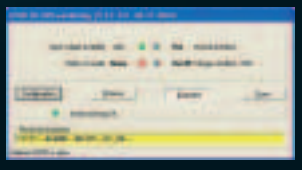
Compact and communicative:
SITOP DC-UPS for safe, reliable 24 V in the event of a power failure

Advantages at a glance

- Several different versions: DC-UPS 24 V / 6 A / 15 A and 40 A modules with a choice of either serial (only 6 A, 15 A) or USB interface
- Battery module from 1.2 to 12 Ah
- Compact design
- Simple attachment to DIN rail
- High degree of safety and availability through monitoring the availability, battery cable, aging status and charge status
- Long battery life thanks to integrated battery management
- Accurate settings thanks to DIP switches: battery switch-on threshold, end-of-charge voltage, charging current, buffer time
- Support for automatic restarting of industrial PCs thanks to specifiable turn-off behavior

PC interfaces and software

- Software tool supports postprocessing and PC response. Software executes under WinNT 4.0, Win2000 and WinXP.
- Software tools can be downloaded from www.siemens.com/sitop



Power supplies • November 2004

sitop POWER

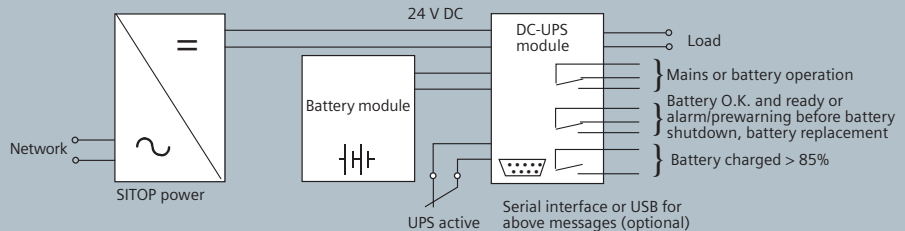
Power failures or voltage fluctuations can cause a plant downtime and cost a lot of time and money. Compact SITOP® DC-UPS modules from 6 to 40 A and battery modules from 1.2 to 12 Ah offer reliable and economical protection for 24 V applications. With a width of 50 mm or 102 mm the DC-UPS modules are small, but wow! Extensive monitoring and protective functions ensure high availability. Buffer time and battery parameters can be set as needed via DIP switches. And the interfaces turn the DC-UPS in mini format into a real communications professional that can be easily integrated in the PC world by means of a software tool.

SIEMENS

	Technical specifications	SITOP DC-UPS module 24 V / 6 A	SITOP DC-UPS module 24 V / 15 A	SITOP DC-UPS module 24 V / 40 A
Input data	Input voltage U_{in} rated / range	**24 V DC** / 22 to 29 V		
	Cut-in threshold for battery factory setting / range	22.5 V DC +/- 0.1 V / 22 to 25.5 V DC, specifiable in 0.5 V increments		
	Input current I_E rated	6 A (+ approx. 0.6 A when battery empty)	15 A (+ approx. 1 A when battery empty)	40 A (+ approx. 2,5 A when battery empty)
	Mains buffering			
	– with 3.2 Ah battery module at approx. +25°C	10 min. at 6 A; 20 min. at 4 A; 45 min. at 2 A	45 sec. at 15 A; 1.5 min. at 10 A; 13 min. at 5 A	45 sec. at 15 A; 1.5 min./10 A;
	– with 7 Ah battery module at approx. +25°C	30 min. at 6 A; 45 min. at 4 A; 150 min. at 2 A	7 min. at 15 A; 15 min. at 10 A; 38 min. at 5 A	(2 x 7 Ah) 2 min at 40 A; 2 min at 20 A;
	– with 12 Ah battery module at approx. +25°C	60 min at 6 A; 150 min at 4 A; 240 min at 2 A	17 min at 15 A; 30 min at 10 A; 90 min at 5 A	(2 x 12 Ah) 11 min at 40 A; 11 min at 20 A;
	- Specifiable range via DIP switches	5, 15, 25, 35, 45, 55, etc. up to 635 seconds or max. buffer time		
Output data	- Output voltage U_{out} for normal operation	Input voltage U_E minus approx. 0.5 V		
	- Output voltage U_{out} for battery operation, approx.	27 V DC (no-load); 24 V (50 % nominal battery current); 22 V (100% nominal battery current); 18.5 V (exhaustive discharge protection)		
	- Output current	**0 A to 6 A**	**0 to 15 A**	**0 to 40 A**
	Output +bat/-bat for normal operation	I-U charging characteristic (first rapid charging current, then constant voltage for charge retention)		
	- End-of-charge voltage: factory setting / range	27.0 V DC +/- 0.1 V / 26.3 to 29.3 V DC specifiable in 0.1 V increments		
	- Charging current: factory setting / range	Approx. 0.4 A / 0.2 A or 0.4 A, selectable	Approx. 0.7 A / 0.35 A or 0.7 A selectable	Approx. 2 A / 1 A or 2 A selectable
	Efficiency (nominal operation) / power loss	Approx. 95% / Approx. 7 watts	Approx. 96% / approx. 14 watts	Approx. 97% / approx. 32 watts
Protection and monitoring	Polarity reversal protection	Against input voltage U_E and against batteries		
	Overcurrent / short-circuit protection	Electr. current limiting to between 1.05 and 1.4 x I_{Rated} for approx. 80 ms / 1.5 to 3 x I_{Rated} for approx. 20 ms, then electronic shutdown of the output with automatic restart tests		
	Exhaustive discharge protection	Automatic shutdown when battery voltage less than approx. 19 V		
	Normal operation / battery operation	LED green, floating changeover contact set to "24 V DC o.k." / LED yellow, floating changeover contact set to "Bat"		
	No battery backup (wire break, battery volt. < 20.4 V)	LED red, floating changeover contact set to "Alarm"		
	Battery replacement required	LED red, flashing at approx. 0.25 Hz, floating changeover contact switching at 0.25 Hz		
	Battery load status (more than 85% charged)	Second LED green and floating NO contact closed (at position > 85%)		
	Control signals			
	On / Off control signal via floating NO contact	Opening the contact ends backup operation resp. the battery is switched off at output		
	Remote timer start via serial interface	Starts mains buffering for specified backup time		
	Serial interface (6EP1931-2DC31 and -2EC31 only)			
	Technical specifications	PC-capable, 8N1 transmission and reception, 9600 baud / 8 data bits / 1 stop bit / no parity bit		
	Required connection to PC	1:1 continuous 9-pole sub D extension cable (plug / socket)		
	USB interface (6EP1931-2DC31 and -2EC41 only)			
	Technical specifications	PC-capable, specification 2.0 with full speed, i.e. 2 Mbit/s. Supplied with +5 V by DC-UPS ("self-powered")		
	Required connection to PC	Standard 4-core shielded cable, 90 ohms, max. 5 m, USB Series "B" connector to DC-UPS		
General	Degree of noise suppression (EN 55022) / interference immunity	Class B (noise immunity to EN 61000-6-2)		
	Safety class (EN 60950)	Safety class III (SELV voltage through SITOP power supply unit)		
	Type of protection (EN 60529)	IP 20		
	UL/cUL (CSA) listed	UL 508, CSA 22.2		
	Ambient temperature / transport and storage temperature	0 to +60°C (climatic category 3K3 to EN 60721-3-3) / -40°C to +85°C		
	Dimensions (W x H x D) in mm	50 x 125 x approx. 125 (required clearance: 50 mm at top and 50 mm at bottom)		102 x 125 x approx. 125
	Weight, approx.	0.4 kg (with interface: 0.45 kg)		1,1 kg (with interface: 1,15 kg)
	Order No.			
	Without interface	6EP1931-2DC21	6EP1931-2EC21	6EP1931-2FC21
	with serial interface	6EP1931-2DC31	6EP1931-2EC31	–
	with USB	6EP1931-2DC41	6EP1931-2EC41	6EP1931-2FC41

SITOP battery module 24V/	2.5 A/1.2 Ah	10 A/3.2 Ah	20 A/7 Ah	25 A/12 Ah	10 A/2.5 Ah high temp.
Battery type	**Maintenance-free lead-gel batteries**				**Maintenance-free pure lead battery**
Recommended end-of-charge volt. (stand-by use)	27.3 V (20°C); 26.8 V (30°C); 26.6 V (40°C)				27.9 V (20°C); 27.2 V (40°C); 26.4V (60°C)
Max. permissible charging current	0.3 A	0.8 A	1.75 A	3 A	5 A
Safety class (EN 60950)	Class III (SELV voltage through SITOP power supply unit and DC-UPS module)				
UL / cUL (CSA) recognized	UL/cUL recognized (UL 1778, CSA 22.2 No. 1071-95), File E219627				
Type of protection (EN 60529)	IP 00				
Short-circuit protection / battery protection	Battery protection / valve control				
Ambient temperature	+ 5 to + 40°C	+ 5 to + 40°C	+ 5 to + 40°C	+ 5 to + 40°C	- 40 to + 60°C
Transport and storage temperature	- 20 to + 50°C	- 20 to + 50°C	- 20 to + 50°C	- 20 to + 50°C	- 40 to + 60°C
Self-discharge rate	Approx. 3% per month at battery temperature of 20°C (increases when temperature goes up)				
Dimensions (Width x Height x Depth)	98 x 116 x 108	190 x 151 x 82	186 x 168 x 121	253 x 118 x 121	265 x 151 x 91
Weight	Approx. 1.6 kg	Approx. 3.2 kg	Approx. 6 kg	Approx. 9 kg	Approx. 3.8 kg
Installation on 35 mm DIN rail	EN 50022-35 x 15/7.5	EN 50022-35 x 15/7.5	Not possible	Not possible	EN 50022-35 x 15/7.5
Installation via 4 keyholes	For hooking in with four M4 bolts (bolts not included in scope of supply)				
Order No.	6EP1935-6MC01	6EP1935-6MD11	6EP1935-6ME21	6EP1935-6MF01	6EP1935-6MD31

Power supplies for mains buffering DC-UPS: circuit diagram



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