



SITOP UPS1600

Brochure 09/2013

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

If a power failure occurs, not only does the AC power go out but also the 24 V DC supply and thus the complete automation system as well. Costly downtimes and undefined system states can be the result. DC uninterruptible power supplies prevent this scenario by providing reliable backup of the DC voltage for hours while also providing diagnostics and system integration. The new SITOP UPS1600 offers even more possibilities for system integration with comprehensive functions and open communication via USB or Ethernet/PROFINET – the first DC UPS with these interfaces, allowing it to fully integrate into projects in TIA Portal.

The DC UPS modules complement 24 V DC 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 by means of a secure network is possible thanks to an integrated web server. The device status of the UPS1600 along with the network connection can be easily monitored in the SINEMA Server network management software.

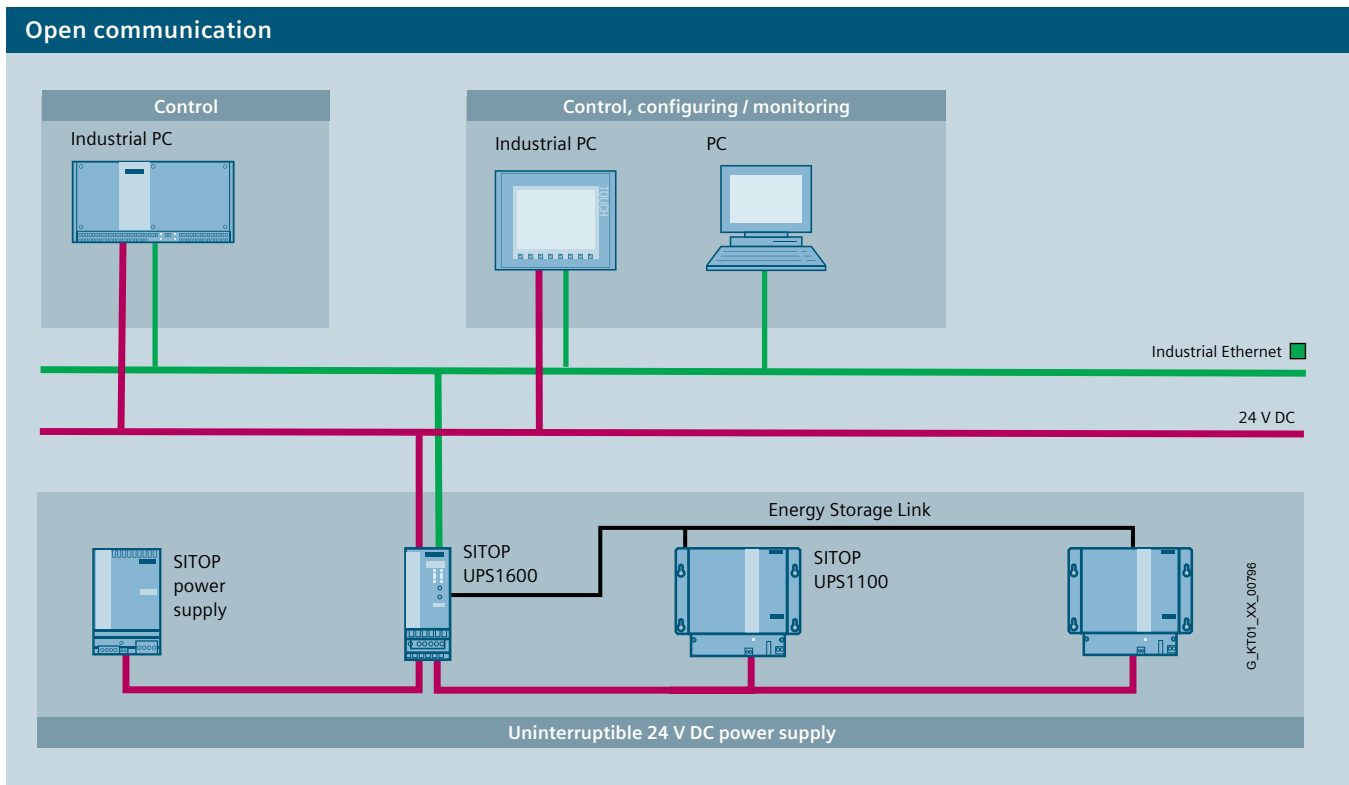
The slim UPS1600 DC UPS module features dynamic overload response, which can be used to activate industrial PCs, for example. The high charging current quickly restores the buffering capacity following a power failure. For use in stand-alone mode, the UPS can be activated from the battery, for example, to start generators.

The benefits at a glance

- Compact DC UPS modules SITOP UPS1600 24 V DC / 10 A and 20 A with digital inputs and outputs, optionally with USB or Ethernet/PROFINET interfaces with 2 ports
- Battery modules SITOP UPS1100 24 V DC / 1.2 Ah, 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 connection, aging 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
- Cold 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

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. This means you benefit from the high performance of the SITOP UPS1600 in any case.



The advantages of SITOP UPS1600 through integration in PC-based systems

- Easy configuration and monitoring via SITOP UPS Manager, runs on all common Windows systems
- Comprehensive diagnostic capabilities using the UPS status 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 (available soon)
- Remote monitoring via integrated UPS 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 system:

Configuration and monitoring takes place via SITOP UPS Manager software. If a power failure occurs, the 24 V DC buffer and the integration of the DC UPS in Industrial Ethernet enable 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 user credentials.






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 a wide variety of states of the UPS, even in the form of trend charts.

Technical specifications

		
DC UPS modules	SITOP UPS1600 24 V/ 10 A	SITOP UPS1600 24 V/ 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 $U_{in \text{ rated/Range}}$	24 V DC/ 21 ... 29 V	
Connection threshold for buffering	22.5 V DC \pm 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 $I_{in \text{ rated}}$	Approx. 14 A for max. charging current (3 A)	Approx. 25 A for max. charging current (4 A)
Mains buffering		
Adjustable range using 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 the automatic restart of PCs or optionally no interruption	
On/off control circuit (via external isolated NO contact)	by opening the circuit the buffer mode is terminated	
Starting from battery with input voltage missing (by means of external isolated NO contact)	by closing the circuit the buffer mode is started	
Energy storage units		
Connectable batteries	<ul style="list-style-type: none"> – coded Siemens types SITOP UPS1100 (max. 6 over Energy Storage Link) – non-coded Siemens types 6EP1935-6M... – other manufacturers of lead-acid or pure lead batteries 	
Output data		
Output voltage in normal operation	Rated input voltage U_{in} less approx. 0.2 V 27 V DC (no load); 24 V DC (50% battery rated current);	
Output voltage in buffering mode	22 V DC (100% battery rated current); 18.5 V DC (exhaustive discharge protection)	
Output +Bat/-Bat in normal operation	I-U charging characteristic (first constant charging current, then charge retention)	
End-of-charge voltage	Automatic temperature-specific setting with SITOP UPS1100 battery modules	
Output current – rated value • Power boost 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. 4A automatic adjustment with UPS1100; otherwise selectable 0.8 A, 1.75 A, 4 AA
Efficiency for normal operation and charged battery	> 97.3%	> 97.5%
Protection and monitoring		
Reverse polarity protection	against input voltage U_{in} and against batteries	
Overload / short-circuit protection	Yes, restart in normal operation	
Signaling		
Normal operation/buffer mode	LED 1 (OK/BAT) green/yellow and isolated changeover switch 1	
Charging status (over 85% charged)	LED 2 (BAT>85%) green and isolated changeover switch 3	
Alarm (not ready for buffering)	LED 3 (Alarm) red and isolated changeover switch 2	
Battery status	LED 4 (BAT.FAULT) red and isolated changeover switch 2: Battery defective, yellow: selected buffering time not assured, yellow flashing: Overtemperature	
PROFINET interface (versions ...-2AY0)	LED 5 (SF) green and LED 6 (RUN)	
Ethernet (versions ...-2AY0)	LED 7 (P1) green/yellow and LED 8 (P2) green/yellow, link and activity	
General data		
Radio interference level (EN 55022) / noise immunity	Class B / Noise immunity to EN 61000-6-2	
Safety class	Class III (ext. circuit and power supply unit: SELV voltage to EN 60950 is required)	
Degree of protection (EN 60529)	IP20	
Ambient temperature during operation with 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; available soon: CB, cCSAus Class I Div 2, ATEX, GL, ABS	

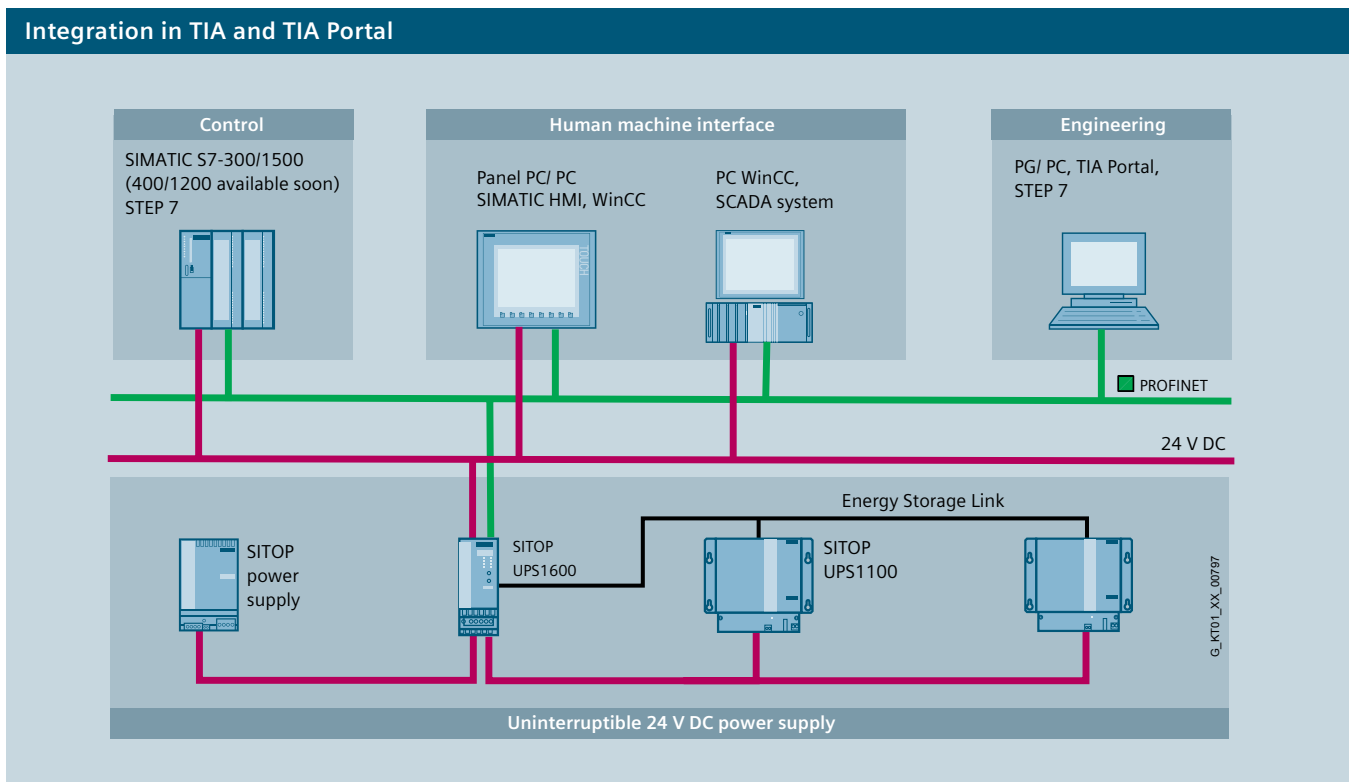
Technical specifications

			
Battery modules	SITOP UPS1100 24 V/ 1.2 Ah	SITOP UPS1100 24 V/ 3.2 Ah	SITOP UPS1100 24 V/ 7Ah
For SITOP UPS1600	10 A	10 A and 20 A	10 A and 20 A
Order number	6EP4131-0GB00-0AY0	6EP4133-0GB00-0AY0	6EP4134-0GB00-0AY0
Recommended end of charge voltage (set automatically by SITOP UPS1600):	26.4...27.3 V DC (> +20 °C), 27.3...29.0 V DC (< +20 °C)		
Charging current	max. 0.36 A	max. 0.96 A	max. 2.1 A
Rated output voltage	24 V DC, 22 ... 27.0 V DC (no load)		
Rated output current	10 A	20 A	40 A
Integral battery fuse	15 A	25 A	2 x 25 A
Signaling	LED green: Battery OK Flashing green: Error 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	Standard rail or wall mounting	Wall mounting
Dimensions (W x H x D) in mm	89 x 130 x 107	190 x 169 x 79,5	186 x 186 x 110.5
Weight, approx.	1.9 kg	3.8 kg	6.1 kg
Certification	CE, cULus; available soon: CB, cCSAus Class I Div 2, ATEX, GL, ABS		

Buffer times				
at load current ...	1 A	24.5 min	2.6 h	5.4 h
	2 A	15,5 min	1 h	2:6 h
	3 A	9 min	39.3 min	1.6 h
	4 A	6.5 min	27.1 min	1.2 h
	6 A	3.5 min	17.5 min	41 min
	8 A	2 min	12.1 min	28.6 min
	10 A	1 min	9 min	21.8 min
	12 A	–	7 min	17.3 min
	14 A	–	5 min	15.1 min
	16 A	–	4 min	12.5 min
	20 A	–	1 min	9.1 min

Technical specifications apply for rated input voltage and +25°C ambient temperature (if not otherwise specified). Determination of the buffering times is based on the discharge period of new and completely charged battery modules until shutdown of the DC UPS.

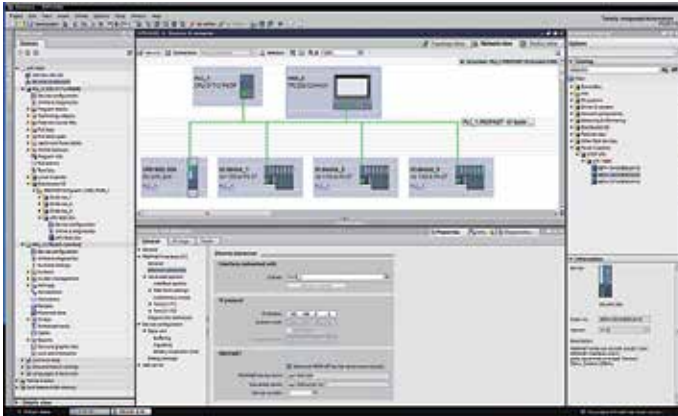
...and system-integrated DC UPSV



SITOP UPS1600 in Totally Integrated Automation: Engineering takes place via the TIA Portal. If a power failure occurs, the 24V 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. Function blocks for SIMATIC S7-300 and 1500 (400 and 1200 available soon) are available for this purpose. The comprehensive diagnostic data of the power supply can be visualized by various devices, for example, via UPS faceplates.

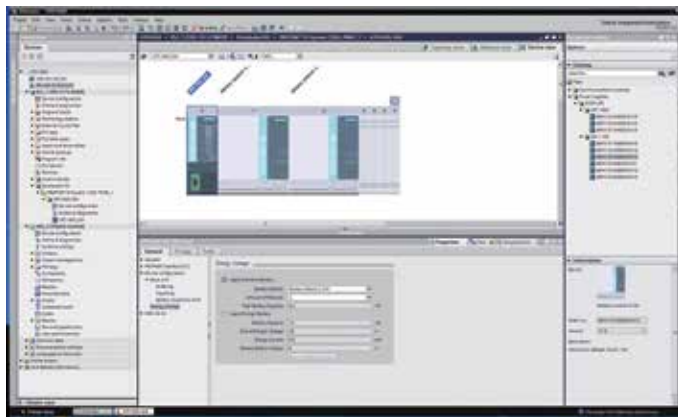
Advantages of the SITOP UPS1600 through system integration

- 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 S7-300/1500 (400/1200 available soon), free download
- Fast integration in the HMI with “UPS faceplates” for SIMATIC Panels and SIMATIC WinCC (free download)



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 extremely user-friendly, because the configuration data of UPS1600 and UPS1100 are stored in the TIA Portal.



Faceplates for diagnostics in WinCC:

Monitoring is quickly provided with prefabricated SITOP UPS1600 faceplates. All relevant operating data and diagnostic data of the DC UPS and the battery can be seen at a glance. Even alarm messages, such as missing buffer readiness are generated without time-consuming programming.

Get more information

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

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

Using the SITOP Selection Tool to select the appropriate power supply:
www.siemens.com/sitop-selection-tool

www.siemens.com/sitop/manuals
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

Industrial Security

Siemens provides automation and drive products with industrial security functions that support the secure operation of plants or machines. They are an important component in a holistic industrial security concept. With this in mind, our products undergo continuous development. We therefore recommend that you keep yourself informed with respect to our product updates. Please find further information and newsletters on this subject at:
<http://support.automation.siemens.com>

To ensure the secure operation of a plant or machine it is also necessary to take suitable preventive action (e.g. cell protection concept) and to integrate the automation and drive components into a state-of-the-art holistic industrial security concept for the entire plant or machine. Any third-party products that may be in use must also be taken into account. Please find further information at:
<http://www.siemens.com/industrialsecurity>

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