SIEMENS

24V DC Uninterruptible Power Supply – High-performance, communicative and integrated in TIA

If a power failure occurs, not only the AC power goes out but also the 24 V DC supply and thus the complete automation system as well. Costly downtime and undefined system states can be the result. The new DC UPS modules prevent this scenario by providing reliable backup of the 24 volts for hours. They also offer new possibilities for diagnostics and system integration. The SITOP UPS1600 offers comprehensive functions, open communication via USB or Ethernet/Profinet and is the first UPS that is fully integrated in TIA.

The DC UPS modules complement 24 V power supplies from SITOP for uninterrupted rated currents up to 20 A from the UPS1100 battery modules based on maintenance-free gel cell batteries. Via the integrated electronics, the UPS1600 automatically detects the type of battery and charges it at the optimal, temperature-controlled charging characteristics. The intelligent battery management system monitors all relevant data, including battery modules connected in parallel. The battery status and various values, such as the voltage, current or residual capacity, are output via the Ethernet/Profinet interface. Even remote diagnostics is possible thanks to an integrated web server.
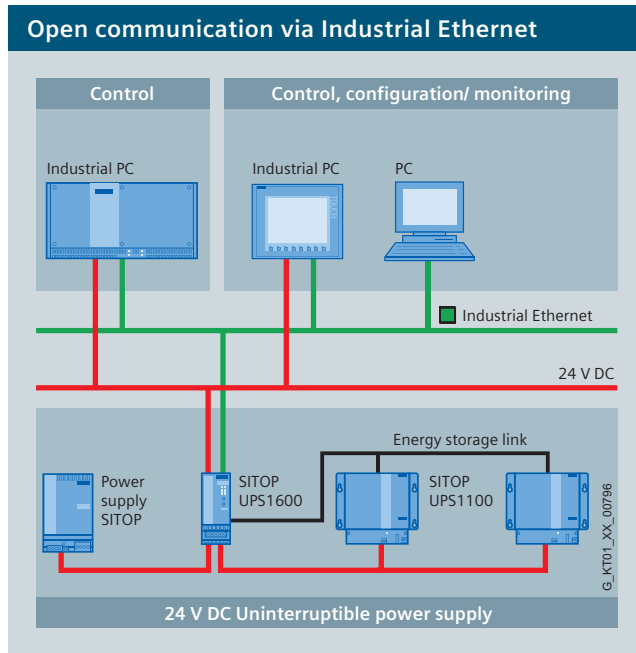
The slim UPS1600 DC UPS module features dynamic overload behavior, which can be used to activate industrial PCs, for example. The high charging current quickly restores the buffering capacity following a power failure. And for use in stand-alone mode, the UPS can be activated from battery without input voltage, for example, to start generators.

The benefits at a glance

- Compact DC UPS modules SITOP UPS1600 24V DC / 10 A and 20 A with digital inputs and outputs, optionally with USB or two Ethernet/Profinet interfaces
- Battery modules SITOP UPS1100 24 V DC / 3.2 Ah and 7 Ah with maintenance-free gel cell batteries and integrated electronics
- Intelligent battery management with automatic detection of battery modules and selection of the optimal, temperature-controlled charging characteristics. Monitoring of operational readiness, battery feed, age and charge level.
- All diagnostic data and alarms available via USB and Ethernet/Profinet
- High dynamic overload capacity: 3 times rated current for 30 ms and 1.5 times rated current for 5 sec. per minute
- High charging currents
- Start from battery modules when mains voltage is unavailable
- Remote monitoring with integrated web server
- SITOP UPS Manager (free software download) supports configuration and monitoring with PC-based systems
- Full integration in TIA: Convenient engineering in the TIA Portal, S7 function blocks for integration in user programs and WinCC faceplates

Answers for industry.

SITOP UPS1600 – the first open...

Whether open or system-integrated, the communicative DC UPS can be integrated into any automation solution. Fully flexible data communication is performed via USB or Industrial Ethernet/Profinet. Special configuration and visualization software makes it easy to integrate the DC UPS in both PC and PLC based systems. You benefit from the high performance of the SITOP UPS1600 in any case.

Open communication via Industrial Ethernet

Control	Control, configuration/ monitoring
Industrial PC	Industrial PC PC

Industrial Ethernet

24 V DC

Energy storage link

Power supply SITOP   SITOP UPS1600   SITOP UPS1100

24 V DC Uninterruptible power supply

G_KT01_XX_00796

The advantages of the SITOP UPS1600: Integration in PC-based systems

- Easy configuration and monitoring via SITOP UPS Manager, runs on all common Windows systems

- Comprehensive diagnostic capabilities using the status of the DC UPS and the connected energy storage

- Connection via USB or Ethernet

- Targeted shutdown of multiple PCs (master-slave principle)

- Closing of software applications

- Integrated OPC server

- Remote monitoring via integrated web server, access to device configuration information and operating data, for example, mains/buffer mode, output power, charging current and battery status

SITOP UPS1600 in PC-based automation systems:
Configuration and monitoring is performed via the PC software, SITOP UPS Manager. If a power failure occurs, the 24 V DC buffer and the integration of the DC UPS in Industrial Ethernet enables controlled shutdown of multiple PCs in master-slave mode.

Remote monitoring via the web server:
The integrated web server provides access to all relevant power supply data, of course, only with appropriate identification.

Configuration and monitoring with the SITOP UPS Manager:
The free software tool supports easy configuration of the UPS in the PC system and also visualization of the various states of the UPS, for example, in the form of trend charts.
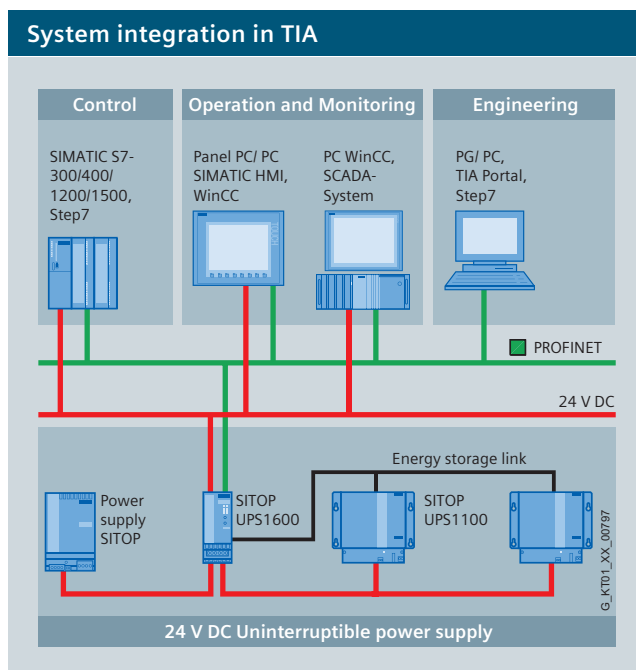
Technical data

DC USV modules	SITOP UPS1600 24 V DC/ 10 A	SITOP UPS1600 24 V DC/ 20 A
Order numbers		
without interface	6EP4134-3AB00-0AY0	6EP4136-3AB00-0AY0
with USB interface	6EP4134-3AB00-1AY0	6EP4136-3AB00-1AY0
with 2 Ethernet/ Profinet interfaces	6EP4134-3AB00-2AY0	6EP4136-3AB00-2AY0
Input data		
Rated input voltage $U_{in\ rated/\ range}$	**24 V DC**/ 21 ... 29 V	
Connection threshold for buffering	22.5 V DC ± 3% (factory setting), adjustable: 21 V, 21.5 V, 22 V, 22.5 V, 23 V, 24 V, 25 V DC or via software.	
Input current $I_{in\ rated}$	approx. 14 A during max. charge current (3 A)	approx. 25 A during max. charge current (4 A)
Mains buffering		
Adjustable range using a rotary coding switch	0.5 min, 1 min, 2 min, 5 min, 10 min, 20 min, max. buffering time or via software	
Behavior on restoration of input voltage after buffering time	Interruption of U_{out} for 5 s for the automatic restart of PCs or optionally no interruption	
On/off control circuit (via external floating NO contact)	by opening the circuit the buffer mode is terminated	
Start from battery during missing input voltage (via external floating NO contact)	by closing the circuit the buffer mode is started	
Energy storage		
Connectable batteries	– coded Siemens types SITOP UPS1100 (max. 6 via Energy Storage Link) – uncoded Siemens types 6EP1935-6M... – other manufacturers	
Output data		
Output voltage in normal operation	Rated input voltage U_{in} less approx. 0.2 V	
Output voltage in buffering mode	27 V DC (no load); 24 V (50% battery rated current); 22 V DC (100% battery rate current); 18.5 V DC (exhaustive discharge protection)	
Output +Bat/-Bat in normal operation	I-U charging characteristic (first rapid charging current, then constant voltage for charge retention)	
End-of-charge voltage	automatic temperature-managed adjustment with battery modules SITOP UPS1100	
Rated output current • Powerboost for 30 ms • Extra Power for 5 s/min	**0 ... 10 A** 30 A 15 A	**0 ... 20 A** 60 A 30 A
Charging current	max. 3 A automatic adjustment with UPS1100; otherwise selectable 0.3 A, 0.8 A, 3 A	max. 4 A automatic adjustment with UPS1100; otherwise selectable 0.8 A, 1.75 A, 4 A
Efficiency on normal operation and loaded battery	>= 95%	>= 95%
Protection and monitoring		
Polarity reversal protection	against reversal on input voltage U_{in} and against batteries	
Overload / short-circuit protection	yes, restart in normal operation	
Signaling		
Normal operation/Buffering mode	LED 1 (O.K./BAT) green/ yellow and floating changeover contact 1	
Charging status (over 85% charged)	LED 2 (BAT.>85%) green and floating changeover contact 3	
Alarm (not ready for buffering)	LED 3 (Alarm) red and floating changeover contact 2	
Battery status	LED 4 (BAT.FAULT)) red and floating changeover contact 2: Batterie defect, yellow: selected buffer time not ensured, yellow flashing: over temperature	
PROFINET Interface	LED 5 (SF) green and LED 6 (RUN)	
Ethernet	LED 7 (P1) green/yellow and LED 8 (P2) green/yellow, Link and Activity	
General details		
Radio interference level (EN 55022) / noise immunity	Class B / Noise immunity to EN 61000-6-2	
Protection class	Class III (ext. circuit and power-supply unit: SELV in accordance with EN 60950 required)	
Degree of protection (EN 60529)	IP20	
Ambient temperature during operation (natural convection)	-25 ... +70 °C (Derating from +60°C)	
Transport/storage temperature	-40 ... + 85 °C	
Dimensions (W x H x D) in mm	50 x 125 x 125	
Weight approx.	0.4 kg without interface, 0.42 kg with USB, 0.45 kg with Ethernet/PROFINET interfaces	
Installation	Snaps onto DIN rail DIN EN 50022-35x15/7.5	
Approvals	CE, cULus, C-Tick; KCC; GL, ABS, ATEX	

Technical data

Battery modules	SITOP UPS1100 24 V DC, 3.2 Ah	SITOP UPS1100 24 V DC, 7 Ah
For SITOP UPS1600	**10 A**	**10 A and 20 A**
Order number	6EP4133-0GB00-0AY0	6EP4134-0GB00-0AY0
Recommended end-of-charge voltage (automatic setting from SITOP UPS1600):	26.4...27.3 V DC (> +20 °C), 27.3...29.0 V DC (< +20 °C)	
Charging current	max. 0.8 A	max. 1.75 A
Rated output voltage	24 V DC, 22...27.0 V DC (no load)	
Rated output current	15 A	30 A
Integral battery fuse	15 A/32 V	30 A/32 V
Signaling	LED green: battery ok., green flashing: defect or warning, off: battery off, no communication	
Degree of protection (EN 60529)	IP00	
Ambient temperature	-10...+50 °C	
Transport/storage temperature	-40...+85 °C	
Service life (when capacity falls to 50% of original capacity), depending on battery temperature, approx.	+20 °C: 4 years +30°C: 2 years, +40°C: 1 year, +50 °C: 0.5 years	
Installation	Standard rail or wall mounting	Wall mounting
Dimensions (W x H x D) in mm	190 x 169 x 79.5	186 x 186 x 110.5
Weight approx.	3.8 kg	6.1 kg
Certifications	CE, cULus, C-Tick; KCC; GL, ABS, ATEX	

Buffer times			
Load current ...	1 A	2.6 h	5.4 h
	2 A	1 h	2.6 h
	3 A	39.3 min	1.6 h
	4 A	27.1 min	1.2 h
	6 A	17.5 min	41 min
	8 A	12.1 min	28.6 min
	10 A	9 min	21.8 min
	12 A		17.3 min
	14 A		15.1 min
	16 A		12.5 min
	20 A		9.1 min

...and system-integrated DC UPS

System integration in TIA

Control	Operation and Monitoring	Engineering
SIMATIC S7-300/400/1200/1500, Step7	Panel PC/ PC SIMATIC HMI, WinCC / PC WinCC, SCADA-System	PG/ PC, TIA Portal, Step7

PROFINET

24 V DC

Power supply SITOP / SITOP UPS1600 / Energy storage link / SITOP UPS1100

24 V DC Uninterruptible power supply

G_KT01_XX_00797

SITOP UPS1600 in Totally Integrated Automation:
Engineering is simple via the TIA Portal. If a power failure occurs, the 24 V DC buffer and the integration of the DC UPS in Profinet enables the PLCs to be brought to a defined state independent of one another. The function blocks of SIMATIC S7-300, 400, 1200 and 1500 are available for this. The comprehensive diagnostic data of the power supply can be visualized by various devices, for example, via UPS faceplates.

Engineering in the TIA Portal:
The integration of the DC UPS into Profinet is simple and reliable.

Engineering in the TIA Portal:
The UPS configuration is also easy to perform, because the configuration data of UPS1600 and UPS1100 are stored in the TIA Portal.
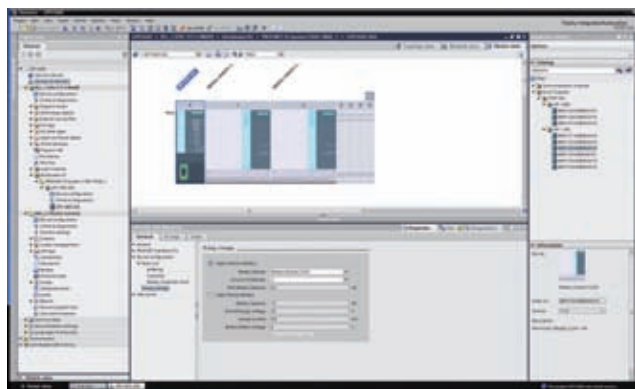
Advantages of the SITOP UPS1600: System integration

- Full integration in TIA saves time and money in planning and operation

- Convenient engineering of SITOP DC UPS in the TIA Portal

- Fast selection of products and network integration in Profinet

- Comprehensive device configuration

- Comprehensive diagnostic capabilities using the power supply status

- Easy integration in STEP 7 user programs with function blocks for S7-300/400/1200/1500 (free download)

- Fast integration in the HMI with "UPS faceplates" for SIMATIC Panels and SIMATIC WinCC (free download)

Faceplates for diagnostics in WinCC:
Monitoring is quickly provided with prefabricated SITOP UPS1600 faceplates. All relevant data of the DC UPS and the battery can be seen at a glance. Alarm messages, for example, if buffer readiness is not available, are also generated, which saves additional programming work.

Additional information

More information on SITOP DC UPS:
www.siemens.com/sitop-ups

Information material for download:
www.siemens.com/sitop-infomaterial

The SITOP Selection Tool for selecting the appropriate
power supply:
www.siemens.com/sitop-selection-tool

Operating instructions as download:
www.siemens.com/sitop/manuals

CAx data (2D, 3D, circuit diagram macro) as download:
www.siemens.com/sitop-cax

Electronic ordering via the Internet with the Industry Mall:
www.siemens.com/industrymall

Your personal contact partner is listed at:
www.siemens.com/automation/partner

www.siemens.com/automation