0.45 kg

	6EP4136-3AB00-0AY0	6EP4136-3AB00-1AY0	6EP4136-3AB00-2AY0
Dimensions (W × H × D) in mm	50 × 138.7 × 125	50 × 138.7 × 125	50 × 138.7 × 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 × 138.7 × 150	70 × 138.7 × 150	70 × 138.7 × 150
Weight	Approx. 0.65 kg	Approx. 0.65 kg	Approx. 0.7 kg

2.6.2 SITOP UPS1100

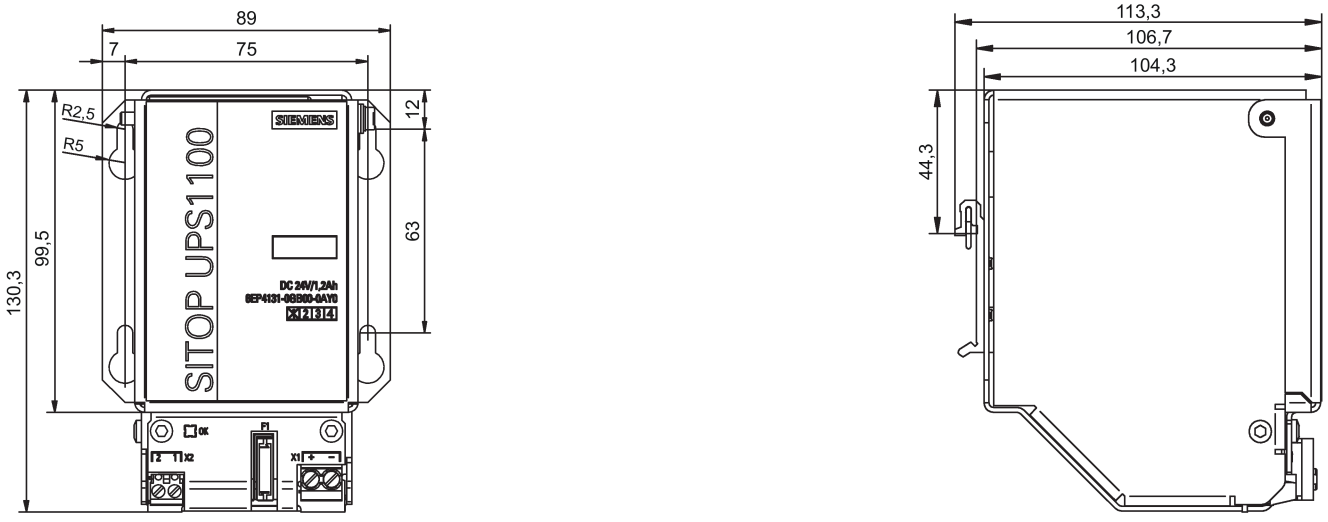


Image 2-23 6EP4131-0GB00-0AY0 dimensioned drawing

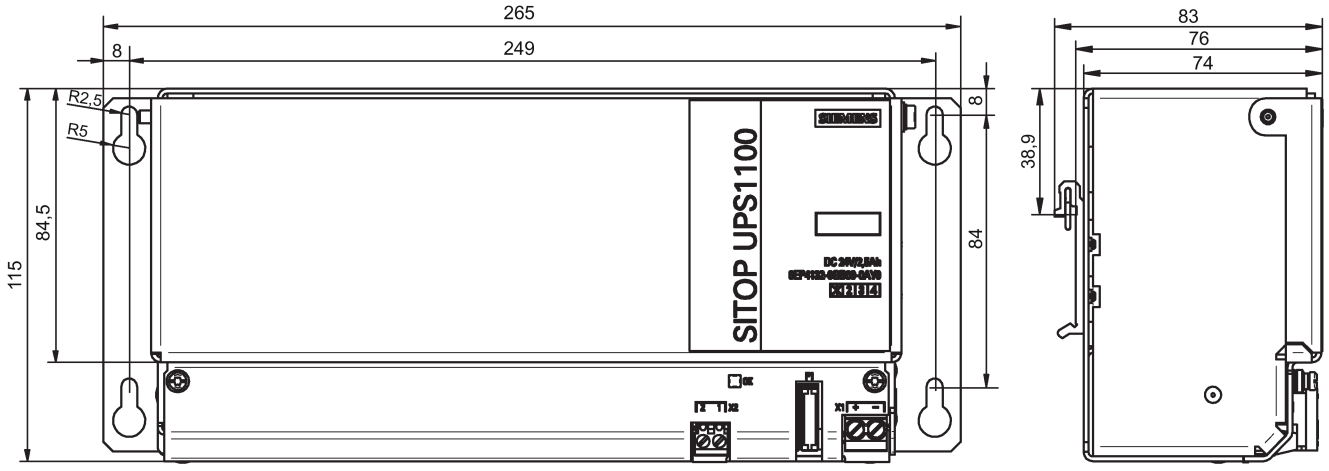


Image 2-24 Dimension drawing 6EP4132-0GB00-0AY0

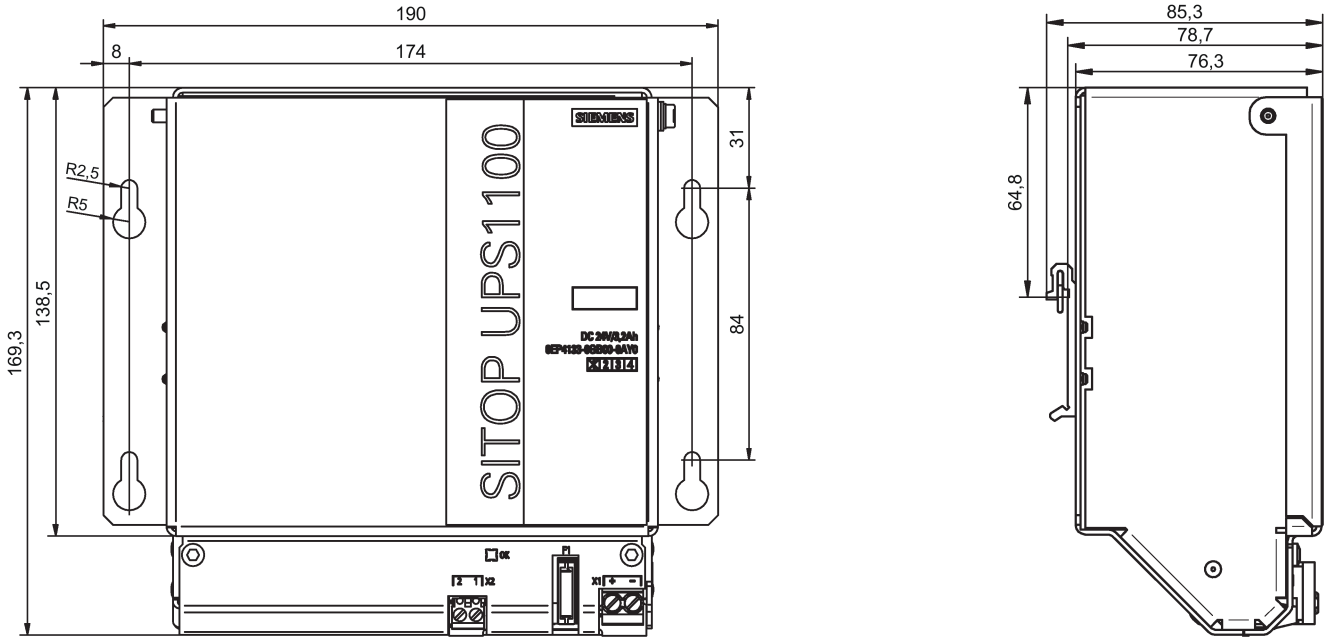
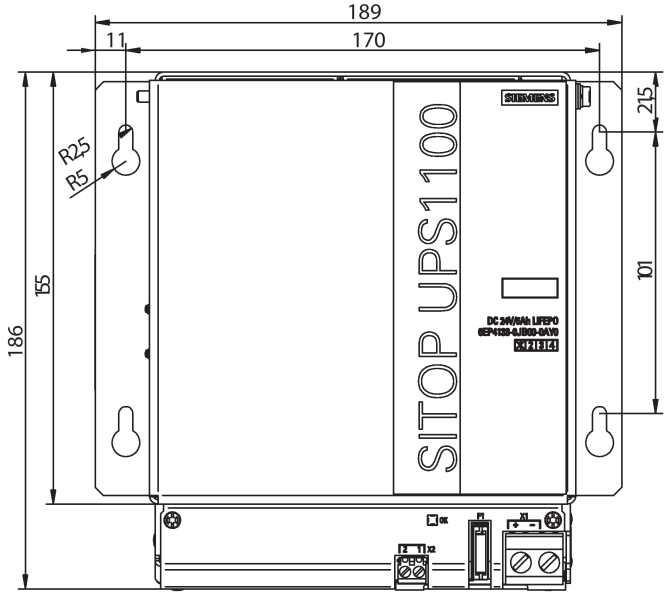


Image 2-25 6EP4133-0GB00-0AY0 dimensioned drawing



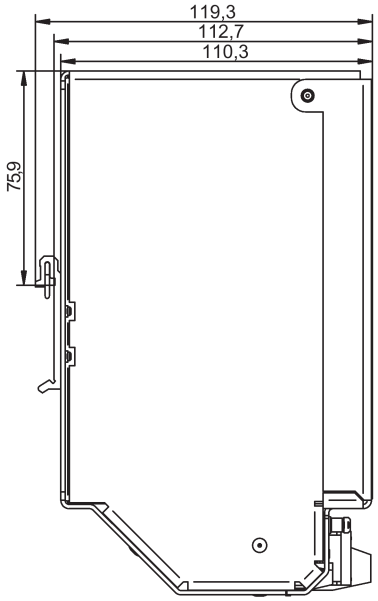
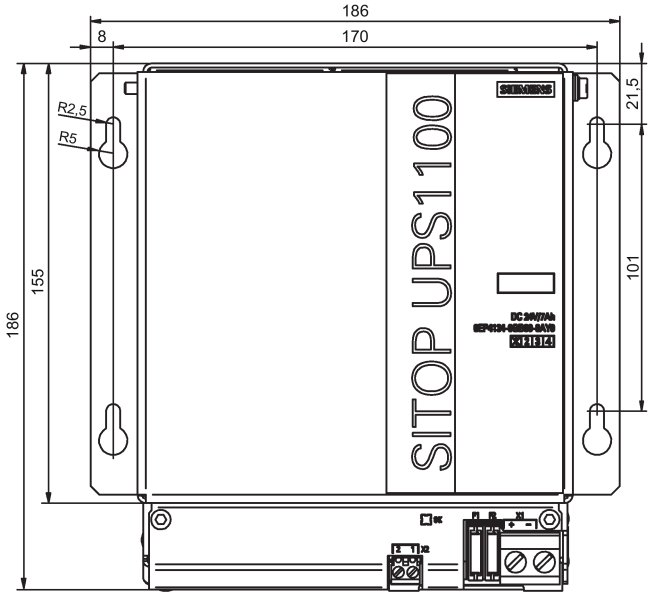


Image 2-26 Dimension drawing 6EP4133-0JB00-0AY0



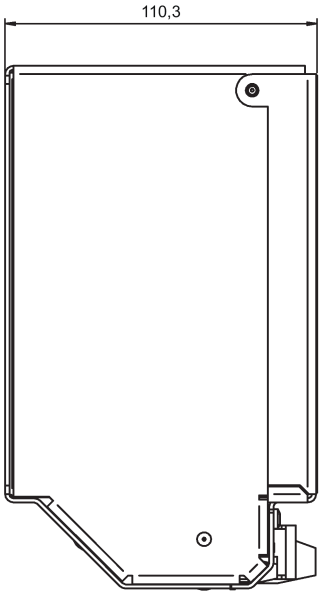


Image 2-27 6EP4134-0GB00-0AY0 dimensioned drawing

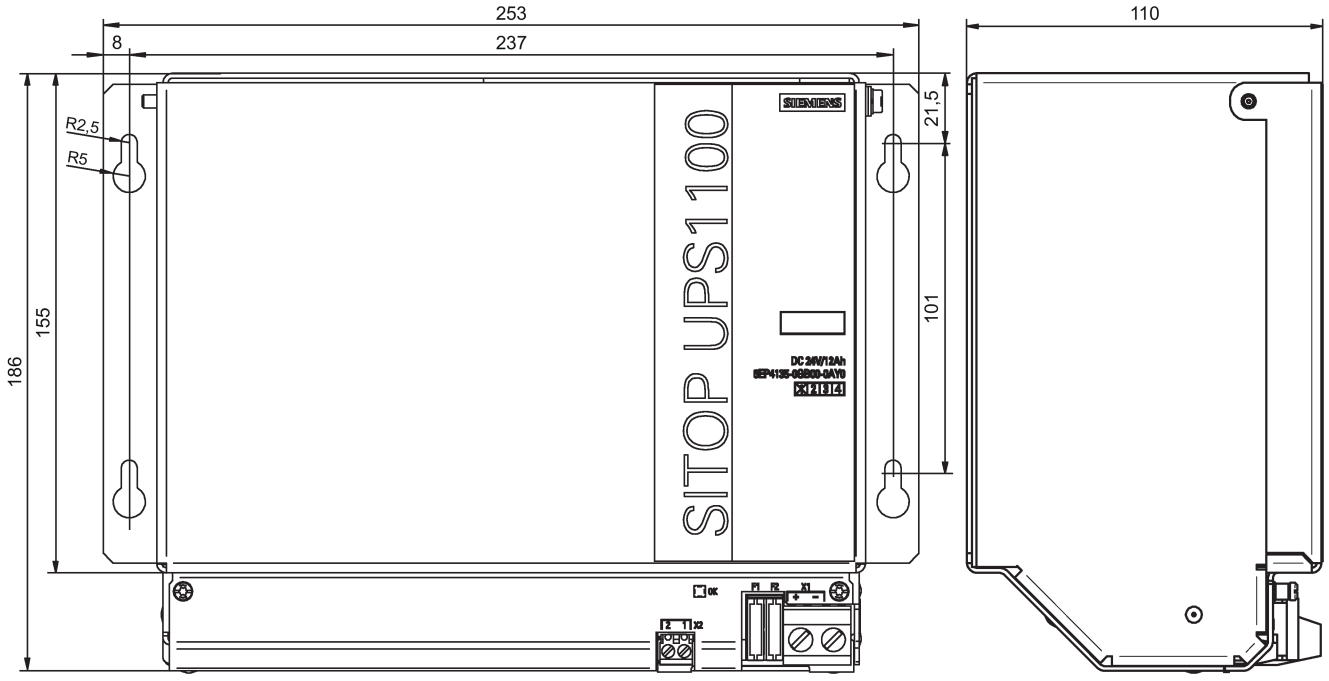


Image 2-28 Dimension drawing 6EP4135-0GB00-0AY0

	6EP4131-0GB00-0AY0 (1.2 Ah)	6EP4132-0GB00-0AY0 (2.5 Ah)	6EP4133-0GB00-0AY0 (3.2 Ah)
Dimensions (W × H × D) in mm	89 × 130.3 × 106.7	265 × 115 × 76	190 × 169.3 × 78.7
Weight	Approx. 1.9 kg	Approx. 3.7 kg	Approx. 3.8 kg

	6EP4133-0JB00-0AY0 (5 Ah)	6EP4134-0GB00-0AY0 (7 Ah)	6EP4135-0GB00-0AY0 (12 Ah)
Dimensions (W × H × D) in mm	189 × 185.5 × 112.7	186 × 186 × 110.3	253 × 186 × 110
Weight	Approx. 3.4 kg	Approx. 6.1 kg	Approx. 9.8 kg

Engineering and remote access

3

3.1 General

This section describes the software tools offered by Siemens that are compatible with SITOP UPS1600 . The software tools are introduced with their functions, the associated requirements and the operation. The software products are:

- SIMATIC STEP 7 in the TIA Portal
- SIMATIC STEP 7
- SITOP UPS Manager
- Web server

Functions of the individual software products

- **SIMATIC STEP 7 in the TIA Portal**
  The SITOP UPS1600 can be used with STEP 7 in the TIA portal 12 with service pack 1 (SP1).
  From SW version V2.1, STEP 7 can be used in the TIA Portal from Version 13.
  After SITOP UPS1600 has been saved in the hardware catalog of STEP 7 in the TIA Portal it can be integrated in the project, parameterized and diagnosed.
- **SIMATIC STEP 7**
  SITOP UPS1600 can be used with STEP 7 from Version 5.4.
  After SITOP UPS1600 has been integrated in the hardware catalog of STEP 7 it can be integrated in projects, parameterized and diagnosed.
- **SITOP UPS Manager**
  Using the SITOP UPS Manager , the SITOP UPS1600 can be parameterized. In addition, the protection of individual computers or computer networks can be determined by shutdown conditions after the failure of the supply voltage.
- **Web server**
  The web server is used to monitor the SITOP UPS1600. It operates independently of the UPS Manager and the PROFINET access.

Note

SIMATIC STEP 7 and the SITOP UPS Manager cannot simultaneously access the SITOP UPS1600.

3.2 Overview of application examples

At our support web site you can find the following application example to parameterize the SITOP UPS1600 uninterruptible power supply:

- "SITOP UPS1600: Graphic blocks and STEP 7 communication blocks" to integrate SITOP UPS1600 into an automation system : (https://support.industry.siemens.com/cs/ww/en/view/78817848)

3.3 SIMATIC STEP 7 in the TIA Portal

3.3.1 Introduction

The uninterruptible power supply SITOP UPS1600 can be used with SIMATIC STEP 7 in the TIA Portal from Version 12 with service pack 1 (SP1). From SW version V2.1, STEP 7 can be used in the TIA Portal from Version 13.

In SIMATIC STEP 7 in the TIA Portal , the basic device SITOP UPS1600 and its battery modules SITOP UPS1100 can be integrated in projects, parameterized and diagnosed.

Note

In order to use SITOP UPS1600 with SIMATIC STEP 7 in the TIA Portal, then you must install the corresponding Hardware Support Package (HSP) or the corresponding generic station description file (GSD). Using UPS1600 with HSP is only possible from TIA Version V13. In TIA Version V12, only using GSD.

You can find additional information at Installing the Hardware Support Package (HSP) (Page 43) or Installing the generic station description file (GSD) (Page 45).

Note

TIA and SITOP UPS Manager cannot simultaneously access SITOP UPS1600. The service of the SITOP UPS Managers may not run while the system is accessed via TIA.

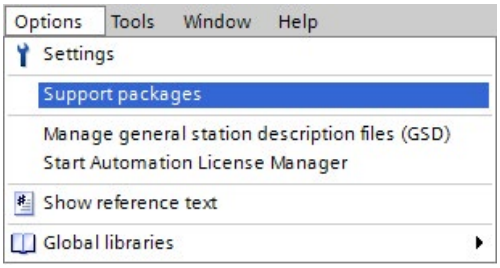
3.3.2 Installing the Hardware Support Package (HSP)

To use SITOP UPS1600, you must install the corresponding Hardware Support Package (HSP) in the TIA Portal . This HSP is available at our SITOP-homepage (http://www.siemens.com/sitop-ups1600) or directly under (https://support.industry.siemens.com/cs/ww/en/view/75854606).

Procedure

To install the Hardware Support Package, proceed as follows:

1. Start STEP 7 in the TIA Portal.
2. In the "Options" menu, click on "Support Packages".



   Dialog "Detailed information" opens.

   All Support Packages from the directory that you specified as storage location for Support Packages in the settings are listed in a table.

3. You have the following possibilities to install the Hardware Support Package:
   - If the Support Package is already present on your computer or on the supplied DVD, you can add it to the list from the "Add from the file system".
   - If you want to add a Support Package from the "Service & Support" page in the Internet, download it with "Load from the Internet".
     You can then add it to the file system.
4. Select the support package that you want to install.
5. Click on "Install", and follow the instructions of the installation program. During the installation you will be prompted to close all TIA Portal instances.
6. Close all TIA Portal instances and click on "Continue".
7. After the Support Package has been installed, the TIA Portal is reinitialized by clicking on "Restart".

   The installed devices are imported into the module catalog and can then be integrated in the project.

   You can find the SITOP UPS1600 in the hardware catalog under "Power Supplies\SITOP UPS\UPS1600".

Note

You can find additional information on installing hardware support packages in the manual of your STEP 7 software.

3.3.3 Installing the generic station description file (GSD)

As an alternative to installing the hardware support package (HSP), in the TIA Portal you can also install the generic station description file (GSD) in order to be able to use the UPS1600. The GSD is available at our SITOP-homepage (http://www.siemens.com/sitop-ups1600) or directly at (https://support.industry.siemens.com/cs/ww/en/view/75854605).

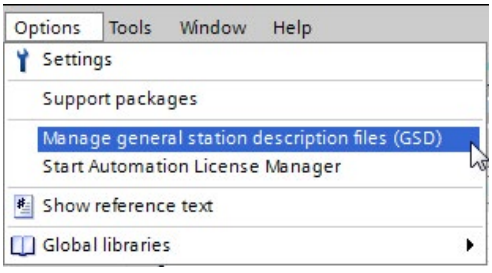
Preconditions

- You know where the GSD file is saved.

Procedure

To install the generic station description file, proceed as follows:

1. Download the GSD file from the Internet.
2. Start STEP 7.
3. In the project view, click in the menu "Options" on "Install general station description file (GSD)" or "Manage general station description file (GSD)".



   The "Manage general station description file (GSD)" dialog is opened.
4. Select the source path under which you locally saved the GSD file that you downloaded.
5. Select the GSD file.
6. Click on "Install", and follow the instructions of the installation program.

The installed devices are imported into the module catalog and can then be integrated in the project. You can find the UPS1600 in the hardware catalog at "Other field devices\PROFINET IO\I/O\Siemens AG\UPS1600".

3.3.4 Inserting SITOP UPS1600 into a project

To be able to use the SITOP UPS1600, you must assign it as IO device to an IO controller (SIMATIC S7 control). Further, SITOP UPS1600 can be equipped in the project with one or several SITOP UPS1100 battery modules.

The main views used to configure the SITOP UPS1600 are the Network view and the Device view.

Note

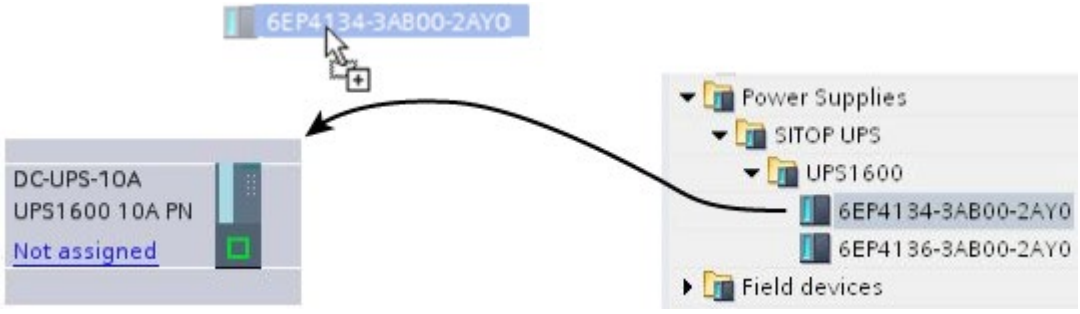
Additional information on the Network view and Device view, as well as the Topology view is available in the manual for your STEP 7 software.

Preconditions

- The hardware support package or the general station description file of the SITOP UPS1600 has been installed.
- STEP 7 in the TIA Portal has been opened, and a project with an IO controller (SIMATIC S7 control) has been created.

Inserting SITOP UPS1600 from the hardware catalog

1. Open the network view.
2. Open the "Hardware catalog" task card.
3. **If you use the SITOP UPS1600 with the hardware support package:**
   In the "Catalog" palette navigate to SITOP UPS1600 under Power Supplies\SITOP UPS\UPS1600.
4. **If you use the SITOP UPS1600 with the general station description file:**
   In the "Catalog" palette, navigate to the SITOP UPS1600 under "Other devices\PROFINET IO\I/O\Siemens AG\UPS1600".
5. Select the required SITOP UPS1600 using a mouse click.
   In the "Information" area you can see information about the selected SITOP UPS1600, and if necessary change the preselected version.
6. Drag the SITOP UPS1600 and drop it into the Network view.



Alternatively, you can add the module to the Network view by double-clicking on the entry in the hardware catalog.

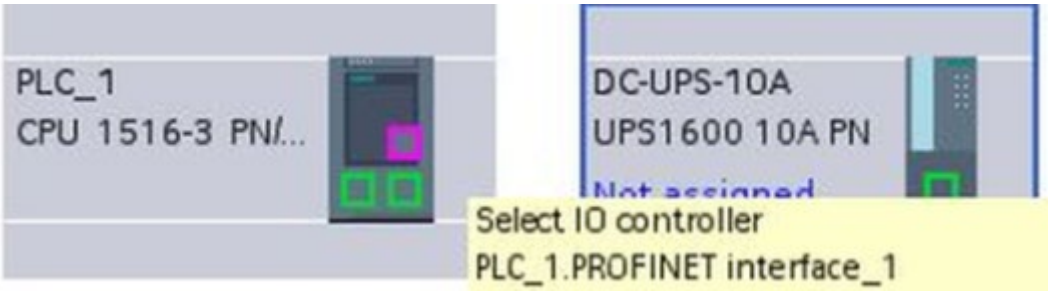
You have now inserted the SITOP UPS1600 into the project. The rectangle displayed in the network view symbolizes the SITOP UPS1600.

3.3.5 Assigning the SITOP UPS1600 to a controller

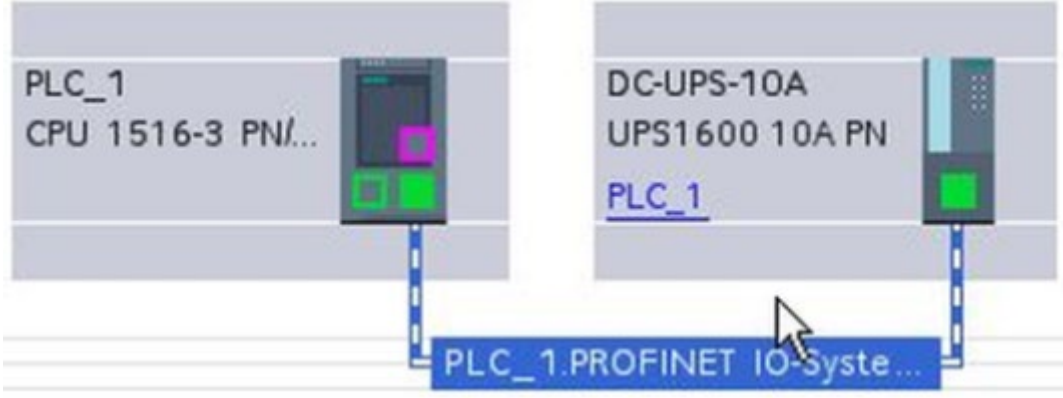
To be able to use the SITOP UPS1600 you must assign an IO controller as IO device.

1. Click in the network view on the blue lettering "Not assigned" at the left next to the symbol of the SITOP UPS1600.

A menu opens with the available controllers.



2. Select a controller in the menu.
3. Select the connection between the controller and SITOP UPS1600.



4. Make the required settings in the "Network data".
5. Double-click on SITOP UPS1600 to display it in the device view.

6. Select the PROFINET-interface.

7. Under "Ethernet addresses" in the inspector window enter the IP address of the SITOP UPS1600, which was already assigned in theTIA Portal.

   You have assigned a controller to the SITOP UPS1600.

3.3.6 Assigning a battery module SITOP UPS1100 to the basic device SITOP UPS1600

The basic functions of the uninterruptible power supply are available with all of the battery modules that are compatible with the SITOP UPS1600. The SITOP UPS100 5 Ah LiFePo battery is first supported by the UPS1600 with SW version V2.1.
Additional functions are available with the SITOP UPS1100 battery module:

- Automatic detection of the battery module rated values
- Automatic management of up to six battery modules
- Temperature-controlled charging
- Battery fast test
- Diagnostics using the SITOP UPS Manager and the web server

Using an example, in the following steps, it is shown how the SITOP UPS1600 is assigned a SITOP UPS1100 battery module.

Note

Only SITOP UPS1100 battery modules of the same type can be inserted into the slots of a SITOP UPS1600.

The number of battery modules that can be configured is limited to six. The description is only applicable to devices that were linked to via the HSP.

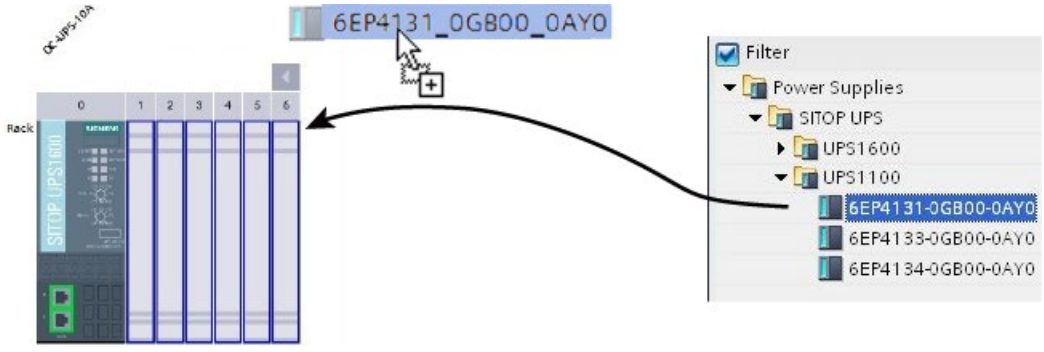
Preconditions

- STEP 7 in the TIA Portal has been opened and a project has been created.
- A SITOP UPS1600 has been integrated in the project.

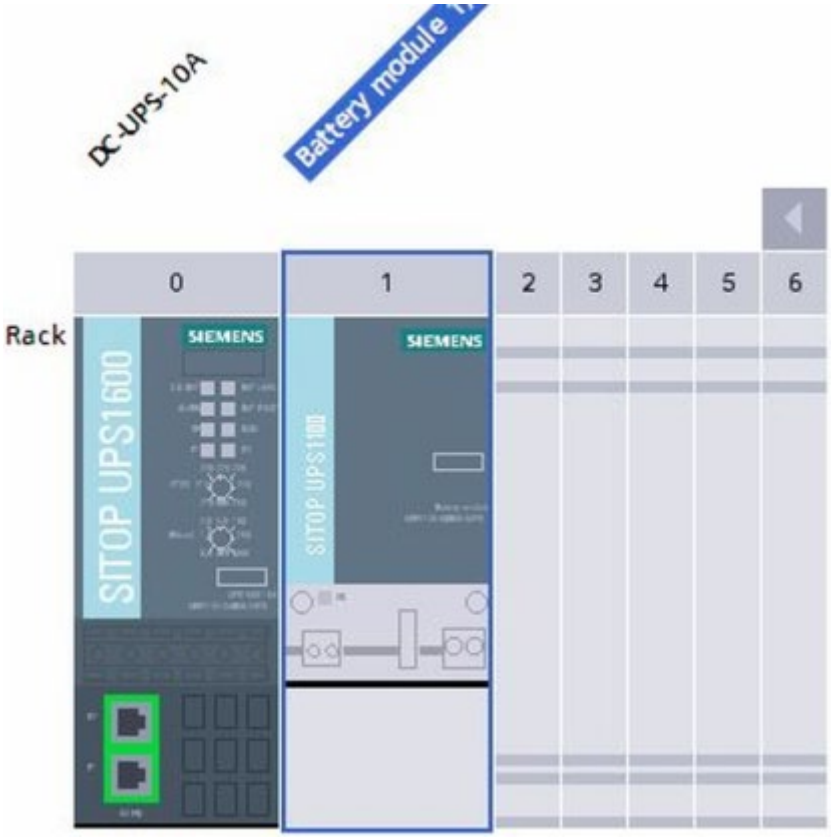
Procedure

The procedure is only applicable for devices integrated via HSP.
For GSD devices, values can be manually specified for a (third-party) battery module; however, it is not necessary to add a battery module to the configuration.

1. In the device view, select the SITOP UPS1600 basic device.
2. In the Hardware catalog , navigate to the SITOP UPS1100 battery module under Power Supplies\SITOP UPS\UPS1100.
3. Select the required battery module in the hardware catalog.
   In the "Information" area you can see information about the expansion module, and when necessary you can change the preselected (default) version.
4. Drag the battery module and drop it into the Device view.
   Alternatively, the battery module can be added by double-clicking on the entry in the hardware catalog.



5. Drag the battery module and drop at the first free slot to the right next to the SITOP UPS1600.
   The battery module is inserted at the selected slot.



6. Save the hardware configuration.

   You have assigned a battery module to the basic device SITOP UPS1600.

How you change the number and type of SITOP UPS1100 battery modules used is described under Parameterizing UPS1600 with STEP 7 in the TIA Portal (Page 51).

3.3.7 Parameterizing the UPS1600

The adjustable parameters of the SITOP UPS1600 can be found in STEP 7 in the TIA Portal in the inspector window under Properties when the appropriate device was selected.

For parameterization, in the area navigation, the settings under "Base Unit", "Energy storage" and "Webserver" are relevant.

Navigation area		Description
Base Unit	Buffering	All parameters, which involve the behavior of SITOP UPS1600 when buffering
	Signaling	Setting of the alarm signaling and the wait time for stable input voltage.
Energy storage	–	Parameters for the battery modules used
Web server	General information	Define as to whether the SITOP UPS1600 may be accessed via web server (yes / no) Activate web server on this module Automatic logoff / Active access only via HTTPS
	Automatic update	Activate automatic update / Activation interval

A detailed description of the individual parameters of the subgroups is contained in the associated section under Parameterizing the UPS in STEP 7 in the TIA Portal (Page 51).

The procedure is the same for all parameters. This section describes the general procedure to reach the configuration dialog, using as example the parameters for buffering. The individual parameters and their possible values are described in the following subsections.

Each parameter has a start value. A click on "Reset to initial values" resets all parameters of a subgroup to the associated start value.

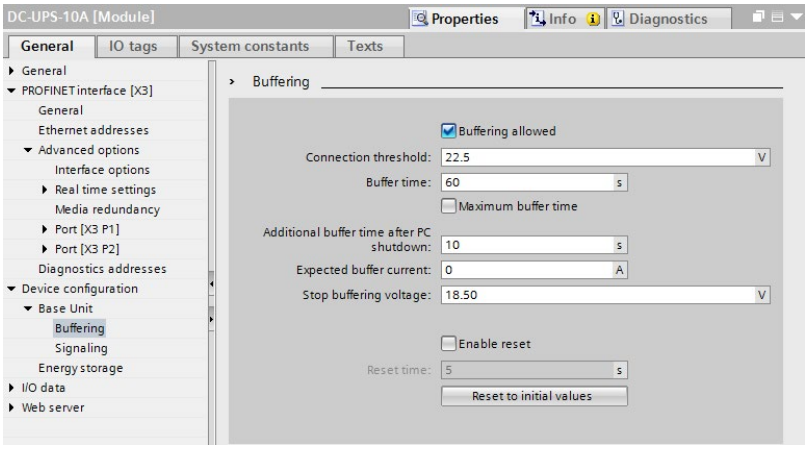
Preconditions

- The SITOP UPS1600 was integrated in the opened project.

Proceed as follows

1. Select the SITOP UPS1600 in the Device view.
2. In the Inspector window, select "Properties " > "General > Device configuration".

   Entries for parameterization are provided in the navigation area.



"Buffering" parameters

Parameter	Value range	Initial value
Buffering allowed	Yes / No	Yes
Connection threshold	21 - 25 V	22.5 V
Buffer time	1 - 32767 s	60 s
Maximum buffer time [1)]	Yes / No	No
Additional buffer time after PC shutdown.	1 - 300 s	10 s
Expected buffer current [1)]	0 - 40 A	0 A
Stop buffering voltage	18 - 23 V	18.5 V
Enable reset	Yes / No	No
Reset time	1 - 120 s	5 s
Battery test interval [2)]	1 - 65535 h	4 h

1) Parameter only available from SW version V2.0 and higher

2) Parameter only available from SW version V2.1 and higher

- **Buffering permitted**
  When the connection threshold is fallen below, selects whether the system is buffered or the output is shut down.
- **Switch-in threshold**
  Setting the switch-in threshold.
- **Buffer time**
  Length of time during which the system should be buffered by the SITOP UPS1600.

- **Maximum buffer time**

  The setting means that buffering is realized for as long as possible. The device only shuts down when the battery has discharged down to the defined stop buffering voltage. The value entered for the "Buffer time" parameter is not relevant in this case.

- **Additional buffer time after PC shutdown**
  Time during which the system should be buffered by the SITOP UPS1600 after the PC was shut down.

- **Expected buffer current**

  Load current, which is expected at the device output during buffer operation. If a value of 0 A is entered, then for this parameter, the average value of the actual load current measured at the output over the last 10 min is assumed. The value of this parameter is used when calculating the remaining buffer time. The entered value may not exceed the rated device current.

- **Stop buffering voltage**
  The voltage at which battery discharge is terminated. The stop buffering voltage defined for this type is always used for a coded battery (UPS1100).

- **Enable reset**
  If the value is set to "Yes" then the output voltage is interrupted after the selected buffer time expires if, in the meantime, the input voltage returns. This option is useful, when, for example, computer networks are protected by the UPS that can be activated by a reset when the power supply is restored. For buffer time "MAX", the output voltage is not interrupted.

- **Reset time**
  Here, you define the interrupt duration.

"Signaling" parameter

Parameter	Value range	Default setting
Downtime alarm	0 - 20,000 ms	125 ms
Wait time for stable input voltage	0.2 - 65 s	0.5 s

- **Downtime alarm**
  The time in which no alarm is issued to the system although it is buffered.

- **Wait time for a stable input voltage**
  Time where the input voltage must continually lie above the connection threshold so that buffering is exited and a transition is made into normal operation.

"Energy storage" parameter

The "energy storage" has two different areas that depend on the battery type being used. First select whether you are using a SITOP UPS1100 battery module or some other energy storage device.

Possible parameters when using a SITOP UPS1100 battery module

Parameter	Value range
Module	Drop-down menu with the SITOP UPS1100 battery modules saved by the HSP
Number of modules	0 - 6
Total capacity	0 - 42 Ah

- **Module**
  Type of SITOP UPS1100 battery module.
- **Number of modules**
  Number of the installed modules.
- **Total capacity**
  Total capacity of the installed battery modules.

Possible parameters for the deployment of a different battery module

Parameter	Value range	Default setting
Total capacity	0.1 - 3,200 Ah	10 Ah
End-of-charge voltage	24 - 30 V	26 V
Charge current	0.001 - 4 A	0.8 A
Faulty battery voltage	1 - 18 V	6 V

- **Total capacity**
  Total capacity of the installed batteries.
- **End of charge voltage**
  Maximum voltage up to which the battery may be charged.
- **Charge current**
  The battery is not charged with more than the selected charge current. The manufacturer's details for the permitted battery charge current must be observed. Further, the following, device-dependent values apply:

  – SITOP UPS1600 10 A: Maximum permissible charge current 3,000 mA
  Derating for T_u > 40 °C or U_{in} < 24 V: 2,000 mA

  – SITOP UPS1600 20 A: Maximum permissible charge current 4,000 mA
  Derating for T_u > 40 °C or U_{in} < 24 V: 3,000 mA

  – SITOP UPS1600 40 A: Maximum permissible charge current 5,000 mA
  Derating for T_u > 40 °C or U_{in} < 24 V: 3,000 mA

  Faulty battery voltage
  If the battery voltage undershoots this value, it is considered as being faulty by the SITOP UPS1600 and is not charged.

"Web server" parameters

Parameter	Value range	Default setting
Activate web server on this module	Yes / No	Yes (up to V2.0) No (from V2.1)
Permit access only with HTTPS	Yes / No	Yes
Log off automatically after 15 minutes	Yes / No	No
Update interval	0 / 5 s / 10 s / 20 s / 30 s / 60 s	10 s

Set here whether access to the UPS via web server is permitted.

- **Activate web server on this module**
  Define whether this device can be accessed via the web server.
- **Permit access only with HTTPS**
  Define whether access is only permissible via HTTPS.
- **Download certificate**
  By pressing the "Download certificate" button, you can download the certificate for encrypted connection via HTTPS.
- **Log off automatically after 15 minutes**
  You define whether a user should be automatically logged off after closing the web server.
- **Update interval**
  You define in which intervals the actual values are sent to the web server.

3.3.8 Loading the configuration (commissioning)

In the delivered state, the SITOP UPS1600 has not yet been assigned an IP address and the DHCP protocol is deactivated.

When the SITOP UPS1600 is first connected with a controller (SIMATIC S7- control system), it must be assigned a device name and an IP address by the controller. A new configuration can be loaded to the device using STEP 7 in the TIA Portal .

Identifying a SITOP UPS1600 in the network

From the STEP 7 in the TIA Portal , you can get the LED "SF" at the SITOP UPS1600 to flash. This means that you can clearly identify a module in the network, e.g. if several SITOP UPS1600 are installed in the network.

Preconditions

- The SITOP UPS1600 has been correctly connected and linked with the network.
- PG/PC with STEP 7 in the TIA Portal is connected with the network.

Proceed as follows

1. Open the "Online > Accessible nodes" menu.
2. As type of PG/PC interface, select "PN/IE".
3. Select the PG/PC interface connected with the system.
4. Select the connection with the subnet, in which the SITOP UPS1600 is located.
   All of the available SITOP UPS1600 devices in the selected subnet are displayed.
5. Select the required SITOP UPS1600.
6. Activate the "Flash LED" checkbox.

7. Check at which SITOP UPS1600 in the network the "SF" LED flashes.

By checking the flashing LEDs, you can uniquely identify all SITOP UPS1600 in a network. Note the device name and the IP address of the required SITOP UPS1600 in order to load a configuration.

Changing the device name of the SITOP UPS1600

1. In STEP 7 , in the tabular area of the Network view, select the "Network overview" table.
2. Overwrite the name in the "Device" column in the row of the PROFINET device involved.

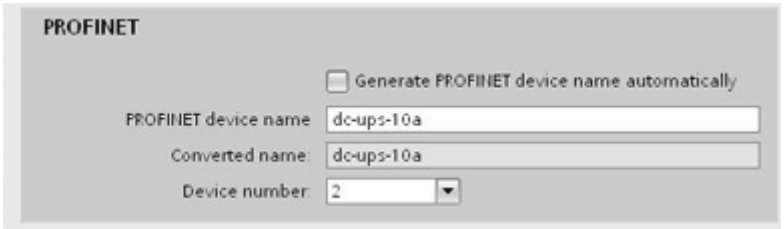
You have changed the name of the SITOP UPS1600 device.

The name is adapted in the graphical area of the network view.

Changing the PROFINET device name of the SITOP UPS1600 via the properties of the PROFINET interface

You can change the PROFINET device name using the properties of the PROFINET interface.

1. In the Network or Device of view of the hardware and network editor from STEP 7, select the PROFINET interface of a PROFINET device.
2. In the Inspector window navigate to "Ethernet addresses" in the "PROFINET" area.
3. Deactivate the "Generate automatically the PROFINET device name" checkbox.
4. Enter the new PROFINET device name in the appropriate field.



Changing the IP address of a SITOP UPS1600

1. In the Network or Device view of the hardware and network editor from STEP 7 in the TIA Portal , select PROFINET interface of a PROFINET device.
2. In the Inspector window navigate to "Ethernet addresses" in the "IP protocol" area.
3. Check whether the "Set IP address in the project" option is activated.
4. Enter the new IP address in the appropriate field.

Loading the configuration to the SITOP UPS1600

To commission the UPS, you must load the project data that you created offline into the connected SITOP UPS1600. This project data results from the configuration of the hardware, networks and connections in STEP 7.
Initially, the complete project data is loaded. Only the changes are loaded for subsequent load actions.

Preconditions

- The project data is consistent.
- The device name must be identical offline and online.
- The SITOP UPS1600 is accessible online.
- The SITOP UPS1600 is located in the PROFINET IO system of an IO controller.
- The PG/PC is connected to the same network to which the SITOP UPS1600 and the controller are connected. The interface of the PG/PC must be set to TCP/IP.

Note

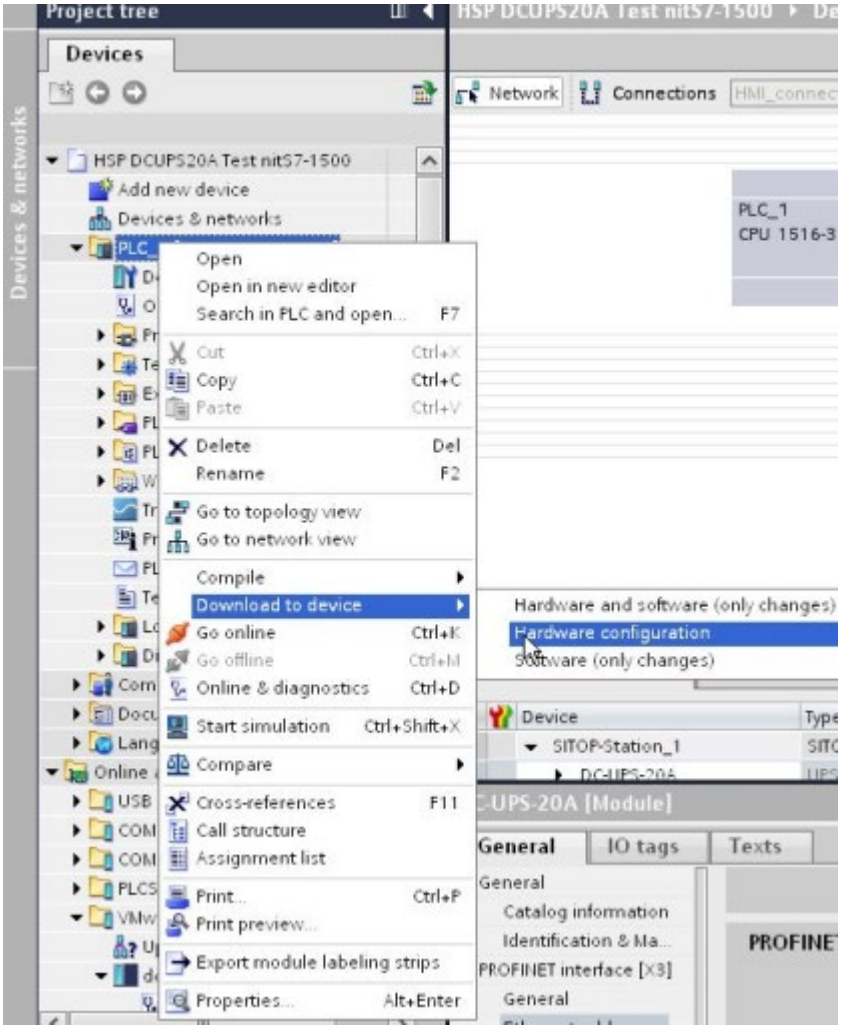
Ensure that the article number of the SITOP UPS1600 configured offline matches the article number of the device connected online. The following response is obtained after loading the configuration into the device:

Offline configured device / Online connected device	UPS1600 10 A	UPS1600 20 A	UPS1600 40 A
UPS1600 10 A	Device status: OK Diagnostics status: OK	Device status: Fault Diagnostics status: Differences were identified (not accepted)	Device status: Fault Diagnostics status: Differences were identified (not accepted)
UPS1600 20 A	Device status: OK Diagnostics status: Differences were identified (accepted)	Device status: OK Diagnostics status: OK	Device status: Fault Diagnostics status: Differences were identified (not accepted)
UPS1600 40 A	Device status: OK Diagnostics status: Differences were identified (accepted)	Device status: OK Diagnostics status: Differences were identified (accepted)	Device status: OK Diagnostics status: OK

Image 3-1 Online / offline

Procedure

1. In the "Project tree", right-click on the SITOP UPS1600 controller.
   The shortcut menu opens.



2. In the shortcut menu, in submenu "Download to device", select option "Hardware configuration".

   The project data are compiled. The "Load" button is activated as soon as loading is possible.

3. Click on "Load".

   Data is loaded. The "Result of the load operation" dialog window is then opened. In this dialog, you can check whether the load task was successful and select any further actions.

4. Click on the "Finish" button.

Result

The set parameters have been loaded to the SITOP UPS1600 via the controller.

3.3.9 Diagnostics

The following data can be retrieved using the online and diagnostics function:

Navigation area		Value
General	Module	Short designation
		Article number
		Hardware
		Firmware
	Module information	Device name
		Module name
		Plant designation
		Location ID
	Manufacturer information	Description of manufacturer
		Serial number
		Copyright entry
		Profile
		Profile details
PROFINET interface	Ethernet address / network connection	MAC address
	Ethernet address / IP parameter	IP address
		Subnet mask
		Default router
		IP settings
		IP setting time
	Ports	List of ports
Functions	Assign an IP address	MAC address
		IP address
		Subnet mask
		Router address
	Firmware update / UPS1600	Article number
		Firmware
		Name
		Rack
		Slot
		Firmware file
		Firmware version
		Suitable for modules with
		Status
		Activate firmware after update
	Assign name	PROFINET device name
		Type
	Reset to factory settings	MAC address
	IP address	

Navigation area		Value
	PROFINET device name	

Retrieve the online and diagnostics data of SITOP UPS1600

Proceed as follows to start the online and diagnostics view of the particular module:

Project tree:

1. Open the device folder of the SITOP UPS1600 in the Project tree. Is located (after the assignment to the control system) in the folder of the control system under "Distributed I/O " > [name of the PROFINET connection]
2. Double-click on "Online & diagnostics".

   Alternatively:

3. Select the device folder of the SITOP UPS1600 in the Project tree.
4. In the shortcut menu or in the "Online" main menu, select the "Online & diagnostics" .

Device view:

1. Open the device view of the device configuration.
2. Select the SITOP UPS1600.
3. In the shortcut menu or in the "Online" main menu, select the "Online & diagnostics" .

Network view:

1. Open the network view of the device configuration.
2. Select the SITOP UPS1600.
3. In the shortcut menu or in the "Online" main menu, select the "Online & diagnostics" .
4. Click on "Connect online".

   The information is displayed under "Diagnostics / General".

3.3.10 Firmware update

⚠ WARNING

The SITOP UPS1600 is reset while updating the firmware. For safety reasons, the output is switched off.

Ensure that no damage is caused to the plant or system.

Ensure that the PG/PC and/or all switches, routers and gateways that are used have an independent power supply during the firmware update.

Note

Do not switch-off the devices during the firmware update.

The files for updating the firmware (firmware updates) are available online under (http://support.automation.siemens.com/WW/view/en/79207181). Different firmware updates are offered depending on the amp rating of the SITOP UPS1600.

Note

Observe the compatibility of the firmware!

Other firmware updates are not compatible.

Determine the amp rating of your SITOP UPS1600 and download the appropriate firmware update.

Note

It is not possible to downgrade the device firmware to a release with a version number lower than the firmware installed in the device itself. Information on how to read out the firmware release from the device is provided in Section Diagnostics (Page 60).

Note

"Reset to factory" function:

Everything is reset, also the IP address. A new IP address must then be assigned, as otherwise there is no connection to the UPS Manager or TIA.

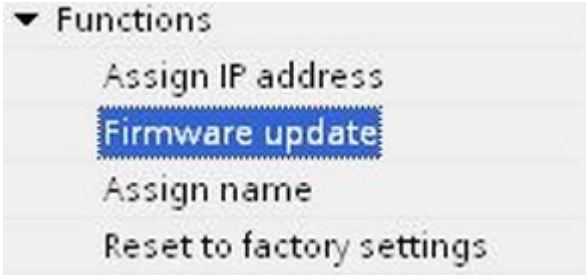
Preconditions

- The SITOP UPS1600 has been correctly connected and linked with the system.
- PG/PC with STEP 7 in the TIA Portal is connected with the system.
- Online connection is established.

Procedure

The firmware update consists of several files, which are combined in a zip file.

1. Download the firmware update.
2. Unpack the ZIP file into a temporary directory.
3. In the network view, select the components whose firmware is to be updated.
4. Change to the device view.
5. Click on "Go online".
6. In the shortcut menu of the SITOP UPS1600, select "Online & Diagnostics".
   The "Online access" menu opens.



7. In the "Functions" folder, select the "Firmware update" group.
8. Click on the "Browse" button in the "Firmware loader" area to select the path to the directory with the unzipped files.
9. Select file "ups10a.upd", "ups20a.upd", "ups40a.upd". All SITOP UPS1600 are displayed in the table, for which an update is possible with the selected firmware file.
10. Click on the "Start update" button. If the selected file can be interpreted by the module, it will be loaded into the module. For version V2.1 - depending on the UPS1600 type - the firmware file is called "ups20a.upd", for example. If this requires changing the operating state of the CPU, you will be prompted to do this with dialogs.
11. Confirm the notes that are displayed.
    The firmware is sent from the controller to the component . While sending, LED 4 ("SF") and LED 6 ("RUN") flash at the SITOP UPS1600.
12. Confirm the message from the TIA Portal that the data was successfully sent by pressing "OK".
    The firmware is saved in the internal component memory. The following LEDs flash while saving:
    - LED 1 ("OK/Bat")
    - LED 2 (">85%")

Note

It can take several minutes to save the firmware in the component. Do not switch-off the devices.

13. The device is automatically restarted after the LEDs no longer flash.

Note

During the firmware update, if the power supply of the SITOP UPS1600, or PG/PC or intermediate switches, routers or gateways is interrupted, then under certain circumstances, a fallback firmware is activated. If the SITOP UPS1600 can then no longer be accessed remotely, you must assign the a new IP address, or under the menu item "Assign name" you must enter a new name in the field "PROFINET device names" (see the manual for the particular unit).

14. The firmware has been updated. Only now is it permissible to switch off the SITOP UPS1600.

Note

After updating the firmware, in the hardware configuration of your project, you must replace the SITOP UPS1600 involved by SITOP UPS1600 with the current firmware version. The configured configuration then matches the actual configuration again.

Note

For GSD, the SITOP UPS1600 must be deleted, and newly integrated; this means that parameters, addresses and names must be newly set - and it is also possible that a new GSD file must first be installed.

3.3.11 Restore factory settings

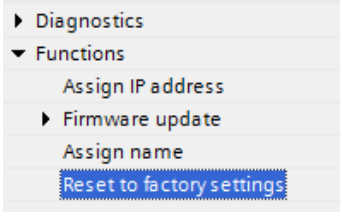
A reset to the factory settings deletes all configurations of the PROFINET interface saved in the SITOP UPS1600 and restores the factory settings. This affects, for example:

- IP address
- Device name

The parameter values for SITOP UPS1600 and the energy storage device are kept.

Proceed as follows to reset the SITOP UPS1600 factory settings:

1. Select SITOP UPS1600 in the Network view and change to the Device view.
2. Click on "Go online".
3. In the SITOP UPS1600 shortcut menu, select "Online & diagnostics".
4. In the "Functions" folder, select the "Reset to factory settings" group.



5. Click on the "Reset" button.
6. Respond to the confirmation prompt with "OK".

3.4 SIMATIC STEP 7

3.4.1 Introduction

The uninterruptible power supply SITOP UPS1600 can be used with SIMATIC STEP 7 from Version 5.4 and higher.

In SIMATIC STEP 7 , the basic device SITOP UPS1600 and its SITOP UPS1100 battery modules can be integrated in the project, parameterized and diagnosed.

Note

SIMATIC STEP 7 and the SITOP UPS Manager cannot simultaneously access the SITOP UPS1600. It is not permissible that the SITOP UPS Manager service runs while the system is being accessed via SIMATIC STEP 7.

3.4.2 Installing the generic station description file (GSD)

To use the SITOP UPS1600 and the SITOP UPS1100 battery modules in SIMATIC STEP 7, you must install the corresponding generic station description file (GSD). The GSD file is available at our SITOP-homepage (http://www.siemens.com/sitop-ups1600) or directly at (https://support.industry.siemens.com/cs/ww/en/view/75854605).

Preconditions

- SIMATIC STEP 7 has been opened and a project has been created.
- At least one station has been added.
- You know where the GSD data have been saved.

Procedure

1. Download the GSD file from the Internet.
2. Close all stations in HW Config.
3. Click on "Browse ...", and select the folder in which the GSD file is located.
4. Select the GSD file and click on "Install".

   Note

   If the file was not able to be installed, or if errors occurred during installation, then SIMATIC STEP 7 creates a report file. You can open this log file by clicking on the "Display log" button.

5. In the "Options" menu, click on "Update Catalog".

The installed devices are imported into the module catalog and can then be integrated in the project. You can find SITOP UPS1600 in the hardware catalog under "PROFINET IO\I/O\UPS1600".

3.4.3 Inserting SITOP UPS1600 into a project

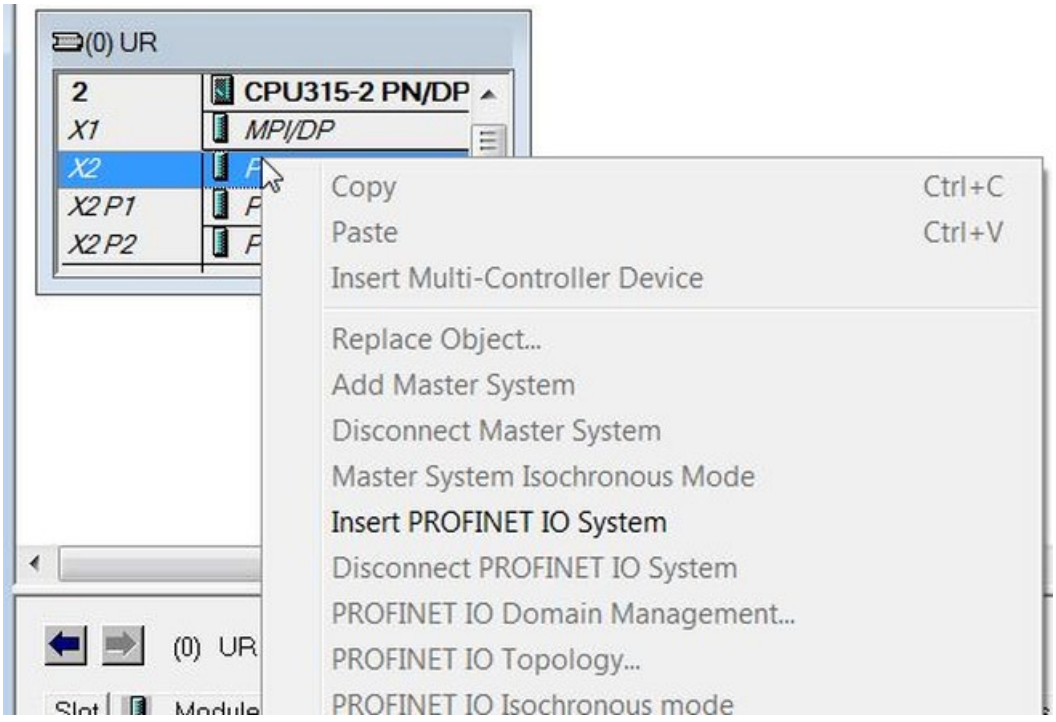
To be able to use the SITOP UPS1600, it must be assigned as IO device to an IO controller (SIMATIC S7 control system) .

Preconditions

- The GSD file of the SITOP UPS1600 has been correctly installed.
- SIMATIC STEP 7 has been opened, and a project with an IO controller (SIMATIC S7 control) has been created.

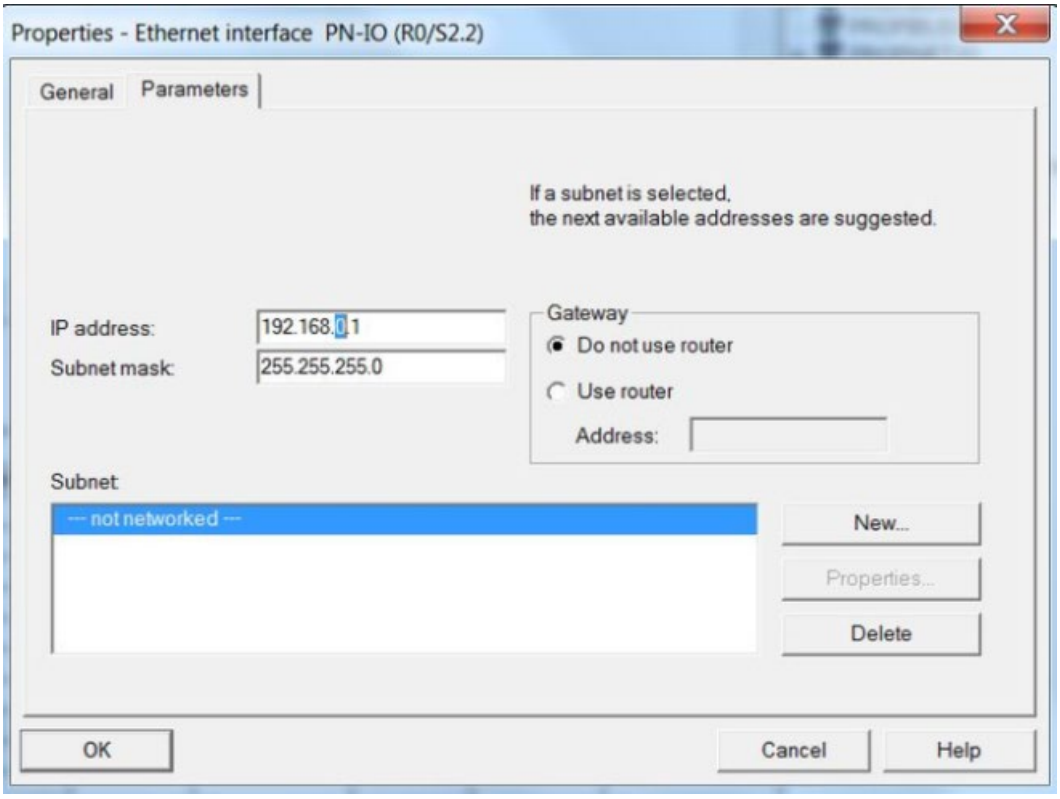
Creating a subnet

1. Open the Hardware view "HW Config".
2. Call the shortcut menu of line "PN-IO"
3. Select "Insert PROFINET IO system".



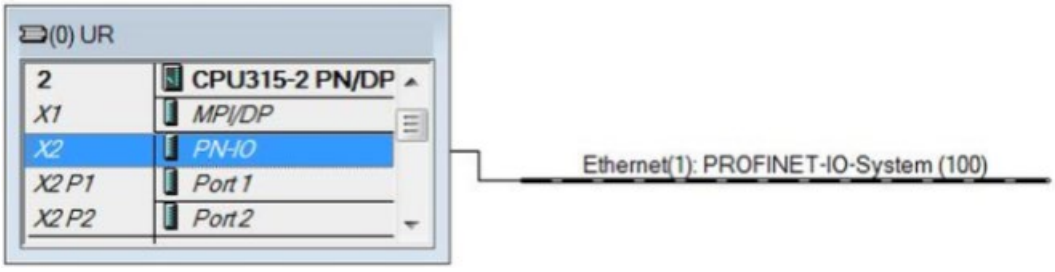
4. In dialog field "Properties - Ethernet interface PN-IO", select the "Parameters" tab.
5. Set the IP address of the PROFINET interface.

6. Create a new subnet.



7. Confirm the properties of the new subnet.
8. Close the "Properties - Ethernet interface PN-IO" dialog box.

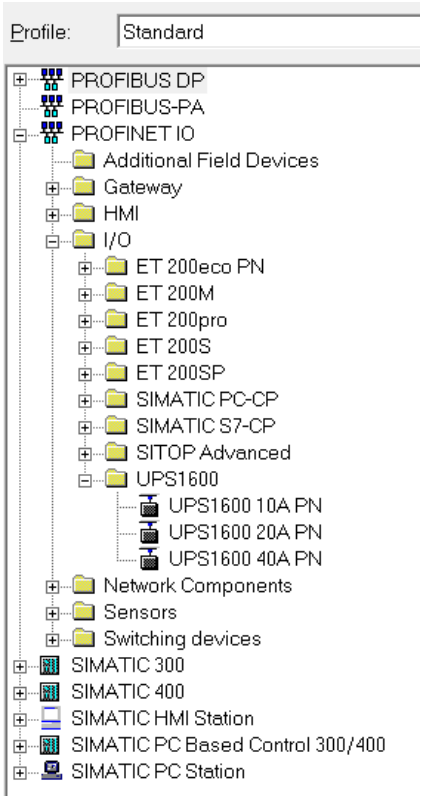
   The subnet is displayed as a horizontal line in the hardware view.



Inserting SITOP UPS1600 from the hardware catalog

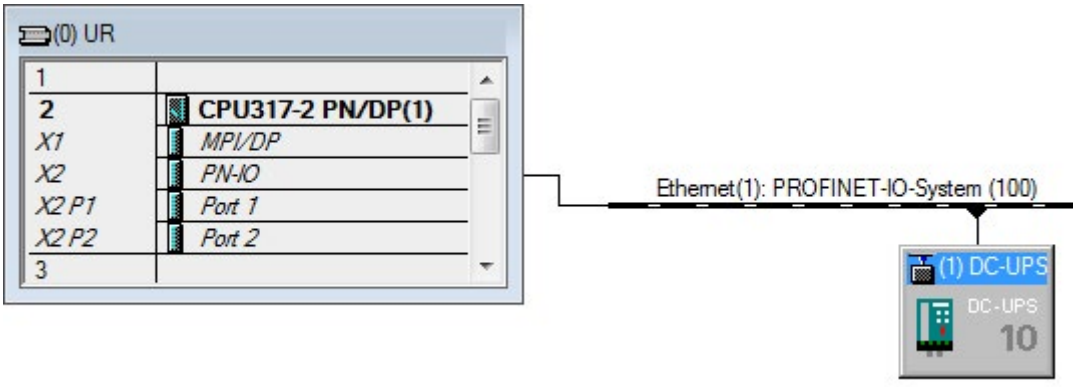
1. Select the subnet.
2. Open the "Catalog" window using the "View > Catalog" menu command.

3. In the hardware catalog, navigate to the SITOP UPS1600 under "PROFINET IO \ I/O \ UPS1600".



4. Click the desired SITOP UPS1600; keep the left mouse button pressed and drag the SITOP UPS1600 to the subnet.
5. Double-click on "SITOP UPS1600".
6. In the open dialog Device name, enter the device number and IP address in the Ethernet.
7. Save the hardware configuration.

   You have now inserted the SITOP UPS1600 into the project. The rectangle displayed in the editor symbolizes the SITOP UPS1600.



3.4.4 Parameter assignment

3.4.4.1 Parameters of the basic device and battery module

The adjustable parameters of the basic device SITOP UPS1600 and the SITOP UPS1100 battery modules are structured according to subgroups in SIMATIC STEP 7. These subgroups are shown in the table below.

Subgroup	Description
Buffer parameters	All parameters, which involve the behavior of SITOP UPS1600 when buffering.
Battery parameters	Parameterizing the battery being used.
Charging parameters	Parameters for the charging behavior: • End-of-charge voltage • Charge current
Reset parameters	Activate interruption of the output voltage for supply system restoration.
Buffering parameters	Load current that is expected at the device output during buffer operation.
Maintenance	R test - the battery state is determined by subjecting it to a load.
Identification	Definition of the location and contact data to be able to identify the SITOP UPS1600.
Web server	Definition as to whether the SITOP UPS1600 may be accessed via web server (yes / no).

A detailed description of the individual parameters of the subgroups is contained in the associated section under Parameterizing SITOP UPS1600 (Page 70).

3.4.4.2 Parameterizing SITOP UPS1600

The procedure is the same for all parameters. This section describes the general procedure to reach the configuration dialog. The individual parameters and their possible values are described in the following subsections.

Each parameter has a start value. A click on "Reset to initial values" resets all parameters of a subgroup to the associated start value.

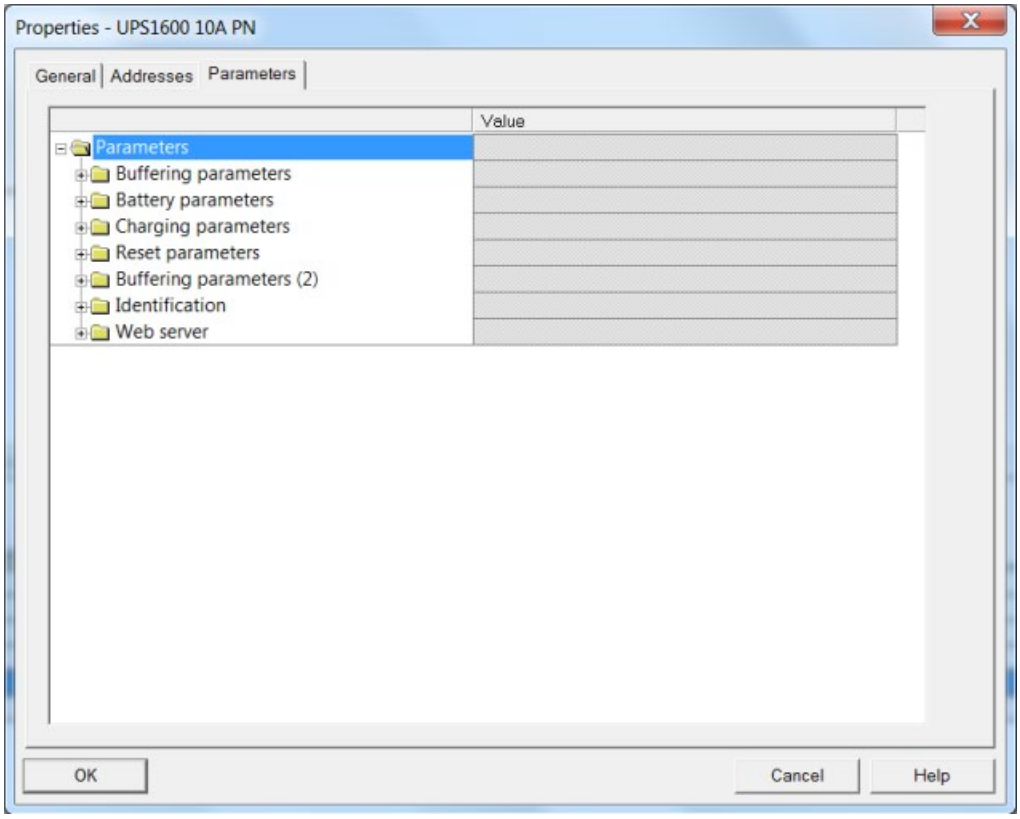
Preconditions

- The SITOP UPS1600 has been integrated in the opened project and networked.

Proceed as follows

1. Open Network view "NetPro" ("Tools > Configure network").
   The controller and the networked SITOP UPS1600 are displayed.
2. In the Network view click on SITOP UPS1600. The hardware configuration opens.
3. Double click in the hardware configuration on the SITOP UPS1600 entry in the station window for slot 0.1.
4. In the configuration dialog click on the "Parameters" tab.

5. Click the desired subgroup.
   The subgroup opens.



6. Enter the values.
7. Confirm your entry by clicking on "OK".

   The parameters are stored in the project.

Buffer parameters

Parameter	Value range	Default setting
Buffer time	1 … 32767 s	60 s
Additional buffer time after PC shutdown	1 … 300 s	10 s
Connection threshold	21 … 25 V	22.5 V
Stop buffering voltage	18 ... 23 V	18.5 V
Wait time for stable input voltage	200 … 65,000 ms	500 ms
Downtime alarm	0 … 20.000 ms	125 ms
Buffering allowed	Yes / No	Yes
Enable reset after buffering	Yes / No	No

- **Buffer time**
  Time where the system is to be buffered by SITOP UPS1600. The "Buffering allowed" parameter is used to specify whether buffering should be performed. If a value of 32767 is entered, then the SITOP UPS1600 interprets this as MAX, and only shuts down the buffering when the stop buffering voltage is reached.
- **Additional backup time after the PC has been shutdown**
  The time to be buffered by the SITOP UPS1600 once the PC has been shut down.
- **Connection threshold**
  If the connection threshold value is fallen below, the SITOP UPS1600 starts buffering. If the value of the connection threshold is subsequently exceeded again, then the SITOP UPS1600 stops buffering.
- **Stop buffering voltage**
  The voltage at which battery discharge is terminated.
- **Wait time for a stable input voltage**
  Time where the input voltage must continually lie above the connection threshold so that buffering is exited and a transition is made into normal operation.
- **Downtime alarm**
  The time in which no alarm is issued to the system although it is buffered.
- **Buffering allowed**
  Select between buffers with the specified values or passive measurement of the power supply by the SITOP UPS1600.
- **Activate reset after buffering**
  If the value is set to "yes", then, in the meantime, if the input voltage returns after the buffer time has expired, the SITOP UPS1600 shuts down the output for the selected interrupt time.

Battery parameters

Parameter	Value range	Default setting
Faulty battery voltage	1 … 18 V	6 V
Battery capacity	0.1 … 3,200 Ah	10 Ah:
Ignore data of coded battery	Yes / No	No

- **Battery defective voltage**
  If the battery voltage undershoots this value, it is considered as being defective by the SITOP UPS1600 and is not charged.
- **Battery capacity**
  If no UPS1100 battery modules are being used: Enter the total capacity of the installed batteries.
- **Ignore data of coded battery**
  Set the value to "Yes" if you define the parameters for the UPS1100 yourself.

Charging parameters

Parameter	Value range	Default setting
End-of-charge voltage	24 … 30 V	26 V
Charge current	1 … 4,000 mA	800 mA

- **End-of-charge voltage**

  The end-of-charge voltage is the maximum voltage up to which the battery is charged.

- **Charge current**
  The battery is not charged with more than the selected charge current. The manufacturer's details for the permitted charge current of the battery must be observed.

Note

When UPS1100 battery modules are used, both parameters are automatically set, and do not have to be defined.

The following, device-dependent maximum values apply:

– SITOP UPS1600 10 A: Maximum permissible charge current 3,000 mA
Derating for T_u > 40 °C or U_{in} < 24 V: 2,000 mA

– SITOP UPS1600 20 A: Maximum permissible charge current 4,000 mA
Derating for T_u > 40 °C or U_{in} < 24 V: 3,000 mA

– SITOP UPS1600 40 A: Maximum permissible charge current 5,000 mA
Derating for T_u > 40 °C or U_{in} < 24 V: 3,000 mA

Reset parameters

Parameter	Value range	Default setting
Reset time	1 … 120 s	5 s

Here, you define the interrupt duration for the "Interrupt output voltage" function (reset after buffering)

Buffering parameters (2)

Parameter	Value range	Default setting
Expected buffer current	0 ... 40 A	0 A

Load current, which is expected at the device output during buffer operation. If a value of 0 A is entered, then for this parameter, the average value of the actual load current measured at the output over the last 10 min is assumed. The value of this parameter is used when calculating the remaining buffer time. The entered value may not exceed the rated device current.

Maintenance

Parameter	Value range	Default setting
R test interval	1 ... 65535 h	4 h

R test: The battery state is determined by subjecting it to a cyclic load.

Identification

Parameter	Value range
Contact	Free text
Location	Free text

- **Contact**
  Enter, for example, a contact address or the name of a staff member.
- **Location**
  Enter a description of the location that can be used to locate the SITOP UPS1600.

Web server

Parameter	Value range	Default setting
Activate web server	Yes / No	No
Activate web server on this module	Yes / No	No
Permit access only with HTTPS	Yes / No	Yes
Log off automatically after 15 minutes	Yes / No	No

Set here whether access to the SITOP UPS1600 via web server is permitted.

Update interval: 0 / 5 s / 10 s / 20 s / 30 s / 60 s 10 s

- Activate web server on this module
  Define whether this device can be accessed via the web server.
- Permit access only with HTTPS
  Define whether access is only permissible via HTTPS.
- Download certificate
  By pressing the "Download certificate" button, you can download the certificate for encrypted connection via HTTPS.
- Log off automatically after 15 minutes
  You define whether a user should be automatically logged off after closing the web server.
- Update interval
  You define in which intervals the actual values are sent to the web server.

3.4.5 Loading the configuration to the SITOP UPS1600 (commissioning)

In the delivered state, the SITOP UPS1600 has not yet been assigned any IP address and the DHCP protocol is deactivated.

When the SITOP UPS1600 is first connected with an IO controller (SIMATIC S7 control system), it must be assigned a device name and an IP address by the IO controller. STEP 7 can be used to load a new configuration to the device.

Preconditions

- The SITOP UPS1600 has been correctly connected and linked with the system.
- PG/PC with SIMATIC STEP 7 is connected with the network.

Displaying accessible nodes

Note

If nodes can only be accessed via interposed switches or routers (with protocol conversion), they are not displayed in the list of the accessible nodes.

1. Click in the "Target system" menu on "Display accessible nodes"
   The "Accessible nodes" window is opened with the following displays:
   - The station
   - The SITOP UPS1600

The following table shows which information is displayed in the "Object name" column.

Accessible nodes	Object name	Description
S7-CPU, PC station	Name of the station	The "Details" view also shows the operating state, module type and, if available, information from the associated STEP 7 project (station name, CPU name, system identification).

Loading the IO controller for the first time

Once you have configured the SITOP UPS1600 and the station, you must load this configuration to the IO controller (SIMATIC S7 control system). This is the way that the IO controller is assigned its configured IP addresses.

Before loading, carry out a consistency test to check the configuration for duplicate addresses, identical names, etc.

Inform yourself whether the IO controller to be loaded can also be initially loaded via the PROFINET interface. If not, you must first load the hardware configuration via the MPI interface .

1. Select in the "Target system > Load" menu.
2. Select the module to be loaded.
3. In the "Select node address" dialog, if necessary, click the "Display" button to display the actual accessible modules (these include the IO controller to be loaded with its current IP address or its MAC address, if no IP address is yet available).

4. Select the IO controller to be loaded from the accessible modules.

   This module is displayed in the "Enter connection to target station" dialog box.

5. Start loading by clicking on the "OK" button.

   The IO controller is assigned the configured IP address.

Note

Ensure that the article number of the SITOP UPS1600 configured offline matches the article number of the device connected online. The following response is obtained after loading the configuration into the device:

Offline configured device / Online connected device	UPS1600 10 A	UPS1600 20 A	UPS1600 40 A
UPS1600 10 A	Device status: OK Diagnostics status: OK	Device status: Fault Diagnostics status: Differences were identified (not accepted)	Device status: Fault Diagnostics status: Differences were identified (not accepted)
UPS1600 20 A	Device status: OK Diagnostics status: Differences were identified (accepted)	Device status: OK Diagnostics status: OK	Device status: Fault Diagnostics status: Differences were identified (not accepted)
UPS1600 40 A	Device status: OK Diagnostics status: Differences were identified (accepted)	Device status: OK Diagnostics status: Differences were identified (accepted)	Device status: OK Diagnostics status: OK

Image 3-2 Online / offline

Allocating the SITOP UPS1600 a device name (online)

In order that the configured IO controller can address the SITOP UPS1600, you must assign each individual IO device (including SITOP UPS1600) the configured device name.

For the procedure described below, the SITOP UPS1600 and the station for the PG/PC must be accessible online on the Ethernet.

1. Open HW Config.
2. In the "Target system > Ethernet" menu, click on "Assign device name".
3. In the "Assign device name" dialog, in the "Device name" field, select SITOP UPS1600.
4. In the "Available devices" select the SITOP UPS1600. Using the "Flash" button, you can flash the LED on the SITOP UPS1600 so that the device can be uniquely identified.
5. Click on the "Assign name" button.

After the name assignment, you can bring the IO controller into the RUN operating state.

When powering up, the IO controller distributes the configuration information to the SITOP UPS1600 and then goes into cyclic operation.

3.4.6 Diagnostics

The following data can be fetched using the Diagnostics function:

Group	Value
SITOP UPS1600 general	Article number
	Serial number

Fetching diagnostics data

You can use the "Station > Open online" menu command in "HW Config" to select the SITOP UPS1600 and view the diagnostics data.

3.4.7 Firmware update

⚠ WARNING

The SITOP UPS1600 is reset while updating the firmware. For safety reasons, the output is switched off.

Ensure that no damage is caused to the plant or system.

Ensure that the PG/PC and/or all switches, routers and gateways that are used have an independent power supply during the firmware update.

Note

Do not switch-off the devices during the firmware update.

The files for updating the firmware (firmware updates) are available online under (http://support.automation.siemens.com/WW/view/en/79207181). Different firmware updates are offered depending on the amp rating of the SITOP UPS1600.

Note

Observe the compatibility of the firmware!

Other firmware updates are not compatible.

Determine the amp rating of your SITOP UPS1600 and download the appropriate firmware update.

Note

It is not possible to downgrade the device firmware to a release with a version number lower than the firmware installed in the device itself. Information on how to read out the firmware release from the device is provided in Section Diagnostics (Page 77).

Note

"Reset to factory" function:

Everything is reset, also the IP address. A new IP address must then be assigned, as otherwise there is no connection to the UPS Manager or TIA.

Preconditions

- The SITOP UPS1600 has been correctly connected and linked with the PROFINET IO system.
- PG/PC with STEP 7 is connected with the network.

Procedure

The firmware update consists of several files, which are combined in a zip file.

1. Download the firmware update.

1. Unpack the ZIP file into a temporary directory.
2. Open the "Accessible nodes" window with the "Target system > Display accessible nodes" menu command.

Note

For an online connection via the "Accessible nodes" window, PG/PC and "Accessible nodes" must be connected to the same physical Ethernet subnet.

3. Select the "Target system > Update firmware" menu command.
4. Select the SITOP UPS1600 whose firmware is to be updated.
5. In the open "Update firmware" dialog, press the "Browse" button to select the path to the directory with the unzipped files.
   In this directory, select the "ups10a.upd", "ups20a.upd", "ups40a.upd" files.
6. After you have selected a file, the information in the bottom fields of the "Update firmware" dialog box indicate the components for which the file is suitable and from which firmware version.
7. Click the "Run" button.
8. STEP 7 verifies that the selected file can be interpreted by the module and then downloads the file to the module.
9. If this requires changing the operating state of the IO controller, then you will be prompted to do this in the relevant dialog boxes.
10. The module then automatically updates the firmware.

Note

A separate connection is established to the CPU for the firmware update, if available. In this case, the task can be interrupted. If no resources are available for another connection, an existing connection will be used automatically. In this case, the task cannot be interrupted; the "Cancel" button in the transfer dialog is grayed-out and cannot be operated.

11. Confirm the notes that are displayed.
    The firmware is sent from the IO controller to the component, and saved in the internal component memory. The following LEDs flash while saving:
    - LED 1 ("OK/Bat")
    - LED 2 (">85%")

    Note

    It can take several minutes to save the firmware in the component. Do not switch-off the devices.

    Note

    During the firmware update, if the power supply of the SITOP UPS1600, or PG/PC or intermediate switches, routers or gateways is interrupted, then under certain circumstances, a fallback firmware is activated. If the SITOP UPS1600 can then no longer be accessed remotely, you must assign the SITOP UPS1600 a new IP address, or under the menu item "Assign name" you must enter a new name in the field "PROFINET device names" (see the manual for the particular device).

12. The SITOP UPS1600 automatically updates the firmware.
13. The firmware has been updated. Only now is it permissible to switch off the SITOP UPS1600.
14. Using STEP 7 (read out the diagnostics buffer of the IO controller), check whether SITOP UPS1600 successfully starts with the new firmware.

Note

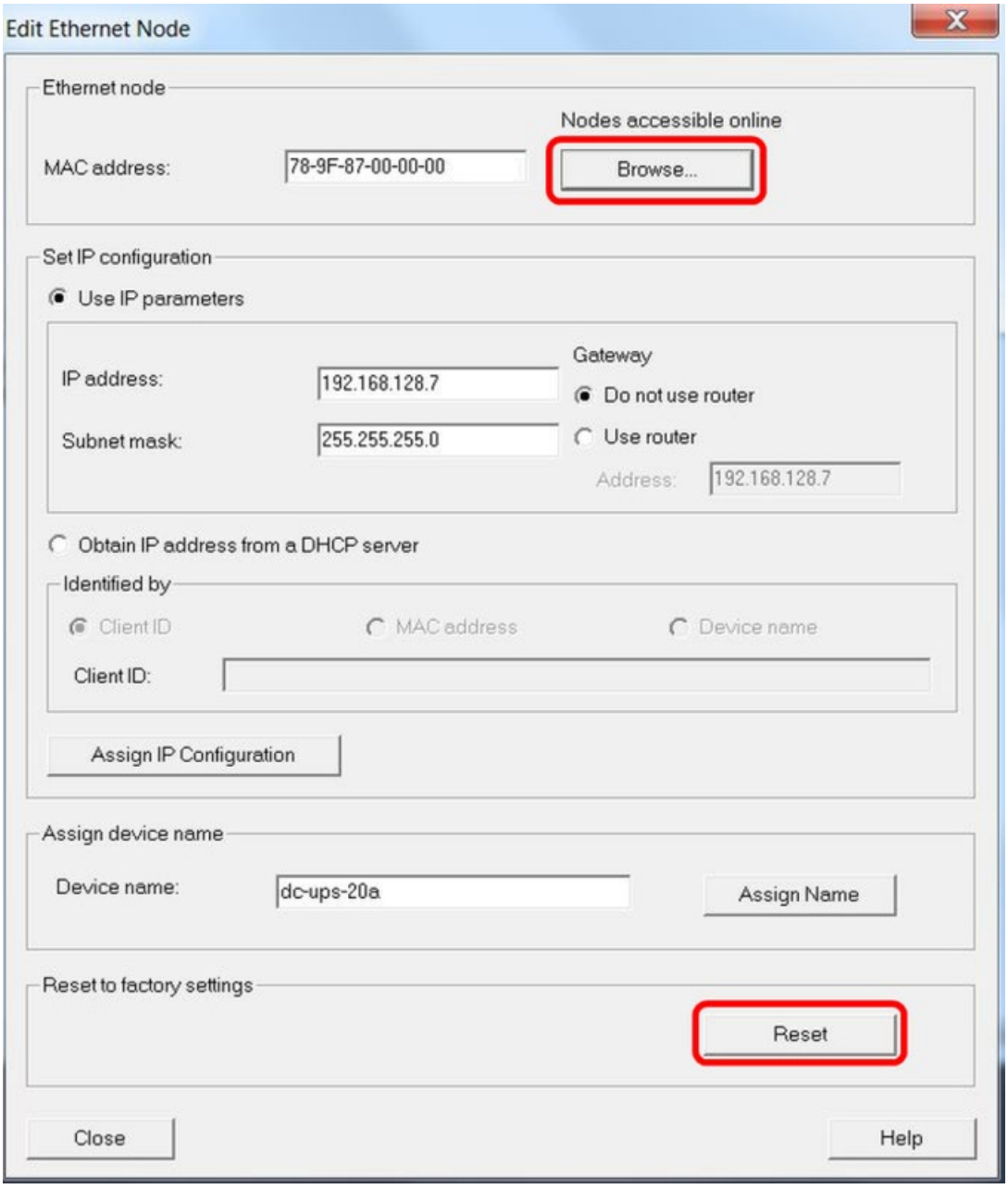
After updating the firmware, in the hardware configuration of your project, you must replace the SITOP UPS1600 involved by the SITOP UPS1600 with the current firmware version. The configured configuration then matches the actual configuration again.

3.4.8 Restore factory settings

With STEP 7 Version 5.5, it is possible to restore the factory setting of modules using the "Target system -> Edit Ethernet node".

1. To select the MAC address of the SITOP UPS1600, which should be reset to the factory setting, click in dialog "Edit Ethernet node" on "Browse".
2. Click on the "Reset" button.

   This deletes the IP address and the device name from the module. The parameter values for SITOP UPS1600 and the energy storage device are kept.


Edit Ethernet Node
Ethernet node
Nodes accessible online
MAC address:
78-9F-87-00-00-00
Browse...
Set IP configuration
Use IP parameters
Gateway
IP address:
192.168.128.7
Do not use router
Subnet mask:
255.255.255.0
Use router
Address:
192.168.128.7
Obtain IP address from a DHCP server
Identified by
Client ID
MAC address
Device name
Client ID:
Assign IP Configuration
Assign device name
Device name:
dc-ups-20a
Assign Name
Reset to factory settings
Reset
Close
Help

3.5 SITOP UPS Manager

Note

Ensure that only the UPS Manager accesses the SITOP UPS1600.

Note

Install the current version of the SITOP UPS Manager so that you can use the full functional scope of the SITOP UPS1600.

The installation file for the SITOP UPS Manager is available at no charge on the SITOP home page (http://www.siemens.com/sitop-ups1600) or directly (https://support.industry.siemens.com/cs/ww/en/view/75854607).

3.5.1 Functions of the SITOP UPS Manager

You can execute the following tasks with the SITOP UPS Manager:

- Configure the SITOP UPS1600 uninterruptible power supply and the battery modules
- Protect a computer or a computer network provided by the uninterruptible power supply with the master-slave technique
- Data backup by controlled shutdown
- Alarm-driven starting of any application (SMS, email)
  New functions from V4.71:
  OPC UA server as non-proprietary software interface.
  Setting IP address and names in the UPS1600
  Identifying the UPS1600 as a result of the flashing LED SF
- OPC UA server as non-proprietary software interface.

By specifying additional applications and alarms, you define a comprehensive protection of your computer or computer network.

The applications can be started depending on the following events:

- Supply voltage failure
- Restoration of the supply voltage
- State of the buffer readiness by the UPS:
  - General buffer readiness
  - Remaining buffer time
- Status of the UPS battery:
  - Battery replacement required
  - Battery charge

3.5.2 OPC UA server

System overview

The "DC-UPS software" component is essential for integrating the OPC server. It comprises two subcomponents:

1. **SitopUPSManagerService:** Responsible for communication with the DC UPS main board and data management.
2. **SitopUPSManager:** Interface between the user and the DC UPS system.

The SitopUPSManagerService component is suitable for two reasons when it comes to integrating the OPC server:

1. As the component is responsible for data management, the OPC server does not require any external interface in order to access data.
2. The component is executed as Windows service, and is therefore run independently of users logged on to the system.

The structure of the DC-UPS software component - and the expansion to include the OPC server component (in green) are shown in the following diagram:

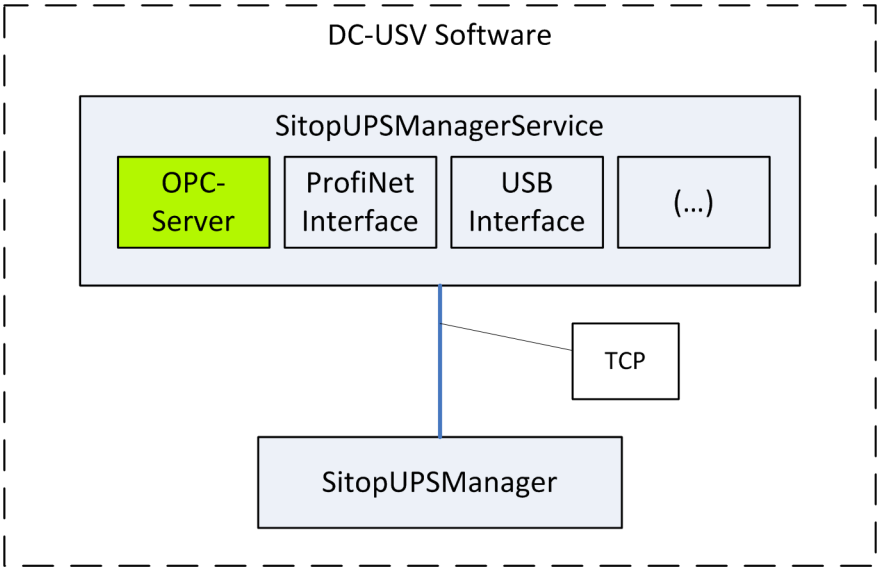


Image 3-3 DC-UPS software component

This results in the following system overview:

- The DC-UPS software at the PC communicates via USB and the USB board - or via Ethernet and the ProfiNet board with the DC UPS main board.
- OPC clients can connect with the OPC server in the DC-UPS software via Ethernet and a binary protocol or SOAP.

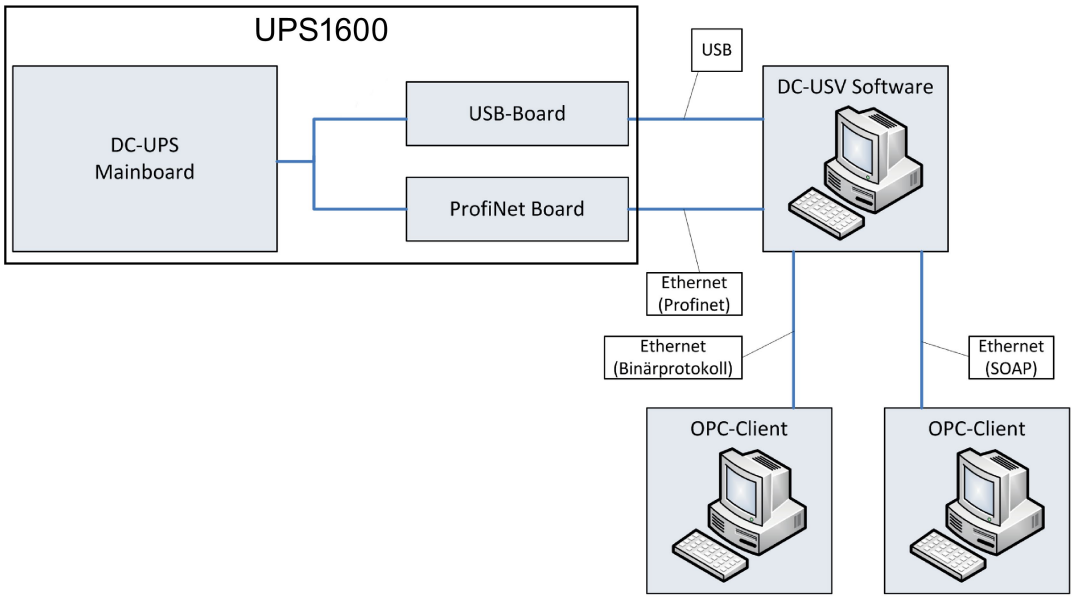


Image 3-4 DC-UPS system overview

Available data

The "Path" column specifies the path to the particular parameter. An "x" in column "SitopUPSManagerService" signals, that parameters of the current version (4.60) of the SitopUPSManagerService are interrogated.

Parameter	Path	SitopUPSManagerService
input voltage ok	GetCyclicData.STAT.Bit0	x (cyclic)
buffer mode active	GetCyclicData.STAT.Bit2	x (cyclic)
ready for buffering	GetCyclicData.STAT.Bit3	x (cyclic)
charge sufficient	GetCyclicData.STAT.Bit4	x (cyclic)
battery change recommended	GetCyclicData.STAT.Bit5	x (cyclic)
battery connection fault	GetCyclicData.STAT.Bit6	x (cyclic)
new alarms pending	GetCyclicData.STAT.Bit7	x (cyclic)
battery charge level	GetCyclicData.CHRG	x (cyclic)
buffer time	GetDataObject.1	x (only at beginning)
buffer threshold	GetDataObject.2	x (only at beginning)
buffering allowed	GetDataObject.3	
battery information	GetDataObject.4	
Mlfb	GetDataObject.4.1	x (cyclic)
serial number	GetDataObject.4.2	x (cyclic)
type	GetDataObject.4.3	
manufacturing date	GetDataObject.4.4	
EOCV	GetDataObject.4.5	
charge current	GetDataObject.4.6	

stop buffering voltage (SBV)	GetDataObject.4.7	
capacity	GetDataObject.4.8	x (cyclic)
standby time	GetDataObject.4.9	
buffer time	GetDataObject.4.10	
total charging current	GetDataObject.4.11	
total culled current	GetDataObject.4.12	
min temp	GetDataObject.4.13	
max temp	GetDataObject.4.14	
software version	GetDataObject.4.15	x (cyclic)
hardware version	GetDataObject.4.16	x (cyclic)
batterie cell volt 1	GetDataObject.4.17	
batterie cell volt 2	GetDataObject.4.18	
batterie voltage	GetDataObject.4.19	
device information	GetDataObject.5.	
Mlfb	GetDataObject.5.1	x (cyclic)
serial number	GetDataObject.5.2	x (cyclic)
hardware version	GetDataObject.5.3	x (cyclic)
software version	GetDataObject.5.4	x (cyclic)
max current	GetDataObject.5.5	x (cyclic)
communication	GetDataObject.5.6	x (cyclic)
software version (BTLDR)	GetDataObject.5.7	x (cyclic)
DPS	GetDataObject.5.8	x (cyclic)
SWD	GetDataObject.5.9	x (cyclic)
SSN	GetDataObject.5.10	x (cyclic)
end of charge voltage	GetDataObject.6	x (only at beginning)
charge current	GetDataObject.7	x (only at beginning)
enable reset	GetDataObject.8	x (only at beginning)
reset time	GetDataObject.9	x (only at beginning)
stop buffering voltage	GetDataObject.10	x (only at beginning)
input voltage ok time	GetDataObject.11	x (only at beginning)
battery defect voltage	GetDataObject.12	x (only at beginning)
ignore battery coding	GetDataObject.13	x (only at beginning)
hardware settings	GetDataObject.14	
buffer time	GetDataObject.14.1	
buffer threshold	GetDataObject.14.2	
buffering allowed	GetDataObject.14.3	
enable reset	GetDataObject.14.4	
start from battery	GetDataObject.14.5	
sel. bat. profile	GetDataObject.14.6	
downtime alarm	GetDataObject.15	x (only at beginning)
battery capacity	GetDataObject.16	x (only at beginning)
buffer time 2	GetDataObject.17	x (only at beginning)
expected buffer current	GetDataObject.18	x (only at beginning)

battery inspection time	GetDataObject.19	x (only at beginning)
resistor test interval	GetDataObject.20	x (only at beginning)
input voltage ok	GetDataObject.401	
buffer mode	GetDataObject.402	x (cyclic)
battery charge	GetDataObject.403	x (cyclic)
charge sufficient	GetDataObject.404	
remaining buffer time	GetDataObject.405	x (cyclic)
battery temperature	GetDataObject.406	x (cyclic)
device temperature	GetDataObject.407	x (cyclic)
input voltage	GetDataObject.408	x (cyclic)
input current	GetDataObject.409	x (cyclic)
output voltage	GetDataObject.410	x (cyclic)
load current	GetDataObject.411	x (cyclic)
mesured charge current	GetDataObject.412	x (cyclic)
battery voltage	GetDataObject.413	x (cyclic)
battery change recommended	GetDataObject.414	x (cyclic)
total operating time	GetDataObject.415	
sw settings valid	GetDataObject.416	
calculated battery capacity	GetDataObject.417	
number of batteries	GetDataObject.418	x (cyclic)
ouput current	GetDataObject.419	x (cyclic)
calculated battery health	GetDataObject.420	x (cyclic)
charge voltage	GetDataObject.421	x (cyclic)
led pattern	GetDataObject.422	x (cyclic)
extended led pattern	GetDataObject.423	
battery connection fault	GetDataObject.424	x (cyclic)

OPC server

The OPC server is implemented based on the "ANSI C stack source code" (https://opcfoundation.org/developer-tools/developer-kits-unified-architecture/ansi-c-stack-source-code/) of the OPC Foundation. The OPC server provides the data listed in "Available data" in the following hierarchical structure:

Parameter			Path	SitopUPSManager-Service
Mainboard				
	state information			
		input voltage ok	GetCyclicData.STAT.Bit0	x
		buffer mode active	GetCyclicData.STAT.Bit2	x
		ready for buffering	GetCyclicData.STAT.Bit3	x
		charge sufficient	GetCyclicData.STAT.Bit4	x
		battery change recommended	GetCyclicData.STAT.Bit5	x
		battery connection fault	GetCyclicData.STAT.Bit6	x

		new alarms pending		GetCyclicData.STAT.Bit7	x
		battery charge level		GetCyclicData.CHRG	x
		remaining buffer time		GetDataObject.405	x
		total operating time		GetDataObject.415	
		input voltage		GetDataObject.408	x
		input current		GetDataObject.409	x
		output voltage		GetDataObject.410	x
		load current		GetDataObject.411	x
		mesured charge current		GetDataObject.412	x
		battery voltage		GetDataObject.413	x
		ouput current		GetDataObject.419	x
		charge voltage		GetDataObject.421	x
		sw settings valid		GetDataObject.416	
		device temperature		GetDataObject.407	x
		led pattern		GetDataObject.422	x
		extended led pattern		GetDataObject.423	
	buffering				
		buffer time		GetDataObject.1	x
		buffer time 2		GetDataObject.17	x
		buffer threshold		GetDataObject.2	x
		stop buffering voltage		GetDataObject.10	x
		input voltage ok time		GetDataObject.11	x
		downtime alarm		GetDataObject.15	x
		buffering allowed		GetDataObject.3	
		enable reset		GetDataObject.8	x
		expected buffer current		GetDataObject.18	x
	battery				
		battery defect voltage		GetDataObject.12	x
		battery capacity		GetDataObject.16	x
		ignore battery coding		GetDataObject.13	x
		battery inspection time		GetDataObject.19	x
		number of batteries		GetDataObject.418	x
		total calculated battery capacity		GetDataObject.417.0	
		total calculated battery health		GetDataObject.420.0	x
		total battery change recommended		GetDataObject.414.0	x
		total battery connection fault		GetDataObject.424.0	
		battery #0			
			calculated battery capacity	GetDataObject.417.1	
			calculated battery health	GetDataObject.420.1	x
			battery change recommended	GetDataObject.414.2	x

			battery connection fault	GetDataObject.424.1	
			battery temperature	GetDataObject.406.1	x
			standby time	GetDataObject.4.9.1	
			buffer time	GetDataObject.4.10.1	
			total charging current	GetDataObject.4.11.1	
			total culled current	GetDataObject.4.12.1	
			EOCV	GetDataObject.4.5.1	
			charge current	GetDataObject.4.6.1	
			capacity	GetDataObject.4.8.1	x
			stop buffering voltage (SBV)	GetDataObject.4.7.1	
			type	GetDataObject.4.3.1	
			min temp	GetDataObject.4.13.1	
			max temp	GetDataObject.4.14.1	
			Mlfb	GetDataObject.4.1.1	x
			serial number	GetDataObject.4.2.1	x
			manufacturing date	GetDataObject.4.4.1	
			software version	GetDataObject.4.15.1	x
			hardware version	GetDataObject.4.16.1	x
			isAvailable		
		battery #n			
			calculated battery capacity	GetDataObject.417.n	
			calculated battery health	GetDataObject.420.n	x
			battery change recommended	GetDataObject.414.n	x
			battery connection fault	GetDataObject.424.n	
			battery temperature	GetDataObject.406.n	x
			standby time	GetDataObject.4.9.n	
			buffer time	GetDataObject.4.10.n	
			total charging current	GetDataObject.4.11.n	
			total culled current	GetDataObject.4.12.n	
			EOCV	GetDataObject.4.5.n	
			charge current	GetDataObject.4.6.n	
			capacity	GetDataObject.4.8.n	x
			stop buffering voltage (SBV)	GetDataObject.4.7.n	
			type	GetDataObject.4.3.n	
			min temp	GetDataObject.4.13.n	

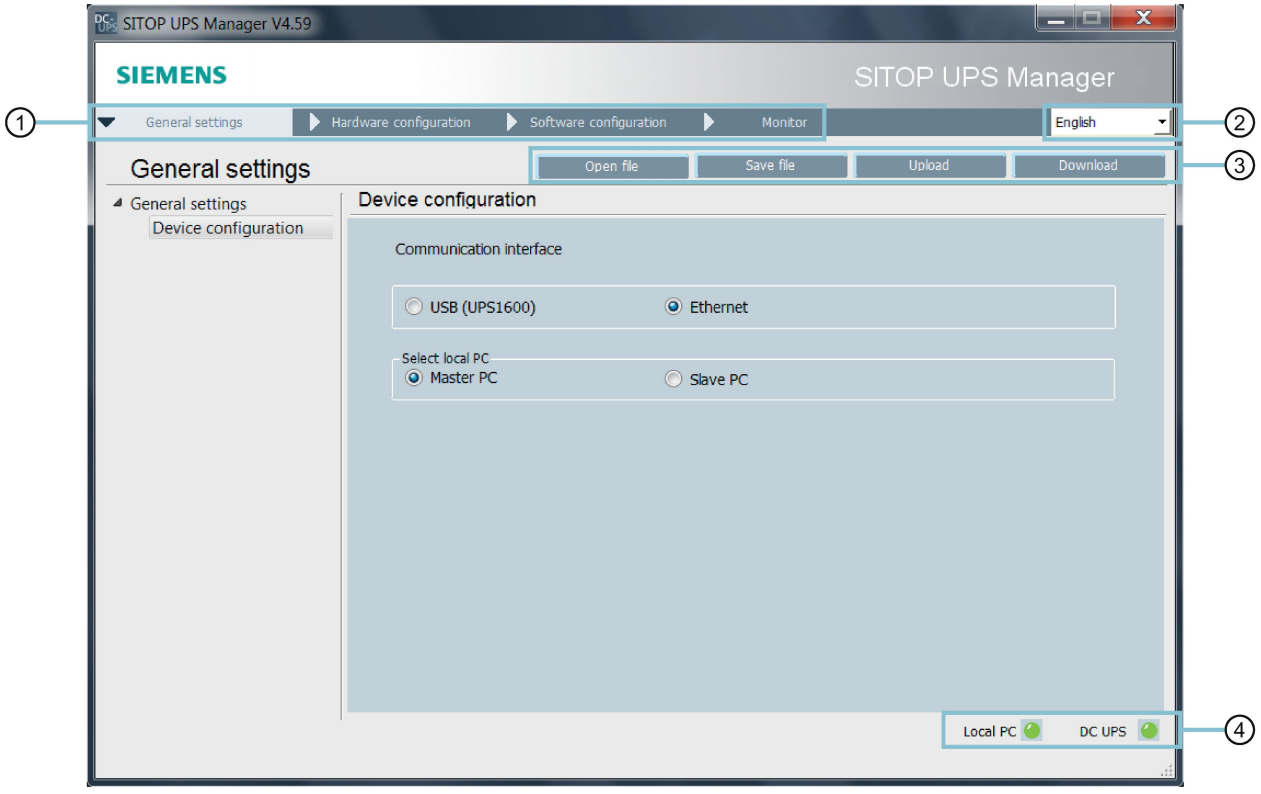
			max temp	GetDataObject.4.14.n	
			Mlfb	GetDataObject.4.1.n	x
			serial number	GetDataObject.4.2.n	x
			manufacturing date	GetDataObject.4.4.n	
			software version	GetDataObject.4.15.n	x
			hardware version	GetDataObject.4.16.n	x
			isAvailable		
	device information				
		mainboard			
			hardware version	GetDataObject.5.3	x
			software version	GetDataObject.5.4	x
			software version (BTLDR)	GetDataObject.5.7	x
			max current	GetDataObject.5.5	x
			Mlfb	GetDataObject.5.1	x
			serial number	GetDataObject.5.2	x
			DPS	GetDataObject.5.8	x
			SWD	GetDataObject.5.9	x
			SSN	GetDataObject.5.10	x
			communication	GetDataObject.5.6	x
		USB-board			
			hardware version	GetDataObject.5.3	x
			software version	GetDataObject.5.4	x
			software version (BTLDR)	GetDataObject.5.7	x
			SSN	GetDataObject.5.10	x
		PN-board			
			hardware version	GetDataObject.5.3	x
			software version	GetDataObject.5.4	x
			software version (BTLDR)	GetDataObject.5.7	x
			SSN	GetDataObject.5.10	x
	charging				
		end of charge voltage		GetDataObject.6	x
		charge current		GetDataObject.7	x
	reset				
		reset time		GetDataObject.9	x
	hardware settings				
		buffer time		GetDataObject.14.1	
		buffer threshold		GetDataObject.14.2	
		buffering allowed		GetDataObject.14.3	
		enable reset		GetDataObject.14.4	
		start from battery		GetDataObject.14.5	
		sel. bat. profile		GetDataObject.14.6	

Parameter					Alarm #
Mainboard					
	alarms				
		Buffer mode not possible			1
		Battery defect			2
		Battery deep discharge, no charging possible			3
		Insufficient charge			4
		Battery deep discharge			5
		Device temperature critical (to high)			8
		Device temperature critical (to low)			9
		Connection to Battery high resistive			10
		Connection to Battery broken			11
		Wrong battery polarity			12
		Device failure			13
		Unknown Battery			14
		Over current			15
		Reset executed			20
		Battery test			21
		Input voltage too high			24
		Surplus battery			26
		DC-UPS parameters corrupt			28
		Device overtemperature			30
		Battery SOH test			34
		Low Voltage Mode			35
		Buffering			36
		Fuse broken			39
	battery				
		battery #0			
			alarms		
				battery defect	2
				Battery deep discharge, no charging possible	3
				Battery temperature high	6
				Battery temperature low	7
				Communication to battery fault	23
				Wrong battery configuration	27
				Battery parameters corrupt	29
				Fuse broken	39
		battery #n			
			alarms		
				battery defect	2

				Battery deep discharge, no charging possible	3
				Battery temperature high	6
				Battery temperature low	7
				Communication to battery fault	23
				Wrong battery configuration	27
				Battery parameters corrupt	29
				Fuse broken	39

Alarms defined in Chapter Troubleshooting (Page 135) are also incorporated in the previously defined hierarchic structure. OPC clients can subscribe to these alarms. All subscribers are informed if an alarm changes its status. The previous table lists all of the alarms.

3.5.3 The user interface of the SITOP UPS Manager



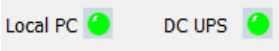
① Tabs for selecting the submenus
② Language selection
③ Save bar
④ Connection lamps

Use the tab ① to reach the individual submenus.

The language selection ② is used to select the user interface language of the SITOP UPS Manager. The German, English, French, Italian, Spanish, and Chinese languages are available.

The functions of the save bar ③ are used to load the configuration into or from the SITOP UPS1600 and open or save the configurations on a data medium.

The colored representations of the connection lamps ④ indicate the status of the incoming and outgoing connection. Both lamps must light green.



Left-hand connection lamp: Connection status SITOP UPS Manager application - SITOP UPS Manager service
Right-hand connection lamp: Connection status SITOP UPS Manager service - SITOP UPS1600

3.5.4 Installation/uninstallation

The installation file for the SITOP UPS Manager is available at no charge on the SITOP home page (http://www.siemens.com/sitop-ups1600) or directly (https://support.industry.siemens.com/cs/ww/en/view/75854607).

Operational requirements

Operating systems

The Windows XP and Windows 7 (32 bit and 64 bit) operating systems are supported.

Ethernet or USB interface

To install and use the SITOP UPS Manager in conjunction with the SITOP UPS1600, the computer must be connected with the SITOP UPS1600 via Ethernet or USB port.

Windows user group

Users of the SITOP UPS Manager must be members of the Windows user group "power users".

Installation preconditions

Administration rights

You require administrator rights to install the SITOP UPS Manager.

Installation paths without blanks

Note

Paths must not contain any blanks!

The path names of the directories for SITOP UPS Manager and batch files must not contain any blanks.

Installation steps

Procedure when installing for the first time

1. Close all applications before you start the installation.
2. Double-click on the "Setup_SITOP-UPSManager_x.xx.x" file.
3. Follow the installation instructions. Enter the requested information in the dialogs:
   - Installer language, English or German
   - Agreement declaration with the license conditions
   - Installation scope:
     Activate option "USB driver" if your SITOP UPS1600 has a USB interface. You can select between application and service.
   - Installation path:
     Use the recommended target directory "C:\Program Files (x68\SITOPUPSManager" or select another one. If you select another target directory, please note that spaces are not permissible in the path name (to be taken into consideration up to version 4.61).
   - Start menu folder
     Select the folder structure under which the SITOP UPS Manager should appear in the start menu.
4. If you are using a SITOP UPS1600 with USB interface, then connect the SITOP UPS1600 to the computer using this interface.
5. Click "Finish" to complete the installation.

Procedure for an already existing installation

Note

The procedure described below is only necessary if a SITOP UPS Manager with version number less than 4.50 is to be installed. These steps are automatically executed for versions from V4.50 and higher.

1. Back up the file "dcups.ini", which is located in directory "ini" in the installation directory of the SITOP UPS Managers.
2. Carry out steps 1 to 5 of the procedure described above when installing for the first time.
3. Replace file "dcups.ini", which is located in directory "ini" in the installation directory of the SITOP UPS Managers, as a result of the file backed up in Step 1.

Result

After the successful installation, the SITOP "UPS Manager" is contained in the start menu under the selected start menu folder.

No further installations are required to operate the SITOP UPS Manager.

Uninstallation

The UPS Manager can be uninstalled using "Start → All programs → SITOPUPS Manager → Uninstall".

3.5.5 Options of establishing a connection to the SITOP UPS1600

Depending on the type, the SITOP UPS1600 provides either a USB interface or an Ethernet interface.

Depending on the type, the SITOP UPS1600 communicates via USB or Ethernet with the SITOP UPS Manager.

The SITOP UPS Manager supports the master-slave operation only for an existing Ethernet connection. This permits, for example, a controlled shutdown of the computers in the network by the applications started with the SITOP UPS Manager.

3.5.6 Establishing a connection via Ethernet

The SITOP UPS1600 requires an IP address for communication with the UPS Manager. This is assigned by the network administrator. Use the Primary Setup Tool to configure the SITOP SITOP UPS1600 interface.

Configuring the SITOP UPS1600 with the Primary Setup Tool

The Primary Setup Tool is a Siemens product that is free of charge, and which is used to identify and configure network-capable devices. You can download the Primary Setup Tool at (http://support.automation.siemens.com/WW/view/en/19440762).

From SW Version V2.1.0, the Primary Setup Tool is already integrated in the UPS Manager (from Version V4.71.x).

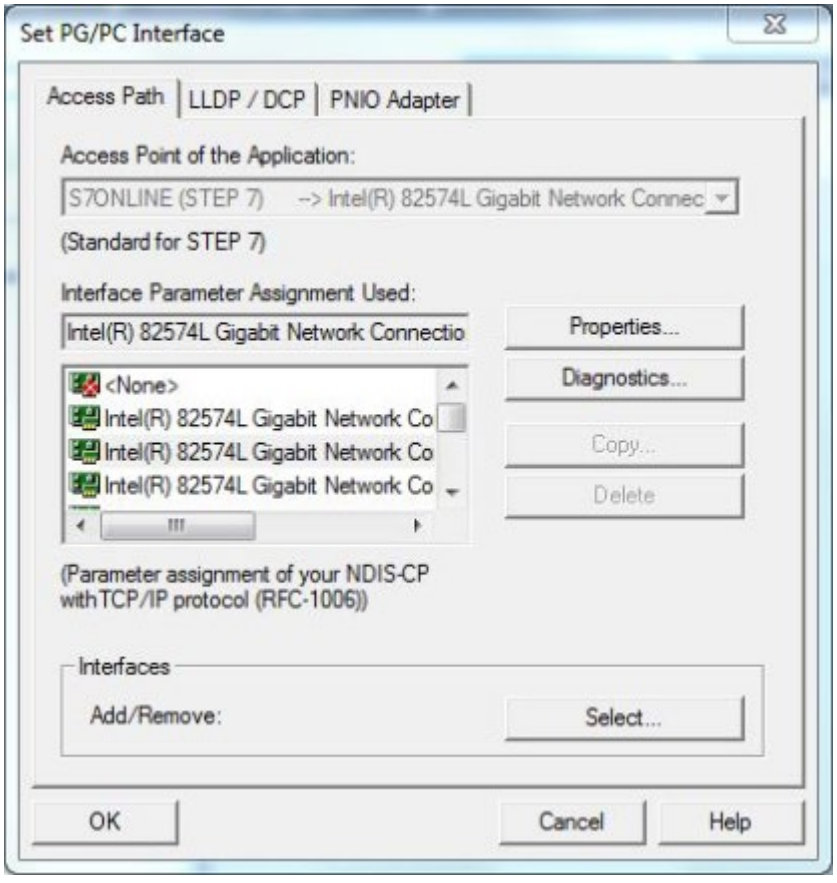
Additional information is contained in the Primary Setup Tool manual. This manual and further links can be found at (http://support.automation.siemens.com/WW/view/en/19440762).

Preconditions

- The SITOP UPS1600 is connected with the client (PG/PC) via the Ethernet interface.
- The Primary Setup Tool is installed on the client.
- Firewall settings that are necessary:
  - Communication via 5000 is permitted.
  - Echo request (ping) is permitted.

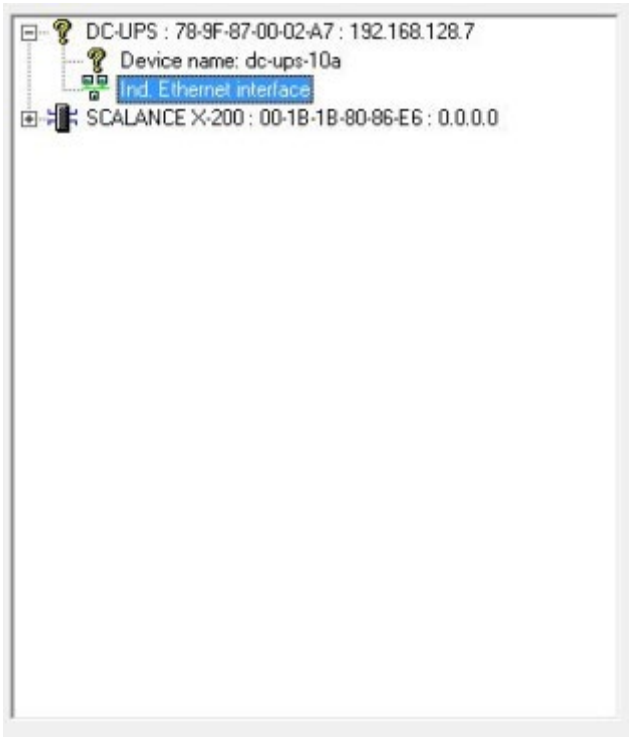
Procedure

1. Start the Primary Setup Tool.
2. Select the "Settings > Select interface" menu command.
   The "Set PG/PC interface" dialog opens.



3. Select the interface with which the client is connected with the SITOP UPS1600.
   Click "OK" to close the "Set PG/PC interface" dialog.

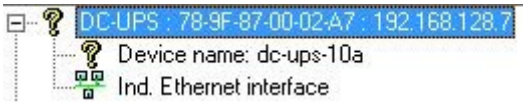
4. Select the menu command "Network > Search".
   SITOP UPS1600 appears in the tree view as "DC-UPS :" with its MAC address and its IP address.



5. Open the SITOP UPS1600 entry and select "Ind. Ethernet interface".
   In the right-hand section, the configuration menu for the Ethernet interface of the SITOP UPS1600 opens.

6. Configure the Ethernet interface as specified by the network administrator.
7. Select the SITOP UPS1600 in the Tree view.

   Loading to the device is not possible while an interface is selected.

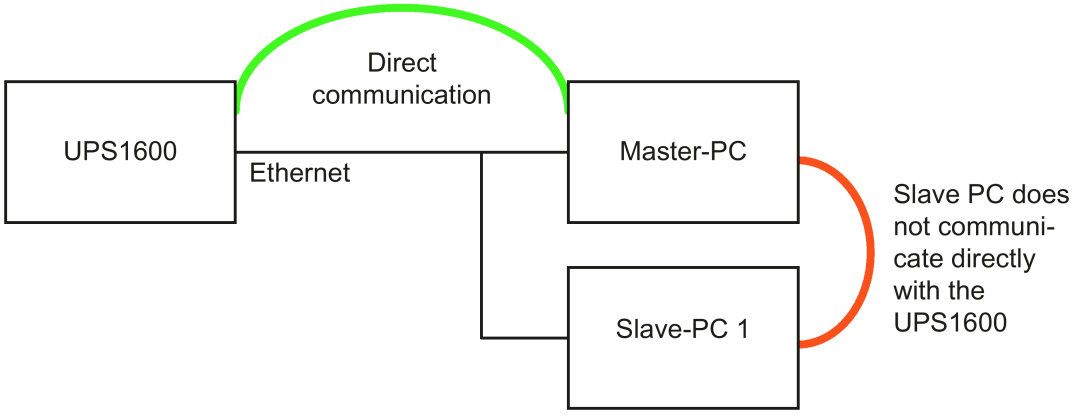


8. Select menu command "Module > Download", to load the configuration to the device.

   Alternatively, you can start loading using the "Load" button in the toolbar.

Configuring the connection in the SITOP UPS Manager

A basic setting is the configuration of the client (PC/PG) as master or slave. The consideration of possible application situations can help here:



- The local computer is the only computer at the SITOP UPS1600.
  Local computer = master PC
- The local computer is one of several computers and performs the master function.
  Local computer = master PC
- The local computer is one of several computers at the SITOP UPS1600 and operates as slave.
  Local computer = slave PC

In the master-slave configuration, the SITOP UPS1600, the master PC and the slave PC are connected at the same physical Ethernet. Only the master PC communicates directly with the SITOP UPS1600. The slave PC receives the control signals from the SITOP UPS Manager of the master PC.

Note

Up to SITOP UPS Manager Version 4.12, the master PC can only manage 1 slave PC. From version 4.12.5 and higher, up to 8 slaves can be managed.

Configuring the local computer as master PC

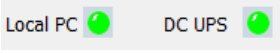
1. Select "General settings > Device configuration".
2. Activate the "Ethernet" checkbox and the "Master-PC" checkbox.
3. If you are prompted as to whether you want to restart the SITOP UPS Manager, confirm this with "Yes".

   The SITOP UPS Manager is restarted.
4. Select "Hardware configuration > Ethernet configuration".
5. Enter the IP address of the master PC in the field "IP address of the master PC". A selection box is displayed next to field "IP address of the master PC", which lists all of the available IP addresses of the client (PC/PG). Selecting an IP address automatically inserts this address in field "IP address of the master PC".

   Note

   Also at the local computer, the IP address of the master PC must be specified in the SITOP UPS Manager if a master-slave configuration is to be used.
6. Enter the IP address of the SITOP UPS1600 in the "IP address of the DC-UPS" field.
7. If you are prompted as to whether you want to restart the SITOP UPS Manager, confirm this with "Yes".
   The SITOP UPS Manager is restarted.

The connection lamps light up green, the connection as master PC to the SITOP UPS1600 is established, if the (local) PC is connected as master PC to the SITOP UPS1600.



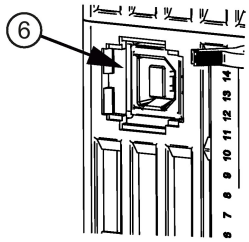
Configuring the client as slave PC

1. Select "General settings > Device configuration".
2. Activate the "Ethernet" checkbox and the "Slave PC" checkbox.
3. If you are prompted as to whether you want to restart the SITOP UPS Manager, confirm this with "Yes".
   The SITOP UPS Manager is restarted.
4. Select "Hardware configuration > Ethernet configuration".
5. Enter the IP address of the master PC in the field "IP address of the master PC".
6. If you are prompted as to whether you want to restart the SITOP UPS Manager, confirm this with "Yes".
   The SITOP UPS Manager is restarted.

The connection lamps light up green, the connection as slave PC to the master PC is established, if the (local) PC is connected as master PC to the SITOP UPS1600.

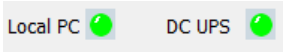
3.5.7 Establishing a connection via USB

1. Connect the SITOP UPS1600 using a USB cable with the client (PC/PG).



2. Select "General settings > Device configuration".
3. Activate the "USB (UPS1600)" checkbox.
4. If, in the lower area, a blue bar with the message "Configuration changed, restart application now." appears, click on the bar to restart the UPS. Clicking on "x" only minimizes the UPS Manager. You can maximize the UPS Manager again by clicking on the associated symbol in the task bar.
   The SITOP UPS Manager is restarted.
5. Check that the connection lamps light green.

   The connection lamps light green, the connection to the SITOP UPS1600 via USB has been established, if the (local) PC is connected as master PC to the SITOP UPS1600.



3.5.8 Configuration in the SITOP UPS Manager

Once you have connected the SITOP UPS1600 and the SITOP UPS Manager, you have the following configuration options:

- Create a new configuration.
- Load a configuration from a data medium or from a device.
- Change a configuration.
- Store a configuration on a data medium or load it into a device.

Procedure

1. Make the required hardware configuration in the SITOP UPS Manager.
   Alternatively, you can load a saved hardware configuration to the UPS Manager using command "Open file" in the storage bar "Configurations".
2. Click in the storage bar "Configurations" on the "Download" button.

   The configuration is loaded to the SITOP UPS1600.

Note

When storing or loading a HW configuration, the entry in "Base unit > Location" is not accepted/changed.

3.5.8.1 General settings

Under "Software configuration > General settings", specify the maximum size of the log file in Kbytes and where it is saved.

From SITOP UPS Manager V4.12.5 and higher, under "Software configuration > General settings" you can also specify as to whether the window of the SITOP UPS Manager should always be in the foreground.

Log file

1. Select "Software configuration > General settings".
2. Enter the maximum file size in kbytes in the "Size of log file" dialog box.
3. Click on "Browse"
4. Select the directory in which the log file should be stored.
5. Confirm with "Select folder".

   The maximum size and the storage location of the log file has been saved.

3.5.8.2 Configuring the SITOP UPS1600

Using the SITOP UPS Manager, you can configure the SITOP UPS1600 and its energy storage device, and then load to the device (if it is an uncoded battery - for UPS1100, the values are automatically identified). To change the charge parameters switch-in threshold or buffer time, you must set the corresponding rotary coding switch to the "REN" position.

1. To do this, select "Hardware configuration > Base device" or "Hardware configuration > Energy storage".
2. Enter the desired values.
3. Click on "Download"

Configuring the basic device (base unit)

The following parameters are available under "Hardware configuration> Base unit".

Parameter	Value range	Default setting
Location	Free text	–
Connection threshold	21 - 25 V	22.5 V
Buffer time	1 - 32767 s	60 s
Maximum buffer time [1)]	Yes / No	No
Additional buffer time after PC shutdown	1 - 300 s	10 s
Expected buffer current [1)]	0 - 40 A	0 A
Reset time	1 - 120 s	5 s
Enable reset time after buffering:	Yes / No	No
Downtime alarm	0 - 20000 ms	125 ms
Wait time for stable input voltage	0.2 - 65 s	0.5 s
Variable time for battery test [2)]	1 - 65535 h	4 h

1) Parameter only available from V2.0.0 and higher

2) Parameter only available from V2.1 and higher

- Location: Details of the location identification where the SITOP UPS1600 is installed.
- Connection threshold: If the connection threshold value is fallen below, the SITOP UPS1600 starts buffering. If the value of the connection threshold is reached or undershot again later, the SITOP UPS1600 stops buffering.
- Buffer time: Length of time during which the system should be buffered by the SITOP UPS1600.
- Maximum buffer time: The MAX setting means that buffering is realized for as long as possible. The device only shuts down when the battery has discharged down to the defined stop buffering voltage. The value entered for the "Buffer time" parameter is not relevant in this case.
- Additional buffer time after PC shutdown: The time in which the system is buffered by the SITOP UPS1600 once the PC has been shut down.
- Expected buffer current: Load current, which is expected at the device output during buffer operation. If a value of 0 A is entered, then for this parameter, the average value of the actual load current measured at the output over the last 10 min is assumed. The

value of this parameter is used when calculating the remaining buffer time. The entered value may not exceed the rated device current.

- Reset time: Time, in which the output voltage of the SITOP UPS1600 is switched off, although in the meantime the input voltage has returned. This function allows IPCs to automatically restart.
- Enable reset time after buffering: If the value is set to "Yes", the SITOP UPS1600 shuts down the output for the selected interrupt time if, in the meantime, the input voltage returns after the buffer time has expired. Using this function, after the SITOP UPS1600 has been powered down, an IPC can be switched on again, for example.
- Downtime alarm: The time in which no alarm is issued to the system although it is buffered.
- Time of the pending input voltage: The time in which no alarm is issued to the system although the connection threshold has been undershot.
- Variable time for battery test: The time interval between battery tests can be set using the parameter.

To reset the parameters to their initial value, click the "Reset to initial values" button. All parameters for the base device will be reset to their initial value.

Configuring the energy storage

The characteristic values of a SITOP UPS1100 battery module are automatically read by the coding. If a SITOP UPS1100 battery module is used, activate the "SITOP UPS1100 battery" checkbox.

If you are using a different battery, activate the "Use third-party battery" checkbox. Enter the rated values of the other battery. The following parameters are available under "Hardware configuration> Energy storage".

Parameter	Value range
Battery capacity	0.1 - 3,200 Ah
End-of-charge voltage	24 - 30 V
Charge current	0.001 - 5 A
Faulty battery voltage	1 - 18 V

- Battery capacity: Total capacity of the installed batteries.
- End-of-charge voltage: The charging completes when the selected end-of-charge voltage is reached.
- Charge current: The battery is not charged with more than the selected charge current. The manufacturer's details for the permitted charge current of the battery must be observed. If several batteries are connected, the smallest permitted charge current applies.
- Faulty battery voltage: If the battery voltage falls below this value, it will be considered as being defective by the SITOP UPS1600 and is not charged.

To reset the parameters to their initial value, click the "Reset to initial values" button. All parameters for the energy storage will be reset to their initial value.

3.5.9 Behavior of the SITOP UPS Manager

The monitoring of the uninterruptible power supply by the SITOP UPS Manager permits other applications to be started event driven.

In the event of a power failure, the SITOP UPS Manager can use the network to perform a controlled shutdown of the devices connected to the uninterruptible power supply in the specified order, or place them in a defined standby state.

The sending of alarms and notifications to the system or to users is also possible (SMS, e-mail).

The applications can be started depending on the following events and factors:

- Power failure
- Power return
- State of the buffer readiness by the SITOP UPS1600:
  - General buffer readiness
  - Remaining buffer time
- State of the SITOP UPS1600 battery:
  - Battery charge
  - for recommended battery replacement
- State of the communication interface:
  - Connection established/interrupted
- System alarm status
  - At least one alarm is active/no longer active

Storing an application

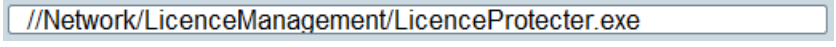
In the various submenus, you can store applications that will be started depending on the above-mentioned events and factors. Examples of such applications are:

- Batch scripts, for example, to shut down a computer in the network.
- Applications that inform the user about the state of the power supply.
- Applications that protect licenses assigned to computers (floating licenses) from being lost because of power failure.

Procedure

1. Open the appropriate submenu under "Software configuration".
2. Activate the checkbox to start the application for the desired event.
3. Click on "Browse" to select an application.
4. Select the required application in a directory.

   The application path is displayed.



5. To check whether the application will performed correctly, click the "Start" button.
6. Enter the time in minutes and seconds after which the application should be started.

Note

Only those applications that do not open any Windows screen can be started.

Behavior during buffer mode

Make the settings under "Software configuration > Buffer operation" vor.

The following options are available:

- Start application on power failure.
- Start application after power return.
- Show SITOP UPS Manager on power failure.
- Show SITOP UPS Manager after power return.
- Shut down PC on power failure after xx minutes.

Note

NOTICE: If the buffer time (see Section Configuring the SITOP UPS1600 (Page 101)) is set shorter than this time, the SITOP UPS1600 switches off before the PC has been shut down. The PC is then no longer protected.

Behavior for missing buffer readiness

Make the settings under "Software configuration > Not ready for buffering".

The following options are available:

- Start the application if buffer mode is not possible.
- Start the application when buffer readiness returns
- Open the SITOP UPS Manager if buffer mode is not possible
- Open the SITOP UPS Manager when buffer readiness returns.

Behavior when battery replacement required

Make the settings under "Software configuration > Battery replacement".

The following options are available:

- Start the application if battery replacement is recommended (from SITOP UPS Manager V4.12.5 and higher).
- Start the application once the battery has been replaced.

- Open the SITOP UPS Manager if battery replacement is recommended (from SITOP UPS Manager V4.12.5 and higher).
- Open the SITOP UPS Manager once the battery has been replaced.

Behavior depending on the battery charge

Make the settings under "Software configuration > Battery charge".

The following options are available:

- Start the application when the battery charge is > 85 % of the maximum.
- Start the application when the battery charge is < 85 % of the maximum.
- Open SITOP UPS Manager when the battery charge is > 85 % of the maximum.
- Open SITOP UPS Manager when the battery charge is < 85 % of the maximum.

Note

From UPS Manager Version V4.71, a percentage value of the battery charge can be programmed where an action should be initiated.

Behavior depending on the remaining buffer time

Make the settings under "Software configuration > Remaining buffer time". Specify the minimum buffer time under "Hardware configuration > Base Unit" in entry "Buffer time".

The following options exist in the "Remaining buffer time" submenu:

- Start the application if the desired buffer time cannot be achieved.
- Start the application if the desired buffer time can be achieved again.
- Display the SITOP UPS Manager if the desired buffer time cannot be achieved.
- Display the SITOP UPS Manager if the desired buffer time can be achieved again.

Response when communication to the SITOP UPS1600 is interrupted

Make the settings under "Software configuration > Communication interface".

The following options are available:

- Start the application if there is a connection to the SITOP UPS1600.
- Start the application if the connection to the SITOP UPS1600 is interrupted.
- Open the SITOP UPS Manager if there is a connection to the SITOP UPS1600.
- Open the SITOP UPS Manager if the connection to the SITOP UPS1600 was interrupted.

Behavior for pending system alarms

Make the settings under "Software configuration > System alarms". Reasons for a system alarm are contained in the alarms list (see Section Troubleshooting (Page 135)).

The following options exist in the "System alarms" submenu:

- Start the application if at least one system alarm is active.
- Start the application if no system alarm is active.
- Open the SITOP UPS Manager if at least one system alarm is active.
- Open the SITOP UPS Manager if no system alarm is active.

3.5.10 Display and visualization

The "Display" menu item shows information about the device data and parameters as well as the state of the power supply.

The following display options exist:

- Active alarms
- Alarm history
- Operating data: Data and parameters of the basic device and the energy storage device
- Trend charts:
  - Load current over time
  - Input voltage over time
  - Remaining buffer time over time
  - Battery temperature over time
  - Battery charge over time
  - Charge current over time
- Online functions:
  - Updating the firmware

Displaying pending alarms

1. Select "Display > Pending alarms".
   The pending alarms are displayed in a tabular form.

	Name	Time stamp	Help
1	Buffer mode not possible	20.10.2014 14:25:18	Buffer mode not possible - check settings, cabling, fuse, and battery voltages
2	Insufficient charge level	20.10.2014 14:20:43	The battery charge level is too low to guarantee the configured buffer time.

The individual columns contain the following information:

- Name: A descriptive name of the alarm
- Time: The time and date of the alarm arrival
- Help: Description of the alarm

Displaying the alarm history

1. Select "Display > Alarm history".
   The alarm history is displayed in a tabular form.

	Name	Time stamp	Alarm
1	Buffer mode not possible	20.10.2014 14:31:01	Outgoing
2	Connection to battery interrupted	20.10.2014 14:31:01	Outgoing
3	Battery defective (battery index: 1)	20.10.2014 14:31:06	Outgoing
4	Insufficient charge level	20.10.2014 14:31:20	Outgoing
5	Insufficient charge level	20.10.2014 14:31:39	Incoming
6	Buffering	20.10.2014 14:31:58	Incoming
7	Buffering	20.10.2014 14:32:04	Outgoing
8	Battery test	20.10.2014 14:32:08	Incoming
9	Battery test	20.10.2014 14:32:08	Outgoing

The individual columns contain the following information:

- Name: A descriptive name of the alarm
- Time: The time and date when the alarm comes and goes
- Alarm:
  - incoming: Occurrence of the alarm event
  - outgoing: Rectification of the alarm event

Data and parameters SITOP UPS1600

1. Select "Display > Operating data".
2. Under "Base Unit" you can find data and parameters of the SITOP UPS1600.

The following data are displayed:

- Order number
- Serial number
- SW version
- HW product version

The following parameters are displayed:

- Buffer mode
- Remaining buffer time
- Input voltage

- Load current
- Ready for buffering

Energy storage data and parameters

1. Select "Display > Operating data".
2. The data and parameters of the energy storage device can be found under "Energy storage".

The following data are displayed:

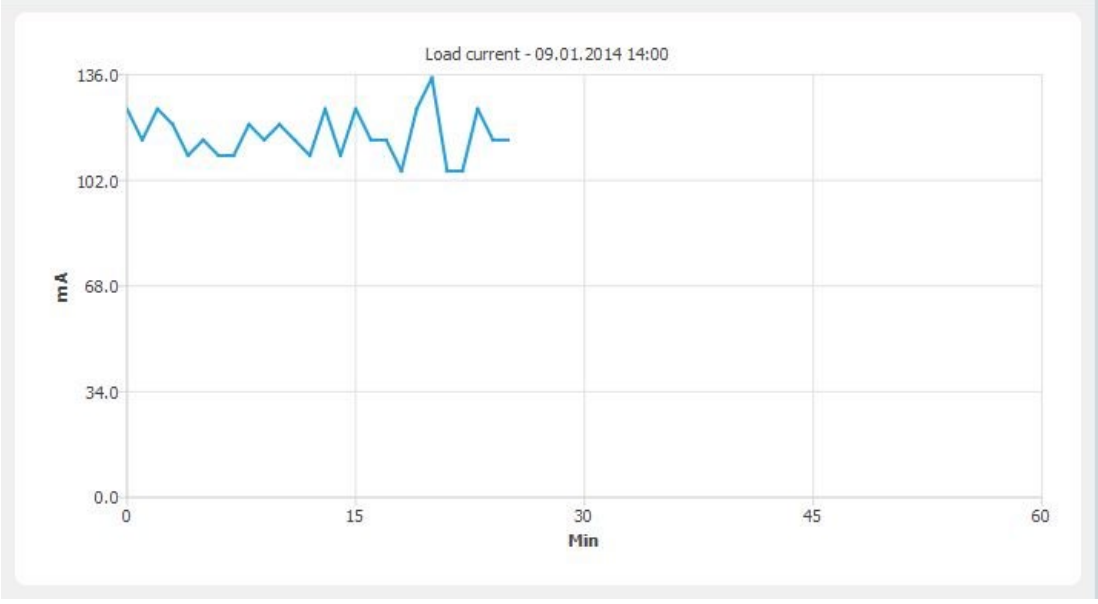
- Order number
- Serial number
- SW version

The following parameters are displayed:

- Battery capacity
- Battery charge level
- Battery temperature
- Measured charge current

Trend charts

You have the possibility of graphically displaying values about the power supply under "Display> Trend chart", for instance the load current over time:



The following trend charts can be selected:

- Load current over time
- Input voltage over time
- Remaining buffer time
- Battery temperature over time
- Battery charge over time
- Charge current over time

Procedure

1. Select "Display > Trend diagram".
2. Select "Base Unit" to display trend diagrams for SITOP UPS1600 values

   or

   select "Energy storage" to display trend diagrams for the energy storage device values.

   3 diagrams are available below both points.
3. Click the appropriate button to display the required trend diagram.

3.5.11 Determining the firmware version

The firmware version of the SITOP UPS1600 can be determined as follows using the UPS Manager:

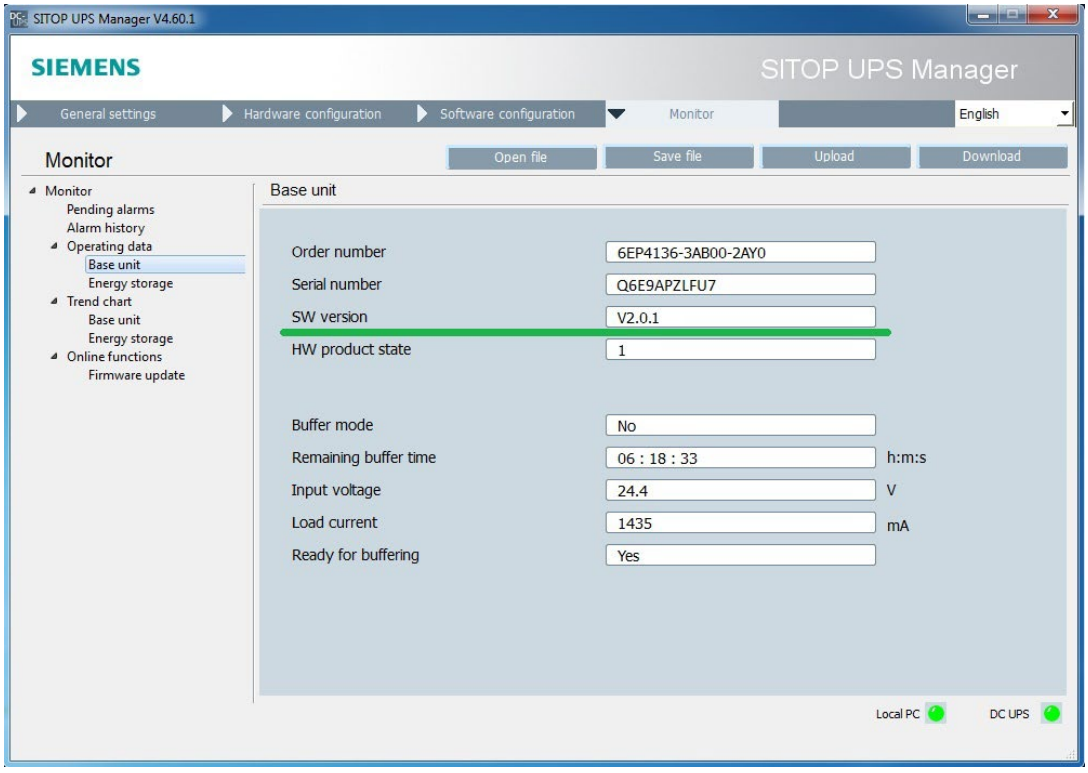
Precondition

The SITOP UPS1600 is connected to your PC via USB.

Also possible for a connection via Ethernet with software version> V2.0 - and manager version > 4.60.1

Procedure

1. Start the UPS Manager.
2. Using the menu command "Display > Operating data > Base unit" the firmware version of the SITOP UPS1600 is displayed.



In the example shown, firmware version V2.0.1 is installed on the SITOP UPS1600.

3.5.12 Firmware update

⚠ WARNING

The SITOP UPS1600 is reset while updating the firmware. For safety reasons, the output is switched off.

Ensure that no damage is caused to the plant or system.

Ensure that the PG/PC and/or all switches, routers and gateways that are used have an independent power supply during the firmware update.

Note

Do not switch-off the devices during the firmware update.

The files for updating the firmware (firmware updates) are available online under (http://support.automation.siemens.com/WW/view/en/79207181). Different firmware updates are offered depending on the amp rating of the SITOP UPS1600.

Note

Observe the compatibility of the firmware!

Other firmware updates are not compatible.

Determine the amp rating of your SITOP UPS1600 and download the appropriate firmware update.

Note

It is not possible to downgrade the device firmware to a release with a version number lower than the firmware installed in the device itself. Information on how to read out the firmware release from the device is provided in Section Display and visualization (Page 106).

Note

"Reset to factory" function:

Everything is reset, also the IP address. A new IP address must then be assigned, as otherwise there is no connection to the UPS Manager or TIA.

Preconditions

- The SITOP UPS1600 has been correctly connected and linked with the system.
- PG/PC with SITOP UPS Manager is connected with the system.

Note

Install the current version of the SITOP UPS Managers, before you start the update. It is possible that an older version (less than 4.5X) of the SITOP UPS Managers does not support this update. The installation file for the SITOP UPS Manager is available at no charge on the SITOP home page (http://www.siemens.com/sitop-ups1600) or directly (https://support.industry.siemens.com/cs/ww/en/view/75854607).

Procedure

1. Select "Display > Online functions".
2. Select "Update firmware".
3. To select the path to the directory with the unzipped files, click on the "Browse" button. In this directory, select the "ups10a.upd", "ups20a.upd" or "ups40a.upd" file.
4. Click on the "Start" button.
   The firmware is updated.
5. A message appears in the window area after the successful update.
6. Manually restart the STIOP UPS1600 by interrupting the STIOP UPS1600 power supply. Restore the power supply to the SITOP UPS1600.

   The firmware update has been performed successfully.

3.6 Web server

The web server is used to monitor the SITOP UPS1600. It operates independently of UPS Manager and PROFINET access. It is not possible to write access the SITOP UPS1600.

New functions of the web server from V2.1 and higher:

- Write access
- User management
- Access via https

3.6.1 Accessing the web server

A Web browser is used for the access and operation.

The following Web browsers are suitable:

- Internet Explorer V8 (on MS Windows XP)
- Internet Explorer V10 (on MS Windows 7)
- Internet Explorer V11 (on MS Windows 7)
- Mozilla Firefox V40 (on MS Windows 7)
- Google Chrome V44 (on MS Windows 7)

Preconditions

- The computer with installed web browser is connected with the SITOP UPS1600 via Ethernet.
- The Web browser can display SVG graphics. From version V2.1 and higher, it is no longer necessary that SVG graphics are supported.

  If your web browser cannot display SVG graphics, then "Please install the SVG viewer for a correct display" message appears on the start screen. To permit the correct display, perform the following steps:

  – Download the SVG update at (http://www.savarese.com/software/svgplugin).
  – Install the SVG update.
  – If required, restart your computer.
- The SITOP UPS1600 has an IP address that you know.
- Web server access is activated.

  The following sections explain how to activate access to the web server:

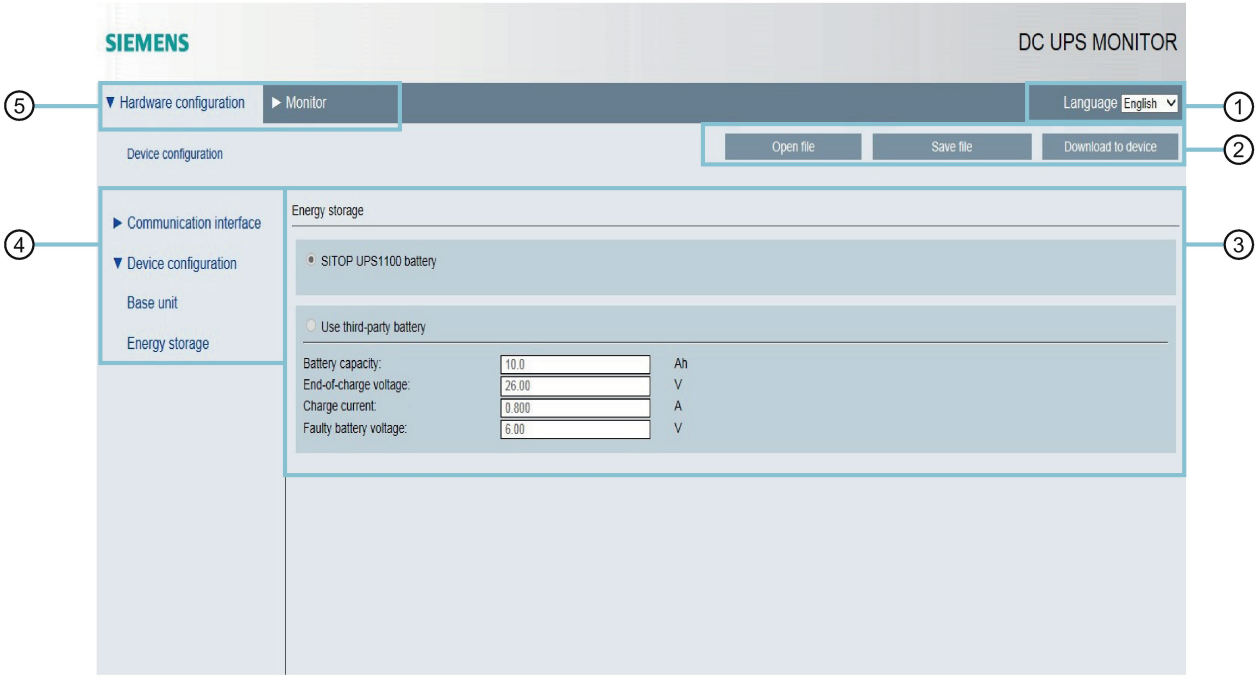
  – For SIMATIC STEP 7 in the TIA Portal at Parameterizing the UPS1600 (Page 51).
  – For SIMATIC STEP 7 at Parameter assignment (Page 70).

Procedure

1. Connect the client (PG, PC) via the PROFINET interface with the CPU.
2. Open the web browser.
   In the address dialog box of the web browser, enter the IP address of the SITOP UPS1600 in the form http://ww.xx.yy.zz (input example: http://192.168.0.14).

The start page of SITOP UPS1600 is opened. You can navigate to further menus from the start page.

3.6.2 The web server user interface



① Language selection
② "Configurations" save bar
③ Editor area
④ Submenus
⑤ Menu

Menu selection ⑤ allows you to access the "HW configuration" and "Display" menus and their associated submenus. The functions of the menus are described in the following sections.

In this area, you can find the submenus dependent on the selected menu item. The function of the individual submenu items is presented in the following sections ④.

The settings (for the submenu items) are made in the Editor area ③.

The functions of the save bar ② are used to load the actual configuration to the SITOP UPS1600 and open or save the configurations to a data medium.

The language selection ① is used to select the user interface language of the web server. The German, English, French, Italian, Spanish, and Chinese languages are available.

Grayed out menus

If the SITOP UPS1600 was assigned a SIMATIC S7 control as I/O device, or the SITOP UPS Manager is connected to the SITOP UPS1600, then the web server is in the read-only mode. The following applies in the read-only mode:

- No write access is possible; the parameter settings can only be read (input values shown in gray, valid for software version up to V2.0)
- Firmware cannot be updated, the item is hidden.

3.6.3 Functions of the web server

Display

The following functions are available:

- View the data of the SITOP UPS1600 (basic device), see View the data of the SITOP UPS1600 (basic device) (Page 115)
- View the energy storage data, see Viewing the energy storage data (Page 116)
- Alarm monitoring (pending alarms, alarm history), see Alarm monitoring (Page 116)

3.6.4 View the data of the SITOP UPS1600 (basic device)

1. Select the "Display" menu
2. Select the "Base unit" entry under "Operating data" in the navigation.

The "Base unit" entry provides the following information:

- Data of the SITOP UPS1600:
  - Order number
  - Serial number
  - SW version
  - HW product version
- Operating mode (normal or buffer mode)
- Ready for buffering
- Remaining buffer time
- Input voltage
- Load current

3.6.5 Viewing the energy storage data

1. Select the "Display" menu
2. Select the "Energy storage" entry under "Operating data" in the navigation.
3. Select the desired battery (example: battery 1) with a click.

The "Battery" entry provides the following information:

- Data of the battery module:
  - Order number
  - Serial number
  - SW version
  - HW product version
- Capacity
- Battery charge
- Battery temperature
- Load current

3.6.6 Alarm monitoring

You can use the web server to obtain information about active alarms and the history of the alarms. Every alarm that concerns the SITOP UPS1600 and the connected battery modules is recorded. You can display pending alarms via "Pending alarms".

Displaying pending alarms

1. Select the "Display" menu
2. Select the "Pending alarms" entry under "Alarms" in the navigation.

   The active alarms are displayed in a tabular format.

Name	Time	Help
Communication with battery fault (battery index: 1)	09.01.2014 14:37:21	Communication with formerly known battery is no longer possible - check communication
Communication with battery fault (battery index: 2)	09.01.2014 14:37:17	Communication with formerly known battery is no longer possible - check communication
Buffer mode not possible	09.01.2014 14:37:14	Buffer mode not possible - check settings, cabling, fuse, and battery voltages

The individual columns contain the following information:

- Name: A descriptive name of the alarm
- Time: The time and date when the alarm came
- Help: Description of the alarm

Displaying the alarm history

1. Select the "Display" menu
2. Select the "Alarm history" entry under "Alarms" in the navigation.

   The alarm history is displayed in a tabular form.

Name	Time	Alarm
Communication with battery fault (battery index: 1)	09.01.2014 14:37:20	Incoming
Communication with battery fault (battery index: 2)	09.01.2014 14:37:16	Incoming
Buffer mode not possible	09.01.2014 14:37:13	Incoming
Communication with battery fault (battery index: 2)	09.01.2014 13:58:42	Incoming
Communication with battery fault (battery index: 1)	09.01.2014 13:58:38	Incoming
Buffer mode not possible	09.01.2014 13:58:35	Incoming
Buffering	09.01.2014 13:58:17	Incoming
Battery test	09.01.2014 13:32:13	Outgoing
Battery test	09.01.2014 13:32:12	Incoming
New battery detected (battery index: 2)	09.01.2014 13:32:04	Incoming
New battery detected (battery index: 1)	09.01.2014 13:32:04	Incoming
Output switched on	09.01.2014 13:32:04	Incoming
Device powered up	09.01.2014 13:32:04	Incoming

The individual columns contain the following information:

- Name: A descriptive name of the alarm
- Time: The time and date when the alarm comes and goes
- Alarm:
  - incoming: Occurrence of the alarm event
  - outgoing: Rectification of the alarm event

Note

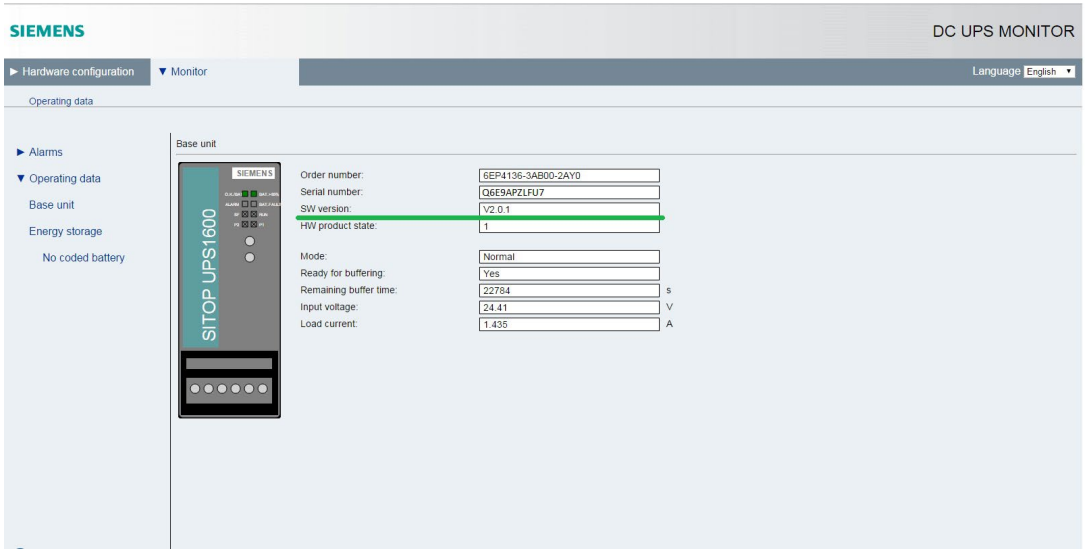
The alarm history is displayed only when no further communications relationships to the SITOP UPS1600 have been established.

Examples for further communications relationships are communication relationships via STEP 7 or the SITOP UPS Manager.

3.6.7 Determining the firmware version

The firmware version of the SITOP UPS1600 can be determined as follows via Ethernet using the web server:

Using the menu command "Display > Operating data > Base unit" the firmware version of the SITOP UPS1600 is displayed.

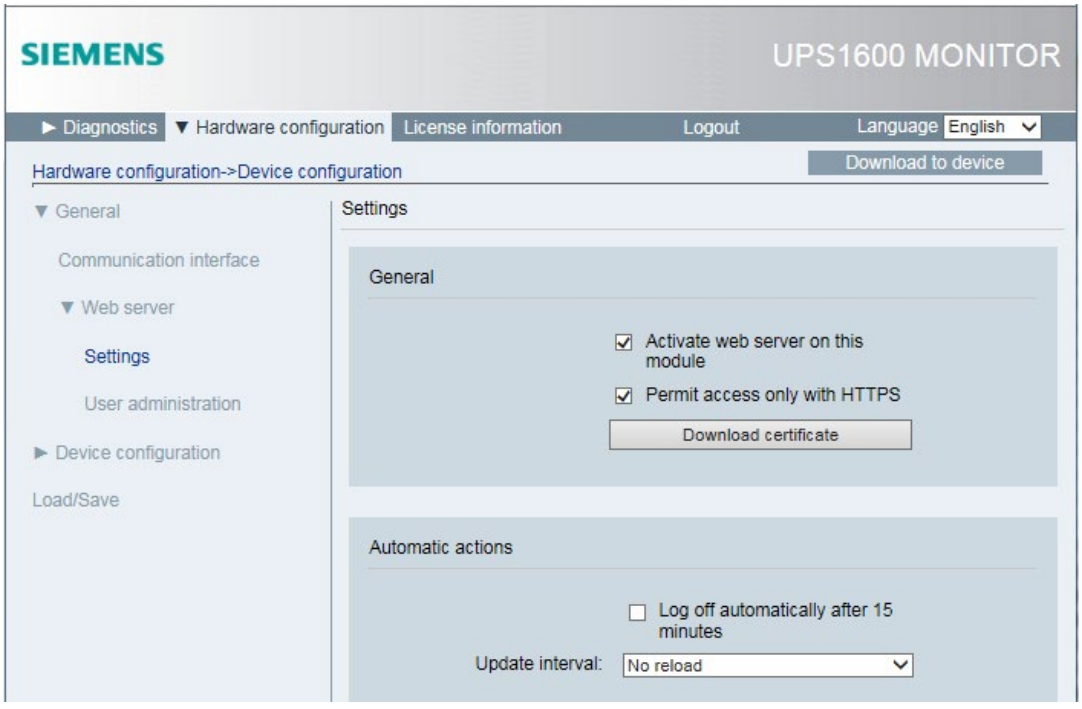


In the example shown, firmware version V2.0.1 is installed on the SITOP UPS1600.

3.6.8 Web server settings / user administration

Here, you can make general settings and define which actions should be automatically executed. User administration is also located here.

Settings



Parameters	Value range	Default setting
Activate web server on this module	Yes/no	No
Permit access only with HTTPS	Yes/no	Yes
Log off automatically after 15 minutes	Yes/no	No
Update interval	0 / 5 s / 10 s / 20 s / 30 s / 60 s	10 s

- **Activate web server on this module**

  Define as to whether the device may be accessed via the web server.

- **Permit access only with HTTPS**

  Define whether access is only permissible via HTTPS.

- **Download certificate**

  You can download the certificate for encrypted connection via HTTPS by pressing the "Download certificate" button.

- **Log off automatically after 15 minutes**

  Define whether a user should be automatically logged off after closing the web server.

- **Update interval**

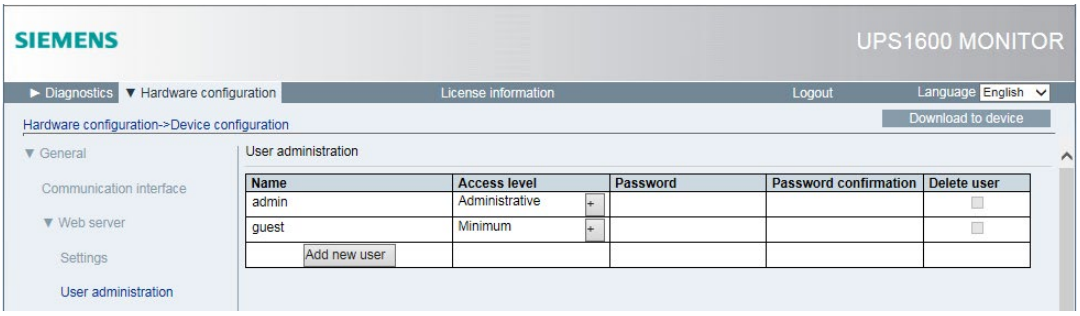
  Define the interval in which the actual values are sent to the web server.

Procedure for changing the administrator password

1. Select the "Hardware configuration" menu.
2. Select submenu "General > Communication interface > Web server".
3. Select entry "Settings".
4. Make the required settings and carry out the appropriate actions in the editor area.
5. Load the data to the device.

User administration

Here, you can change the administrator password and set up the system so that guests can access the system - and up to 14 additional user accounts with different authorization levels.



Procedure for changing the administrator password

1. Select the "Hardware configuration" menu.
2. Select submenu "General > Communication interface > Web server".
3. Select entry "User administration".
4. In the editor area, under "Administrator" enter the current administrator password.
5. In the editor area, under "Password" enter a new password.
6. Repeat the new password.
7. Load the data to the device.

Procedure for setting up a guest access

1. Select the "Hardware configuration" menu.
2. Select submenu "General > Communication interface > Web server".
3. Select entry "User administration".
4. In the editor area under "Add new user" enter the password and select the individual access rights for a new user.

Procedure for setting up a user account

1. Select the "Hardware configuration" menu.
2. Select submenu "General > Communication interface > Web server".
3. Select entry "User administration".
4. In the editor area under "Add new user" enter the password and select the individual access rights for a new user.

3.7 Cyclic and acyclic data

The data communicated between the SITOP UPS1600 and the PROFINET IO-Controller can be viewed in STEP 7 or classic in the TIA Portal. Here, a distinction is made between cyclic data (input/output data) and acyclic data (reading/writing data sets).

Input/output data

SITOP UPS1600 sends, in cyclic intervals (1 ms - 512 ms for IRT or 1 ms - 2048 ms for RT), data about the actual operating states to the PROFINET IO-Controller. You will find more information on this at Input and output data (Page 122).

Reading and writing data sets

Reading and writing data sets are sent acyclically from the SITOP UPS1600 to the PROFINET IO-Controller or from the PROFINET IO-Controller to the SITOP UPS1600. Additional information can be found at Reading and writing data sets (Page 123).

3.7.1 Input and output data

An overview of the input and output data, which is cyclically sent from the SITOP UPS1600 to the PROFINET IO controller is provided in the following tables.

Slot	Subslot	Data	Description	Data size
0	2	Input voltage	Input voltage is present: • 0: NOT OK • 255: OK	Unsigned8
		Buffer mode	Buffer mode: The load connected to the SITOP UPS1600 is supplied via the energy storage device connected to the SITOP UPS1600: • 0: inactive • 255: active	Unsigned8
		Ready for buffering	Ready for buffer operation as the energy storage device of the buffer component has been sufficiently charged. • 0: NOT OK • 255: OK	Unsigned8
		Charge sufficient	Charge sufficient: The required charge has been reached when the flag is set: • 0: NOT OK • 255: OK	Unsigned8

Slot	Subslot	Data	Description	Data size
		Battery change recommended	Battery replacement recommended: The battery capacity is not sufficient for the defined buffer time: • 0: no • 255: yes	Unsigned8
		New alarms pending	New alarms pending: • 0: no • 255: yes	Unsigned8
		Battery charge level	Battery charge level in %: • 0-100: 0-100% • 255: unknown battery	Unsigned8
		Battery connection maintenance from V2.1	Connection to the battery interrupted: Check the connection and fuse: • 0: no maintenance required • 255: maintenance required	Unsigned8

3.7.2 Reading and writing data sets

An overview of all data sets, which are communicated between the SITOP UPS1600 and the PROFINET IO-Controller is provided in the following table. Here, a distinction is made between the following data sets:

- **Reading data sets:** Data which is sent from the SITOP UPS1600 to the PROFINET IO-Controller.
- **Writing data sets:** Data which is sent from the PROFINET IO-Controller to the SITOP UPS1600.

Index	Slot	Subslot	Data set	Type	Description	Data size
0x0001	0	1	Buffering parameters	Reading / writing	Buffer parameters.	14 bytes
0x0002	0	1	Battery parameters	Reading / writing	Parameters of the connected battery modules.	5 bytes
0x0003	0	1	Charging parameters	Reading / writing	Charge parameters of the connected battery modules.	4 bytes
0x0004	0	1	Reset parameters	Reading / writing	Reset parameters.	1 byte
0x0005	0	1	Battery information parameters	Reading	Information about the connected battery modules SITOP UPS1100. This information is available via the link "Energy Storage".	1024 bytes
0x0006	0	1	Device information Parameters	Reading	Information about the SITOP UPS1600.	148 bytes

Index	Slot	Subslot	Data set	Type	Description	Data size
0x0007	0	1	Hardware settings parameters	Reading	Hardware settings of the SITOP UPS1600 (settings that were made at the front of the device).	8 bytes
0x0008	0	1	Buffering parameters from V2.0	Reading / writing	Buffer parameters of the SITOP UPS1600	2 bytes
0x0009	0	1	Maintenance parameters from V2.1	Reading / writing	Maintenance parameters of SITOP UPS1600	2 bytes
0x0020	0	1	State information	Reading	Status information about SITOP UPS1600 and the connected battery modules SITOP UPS1100. Information about the SITOP UPS1100 battery modules is available via the link "Energy Storage".	64 bytes 70 bytes (from V2.1)
0x0040	0	1	Identification value parameters	Reading / writing	Device identification parameters.	80 bytes 108 bytes (from V2.1)
0x0041	0	1	Web server parameters	Reading / writing	Web server settings of the SITOP UPS1600.	1 byte 6 bytes (from V2.1)

You can find detailed information about the individual data sets in Section Data sets (Page 124)

3.7.2.1 Data sets

In this section you can find detailed information about the individual data sets that are sent from the PROFINET IO-Controller to the SITOP UPS1600 - and which can be read from the SITOP UPS1600.

0x0001: Buffering parameters (reading/writing)

Data	Description	Data type
Buffer time [1 s]	Buffer time: After the selected buffer time has expired, the SITOP UPS1600 switches off the load output. The actual buffer time that can be achieved depends on the connected loads and energy storage devices.	Unsigned16
Buffer time 2 [1 s]	Additional buffer time after PC shutdown. The specified value is 5 seconds (only valid in conjunction with the PC software SITOP UPS Manager)	Unsigned16
Buffer threshold [0.01 V]	Connection threshold: Switching voltage for buffering. Buffering is active below this value.	Unsigned16
Stop buffering voltage [0.01 V]	Stop buffering voltage: Buffer operation is exited if the battery voltage is below this value.	Unsigned16
Input voltage OK time [1 ms]	Wait time for stable input voltage: Minimum time during which the input voltage during buffer operation must be available at the SITOP UPS1600 to exit buffer operation of the SITOP UPS1600 and to again supply the connected loads via the input voltage (normal operation).	Unsigned16

Data	Description	Data type
Downtime alarm [1 ms]	Downtime alarm: Alarm filter - alarm is only sent if it is active for longer than the set time.	Unsigned16
Buffering allowed	Activate or deactivate buffer operation. The setting is only accepted in operating mode Remote Enable (REN) of the SITOP UPS1600.	Unsigned8
Enable reset after buffering	Enable reset after buffering: If, during buffer operation, the input voltage becomes available again, then the output is switched off for a selectable time in order to reset the connected devices.	Unsigned8

0x0002: Battery parameters (reading/writing)

Data	Description	Data type
Battery defect voltage [0.01 V]	Battery defect voltage: If the battery voltage falls below the set value, then the battery is identified to be defective.	Unsigned16
Battery capacity [0.1 Ah]	Battery capacity: Total battery capacity of all energy storage devices connected to the SITOP UPS1600.	Unsigned16
Ignore battery coding	Ignore data of the coded battery: When this parameter is set to "1", then data of the coded battery is ignored. Instead, data is taken from the parameterization ("Battery Parameters", "Charging Parameters").	Unsigned8

0x0003: Charging parameters (reading/writing)

Data	Description	Data type
End of charge voltage [0.01 V]	End of charge voltage: Battery voltage when charging changes to trickle charging. The connected energy storage device is then charged up to 100 %.	Unsigned16
Charge current [1 mA]	Charge current: Current magnitude used to charge the connected battery modules during the constant charging process.	Unsigned16

0x0004: Reset parameters (reading/writing)

Data	Description	Data type
Reset time [1 s]	Reset time: Time during which the SITOP UPS1600 output is shutdown if the connected devices are reset.	Unsigned8

0x0005: Battery information parameters (reading)

Data	Description	Data type
Number of batteries	Number of connected battery modules. Here, only the SITOP UPS1100 battery modules (coded batteries) are counted.	Unsigned8
Fill byte(s)	-	3xUnsigned8
Batt 1: Standby time [1 s]	Standby time.	Unsigned32

Data	Description	Data type
Batt 1: Buffer time [1 s]	Required buffer time, after which the SITOP UPS1600 shuts down in the buffer mode.	Unsigned32
Batt 1: Total charging current [1 mA]	Total charge current (battery-specific data): Total charge within the service lifetime of the SITOP UPS1600.	Unsigned32
Batt 1: Total culled current [1 mAh]	Total charge level used (battery-specific data): Time, in which the battery is connected to the SITOP UPS1600 and power was drawn.	Unsigned32
Batt 1: EOCV [0.01 V]	"End-of-charge voltage": Battery voltage when charging changes to trickle charging. The energy storage device is then charged up to 100 %.	Unsigned16
Batt 1: Charge current [1 mA]	Charge current: Current magnitude used to charge the connected battery modules during the constant charging process.	Unsigned16
Batt 1: Battery capacity [0.1 Ah]	Battery capacity: Total battery capacity of all energy storage devices connected to the SITOP UPS1600.	Unsigned16
Batt 1: Stop buffering voltage [0.01 V]	Stop buffering voltage: Buffer operation is exited if the battery voltage is below this value.	Unsigned16
Batt 1: Battery type	Battery type	Unsigned8
Batt 1: Minimal temperature [1 °C]	Lowest specified operating temperature of the battery module being used SITOP UPS1100.	Signed8
Batt 1: Maximal temperature [1 °C]	Highest specified operating temperature of the battery module being used SITOP UPS1100.	Signed8
Fill byte(s)	-	3xUnsigned8
Batt 1: Order number	Order number (Article number).	VisibleString(30)
Batt 1: Serial number	Serial number	VisibleString(30)
Batt 1: Manufacturing date	Manufacturing date	VisibleString(30)
Batt 1: Version number	Version number	VisibleString(50)
Batt 2: Standby time [1 s]	Standby time.	Unsigned32
Batt 2 Buffer time [1 s]	Required buffer time, after which the SITOP UPS1600 shuts down in the buffer mode.	Unsigned32
Batt 2: Total charging current [1 mA]	Total charge current (battery-specific data): Total charge within the service lifetime of the SITOP UPS1600.	Unsigned32
Batt 2: Total culled current [1 mAh]	Total charge level used (battery-specific data): Time, in which the battery is connected to the SITOP UPS1600 and power was drawn.	Unsigned32
Batt 2: EOCV [0.01 V]	"End-of-charge voltage": Battery voltage when charging changes to trickle charging. The energy storage device is then charged up to 100 %.	Unsigned16
Batt 2: Charge current [1 mA]	Charge current: Current magnitude used to charge the connected battery modules during the constant charging process.	Unsigned16
Batt 2: Battery capacity [0.1 Ah]	Battery capacity: Total battery capacity of all energy storage devices connected to the SITOP UPS1600.	Unsigned16
Batt 2 Stop buffering voltage [0.01 V]	Stop buffering voltage: Buffer operation is exited if the battery voltage is below this value.	Unsigned16
Batt 2: Battery type	Battery type	Unsigned8
Batt 2: Minimal temperature [1 °C]	Lowest specified operating temperature of the battery module being used SITOP UPS1100.	Signed8

Data	Description	Data type
Batt 12 Maximal temperature [1 °C]	Highest specified operating temperature of the battery module being used SITOP UPS1100.	Signed8
Fill byte(s)	-	3xUnsigned8
Batt 2: Order number	Order number (Article number).	VisibleString(30)
Batt 2: Serial number	Serial number	VisibleString(30)
Batt 2: Manufacturing date	Manufacturing date	VisibleString(30)
Batt 2: Version number	Version number	VisibleString(50)
Batt 3: Standby time [1 s]	Standby time.	Unsigned32
Batt 3: Buffer time [1 s]	Required buffer time, after which the SITOP UPS1600 shuts down in the buffer mode.	Unsigned32
Batt 3: Total charging current [1 mA]	Total charge current (battery-specific data): Total charge within the service lifetime of the SITOP UPS1600.	Unsigned32
Batt 3: Total culled current [1 mAh]	Total charge level used (battery-specific data): Time, in which the battery is connected to the SITOP UPS1600 and power was drawn.	Unsigned32
Batt 3: EOCV [0.01 V]	"End-of-charge voltage": Battery voltage when charging changes to trickle charging. The energy storage device is then charged up to 100 %.	Unsigned16
Batt 3: Charge current [1 mA]	Charge current: Current magnitude used to charge the connected battery modules during the constant charging process.	Unsigned16
Batt 3: Battery capacity [0.1 Ah]	Battery capacity: Total battery capacity of all energy storage devices connected to the SITOP UPS1600.	Unsigned16
Batt 3: Stop buffering voltage [0.01 V]	Stop buffering voltage: Buffer operation is exited if the battery voltage is below this value.	Unsigned16
Batt 3: Battery type	Battery type	Unsigned8
Batt 3: Minimal temperature [1 °C]	Lowest specified operating temperature of the battery module being used SITOP UPS1100.	Signed8
Batt 3: Maximal temperature [1 °C]	Highest specified operating temperature of the battery module being used SITOP UPS1100.	Signed8
Fill byte(s)	-	3xUnsigned8
Batt 3: Order number	Order number (Article number).	VisibleString(30)
Batt 3 Serial number	Serial number	VisibleString(30)
Batt 3: Manufacturing date	Manufacturing date	VisibleString(30)
Batt 3: Version number	Version number	VisibleString(50)
Batt 4: Standby time [1 s]	Standby time.	Unsigned32
Batt 4: Buffer time [1 s]	Required buffer time, after which the SITOP UPS1600 shuts down in the buffer mode.	Unsigned32
Batt 4: Total charging current [1 mA]	Total charge current (battery-specific data): Total charge within the service lifetime of the SITOP UPS1600.	Unsigned32
Batt 4: Total culled current [1 mAh]	Total charge level used (battery-specific data): Time, in which the battery is connected to the SITOP UPS1600 and power was drawn.	Unsigned32
Batt 4: EOCV [0.01 V]	"End-of-charge voltage": Battery voltage when charging changes to trickle charging. The energy storage device is then charged up to 100 %.	Unsigned16
Batt 4: Charge current [1 mA]	Charge current: Current magnitude used to charge the connected battery modules during the constant charging process.	Unsigned16

Data	Description	Data type
Batt 4: Battery capacity [0.1 Ah]	Battery capacity: Total battery capacity of all energy storage devices connected to the SITOP UPS1600.	Unsigned16
Batt 4: Stop buffering voltage [0.01 V]	Stop buffering voltage: Buffer operation is exited if the battery voltage is below this value.	Unsigned16
Batt 4: Battery type	Battery type	Unsigned8
Batt 4: Minimal temperature [1 °C]	Lowest specified operating temperature of the battery module being used SITOP UPS1100.	Signed8
Batt 4: Maximal temperature [1 °C]	Highest specified operating temperature of the battery module being used SITOP UPS1100.	Signed8
Fill byte(s)	-	3xUnsigned8
Batt 4: Order number	Order number (Article number).	VisibleString(30)
Batt 4: Serial number	Serial number	VisibleString(30)
Batt 4: Manufacturing date	Manufacturing date	VisibleString(30)
Batt 4: Version number	Version number	VisibleString(50)
Batt 5: Standby time [1 s]	Standby time.	Unsigned32
Batt 5: Buffer time [1 s]	Required buffer time, after which the SITOP UPS1600 shuts down in the buffer mode.	Unsigned32
Batt 5: Total charging current [1 mA]	Total charge current (battery-specific data): Total charge within the service lifetime of the SITOP UPS1600.	Unsigned32
Batt 5: Total culled current [1 mAh]	Total charge level used (battery-specific data): Time, in which the battery is connected to the SITOP UPS1600 and power was drawn.	Unsigned32
Batt 5: EOCV [0.01 V]	"End-of-charge voltage": Battery voltage when charging changes to trickle charging. The energy storage device is then charged up to 100 %.	Unsigned16
Batt 5: Charge current [1 mA]	Charge current: Current magnitude used to charge the connected battery modules during the constant charging process.	Unsigned16
Batt 5: Battery capacity [0.1 Ah]	Battery capacity: Total battery capacity of all energy storage devices connected to the SITOP UPS1600.	Unsigned16
Batt 5: Stop buffering voltage [0.01 V]	Stop buffering voltage: Buffer operation is exited if the battery voltage is below this value.	Unsigned16
Batt 5: Battery type	Battery type	Unsigned8
Batt 5: Minimal temperature [1 °C]	Lowest specified operating temperature of the battery module being used SITOP UPS1100.	Signed8
Batt 5: Maximal temperature [1 °C]	Highest specified operating temperature of the battery module being used SITOP UPS1100.	Signed8
Fill byte(s)	-	3xUnsigned8
Batt 5: Order number	Order number (Article number).	VisibleString(30)
Batt 5: Serial number	Serial number	VisibleString(30)
Batt 5: Manufacturing date	Manufacturing date	VisibleString(30)
Batt 5: Version number	Version number	VisibleString(50)
Batt 6: Standby time [1 s]	Standby time.	Unsigned32
Batt 6 Buffer time [1 s]	Required buffer time, after which the SITOP UPS1600 shuts down in the buffer mode.	Unsigned32
Batt 6 Total charging current [1 mA]	Total charge current (battery-specific data): Total charge within the service lifetime of the SITOP UPS1600.	Unsigned32

Data	Description	Data type
Batt 6: Total culled current [1 mAh]	Total charge level used (battery-specific data): Time, in which the battery is connected to the SITOP UPS1600 and power was drawn.	Unsigned32
Batt 6: EOCV [0.01 V]	"End-of-charge voltage": Battery voltage when charging changes to trickle charging. The energy storage device is then charged up to 100 %.	Unsigned16
Batt 6: Charge current [1 mA]	Charge current: Current magnitude used to charge the connected battery modules during the constant charging process.	Unsigned16
Batt 6: Battery capacity [0.1 Ah]	Battery capacity: Total battery capacity of all energy storage devices connected to the SITOP UPS1600.	Unsigned16
Batt 6: Stop buffering voltage [0.01 V]	Stop buffering voltage: Buffer operation is exited if the battery voltage is below this value.	Unsigned16
Batt 6: Battery type	Battery type	Unsigned8
Batt 6: Minimal temperature [1 °C]	Lowest specified operating temperature of the battery module being used SITOP UPS1100.	Signed8
Batt 6: Maximal temperature [1 °C]	Highest specified operating temperature of the battery module being used SITOP UPS1100.	Signed8
Fill byte(s)	-	3xUnsigned8
Batt 6: Order number	Order number (Article number).	VisibleString(30)
Batt 6: Serial number	Serial number	VisibleString(30)
Batt 6: Manufacturing date	Manufacturing date	VisibleString(30)
Batt 6: Version number	Version number	VisibleString(50)

0x0006: Device information parameters (reading)

Data	Description	Data type
HW revision	Hardware version	Unsigned16
SW revision	Software release	Unsigned16
Boot loader version	Boot loader version	Unsigned16
Max output current [1 A]	Maximum output current	Unsigned8
Fill byte(s)	-	Unsigned8
MLFB/Order number	MLFB/order number (Article number)	VisibleString(30)
Serial number	Serial number	VisibleString(30)
Device name	Device name	VisibleString(30)
Version number	Version number	VisibleString(50)

0x0007: Hardware setting parameters (reading)

Data	Description	Data type
Buffer time [1 s]	Buffer time: After the selected buffer time has expired, the SITOP UPS1600 switches off the load output. The actual buffer time that can be achieved depends on the connected loads and energy storage devices.	Unsigned16
Buffer threshold [0.01 V]	Connection threshold: Switching voltage for buffering. Buffering is active below this value.	Unsigned16
Buffering allowed	Activate or deactivate buffer operation. The setting is only accepted in operating mode Remote Enable (REN) of the SITOP UPS1600.	Unsigned8
Enable reset	Enable reset: If, during buffer operation, the input voltage becomes available again, then the output of the SITOP UPS1600 is switched off for a selectable time in order to reset connected loads.	Unsigned8
Start from battery	Start from battery: Setting at the signal terminal for function "Start from battery".	Unsigned8
Selected battery profile	Profile of the selected battery: The battery charging behavior is set at the signal terminals. The setting is only used, if the SITOP UPS1600 is not in the "Remote Enable" (REN) mode	Unsigned8

0x0008: Buffering parameters (reading/writing)

Data	Description	Data type
Expected buffer current [0.1 Ah] from V2.0 and higher	Expected buffer current: Estimated average load current during buffer operation.	Unsigned16

0x0009: Maintenance parameters (reading/writing)

Data	Description	Data type
Resistor test interval [1 h] from V2.1	R test interval	Unsigned16

0x0020: State information (reading)

Data	Description	Data type
Remaining buffer time [1 s]	Probable remaining buffer time. The remaining buffer time is calculated based on the present battery charge and the average current over a 10 minute period.	Unsigned32
Total operating time [1 h]	Total operating time.	Unsigned32
Total calculated battery capacity [0.1 Ah]	Total calculated battery capacity	Unsigned16
Calculated battery 1 capacity [0.1 Ah]	Battery 1: Calculated battery capacity.	Unsigned16
Calculated battery 2 capacity [0.1 Ah]	Battery 2: Calculated battery capacity.	Unsigned16

Data	Description	Data type
Calculated battery 3 capacity [0.1 Ah]	Battery 3: Calculated battery capacity.	Unsigned16
Calculated battery 4 capacity [0.1 Ah]	Battery 4: Calculated battery capacity.	Unsigned16
Calculated battery 5 capacity [0.1 Ah]	Battery 5: Calculated battery capacity.	Unsigned16
Calculated battery 6 capacity [0.1 Ah]	Battery 6: Calculated battery capacity.	Unsigned16
Input voltage [0.01 V]	Input voltage: Measured rms value of the supply voltage at the input of the SITOP UPS1600.	Unsigned16
Input current [5 mA]	Current measured at the input of the SITOP UPS1600.	Unsigned16
Output voltage [0.01 V]	Voltage measured at the output of the SITOP UPS1600.	Unsigned16
Load current [5 mA]	Load current measured at the output of the SITOP UPS1600.	Unsigned16
Measured charge current [1 mA]	Measured battery charge current of the SITOP UPS1600.	Unsigned16
Battery voltage [0.01 V]	Measured battery voltage of the connected battery modules.	Unsigned16
Output current [5 mA]	Load current measured at the output of the SITOP UPS1600.	Unsigned16
Charge voltage [0.01 V]	Voltage used to charge the batteries during the constant charging process.	Unsigned16
Fill byte(s)	-	3 x Unsigned8
Valid configuration	Valid configuration: Indicates whether the software parameters or the parameters at the rotary switches are used. The corresponding setting should be made at the rotary switch for the buffer threshold.	Unsigned8
Number of batteries	Number of connected battery modules. Here, only the SITOP UPS1100 battery modules (coded batteries) are counted.	Unsigned8
Fill byte(s)	-	7 x Unsigned8
Battery 1 change recommended	Battery 1: Battery replacement recommended: The battery capacity is not sufficient for the defined buffer time.	Unsigned8
Battery 2 change recommended	Battery 2: Battery replacement recommended: The battery capacity is not sufficient for the defined buffer time.	Unsigned8
Battery 3 change recommended	Battery 3: Battery replacement recommended: The battery capacity is not sufficient for the defined buffer time.	Unsigned8
Battery 4 change recommended	Battery 4: Battery replacement recommended: The battery capacity is not sufficient for the defined buffer time.	Unsigned8
Battery 5 change recommended	Battery 5: Battery replacement recommended: The battery capacity is not sufficient for the defined buffer time.	Unsigned8
Battery 6 change recommended	Battery 6: Battery replacement recommended: The battery capacity is not sufficient for the defined buffer time.	Unsigned8
Battery 1 Connection Fault	Battery1: Connection fault	Unsigned8
Battery 2 Connection Fault	Battery2: Connection fault	Unsigned8
Battery 3 Connection Fault	Battery3: Connection fault	Unsigned8
Battery 4 Connection Fault	Battery4: Connection fault	Unsigned8
Battery 5 Connection Fault	Battery5: Connection fault	Unsigned8
Battery 6 Connection Fault	Battery6: Connection fault	Unsigned8
Battery 1 temperature [1 °C]	Battery 1: Battery temperature	Integer8
Battery 2 temperature [1 °C]	Battery 2: Battery temperature	Integer8

Data	Description	Data type
Battery 3 temperature [1 °C]	Battery 3: Battery temperature	Integer8
Battery 4 temperature [1 °C]	Battery 4: Battery temperature	Integer8
Battery 5 temperature [1 °C]	Battery 5: Battery temperature	Integer8
Battery 6 temperature [1 °C]	Battery 6: Battery temperature	Integer8
Device temperature [1 °C]	Temperature in the housing	Integer8
Device temperature	Status of LEDs 1 to 4 for the SITOP UPS1600	Unsigned8

0x0040: Identification value parameters (reading/writing)

Data	Description	Data type
Contact	Name of the contact person. You can change the name to suit your requirements (maximum 22 characters).	VisibleString(40) VisibleString(64) from V2.1
Location	Location designation: Indicates the unique location of the SITOP UPS1600 (max. 22 characters).	VisibleString(40) VisibleString(44) from V2.1

0x0041: Web server parameters (reading/writing)

Data	Description	Data type
WebserverEnabled	Enable/disable the web server of the SITOP UPS1600: • 0: disable • 255. enable	Unsigned8
AutoReloadEnabled from V2.1	Enable/disable automatic update: • 0: disable • 255. enable	Unsigned8
ReloadTime from V2.1	Update interval: • 0: Off • 5: 5s • 10: 10s • 20: 20s • 30: 30s • 60: 60s	Unsigned8
AutoLogout from V2.1	Enable/disable automatic logoff: • 0: disable • 255. enable When automatic logoff is activated, the logged on user ("Guest" or "Admin") is automatically logged off when the SITOP UPS1600 web server is inactive for 15 minutes.	Unsigned8

Data	Description	Data type
HttpAccessEnable from V2.1	Enable/disable HTTP access: • 0: disable • 255: enable	Unsigned8
Fill byte(s) from V2.1	-	Unsigned8

The help text provides further information about a pending alarm.
The Extended Error Type helps to interpret the alarms in self-programmed S7 function blocks.
The maintenance specifies the severity of the alarm:
D = Diagnostics
MD = Maintenance Demanded
MR = Maintenance Required

Error Type	Extended Error Type	Maintenance	Alarm Text	Help Text
256	1	D	Software corrupted	Software has been corrupted - attempt to update the software.
256	2	MR	Wrong checksum	Internal error: Communication disrupted
256	3	MR	Parameter corrupt	Attempting to write to an unknown or read-only object.
256	4	MR	Unknown parameter	Attempting to set a parameter that is not known by DC UPS.
256	5	MR	Wrong message length	Internal error: Communication disrupted
256	6	MR	Wrong parameter	Parameter value lies outside the valid range.
256	7	MR	Command not accepted	An incorrect command was sent to the DC UPS
256	8	MR	Communication error: Wrong length field	Syntax error in command
256	9	MR	Wrong request	Error in sent message: Unknown request sent.
256	10	MR	Cannot write to object	Attempting to write a parameter that is "read-only"
256	11	MR	Object pending	DC UPS cannot provide data for the requested object.
256	12	MR	Battery not available	Attempting to access a battery that is not available. Either the battery with the requested number was never connected or communication with this battery was interrupted.
256	13	MR	EEPROM write error	Saving DC UPS parameters failed. Device is defective.
256	14	MR	Unknown alarm	Internal error: Wrong parameter at execution of test command.
256	15	MR	Command outside range	An incorrect command was sent to the DC-UPS.
256	16	MR	Software update is being performed.	The command sent cannot be executed as long as the program is running.
256	17	MR	No software update	Cannot execute the sent command because no software update has been started.
256	18	MR	Wrong battery number	Attempting to retrieve data about a battery which does not exist or is not connected.
256	19	MR	Wrong address	Wrong Flash address in software update - software update file is corrupt.

Error Type	Extended Error Type	Maintenance	Alarm Text	Help Text
256	20	MR	Write error	Cannot write to flash - hardware may be defective.
256	21	MR	Read error	Unable to read EEPROM. Device is defective.
256	22	MR	Wrong device ID	An attempt was made to update the software with an update file that is not suitable for the DC PS.
256	23	MR	Corrupt data record	Error during software update - try to update the software again.
256	24	MR	Wrong update	An attempt was made to update the software with an invalid update file. The update file is probably too old.
256	25	MR	Too much data	An entry in the software update cannot contain more than 32 bytes of reference data.
256	26	D	Device failure	Device failure
257	1	MD	Buffer mode not possible.	Buffer mode is not possible - check settings, cabling, fuse, and battery voltages
257	2	MD	Device temperature critical (too high)	Device temperature is very high! Ensure adequate cooling or disconnect unnecessary loads.
257	3	MD	Device temperature critical (too low)	Device temperature is very low! Ensure a higher ambient temperature.
257	4	D	High-resistance connection to battery.	High-resistance connection to battery - check the battery power cables.
257	5	D	Connection to battery interrupted.	Connection to battery interrupted - check connection and fuse.
257	6	MD	Unknown battery	Data from the battery cannot be read correctly. Battery is defective or not supported by SIEMENS.
257	7	MR	Overcurrent	Output current of DC UPS is too high. Output is switched off for 20 s The output is switched on again after 20 s.
257	12	MR	Reset executed.	Input voltage at DC UPS was OK again before the buffer time expired. Connected devices are reset by switching off the DC UPS outputs for the configured time.
257	13	MR	Battery test	Battery "State of Health" tests (SoH) are performed. The output of the DC UPS is connected to the battery in order to determine the actual battery capacity.
257	15	MR	Input voltage is too high	Input voltage exceeds 30 V. DC UPS is not operational.
257	16	MD	Surplus battery	More than 6 batteries are connected. Connect a maximum of 6 batteries to the Energy Storage Link.
257	17	D	DC UPS parameters corrupt.	DC UPS parameters corrupt - attempt to update the software.
257	18	D	Device overtemperature	Output and battery charging is switched off to prevent damage to the device.
257	19	MR	Battery SoH test	Battery "State of Health" tests (SoH) are performed.
257	20	MR	Low voltage mode	Input voltage of DC UPS is too low. DC UPS is not ready for buffering.
257	21	MR	Buffering	Device is in the buffer mode.

Error Type	Extended Error Type	Maintenance	Alarm Text	Help Text
257	24	F	Wrong battery polarity	Wrong battery polarity - check battery connections.
257	25	MD	Reserve	
257	26	MR	Insufficient charge level	Battery charge level presently too low to reach the set buffer capacity.
257	27	MR	Deep discharge battery	Battery is deep discharged - no buffering possible.
258	1	D	Battery defective (battery index: x)	Battery defective - check the fuse and the battery voltages.
258	2	D	Battery deep discharged, charging not possible (battery index: {1:d}).	Battery is deep discharged - replace battery.
258	3	MD	Battery temperature high (battery index: {1:d}).	Battery temperature too high - battery life will be shortened.
258	4	MD	Battery temperature low (battery index: {1:d}).	Battery temperature too low - reduced output current
258	5	D	Communication error to battery (battery index: {1:d}).	Communication with formerly known battery is no longer possible - check communication.
258	7	D	Wrong battery configuration (battery index: x).	Different battery types connected. Only batteries of the same type can be operated together.
258	8	MD	Battery parameters corrupt (battery index: {1:d}).	Battery defective - replace battery.
258	12	D	Fuse is defective (battery index: x).	Fuse is defective.

Mounting/removing

5

5.1 SITOP UPS1600

⚠ WARNING
Installing the device in a housing or a control cabinet
The SITOP UPS1600s are built-in units. They must be installed in a housing or control cabinet where only qualified personnel have access.

The device can be mounted in a control cabinet on standard TH35×7.5/15 mounting rails (according to EN 60715).

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 this is too difficult, press slider ⑩ at the same time, as described under "Removal".

Removal

To remove, carefully open the slider ⑩ using a screwdriver or by hand (see Image 5-1 Removal (example 6EP4136-3AB00-2AY0) (Page 139)) 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.

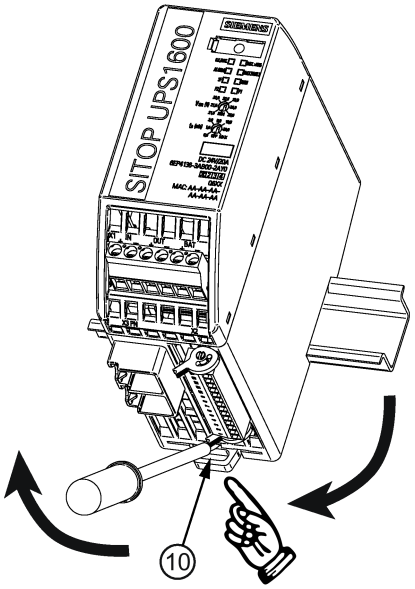


Image 5-1 Removal (example 6EP4136-3AB00-2AY0)

5.1.1 Signal connector

Mounting

Push connector on socket ④ in the housing.

Removal

To remove the signal connector, press the release lever (4b) (see Image 5-2 Mounting/removal: Signal connector (Page 140)) and then remove the connector.

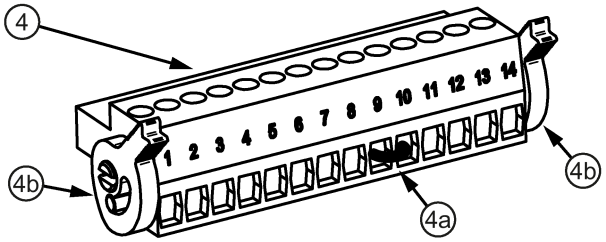


Image 5-2 Mounting/removal: Signal connector

5.1.2 USB connector

For deployment in an explosion-endangered environment, a USB connector with strain relief must be used.

Mounting

Push the connector onto the socket in the housing until the strain relief (6b) snaps into the housing (6a).

Removal

To remove the USB connector, press to release the strain relief (6b) (see Image 5-3 Mounting/removal: USB connector (Page 140)) and then remove the connector.

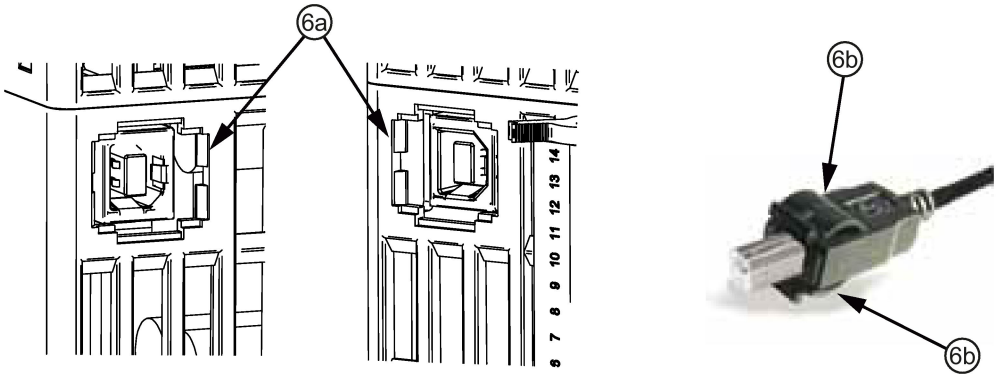


Image 5-3 Mounting/removal: USB connector

5.1.3 PROFINET/Ethernet connector

For use in a hazardous zone, a PROFINET/Ethernet connector with strain relief must be used.

Mounting

Push the connector onto the socket in the housing until the strain relief (5b) snaps into the housing (5a).

Removal

To remove the PROFINET/Ethernet connector, press to release the strain relief (5b) (see Image 5-4 Mounting/removal: Ethernet (Page 141)) and then remove the connector.

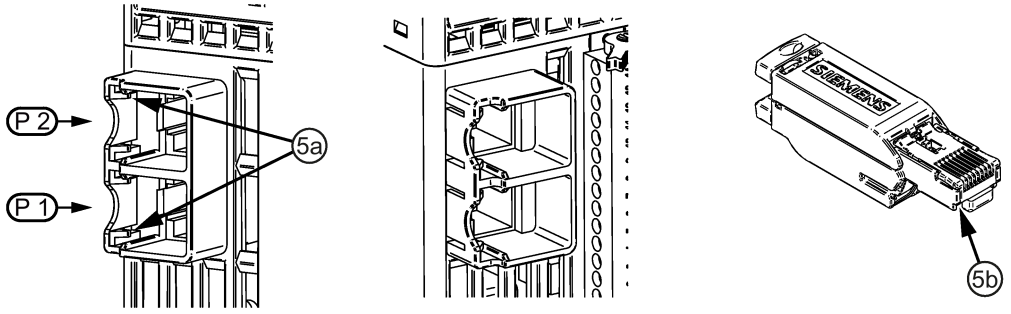


Image 5-4 Mounting/removal: Ethernet

5.2 SITOP UPS1100

⚠ WARNING

Mounting the device in a housing or a control cabinet

The SITOP UPS1100 battery modules are built-in units. They must be mounted in a housing or control cabinet where only qualified personnel have access.

All devices are suitable for direct wall mounting.
Devices 6EP4131-0GB00-0AY0 (1.2 Ah), 6EP4132-0GB00-0AY0 (2.5 Ah), 6EP4133-0GB00-0AY0 (3.2 Ah) and 6EP4133-0JB00-0AY0 (5 Ah) can also be snapped onto a standard mounting rail TH35×15 (EN 60715), and device 6EP4131-0GB00-0AY0 (1.2 Ah) also onto a standard mounting rail TH35×7.5 (EN 60715).

The lower part of the control cabinet or the coolest location in the control cabinet should be chosen as mounting location.

Mounting

See Chapter Dimensions and weight for the holes for wall mounting SITOP UPS1100 (Page 36).

To mount the device on a standard mounting rail, place it with the standard mounting rail guide at the upper edge of the standard mounting rail and snap it in downwards. If this is too difficult, push the device downwards while pressing on the rail as described for "Removal".

Note

The fuses should be inserted in the fuse holder only when commissioning the device (charged batteries).

Removal

To remove the device, pull it forcibly downwards while removing it from the lower edge of the standard mounting rail (see Image 5-5 Removal (example 6EP4133-0GB00-0AY0 (3,2 Ah)) (Page 143)). Then you can remove the device from the upper edge of the standard mounting rail.

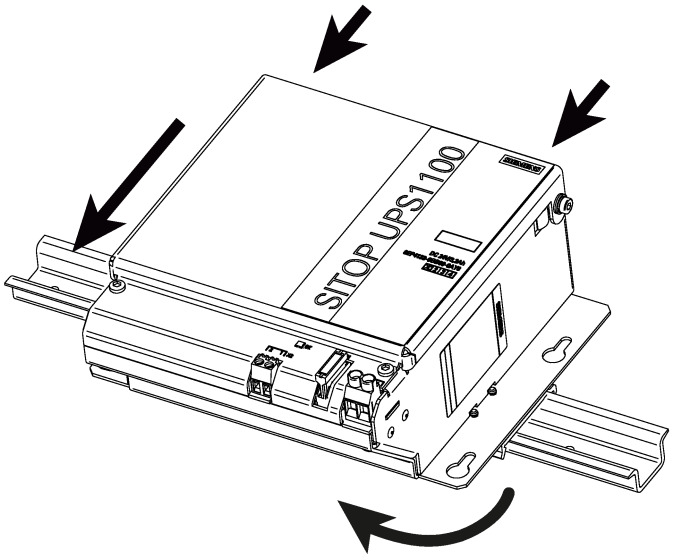


Image 5-5 Removal (example 6EP4133-0GB00-0AY0 (3,2 Ah))

Mounting position, mounting clearances

6

6.1 SITOP UPS1600

6.1.1 Standard mounting position

The device is designed for mounting on standard EN 60715 35×7.5/15 mounting rails. The device must be mounted vertically to ensure proper cooling, and with the input terminals and output terminals at the bottom.

A clearance of at least 50 mm should be maintained above and below the device.

No clearance is required at the side.

Output current as a function of the ambient temperature

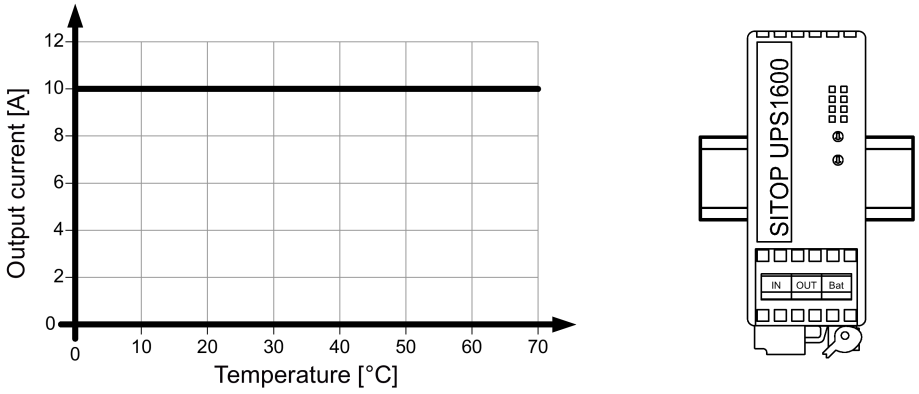


Image 6-1 6EP4134-3AB00-... : Output current in the standard mounting position

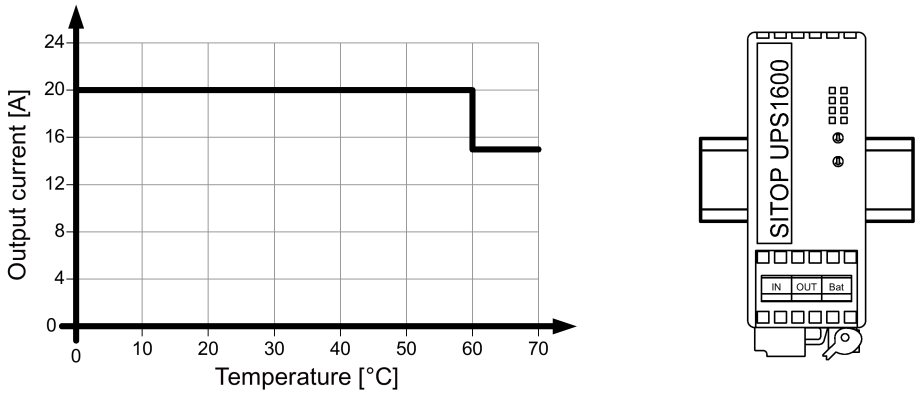


Image 6-2 6EP4136-3AB00-... : Output current in the standard mounting position

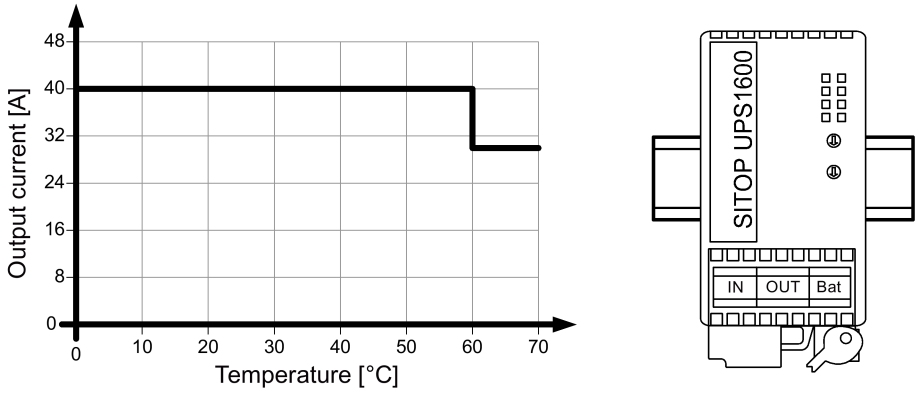


Image 6-3 6EP4137-3AB00-... : Output current in the standard mounting position

6.1.2 Other mounting positions

Not released.

6.2 SITOP UPS1100

6.2.1 Standard mounting position

The device is suitable for the direct wall mounting. Devices 6EP4131-0GB00-0AY0 (1.2 Ah), 6EP4132-0GB00-0AY0 (2.5 Ah), 6EP4133-0GB00-0AY0 (3.2 Ah) and 6EP4133-0JB00-0AY0 (5 Ah) can also be snapped onto a standard mounting rail TH35×15 (EN 60715), and device 6EP4131-0GB00-0AY0 (1.2 Ah), also onto a standard mounting rail TH35×7.5 (EN 60715). It should also be mounted at the coolest point in the control cabinet (e.g. in the lower part of the control cabinet). The device must be mounted vertically in such a way that the terminals are at the bottom.

No clearance is required at the side.

6.2.2 Other mounting positions

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 rail.

All mounting positions have been released, except the following:
For UPS1100 1.2 Ah: Mounting position (2) (see the following diagram)
all other UPS1100: Mounting position (5) (see the following diagram)

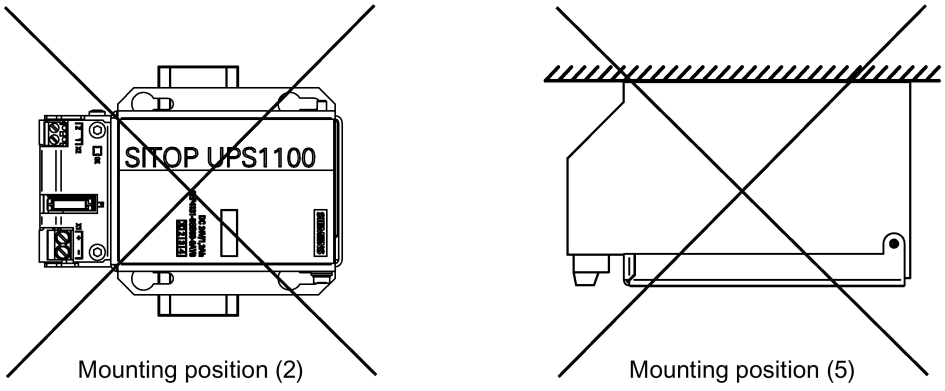


Image 6-4 Mounting positions forbidden for the UPS1100

6.3 Altitude derating

Output current as a function of the altitude derating

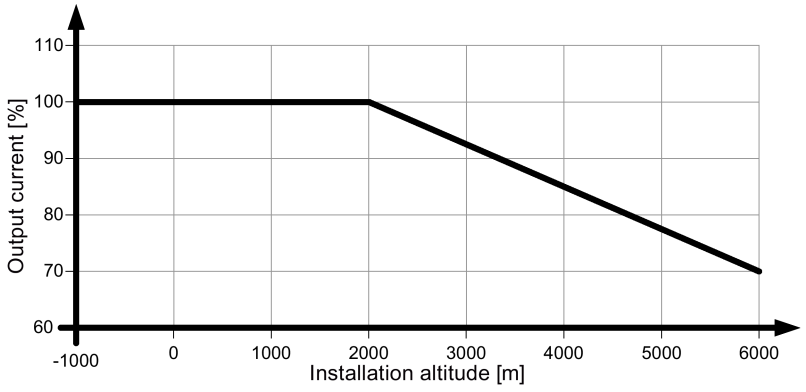


Image 6-5 Altitude derating

Details see chapter Environmental conditions (Page 169)

Installation

7

Note

When installing the devices, the relevant country-specific regulations must be complied with.

The 24 V supply voltage must be SELV in accordance with EN60950-1 and EN50178.

Only qualified personnel are allowed to install the device/system and set it into operation.

The connections must not be attached or detached during operation.

Note

for SITOP UPS1100

The self-discharge rate of the batteries is approx. 3%/month for a temperature of 20° C. This value is temperature dependent and becomes more unfavorable for an increasing temperature, and more favorable for a decreasing temperature.

The fuses should only be inserted in the fuse holder when commissioning the device.

SITOP UPS1100 1.2 Ah is only recommended in conjunction with SITOP UPS1600 10 A.

SITOP UPS1100 2.5 Ah, 3.2 Ah and 5 Ah are only recommended in conjunction with SITOP UPS1600 10 A and 20 A.

When using battery modules without Energy Storage Link, it must be ensured that the selected batteries match the data of the UPS1600 (static and dynamic load current, charge current).

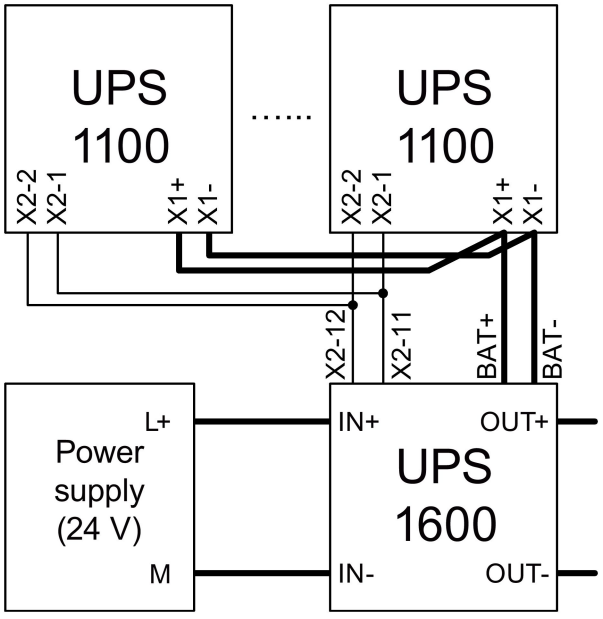


Image 7-1 Wiring

7.1 Connecting the SITOP UPS1600 at its input

SITOP UPS1600 is designed to be connected to a 24 V DC supply. The 24 V supply voltage must be SELV in accordance with EN60950-1 and EN50178.

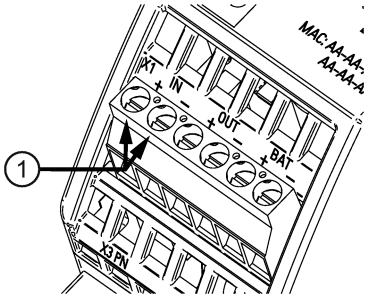


Image 7-2 Input side connection

The 24 V power supply is connected at the "IN+", and "IN-" ① terminals (see Image 7-2 Input side connection (Page 150)).

Cables must be used that are suitable for at least 90 °C (only for applications for UL508).

7.2 Connecting the SITOP UPS1600 at its output

The output of the SITOP UPS1600 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 155)).

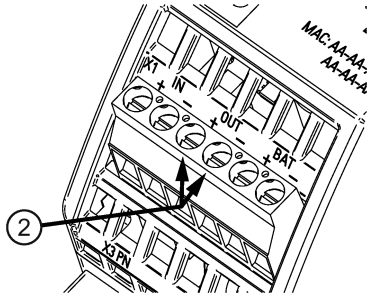


Image 7-3 Output-side connection

The output voltage is connected at the "OUT+" and "OUT–" ② terminals (see Image 7-3 Output-side connection (Page 151)). Ensure that the output cables are dimensioned correctly for the maximum output current rms value and fused accordingly.

The deployed cables must be suitable for temperatures of at least 90° C. (only for applications for UL508)

7.3 Connecting the BAT SITOP UPS1600

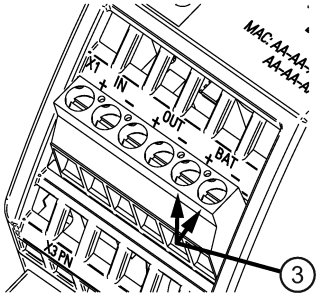


Image 7-4 BAT connection

The "BAT+" and "BAT-" ③ connections (see Image 7-4 BAT connection (Page 151)) are used to connect the SITOP UPS1600 with one or more SITOP UPS1100 battery modules. Ensure that the cables are dimensioned correctly for the maximum output current rms value of the SITOP UPS1600.

For wiring, see Image 7-1 Wiring (Page 150).

Cables must be used that are suitable for at least 90 °C (only for applications for UL508).

Maximum cable length 3 m

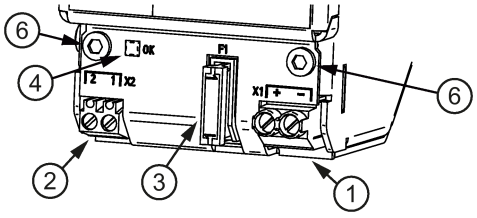
7.4 USB interface

Maximum USB cable length 5 m

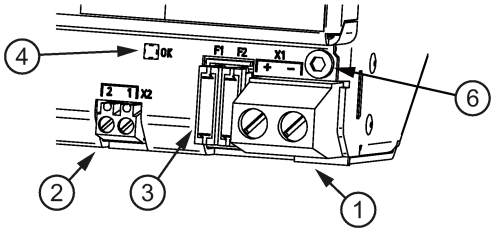
7.5 PROFINET/Ethernet connection

Maximum length of the PROFINET/Ethernet cable 100 m (90 m BASIC- Link plus 2 x 5 m CHANNEL- Link)

7.6 SITOP UPS1100 connections



Connections 1.2 Ah/2.5 Ah/3.2 Ah/5 Ah



Connections 7/12 Ah

Connection X1 ①

The connections "X1+" and "X1-" are used to transfer power between the SITOP UPS1600 and the SITOP UPS1100.

1. Ensure that the cables are dimensioned corresponding to the fuses in the SITOP UPS1100 and the impedances between SITOP UPS1600 and SITOP UPS1100 are the same.
2. Only connect charged batteries with one another.

Connection X2 ②

Connections "X2-1" and "X2-2" serve to transfer data between SITOP UPS1600 and SITOP UPS1100 (see Image 7-1 Wiring (Page 150)).

When several battery modules are used, note the following:

- Up to 6 battery modules of the same type can be connected together in parallel.
- If different battery modules are connected in parallel, relay 2 flashes (battery defective). No calculations with regard to charge and remaining buffer time are performed. The battery modules are not charged, but buffering is possible.
- If more than six battery modules are connected in parallel, relay 2 flashes (battery defective). No calculations with regard to charge and remaining buffer time are performed. Charging and buffering, however, is possible.

7.7 Maintenance

7.7.1 Battery

SITOP UPS1100 devices contain 2 maintenance-free batteries.

Device type	Battery type
6EP4131-0GB00-0AY0 (1.2 Ah)	YUASA NP1,2-12
6EP4132-0GB00-0AY0 (2.5 Ah)	Hawker Energy CYCLON 0810-0075 2.5-12
6EP4133-0GB00-0AY0 (3.2 Ah)	YUASA NP3,2-12 or B.B.Battery BP3,6-12
6EP4133-0JB00-0AY0 (5 Ah)	NEC ALM12V7s
6EP4134-0GB00-0AY0 (7 Ah)	YUASA NP7-12 or B.B.Battery BP7-12
6EP4135-0GB00-0AY0 (12 Ah)	YUASA NP12-12 or B.B.Battery BP12-12

When replacing the batteries, always use batteries with the same batch number (approximately the same charge state).

The rechargeable batteries must be disposed of, discharged according to the applicable regulations.

When storing, installing and operating the buffer batteries, the regulations of VDE 0510 Part 2 / EN 50272-2 or the applicable national regulations must be observed.

The self-discharge rate of the batteries is approx. 3%/month for a temperature of 20° C. This value is temperature dependent and becomes more unfavorable for an increasing temperature, and more favorable for a decreasing temperature.

7.7.2 Battery replacement

See Image 7-5 Maintenance (Page 154) and Image 7-6 Wiring schematic (Page 154)

1. Remove the screws ⑨ using a Torx T10 screwdriver.
2. Open the cover.
3. Press button ⑧ for at least 2 s.

   LED ④ flashes
4. Remove fuse ③
5. Replace the batteries.
6. Press the button for at least 2 s

   LED ④ stops flashing and lights continuously.
7. Insert the fuse.
8. Close the cover (screw).

Pressing the button resets the following functions:

- Operating hours counter
- Buffer time counter
- Summed charge current
- Summed load current
- Calculated capacity

Note

Replace the battery only in normal operation, not in backup operation.

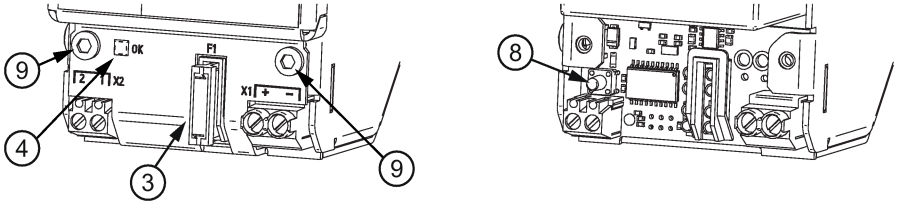
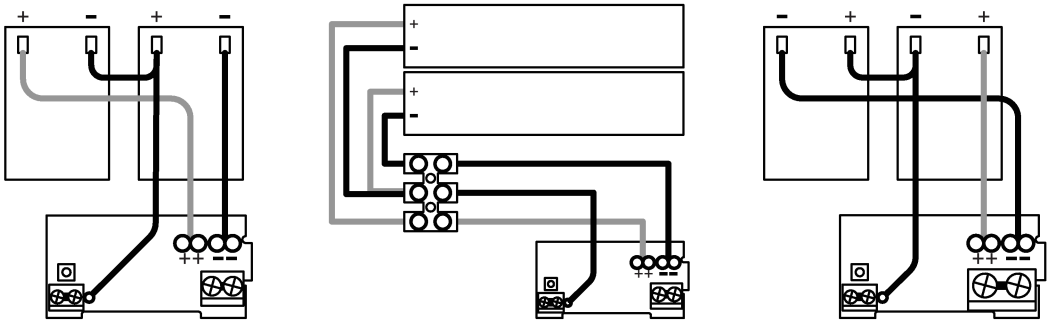


Image 7-5 Maintenance



6EP4131-0GB00-0AY0 1,2 Ah
6EP4133-0GB00-0AY0 3,2 Ah

6EP4132-0GB00-0AY0 2,5 Ah

6EP4133-0JB00-0AY0 5 Ah
6EP4134-0GB00-0AY0 7 Ah
6EP4135-0GB00-0AY0 12 Ah

Image 7-6 Wiring schematic

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

8.1.1 SITOP UPS1600

	6EP4134-3AB00- ... (10 A)	6EP4136-3AB00- ... (20 A)	6EP4137-3AB00- ... (40 A)
Input voltage $U_{in\ rated}$/ range	24 V DC/21 - 29 V		
Connection threshold for buffering • Remark	22.5 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. The connection 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 UPS1100

Charge current: For one connected battery module the max. charge current is 0.3C A, for several battery modules connected in parallel, the charge current is 0.3C A multiplied by the number of batteries connected in parallel, however, limited by the maximum permissible charge current of the UPS1600 (see Chapter 8.2.1).

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

	6EP4131-0GB00- ... (1.2 Ah) 6EP4133-0GB00- ... (3.2 Ah) 6EP4134-0GB00- ... (7 Ah) 6EP4135-0GB00- ... (12 Ah)	**6EP4132-0GB00- ... (2.5 Ah)**	**6EP4133-0JB00- ... (5 Ah)**
at -10 C	-	29.0 V	29.28 V
at 0 C	-	28.6 V	29.52 V
at 10 C	27.8 V	28.3 V	29.16 V
at 20 C	27.3 V	27.9 V	28.8 V
at 30 C	26.8 V	27.5 V	28.8 V
at 40 C	26.6 V	27.2 V	28.8 V
at 50 C	-	26.8 V	27.8 V
at 60 C	-	26.4 V	-

See also

SITOP UPS1600 (Page 157)

Output (Page 157)

8.2 Output

8.2.1 SITOP UPS1600

	6EP4134-3AB00- ... (10 A)	6EP4136-3AB00- ... (20 A)	6EP4137-3AB00- ... (40 A)
Output voltage with normal operation	Input voltage U_{in} approx. - 0.2 V		
Output voltage for buffer mode	27 V DC (no-load); 24 V (50 % rated battery current); 22 V (100 % rated battery current); 18.5 V (deep discharge protection)		
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 one connected battery module the max. charge current is 0.3C A, for several battery modules connected in parallel, the charge current is 0.3C A multiplied by the number of batteries connected in parallel, however, limited by the maximum permissible charge current of the UPS1600.		
End-of-charge voltage	Automatic temperature-controlled setting with the 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 UPS1100 5 Ah, Extra Power is permissible for 1 s/min.		
Charge current	Max. 3 A Automatic setting for UPS1100; otherwise 0.3 A, 0.8 A or 3 A can be selected (by software or jumper (see Table 2-5 Charge current (Page 26)))	Max. 4 A Automatic setting for UPS1100; otherwise 0.8 A, 1.75 A, 4 A can be selected (by software or jumper (see Table 2-5 Charge current (Page 26)))	Max. 5 A Automatic setting for UPS1100; otherwise 0.8 A, 1.75 A, 4 A can be selected (by software or jumper (see Table 2-5 Charge current (Page 26)))
• Remark	The charge current can be automatically reduced if the charge current plus the load current at the UPS1600 results in an overload of the feeding power supply. The charge current can also be reduced if the ambient temperature of the UPS1600 is higher than 40 °C - or if the input voltage at the 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		

8.2.2 SITOP UPS1100

	6EP4131-0GB00-... (1.2 Ah)	6EP4132-0GB00-... (2.5 Ah)	6EP4133-0GB00-... (3.2 Ah)	6EP4133-0JB00-... (5 Ah)	6EP4134-0GB00-... (7 Ah)	6EP4135-0GB00-... (12 Ah)
Output voltage rated value	24 V DC					
Output voltage range	22 - 27 V DC	22 - 27 V DC	22 - 27 V DC	22 - 28.8 V DC	22 - 27 V DC	22 - 27 V DC
Output current rated value	10 A	20 A	20 A	20 A	40 A	40 A
Power boost for 30 ms	30 A	60 A	60 A	60 A	120 A	120 A
Extra Power for 5 s/min	15 A	30 A	30 A	-	60 A	60 A
Extra Power for 1 s/min	-	-	-	30 A	-	-
Battery fuse (plug-in)	15 A / 32 V	25 A / 32 V	25 A / 32 V	25 A/32 V	2 × 25 A/32 V	2 × 25 A/32 V

8.3 Backup times

Output current	6EP4131-0GB00-... (1.2 Ah)	6EP4132-0GB00-... (2.5 Ah)	6EP4133-0GB00-... (3.2 Ah)	6EP4133-0JB00-... (5 Ah)	6EP4134-0GB00-... (7 Ah)	6EP4135-0GB00-... (12 Ah)
1 A	34 minutes	1.7 h	2.5 h	5.2 h	5.4 h	10.3 h
2 A	11 minutes	54.6 minutes	1 h	2.5 h	2.6 h	4.8 h
3 A	9 minutes	32.9 minutes	39 minutes	1.7 h	1.6 h	3 h
4 A	6 min	20.6 minutes	27 minutes	1.25 h	1.2 h	2.3 h
6 A	3.5 minutes	14.3 minutes	17.5 minutes	50.6 minutes	41 minutes	1.4 h
8 A	2 minutes	10.5 minutes	12 minutes	37.8 minutes	28 minutes	1 h
10 A	1 minute	7.2 minutes	9 minutes	30.2 minutes	22 minutes	48.6 minutes
12 A	-	6 minutes	7 minutes	25.1 minutes	17 minutes	40.3 minutes
14 A	-	4.5 minutes	5 minutes	21.6 minutes	15 minutes	33.6 minutes
16 A	-	4.1 minutes	4 minutes	18.8 minutes	12.5 minutes	26 minutes
20 A	-	2.9 minutes	1 minute	12.9 minutes	9 minutes	19.6 minutes
30 A	-	-	-	-	4.6 min	12.1 min
40 A	-	--	-	-	2.8 min	8.5 min

8.4 Efficiency

Table 8- 1 SITOP UPS1600

	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

8.5 Protection and monitoring

Table 8- 2 SITOP UPS1600

	6EP4134-3AB00- ... (10 A)	6EP4136-3AB00- ... (20 A)	6EP4137-3AB00- ... (40 A)
Current limitation Typ.	30 A	60 A	120 A
• Remark	Power boost with 300 % $I_{out\ rated}$ for typ. 30 ms	Power boost with 300 % $I_{out\ rated}$ for typ. 30 ms	Power boost with 300 % $I_{out\ rated}$ for typ. 30 ms
Short-circuit protection	Shutdown after 30 ms		
Reverse polarity protection	With respect to the input voltage U_{in} and with respect to batteries		
Overload/short-circuit indicator	Yes, restart in normal operation		

Table 8- 3 SITOP UPS1100

	6EP4131-0GB00-... (1.2 Ah)	6EP4132-0GB00-... (2.5 Ah)	6EP4133-0GB00-... (3.2 Ah)	6EP4133-0JB00-... (5 Ah)	6EP4134-0GB00-... (7 Ah)	6EP4135-0GB00-... (12 Ah)
Short-circuit protection	Yes, fuse					
Reverse polarity protection	Yes					

8.6 MTBF

	6EP4134-3AB00-... (10 A) 6EP4136-3AB00-... (20 A) 6EP4137-3AB00-... (40 A)
Mean Time Between Failures	SN29500: >320000 hours at 40 °C, rated load, 24-h operation

8.7 Mechanical system

8.7.1 SITOP UPS1600

Table 8- 4 SITOP UPS1600 10 A / 20 A

	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 / BAT	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

	6EP4134-3AB00- ... (10 A)			6EP4136-3AB00- ... (20 A)		
	... -0AY0	... -1AY0	... -2AY0	... -0AY0	... -1AY0	... -2AY0
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 rail mounting	No					
Mounting	Can be snapped onto standard TH35x7,5/15 mounting rails (EN 60715)					

Table 8- 5 SITOP UPS1600 40 A

	6EP4137-3AB00- ... (40 A)		
	... -0AY0	... -1AY0	... -2AY0
Connection system	Screw-type terminal		
Connections / DC input	IN+, IN-: 1 screw terminal each for 0.5 - 16 (4) mm² solid (finely stranded)		
Connections / DC output	OUT+, OUT-: 1 screw terminal each for 0.5 - 16 (4) mm² solid (finely stranded)		
Connections / BAT	BAT+, BAT-: 1 screw terminal each for 0.5 - 16 (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	70 mm	70 mm	70 mm
Height of the housing	138.7 mm	138.7 mm	138.7 mm
Depth of the housing	150 mm	150 mm	150 mm
Installation width	70 mm	70 mm	70 mm
Mounting height	238.7 mm	238.7 mm	238.7 mm
Weight, approx.	0.65 Kg	0.65 Kg	0.7 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 rail mounting	No		
Mounting	Can be snapped onto standard TH35x7,5/15 mounting rails (EN 60715)		

8.7.2 SITOP UPS1100

Table 8- 6 SITOP UPS1100 1.2 Ah / 2.5 Ah / 3.2 Ah

	6EP4131-0GB00- ... (1.2 Ah)	**6EP4132-0GB00- ... (2.5 Ah)**	**6EP4133-0GB00- ... (3.2 Ah)**
Connection system	Screw-type terminal		
Connections / DC input	X1-1, X1-2: 1 screw terminal each for 0.2 - 6 (4) mm² solid (finely stranded)		
Connections / signal terminal	X2-1, X2-2: 1 screw terminal each for 0.14 - 4 (2.5) mm² solid (finely stranded)		
Width of the housing	89 mm	265 mm	190 mm
Height of the housing	130.3 mm	115 mm	169.3 mm
Depth of the housing	106.7 mm	76 mm	78.7 mm
Installation width	89 mm	265 mm	190 mm
Mounting height	145.3 mm	130 mm	184.3 mm
Weight, approx.	1.9 kg	3.7 kg	3.8 kg
Product feature / of the housing / housing that can be lined up next to one another	Yes		
Type of mounting / wall mounting	Yes		
Type of mounting / rail mounting	Yes		
Type of mounting / S7-300 rail mounting	No		
Mounting	Wall mounting, can be snapped onto standard TH35x7,5/15 mounting rails (EN 60715)	Wall mounting, can be snapped onto standard TH35x15 mounting rails (EN 60715)	

Table 8- 7 SITOP UPS1100 7 Ah / 12 Ah

	6EP4133-0JB00- ... (5 Ah)	**6EP4134-0GB00- ... (7 Ah)**	**6EP4135-0GB00- ... (12 Ah)**
Connection system	Screw-type terminal	Screw-type terminal	
Connections / DC input	X1-1, X1-2: 1 screw terminal each for 0.2 - 6 (4) mm² solid (finely stranded)	X1-1, X1-2: 1 screw terminal each for 0.2 - 16 mm² solid/finely stranded	
Connections / signal terminal	X2-1, X2-2: 1 screw terminal each for 0.14 - 4 (2.5) mm² solid (finely stranded)	X2-1, X2-2: 1 screw terminal each for 0.14 - 4 (2.5) mm² solid (finely stranded)	
Width of the housing	189 mm	186 mm	253 mm
Height of the housing	186 mm	186 mm	186 mm
Depth of the housing	112.7 mm	110.3 mm	110 mm
Installation width	189 mm	186 mm	253 mm
Mounting height	201 mm	201 mm	201 mm

	6EP4133-0JB00- ... (5 Ah)	6EP4134-0GB00- ... (7 Ah)	6EP4135-0GB00- ... (12 Ah)
Weight, approx.	3.4 kg	6.1 kg	9.3 kg
Product feature / of the housing / housing that can be lined up next to one another	Yes	Yes	
Type of mounting / wall mounting	Yes	Yes	
Type of mounting / rail mounting	Yes	No	
Type of mounting / S7-300 rail mounting	No	No	
Mounting	Wall mounting, can be snapped onto standard TH35x15 mounting rails (EN 60715)	Wall mounting	

8.8 Dimension drawing

see Section Dimensions and weight (Page 34)

CAD data that can be downloaded from the Internet:

6EP4134-3AB00-0AY0
(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G_KT01_XX_00813)

6EP4134-3AB00-1AY0
(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G_KT01_XX_00816)

6EP4134-3AB00-2AY0
(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G_KT01_XX_00819)

6EP4136-3AB00-0AY0
(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G_KT01_XX_00810)

6EP4136-3AB00-1AY0
(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G_KT01_XX_00807)

6EP4136-3AB00-2AY0
(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G_KT01_XX_00804)

6EP4137-3AB00-0AY0
(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G_KT01_XX_01019)

6EP4137-3AB00-1AY0
(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G_KT01_XX_01022)

6EP4137-3AB00-2AY0
(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G_KT01_XX_01025)

6EP4131-0GB00-0AY0
(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G_KT01_XX_00829)

6EP4132-0GB00-0AY0
(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G_KT01_XX_01013)

6EP4133-0GB00-0AY0
(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G_KT01_XX_00832)

6EP4134-0GB00-0AY0
(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G_KT01_XX_00835)

6EP4135-0GB00-0AY0
(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G_KT01_XX_01016)

6EP4133-0JB00-0AY0
(http://www.automation.siemens.com/bilddb/index.aspx?objKey=G_KT01_XX_01105)

Safety, approvals, EMC

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9.1 Safety

	6EP4134-3AB00- ..., 6EP4136-3AB00- ..., 6EP4137-3AB00- ... 6EP4131-0GB00- ..., 6EP4132-0GB00- ..., 6EP4133-0GB00- ..., 6EP4134-0GB00- ..., 6EP4135-0GB00- ..., 6EP4133-0JB00- ...
Protection class	Class III
Degree of protection (EN 60529)	IP20
Test voltage	See Table 9-1 Test voltage (Page 166)

9.2 Test voltage

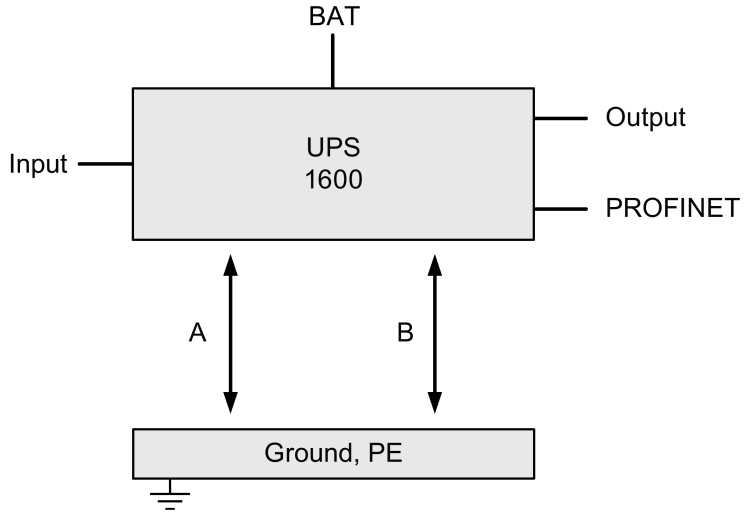

Image 9-1 Test voltage diagram

Only applicable for UPS1600 with PROFINET (-2AY0).

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

Preconditions for performing the field test:

Test (A)

- Connect the input, output, BAT and signaling contact with one another and measure with respect to PE

Test (B)

- Connect all PROFINET cables and measure with respect to PE (input, output, BAT signal connector and PE are connected with each other)

Table 9- 1 Test voltage

	Test time	**Input, output, BAT ↔ PE (A)**	**PROFINET ↔ PE (B)**
Type test	60 s	700 V DC	2200 V DC
	60 s	500 V AC	1500 V AC
Production test	1 s	200 V DC	
	1 s	140 V AC	
Field test	1 s	200 V DC	2200 V DC
	1 s	140 V AC	1500 V AC

Remark:

Tripping current for DC measurement: 0 mA

Tripping current for AC measurement: <100 mA

9.3 Approvals

	6EP4134-3AB00- ... **6EP4136-3AB00- ...** **6EP4137-3AB00- ...**	**6EP4131-0GB00-0AY0** **6EP4132-0GB00-0AY0** **6EP4133-0GB00-0AY0** **6EP4133-0JB00-0AY0** **6EP4134-0GB00-0AY0** **6EP4135-0GB00-0AY0**
CE marking	Yes, (2004/108/EG)	Yes, (2004/108/EG and 2006/66/EG)
UL/cUL approval	cULus-listed (UL 508, CSA 22.2 No. 107.1), File E197259	cURus-Recognized (UL 1778, CSA C22.2 No. 107.1), File E219627
Explosion protection	EPS 13 ATEX 1 607 X IECEx EPS 14.0063X II 3G Ex nA nC IIC T4 Gc cCSAus HazLoc Class I, Div 2, Group A,B,C,D T4	EPS 13 ATEX 1 607 X IECEx EPS 14.0063X II 3G Ex nA IIC T4 Gc cCSAus HazLoc Class I, Div 2, Group A,B,C,D T4 6EP4133-0JB00-0AY0: No explosion protection certification
CB certification	Yes, (IEC 60950-1)	Yes, (IEC 60950-1)
Marine approvals	GL	GL

9.4 EMC

		6EP4134-3AB00- ... (10 A) 6EP4136-3AB00- ... (20 A) 6EP4137-3AB00- ... (40 A) 6EP4131-0GB00-0AY0 (1.2 Ah) 6EP4132-0GB00-0AY0 (2.5 Ah) 6EP4133-0GB00-0AY0 (3.2 Ah) 6EP4134-0GB00-0AY0 (7 Ah) 6EP4135-0GB00-0AY0 (12 Ah)	6EP4133-0JB00-0AY0 (5 Ah)
Electrostatic discharge	EN 61000-4-2	6 kV contact, 8 kV air	5 kV contact, 8 kV air
Electromagnetic fields	EN 61000-4-3	80 - 1000 MHz 10 V/m 1400 - 2000 MHz 10 V/m 2000 - 2700 MHz 10 V/m 895 - 905 MHz and 1.89 GHz 10 V/m	
High-speed transient disturbance variables (burst)	EN 61000-4-4	2 kV at DC input/output	
Surge voltages	EN 61000-4-5	500 V symmetrical/unsymmetrical at the DC input/output, 1 kV unsymmetrical at signal connections	
High-frequency fields	EN 61000-4-6	10 V; 0.15 - 80 MHz	
Magnetic fields	EN 61000-4-8	Not applicable	
Emitted interference	EN 55022	Class B	
Generic standards	EN 61000-6-2	Immunity for industrial environments	
	EN 61000-6-3	Emission for residential areas	

Environmental conditions

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Table 10- 1 UPS1600

	6EP4134-3AB00- ... (10 A)	6EP4136-3AB00- ... (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		
	Remark: The service life of the UPS1100 battery modules (decrease to 50% of the original capacity) depends on the battery temperature, at approximately 20° C: 4 years, 30 °C: 2 years, 40 °C: 1 year		
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		
Air 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 Image 6-5 Altitude derating (Page 148) Storage: • 1080 - 660 hPa (-1000 - 3500 m)		

Table 10- 2 UPS1100

	6EP4131-0GB00-0AY0 (1.2 Ah) **6EP4133-0GB00-0AY0 (3.2 Ah)** **6EP4134-0GB00-0AY0 (7 Ah)** **6EP4135-0GB00-0AY0 (12 Ah)**	**6EP4132-0GB00-0AY0 (2.5 Ah)**	**6EP4133-0JB00-0AY0 (5 Ah)**
Ambient temperature	0 ... 40 °C for natural convection (self convection) 1.2 / 3.2 / 7 Ah: From product version 3: -15 ... 50 °C for natural convection (self convection) 12 Ah: From product version 2: -15 ... 50 °C for natural convection (self convection)	-40 ... 60 °C for natural convection (self convection)	-20 ... 50 °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		
	Remark: The service life of the UPS1100 battery modules (decrease to 50% of the original capacity) depends on the battery temperature, at approximately 20° C: 4 years, 30 °C: 2 years, 40 °C: 1 year		
Transport and storage temperature	-20 ... 50 °C	-40 ... 60 °C	-40 ... 60 °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, without condensation		
Degree of pollution	2		
Mechanical stressing 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		

	6EP4131-0GB00-0AY0 (1.2 Ah) **6EP4133-0GB00-0AY0 (3.2 Ah)** **6EP4134-0GB00-0AY0 (7 Ah)** **6EP4135-0GB00-0AY0 (12 Ah)**	**6EP4132-0GB00-0AY0 (2.5 Ah)**	**6EP4133-0JB00-0AY0 (5 Ah)**
Damaging gases	Tested according to: • EN 60068-2-42 sulfur dioxide • EN 60068-2-43 hydrogen sulfide		
Air 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 Image 6-5 Altitude derating (Page 148) Storage: • 1080 - 660 hPa (-1000 - 3500 m)		

Environment

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The devices are in conformance with RoHS.

As a rule, only non-silicon precipitating materials are used.

Disposal guidelines

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

Note

The rechargeable batteries must be disposed of, discharged according to the applicable regulations.

Service & Support

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Technical support

Technical support for all IA/DT products can be accessed through the following communication channels:

- Phone: + 49 (0) 911 895 7222
- E-Mail (mailto:support.automation@siemens.com)
- Internet:
  Online support request form (http://www.siemens.de/automation/support-request)

Technical documentation on the Internet

Operating instructions and manuals for SITOP are available in the Internet:
Operating instructions/manuals (http://www.siemens.de/sitop/manuals)

SITOP power supply homepage

General news about our power supplies is available in the Internet at the SITOP homepage:
SITOP (http://www.siemens.de/sitop)

Information material

SITOP information can be downloaded from the Internet:
Information and download center (http://www.siemens.de/sitop-infomaterial)

CAx data

2D/3D data and circuit diagram macros can be downloaded from the Internet:
Siemens image database (http://www.siemens.de/sitop-cax)

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

SITOP Selection Tool

Simply and quickly select the optimum the power supply or DC-UPS:
SITOP Selection Tool (http://www.siemens.de/sitop-selection-tool)

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:

- On the Internet (http://www.siemens.de/automation/partner)
- In Catalog CA 01