

SITOP DC UPS uninterruptible power supplies

DC UPS with capacitors

Technical specifications (continued)

Product	SITOP UPS500S 15 A	SITOP UPS500P 7 A
Power supply, type	Basic unit 15 A	Basic unit 7 A, IP65
Article No.	6EP1933-2EC41 (with USB interface and 2.5 kW) 6EP1933-2EC51 (with USB interface and 5 kW)	6EP1933-2NC01 (with USB interface and 5 kW) 6EP1933-2NC11 (with USB interface and 10 kW)
Input "In L+ / In M" for normal operation	Controlled DC voltage	Controlled DC voltage
Rated voltage $U_{in rated}^{1)}$	24 V DC	24 V DC
Voltage range	22 ... 29 V	22.5 ... 29 V
Connection threshold for buffering	22 ... 25.5 V DC in 0.5 V increments, adjustable Factory setting: 22.5 V DC \pm 0.1 V	22.5 V DC \pm 0.1 V
Rated current $I_{in rated}$	15.2 A + approx. 2.3 A with empty energy storage (capacitor)	7 A + approx. 2 A with empty energy storage (capacitor)
Mains buffering		
Mains buffering or buffering times without add-on modules	6EP1933-2EC41: 15 A for 3 s or 10 A for 6 s or 5 A for 15 s or 2 A for 38 s 6EP1933-2EC51: 15 A for 9 s or 10 A for 15 s or 5 A for 31 s or 2 A for 76 s	7 A for 49 s or 5 A for 68 s or 3 A for 108 s or 1 A for 351 s
Mains buffering or buffering times with expansion modules	For longer buffering times, see table	–
On/off control circuit	External isolated NO contact (loading max. 15 V DC/ max. 10 mA) is required; opening the control circuit terminates buffer mode.	–
Methods of setting the buffering time	Adjustable using DIP switches to a maximum buffering time up to forced shutdown at approx. 7 V internal capacitor voltage (output remains constant at 24 V up to that point) or to a time limit of 5 ... 315 s (in 10 s increments) if the energy content is sufficient for the required current	–
Interruption	Adjustable with DIP switch, either: • Interruption of the output voltage despite returning input voltage for 5 s following expiry of set buffering time to support automatic restarting of Industrial PCs or • No forced interruption on expiry of the set buffer time	–
Output "Out L+ / Out M" for normal operation		
Rated voltage $U_{out rated}$	24 V DC	24 V DC
Voltage range	23.3 ... 24.7 V DC or 24 V DC \pm 3%	23.3 ... 24.7 V DC or 24 V DC \pm 3%
Startup delay	approx. 600 ms	approx. 600 ms
Voltage rise	ca. 25 ms	ca. 25 ms
Output current I_{out}	0 ... 15 A	0 ... 7 A
Dynamic current with overload	Electronic current limitation to typically 25 A for approx. 200 ms, then electronic shutdown of the output with automatic restart attempts (approx. 20 s intervals between restart attempts)	Electronic shutdown at typ. 30 A, automatic restart after 20 s
Dynamic current with short-circuit	Electronic current limitation to typically 25 A for approx. 110 ms, then electronic shutdown of the output with automatic restart attempts (approx. 20 s intervals between restart attempts)	Electronic shutdown at typ. 30 A, automatic restart after 20 s

¹⁾ All SITOP 24 V DC power supplies are permissible without restriction

Technical specifications (continued)

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Output "Out L+ / Out M" for buffer mode		
Rated voltage $U_{out\ rated}$	24 V DC	24 V DC
Approximate voltage range	23.3 ... 24.7 V DC or 24 V DC \pm 3%	23.3 ... 24.7 V DC or 24 V DC \pm 3%
Output current I_{out}	0 ... 15 A	0 ... 7 A
Dynamic current with overload	Electronic current limitation to typically, 25 A for approx. 200 ms, then electronic shutdown of the output (restart following return to normal operation)	Electronic shutdown at typ. 30 A, automatic restart after 20 s
Dynamic current with short-circuit	Electronic current limitation to typically, 25 A for approx. 110 ms, then electronic shutdown of the output (restart following return to normal operation)	Electronic shutdown at typ. 30 A, automatic restart after 20 s
Charging current	Approx. 1 A (factory setting), adjustable to 1 A or 2 A (charging is carried out with closed and open on/off circuit)	2 A permanently set
Charging time after a discharge	6EP1933-2EC41: 110 s with 1 A, 54 s with 2 A 6EP1933-2EC51: 205 s with 1 A, 120 s with 2 A	Approx. 300 s
Charging time with add-on modules	For longer charging times, see table	Not applicable
Efficiency / heat loss		
At $U_{out\ rated}$, $I_{out\ rated}$ approx.	97.5 % / 9 W	96.5 % / 5.2 W
Protection and monitoring		
Reverse polarity protection	against polarity reversal on input voltage	against polarity reversal on input voltage
Overload protection	Electronic shutdown of the output in accordance with "dynamic current with overload" in normal operation (automatic restart attempts) or in buffer mode (restart following return to normal operation)	Electronic shutdown of the output in accordance with "dynamic current with overload" in normal operation (automatic restart attempts) or in buffer mode (restart following return to normal operation) Thermal overload protection
Short-circuit protection	Electronic shutdown of the output in accordance with "dynamic current with short-circuit" in normal operation (automatic restart attempts) or in buffer mode (restart following return to normal operation), built-in (inaccessible) 20 A fuse.	Electronic shutdown of the output in accordance with "dynamic current with overload" in normal operation (automatic restart attempts) or in buffer mode (restart following return to normal operation) Thermal overload protection
Signaling		
Normal operation	Green LED (OK) and isolated relay contact (changeover contact) ¹⁾	Green LED (OK)
Buffer mode (capacitor supplies load alone or in addition to the PS in the case of overload)	Green LED (Bat) and isolated relay contact (changeover contact) ¹⁾	Yellow LED (Bat)
Alarm (buffer not ready, or prewarning from < 12 V capacitor voltage)	Red LED (alarm) and isolated relay contact (changeover contact) ¹⁾	Red LED (Alarm)
*Capacitor charge > 85 % ²⁾	Second green LED (Bat > 85 %) and isolated NO contact closed (off position = open)	Second green LED (Bat > 85 %)
USB port		
	Output of all alarm signals and receipt of the "Remote Timerstart" signal. Technical design: Specification 2.0 with full speed, i.e. 2 Mbps Supplied with +5 V ("self powered"). Required connection to the PC: Commercially available 4-core shielded cable, 90 ohms, max. 5 m, USB series "A" connector to PC and USB series "B" connector to DC UPS	Output of all alarm signals and receipt of the "Remote Timerstart" signal. Technical design: Specification 2.0 with full speed, i.e. 2 Mbps Supplied with +5 V ("self powered"). Required connection to the PC: see connector set

¹⁾ Permissible contact rating: 60 V DC/1 A or 30 V AC/1 A.

²⁾ 85% with regard to residual capacity still available depending on aging. The original capacity (= capacity when new) reduces by only approx. 20 % within 8 years of operation even at a high ambient temperature of the device of +50 °C, for example, so that 80 % residual capacity still remains. The backup times also reduce by approximately 20 % in 8 years (at +50 °C) with small currents (up to approximately 5 A), and by approximately 30 % with high load currents (over 10 A).

Note: The lower the ambient temperature, the smaller the capacity reduction (approximately one half per 10 °C lower ambient temperature, that is at +40 °C, for example, only 10 % capacity reduction in 8 years)

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Control signals		
On/off control signal	Buffering is terminated by opening the control circuit or by means of DIP switches on the device (DIP switch must be in "Off" position). All other functions are retained.	Not applicable
"Remote Timerstart" via USB port	Starts mains buffering for the set buffering time	Starts mains buffering for the set buffering time
Safety		
Primary/secondary isolation	No	No
Protection class	Class III (ext. circuit and power supply unit: SELV in accordance with EN 60950 required)	Class III (ext. circuit and power supply unit: SELV in accordance with EN 60950 required)
EMC		
Emitted interference	Radio interference suppression according to EN 55022, limit-value curve B	Radio interference suppression according to EN 55022, limit-value curve B
Interference immunity	Interference immunity according to EN 61000-6-2	Interference immunity according to EN 61000-6-2
Ambient conditions		
Ambient temperature in operation	0 ... +60 °C with natural convection	0 ... +55 °C with natural convection
Transport/storage temperature	-40 ... +70 °C	-40 ... +70 °C
Degree of protection (EN 60529)	IP20	IP65
Humidity class	Rated conditions in accordance with EN 60721, climate class 3K3 (relative humidity 5% ... 85% and absolute humidity 1 g/m ³ ... 25 g/m ³ ; no condensation)	Rated conditions in accordance with EN 60721, climate class 3K3 (relative humidity 5% ... 85% and absolute humidity 1 g/m ³ ... 25 g/m ³ ; no condensation)
Approvals		
CE	Yes	Yes
UL/cUL (CSA) approval	cULus-listed (UL 508, CSA C22.2 No. 107.1) File E197259	-
Mechanics		
Input connections 24 V DC	2 screw terminals for 1 ... 4 mm ² /17 ... 11 AWG	See connector set ¹⁾
Output connections 24 V DC	4 screw terminals for 1 ... 4 mm ² /17 ... 11 AWG	See connector set ¹⁾
Connections for control circuit and alarm signals	10 screw terminals for 0.5 ... 2.5 mm ² /20 ... 13 AWG	Not applicable
USB port	Yes	Yes
Dimensions (W x H x D) in mm	120 x 125 x approx. 125	400 (without connector) x 80 x 80 470 (without connector) x 80 x 80
Required clearances	50 mm above and 50 mm below the device	50 mm above and 50 mm below the device
Weight	Approx. 1.0 kg	Approx. 1.9 kg Approx. 2.2 kg
Installation	Can be snapped onto standard mounting rail EN 60715 35x7.5/15	Screw mounting

¹⁾ "The connector set contains connection plugs for input and output and pre-assembled USB cables 2 m long (connector set not included in the scope of delivery of SITOP UPS500P); MLFB: 6EP1975-2ES00

Product	SITOP UPS501S
Power supply, type	Expansion module
Article No.	6EP1935-5PG01
Mechanics	
Connections	Can be easily connected to SITOP UPS500S via a user-friendly plug-in system
Dimensions (W x H x D) in mm	Approx. 70 x 125 x 125
Weight	Approx. 0.7 kg
Installation	Can be snapped onto standard mounting rail EN 60715 35x7.5/15

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DC UPS with capacitors

Ordering data

Article No.

SITOP UPS500S

- DC UPS basic device 15 A
- with USB interface and 2.5 kW
 - with USB interface and 5 kW

6EP1933-2EC41
6EP1933-2EC51

SITOP UPS501S

Expansion module 5 kW for
UPS500S

6EP1935-5PG01

SITOP UPS500P

- DC UPS basic device 7 A
- with USB interface and 5 kW
 - with USB interface and 10 kW

6EP1933-2NC01
6EP1933-2NC11

Accessories

Article No.

Connector set for UPS500P

consisting of connector for input
and output with pre-assembled
USB cable (2 m long)

6EP1975-2ES00

More information

The SITOP Selection Tool offers detailed selection guidance according to criteria such as the required backup time, nominal current or peak current. Available at:
<http://www.siemens.com/sitop-selection-tool>