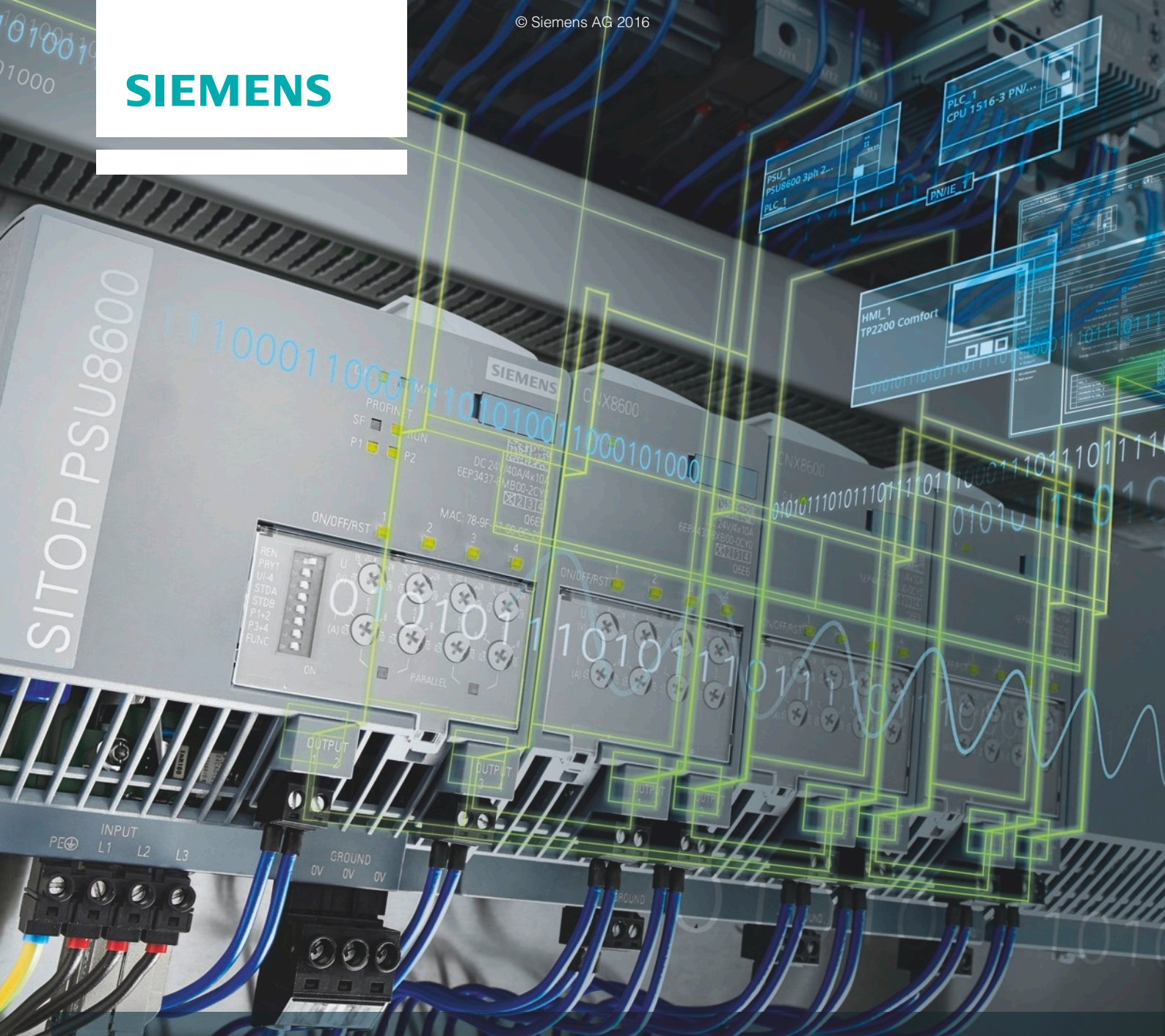
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SIEMENS



SITOP
Power Supply

SITOP

Catalog
KT 10.1

Edition
2016

siemens.com/sitop

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Related catalogs

Industrial Controls IC 10
SIRIUS

PDF (E86060-K1010-A101-A6-7600)



Motion Control PM 21
SIMOTION, SINAMICS S120 & SIMOTICS
Equipment for Production Machines

E86060-K4921-A101-A3-7600



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Products for
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Industry Mall
Information and Ordering Platform
in the Internet:

www.siemens.com/industrymall



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SITOP power supply

SITOP



Catalog KT 10.1 · 2016

Supersedes:
Catalog KT 10.1 · 2015

Refer to the Industry Mall for current updates of this catalog:
www.siemens.com/industrymall

The products contained in this catalog can also be found in the Interactive Catalog CA 01.
Article No.: E86060-D4001-A510-D6-7600

Please contact your local Siemens branch.

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PEFC
PEFC/04-31-1404

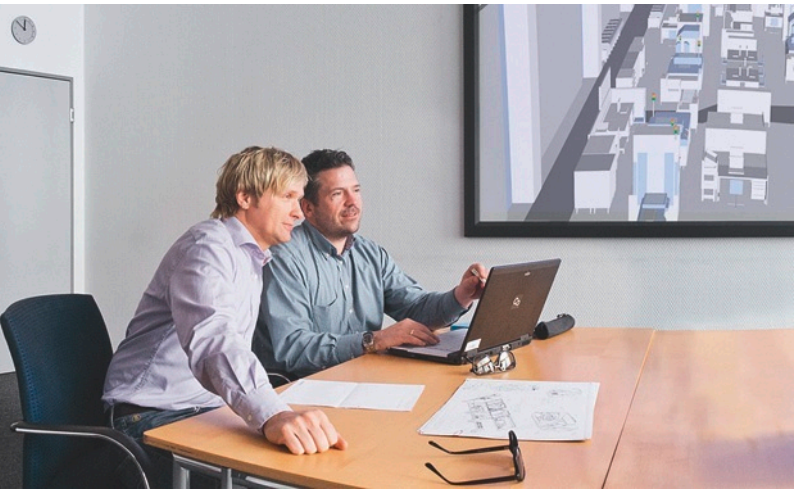
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www.pefc.org

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THE INTERNATIONAL CERTIFICATION NETWORK

The products and systems described in this catalog are manufactured/distributed under application of a certified quality management system in accordance with DIN EN ISO 9001 (Certified Registration No. 000656 QM08). The certificate is recognized by all IQNet countries.

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Answers for industry.

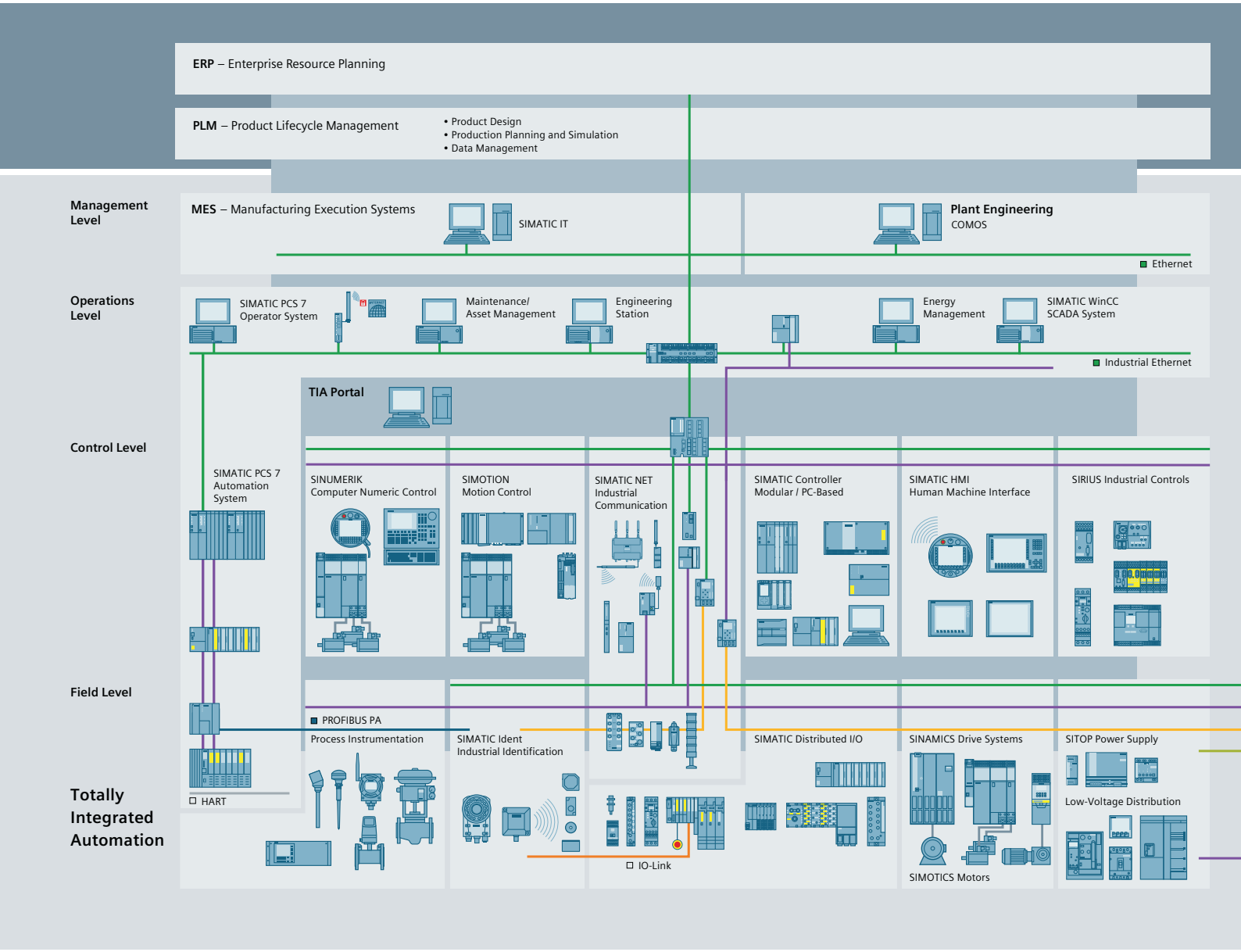
Integrated technologies, vertical market expertise and services for greater productivity, energy efficiency, and flexibility.

Siemens is the world's leading supplier of innovative and environmentally friendly products and solutions for industrial companies. End-to-end automation technology and industrial software, solid market expertise, and technology-based services are the levers we use to increase our customers' productivity, efficiency and flexibility.

We consistently rely on integrated technologies and, thanks to our bundled portfolio, we can respond more quickly and flexibly to our customers' wishes. With our globally unmatched range of automation technology, industrial control and drive technology as well as industrial software, we equip companies with exactly what they need over their entire value chain – from product design and development to production, sales and service. Our industrial customers benefit from our comprehensive portfolio, which is tailored to their market and their needs.

Market launch times can be reduced by up to 50% due to the combination of powerful automation technology and industrial software. At the same time, the costs for energy or waste water for a manufacturing company can be reduced significantly. In this way, we increase our customers' competitive strength and make an important contribution to environmental protection with our energy-efficient products and solutions.

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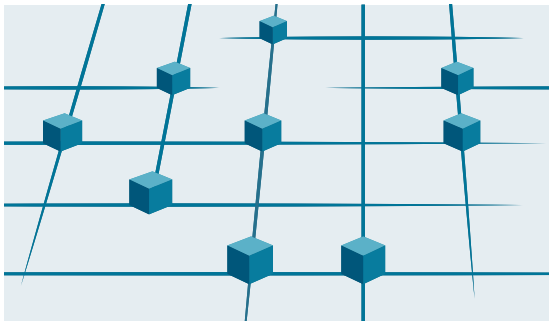


Efficient automation starts with efficient engineering.

Totally Integrated Automation: Efficiency driving productivity.

Efficient engineering is the first step toward better production that is faster, more flexible, and more intelligent. With all components interacting efficiently, Totally Integrated Automation (TIA) delivers enormous time savings right from the engineering phase. The result is lower costs, faster time-to-market, and greater flexibility.

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Totally Integrated Automation
Efficient interoperability of all automation components



A unique complete approach for all industries

As one of the world's leading automation suppliers, Siemens provides an integrated, comprehensive portfolio for all requirements in process and manufacturing industries. All components are mutually compatible and system-tested. This ensures that they reliably perform their tasks in industrial use and interact efficiently, and that each automation solution can be implemented with little time and effort based on standard products. The integration of many separate individual engineering tasks into a single engineering environment, for example, provides enormous time and cost savings.

With its comprehensive technology and industry-specific expertise, Siemens is continuously driving progress in manufacturing industries – and Totally Integrated Automation plays a key role.

Totally Integrated Automation creates real value added in all automation tasks, especially for:

- **Integrated engineering**
  Consistent, comprehensive engineering throughout the entire product development and production process
- **Industrial data management**
  Access to all important data occurring in productive operation – along the entire value chain and across all levels
- **Industrial communication**
  Integrated communication based on international cross-vendor standards that are mutually compatible
- **Industrial security**
  Systematic minimization of the risk of an internal or external attack on plants and networks
- **Safety Integrated**
  Reliable protection of personnel, machinery, and the environment thanks to seamless integration of safety technologies into the standard automation

Making things right with Totally Integrated Automation

Totally Integrated Automation, industrial automation from Siemens, stands for the efficient interoperability of all automation components. The open system architecture covers the entire production process and is based on end-to-end shared characteristics: consistent data management, global standards, and uniform hardware and software interfaces.

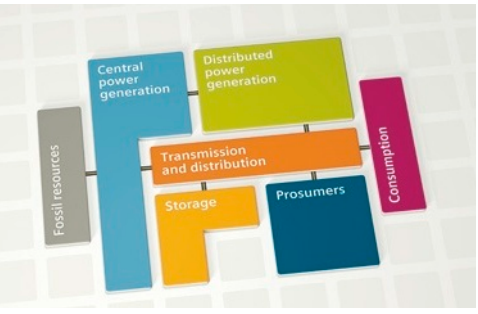
Totally Integrated Automation lays the foundation for comprehensive optimization of the production process:

- Time and cost savings due to efficient engineering
- Minimized downtime due to integrated diagnostic functions
- Simplified implementation of automation solutions due to global standards
- Better performance due to interoperability of system-tested components

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Totally Integrated Power
We bring power to the point – safely and reliably.



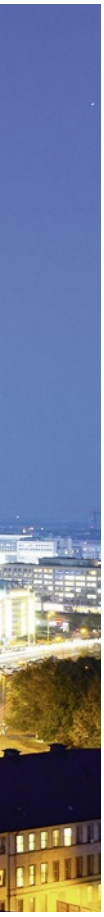
Comprehensive answers for power distribution in complex energy systems – from Siemens

Efficient, reliable, safe: These are the demands placed on electrification and especially power distribution. And our answer – for all application areas of the energy system – is Totally Integrated Power (TIP). It's based on our comprehensive range of products, systems, and solutions for low and medium voltage, rounded out by our support throughout the entire lifecycle – from planning with our own software tools to installation, operation, and services.

Smart interfaces allow linking to industrial or building automation, making it possible to fully exploit all the optimization potential of an integrated solution. This is how we provide our customers around the world with answers to their challenges. With highly efficient, reliable, and safe power distribution, we lay the foundation for sustainable infrastructure and cities, buildings, and industrial plants. We bring power to the point – wherever and whenever it is needed.

More information: www.siemens.com/tip

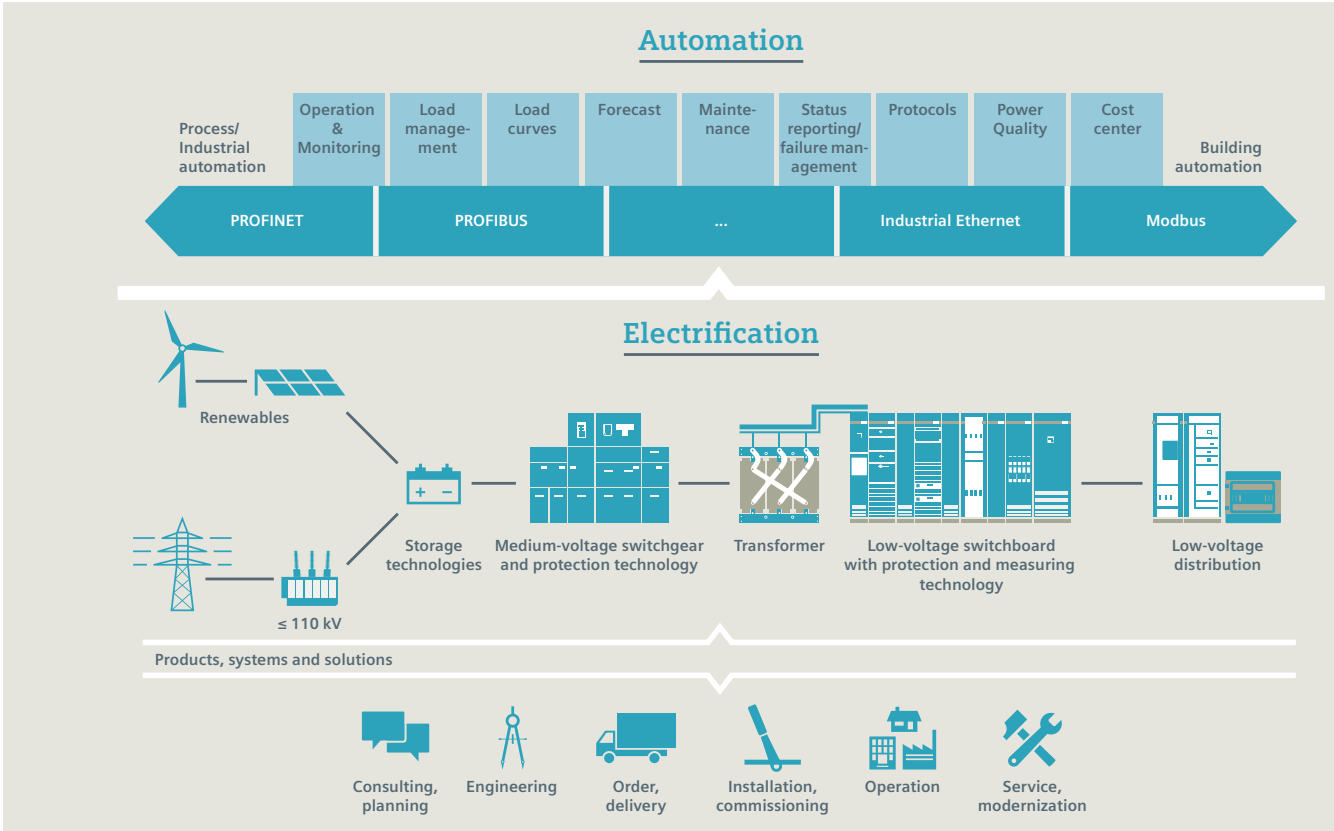
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Totally Integrated Power offers more:

- **Consistency**:
  For simplified plant engineering and commissioning as well as smooth integration into automation solutions for building or production processes
- **One-stop-shop**:
  A reliable partner with a complete portfolio for the entire process and lifecycle – from the initial idea to after-sales service
- **Safety**:
  A comprehensive range of protection components for personnel safety and line and fire protection, safety by means of type testing
- **Reliability**:
  A reliable partner who works with customers to develop long-lasting solutions that meet the highest quality standards
- **Efficiency**:
  Bringing power to the point means greater plant availability and maximum energy efficiency in power distribution
- **Flexibility**:
  End-to-end consistency and modular design of Totally Integrated Power for any desired expansions and adaptation to future requirements
- **Advanced technology**:
  Reliable power distribution especially for applications in which supply is critical, continuous refinement of the technology

Challenges are our speciality



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Notes

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Introduction



1/2 SITOP power supplies
1/2 Introduction
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1/6 Selection tables for power supplies
1/8 Customized SITOP products

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Overview

The benchmark in reliability, efficiency and integration

Efficient operation of a machine or plant requires a reliable, constant power supply.

The quality and reliability of the SITOP stabilized power supplies ensure high levels of safety in DC power supply in industrial engineering and building management systems.

Our perfectly coordinated selection of SITOP power supplies is enhanced by a unique range of add-on modules that extensively protect the 24 V power supplies against interference on the primary and secondary side, right up to complete all-round protection.



TOP reliability

You should only have to think once about a good power supply when you are purchasing it – and then never again.

SITOP has proved its reliability more than 10 million times over in almost every supply system in the world. With their wide-range input, excellent load behavior and extensive certification, SITOP power supplies alone ensure the reliability of the power supply.

Depending on requirements, SITOP power supplies can be individually adapted with expansion modules and uninterruptible power supplies (DC UPS). This ensures reliability of the 24 V supply for machines or plants, even in the event of an overload in the output circuit or a power failure on the input side.

TOP efficiency

Production costs are determined more and more by energy costs. Savings in this area generate valuable competitive advantages. SITOP power supplies make an important contribution here. Due to the high degree of efficiency, the primary switched-mode power supplies operate extremely effectively. The power loss across the entire performance range is low – even during no-load operation. Because power supplies are rarely operated at full load, there is outstanding potential for savings here.

SITOP also supports the entire process chain of the customer efficiently. It offers easy product selection using the SITOP Selection Tool, for example, and extensive additional information such as 3D data, circuit diagram macros, certification and individually-configurable product documentation. Every SITOP solution can therefore be planned and ordered, designed, configured and operated in an extremely efficient manner.

TOP integration

The better power supplies are integrated in their industrial environment, the higher their productivity. SITOP is optimally tailored to automation systems such as SIMATIC, SINUMERIK and SIMOTION.

In addition, the PSU8600 power supply system and the UPS1600 uninterruptible power supply are completely integrated in TIA. Convenient engineering in the TIA Portal supports, for example, easy network integration in PROFINET or comprehensive diagnostics.

SIMATIC S7 function blocks support easy integration in STEP 7 user programs, and ready-to-use WinCC faceplates are available for operator control and monitoring.

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SITOP compact

The slim power supply unit for control boxes



LOGO!Power

The flat power supply unit for distribution boards



SITOP lite

The low-cost basic power supply



SITOP smart

The powerful standard power supply



SITOP modular

The technology power supply for demanding solutions

Power supply system SITOP PSU8600 with Ethernet/PROFINET and complete integration in TIA



SITOP power supplies in SIMATIC design

The optimum supply for SIMATIC S7 and more



SITOP in special desgns, made for special tasks

Well prepared for special tasks and conditions



Expansion modules

Redundancy modules

Protection against failure of a power supply by means of redundant configuration of the power supply unit

Selectivity modules

Protection against overload and short circuit by means of electronic protection of 24 V feeds

Buffer module

Protection against power failure for a few seconds



SITOP DC UPS

SITOP UPS500 with capacitors

Protection against power failure on the input side through buffering for a few minutes

SITOP UPS1600 with battery modules

Protection against power failure on the input side through buffering for a few hours.
DC UPS with Ethernet/PROFINET – open and integrated in TIA



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SITOP Selection Tool

Overview

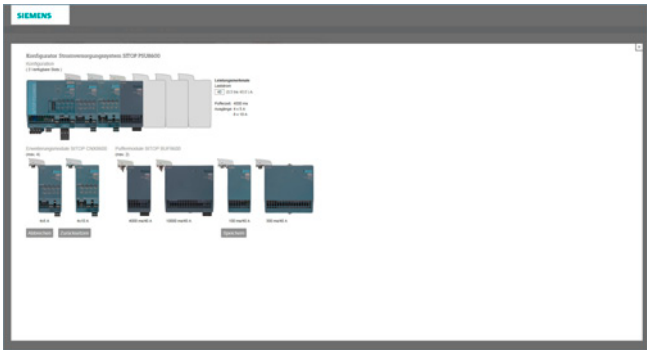
SITOP Selection Tool - get to the right power supply simply and quickly

With the SITOP Selection Tool, you can select not only your DC power supply, but now also the appropriate uninterruptible power supply (DC UPS) with capacitor or battery technology. Entering just a few technical specifications will automatically select the relevant parameters and show the matching products. Selection parameters can be changed at any time.

You can individually configure the PSU8600 power supply system using drag-and-drop to select additional modules for extra outputs or add-on modules for bridging power failures, for example. With the help of mandatory fields such as load current, buffer time and buffer voltage, an appropriate DC UPS is selected and then displayed with its performance characteristics.

The Selection Tool checks the reliability of each production selection or configuration automatically. The user can then save the selected products in the product list and export the list, including performance data, into several file formats, or directly to the Industry Mall shopping cart. More detailed information about the selected products can be found in the form of product data sheets, 3D data and operating instructions. The product data can also be requested directly by means of the CAx Download Manager.

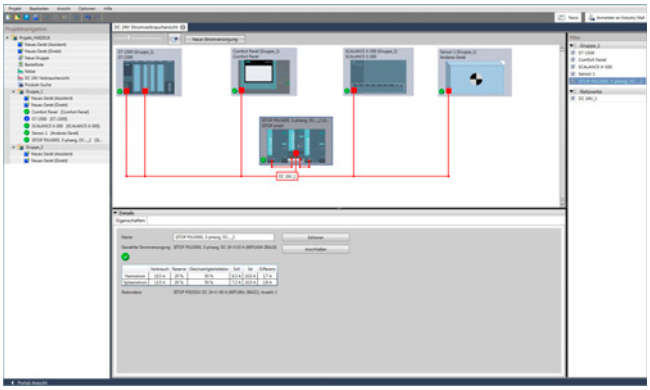
The tool is available on the Internet and in the Industry Mall:
www.siemens.com/sitop-selection-tool
www.siemens.com/industrymall



Selection assistant for the SITOP PSU8600 power supply system

TIA Selection Tool - makes it easy to choose the right power supply for 24 V loads

The "24 V DC power consumer view" of the TIA Selection Tool shows all automation products with 24 V infeed which have already been selected. Using drag-and-drop, the loads can be connected to one or more SITOP power supplies. The total of the required rated and peak currents is automatically calculated and taken into account when selecting power supplies. Others loads such as sensors or actuators which were not selected with the Tool can also be assigned. Only those power supplies are offered which supply the total power demand of the load to be supplied. It is also possible to define additional power reserves for other loads, rated diversity factors or redundant designs. Finally, the required power supplies are transferred into the order list in the Industry Mall and any additional product data can be requested from the CAX Download Manager.



24 V DC power consumer view of the TIA Selection Tool

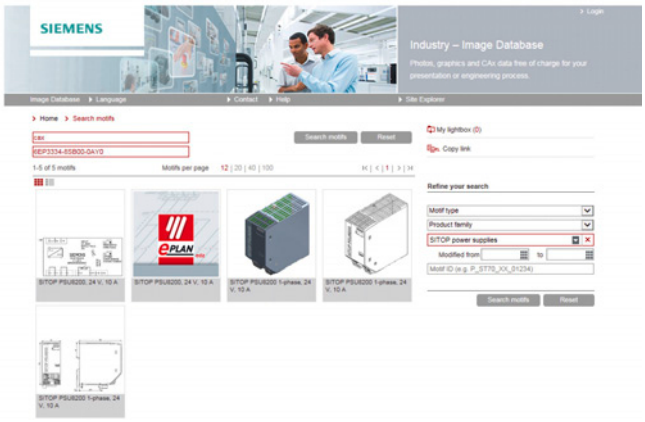
For more information about the "24 V DC power consumer view" of the TIA Selection Tool, visit:
www.siemens.com/sitop-tst

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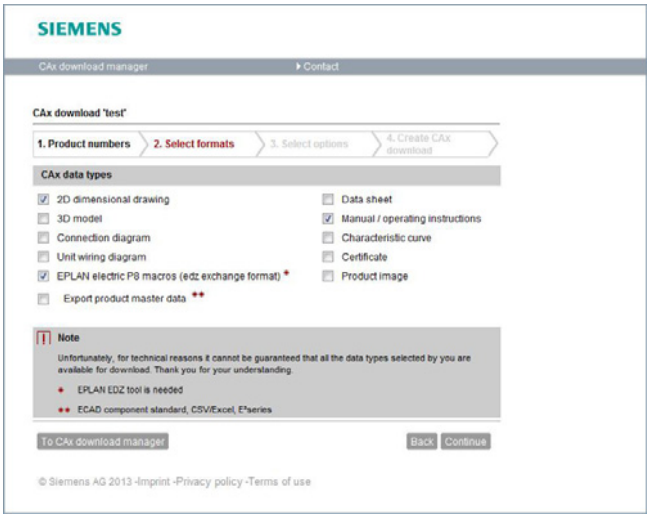
Overview

Everything you need for project planning

Additional information such as 3D data, circuit diagram macros, certificates and operating instructions are available at the click of the mouse. The engineering data can be downloaded in DXF, STEP and EPLAN format and can be used directly for your planning. They are also available via the CAx Download Manager and can be individually selected there as required and called up as a download. You not only save valuable time on planning, but also benefit from traceable documentation.



CAD and CAE data in the industry image database for easy configuration



All the product information is available to download using the CAx Download Managerh

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Selection tables for power supplies

Input voltage	Output current	SITOP compact	LOGO!Power	SITOP lite	SITOP smart	SITOP modular	PSU8600 power supply system	SIMATIC design	Special design - special uses
Output voltage 24 V DC		**You will find all the technical specifications for these products on the pages specified below**							
1-phase AC									
120 V, 230 V	0.6 A	**2/6**							
	1.3 A	**2/6**	**3/13**						
	2 A							8/3	
	2.1 A								9/7
	2.5 A	**2/6**	**3/13**	**4/2**	**5/8**			8/9	
	3 A							8/11	
	3.1 A								9/7
	3.5 A								
	3.7 A	**2/9**							
	4 A	**2/9**	**3/13**						
	4.1 A								9/7
	5 A			**4/2**	**5/8**	**6/3**, **6/8**		8/6	9/11, 9/33
	6 A								
	6.2 A								9/7
	8 A							8/11	9/11, 9/14
	10 A			**4/2**	**5/8**	**6/3**, **6/8**		8/6	9/33
	12 A								
	12.5 A								9/7
	20 A				**5/8**	**6/3**			
	40 A					**6/3**			
1-phase DC									
48 ... 220 V	0.375 A								9/25
48 ... 110 V	2 A								9/27
24 ... 110 V	2 A							8/3	
110 ... 300 V	0.6 A	**2/6**							
	1.3 A	**2/6**	**3/13**						
	2.5 A	**2/6**	**3/13**						
	3.7 A	**2/9**							
	4 A	**2/9**	**3/13**						
120 ... 375 V	2.1 A								
	3.1 A								
	4.1 A								
	6.2 A								
	12 A								
300 ... 900 V	20 A								9/31
3-phase AC									
400 ... 500 V	5 A				**5/13**				9/36
	8 A								9/14
	10 A				**5/13**				
	17 A								9/18
	20 A				**5/13**	**6/13**	7/5		
	30 A								9/18
	40 A				**5/13**	**6/13**	7/5		
	4 x 5 A						7/5		
	4 x 10 A						7/5		
400 ... 480 V									
	8 A							8/14	9/14

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Input voltage	Output current	SITOP compact	LOGO!Power	SITOP lite	SITOP smart	SITOP modular	PSU8600 power supply system	SIMATIC design	Special design - special uses
Output voltage 5, 12, 15, 36, 48 V DC		You will find all the technical specifications for these products on the pages specified below							
1-phase AC									
120 V, 230 V	3 - 52 V/2 - 10 A								9/23
	5 V/3 A		3/3						
	5 V/6.3 A		3/3						
	12 V/1.9 A		3/6						
	12 V/2 A	2/3							
	12 V/3 A								9/4
	12 V/4.5 A		3/6						
	12 V/6.5 A	2/3							
	12 V/7 A				5/3				
	12 V/8.3 A								9/4
	12 V/14 A				5/3				
	15 V/1.9 A		3/9						
	15 V/4 A		3/9						
	2 x 15 V/3.5 A								9/21
1-phase DC									
24 V	12 V/2.5 A								9/29
110 ... 300 V	5 V/3 A		3/3						
	5 V/6.3 A		3/3						
	12 V/1.9 A		3/6						
	12 V/2 A	2/3							
	12 V/2.5 A								9/29
	12 V/4.5 A		3/6						
	12 V/6.5 A	2/3							
	15 V/1.9 A		3/9						
	15 V/4 A		3/9						
3-phase AC									
400 ... 500 V	12 V/20 A								9/16
	36 V/13 A					6/17			
	48 V/10 A					6/19			
	48 V/20 A					6/19			

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Customized SITOP products

Overview

Our well-proven standard power supplies cannot, of course, satisfy the requirements of every application. We make it possible for you to optimize your system to suit application-specific requirements.

You benefit from the expertise of large-scale production and gain maximum development security and quality.

Our customer-specific solutions are used today in many sectors of mechanical engineering, in automation technology, vehicle electronics, equipment manufacturing and in industrial instrumentation technology.

Our offer is in principle open to every application case. If we have awakened your interest or if you would like to receive further details, please contact your local Siemens representative.

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2/2 **Introduction**
2/3 1-phase, 12 V DC
2/6 1-phase, 24 V DC

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Overview



The slim power supply unit for control boxes

The single-phase SITOP compact are power supplies for the lower performance range. Thanks to the extremely space-saving slim design, they are especially suited to distributed applications in control boxes or in small control cabinets. The series is characterized by low power losses throughout the entire load range. The losses are extremely low even during idling, which means they are perfectly suited for applications that are frequently in stand-by mode. The SITOP PSU100C power supplies have a wide-range input for AC and DC networks; plug-in terminals facilitate the electrical connection.

To further increase the 24 V availability, the SITOP compact power supplies can be combined with **DC UPS**, **redundancy** and **selectivity modules**.

Main product highlights

- 24 V DC/ 0.6 A, 1.3 A, 2.5 A, and 4 A as well as 12 V DC/ 2 A and 6.5 A
- 24 V DC/3.7 A for the supply of NEC class 2 circuits with limited output power (100 VA)
- 1-phase wide-range input from 85 V to 264 V AC or 110 V to 300 V DC
- Small mounting surface thanks to its slim design
- High efficiency across the entire load range: up to 28 % energy savings in comparison with similar devices
- Low energy consumption during no-load operation or stand-by: Energy savings of up to 53 % are possible
- Adjustable output voltage for compensating voltage drops
- Green LED for "Output voltage OK"
- Plug-in connecting terminals for pre-fabricated wiring and fast electrical connection
- Wide temperature range from –20 to +70 °C
- Comprehensive certifications, such as UL, ATEX or GL

More information

Select the appropriate power supply quickly and easily with the SITOP Selection Tool:

http://www.siemens.com/sitop-selection-tool

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Overview



The single-phase SITOP compact are power supplies for the lower performance range. Thanks to the extremely space-saving slim design, they are especially suited to distributed applications in control boxes or in small control cabinets. The series is characterized by low power losses throughout the entire load range. The losses are extremely low even during idling, which means they are perfectly suited for applications that are frequently in stand-by mode. The SITOP PSU100C power supplies have a wide-range input for AC and DC networks; plug-in terminals facilitate the electrical connection.

Main product highlights

- 12 V DC, 2 A and 6.5 A
- 1-phase wide-range input from 85 V to 264 V AC or 110 V to 300 V DC
- Small mounting surface thanks to its slim design
- High efficiency across the entire load range.
- Low energy consumption during no-load operation or stand-by
- Adjustable output voltage for compensating voltage drops
- Green LED for "12 V OK"
- Plug-in connecting terminals for pre-fabricated wiring and fast electrical connection
- Wide temperature range from –20 to +70 °C
- Comprehensive certifications, such as UL, ATEX or GL

Technical specifications

Article number	**6EP1321-5BA00**	**6EP1322-5BA10**
Product	**SITOP PSU100C**	**SITOP PSU100C**
Power supply, type	**12 V/2 A**	**12 V/6.5 A**
Input		
Input	1-phase AC or DC	1-phase AC or DC
Rated voltage value $V_{in\ rated}$	100 ... 230 V	100 ... 230 V
Voltage range AC	85 ... 264 V	85 ... 264 V
Input voltage		
• at DC	110 ... 300 V	110 ... 300 V
Wide-range input	Yes	Yes
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	20 ms; at V_{in} = 230 V	20 ms; at V_{in} = 230 V
Rated line frequency 1	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz
Input current		
• at rated input voltage 100 V	0.63 A	1.6 A
• at rated input voltage 230 V	0.31 A	0.8 A
Switch-on current limiting (+25 °C), max.	33 A	31 A
I^2t, max.	1.2 $A^2 \cdot s$	3 $A^2 \cdot s$
Built-in incoming fuse	internal	internal
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 16 A characteristic B or from 10 A characteristic C	Recommended miniature circuit breaker: from 16 A characteristic B or from 10 A characteristic C

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Technical specifications (continued)

Article number	6EP1321-5BA00	6EP1322-5BA10
Product	SITOP PSU100C	SITOP PSU100C
Power supply, type	12 V/2 A	12 V/6.5 A
Output		
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	12 V	12 V
Total tolerance, static ±	3 %	3 %
Static mains compensation, approx.	0.5 %	0.5 %
Static load balancing, approx.	1 %	1 %
Residual ripple peak-peak, max.	200 mV	200 mV
Residual ripple peak-peak, typ.	40 mV	80 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	300 mV	300 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	50 mV	80 mV
Adjustment range	10.5 ... 12.9 V	10.5 ... 12.9 V
Product function Output voltage adjustable	Yes	Yes
Output voltage setting	via potentiometer	via potentiometer
Status display	Green LED for output voltage OK	Green LED for output voltage OK
On/off behavior	Overshoot of V_{out} approx. 5 %	Overshoot of V_{out} approx. 1 %
Startup delay, max.	0.6 s	1 s
Voltage rise, typ.	10 ms	500 ms
Rated current value I_{out} rated	2 A	6.5 A
Current range	0 ... 2 A	0 ... 6.5 A
• Note	+55 ... +70 °C: Derating 3%/K	+50 ... +70 °C: Derating 3.5%/K
Supplied active power typical	24 W	78 W
Parallel switching for enhanced performance	Yes; Start-up with single nominal load only	Yes; Start-up with single nominal load only
Numbers of parallel switchable units for enhanced performance	2	2
Efficiency		
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	82 %	86 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	5.8 W	12.5 W
Power loss [W] during no-load operation maximum	0.75 W	0.75 W
Closed-loop control		
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.1 %	0.1 %
Dynamic load smoothing (V_{out}: 10/90/10 %), U_{out} ± typ.	3 %	3 %
Load step setting time 10 to 90%, typ.	4 ms	3 ms
Load step setting time 90 to 10%, typ.	3 ms	3 ms
Protection and monitoring		
Output overvoltage protection	Yes, according to EN 60950-1	Yes, according to EN 60950-1
Current limitation, typ.	2.4 A	7.2 A
Property of the output Short-circuit proof	Yes	Yes
Short-circuit protection	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart
Overload/short-circuit indicator	-	-
Safety		
Primary/secondary isolation	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I	Class I
Leakage current		
• maximum	3.5 mA	3.5 mA
• typical	0.4 mA	0.4 mA
CE mark	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)
Explosion protection	ATEX (EX) II 3G Ex nA IIC T4; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007) Class I, Div. 2, Group ABCD, T4	ATEX (EX) II 3G Ex nA IIC T4; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007) Class I, Div. 2, Group ABCD, T4
FM approval	-	-
CB approval	Yes	Yes
Marine approval	GL, ABS	GL, ABS
Degree of protection (EN 60529)	IP20	IP20

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Technical specifications (continued)

Article number	6EP1321-5BA00	6EP1322-5BA10
Product	**SITOP PSU100C**	**SITOP PSU100C**
Power supply, type	**12 V/2 A**	**12 V/6.5 A**
EMC		
Emitted interference	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	not applicable	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2
Operating data		
Ambient temperature		
• during operation	-20 ... +70 °C	-20 ... +70 °C
- Note	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation
Mechanics		
Connection technology	screw-type terminals	screw-type terminals
Connections		
• Supply input	L, N, PE: Removable screw terminal, each for 1 x 0.5 ... 2.5 mm^2	L, N, PE: Removable screw terminal, each for 1 x 0.5 ... 2.5 mm^2
• Output	+: 1 screw terminal for 0.5 ... 2.5 mm^2; -: 2 screw terminals for 0.5 ... 2.5 mm^2	+: 1 screw terminal for 0.5 ... 2.5 mm^2; -: 2 screw terminals for 0.5 ... 2.5 mm^2
• Auxiliary	-	-
Width of the enclosure	30 mm	52.5 mm
Height of the enclosure	80 mm	80 mm
Depth of the enclosure	100 mm	100 mm
Weight, approx.	0.12 kg	0.32 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15
Electrical accessories	Removable spring-type terminal 6EP1971-5BA00	Removable spring-type terminal 6EP1971-5BA00
MTBF at 40 °C	3 737 060 h	2 853 800 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SITOP PSU100C 1-phase, 12 V DC/2 A Stabilized power supply Input: 100 … 230 V AC (110 … 300 V DC) Output: 12 V DC/2 A	**6EP1321-5BA00**
SITOP PSU100C 1-phase, 12 V DC/6.5 A Stabilized power supply Input: 100 … 230 V AC (110 … 300 V DC) Output: 12 V DC/6.5 A	**6EP1322-5BA10**

Accessories

	Article No.
SITOP Power PSU100C accessories Removable spring-loaded terminal, 100 units, for SITOP PSU100C	**6EP1971-5BA00**

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Overview



The single-phase SITOP compact are power supplies for the lower performance range. Thanks to the extremely space-saving slim design, they are especially suited to distributed applications in control boxes or in small control cabinets. The series is characterized by low power losses throughout the entire load range. The losses are extremely low even during idling, which means they are perfectly suited for applications that are frequently in stand-by mode. The SITOP PSU100C power supplies have a wide-range input for AC and DC networks; plug-in terminals facilitate the electrical connection.

To further increase the 24 V availability, the SITOP compact power supplies can be combined with **DC UPS**, **redundancy** and **selectivity modules**.

Main product highlights

- 24 V DC/ 0.6 A, 1.3 A, 2.5 A and 4 A
- 24 V DC/3.7 A for the supply of NEC class 2 circuits with limited output power (100 VA)
- 1-phase wide-range input from 85 V to 264 V AC or 110 V to 300 V DC
- Small mounting surface thanks to its slim design
- High efficiency across the entire load range.
- Low energy consumption during no-load operation or stand-by
- Adjustable output voltage for compensating voltage drops (starting at 1.3 A)
- Green LED for "24 V OK"
- Plug-in connecting terminals for pre-fabricated wiring and fast electrical connection
- Wide temperature range from –20 to +70 °C
- Comprehensive certifications, such as UL, ATEX or GL

Technical specifications

Article number	**6EP1331-5BA00**	**6EP1331-5BA10**	**6EP1332-5BA00**
Product	**SITOP PSU100C**	**SITOP PSU100C**	**SITOP PSU100C**
Power supply, type	**24 V/0.6 A**	**24 V/1.3 A**	**24 V/2.5 A**
Input			
Input	1-phase AC or DC	1-phase AC or DC	1-phase AC or DC
Rated voltage value $V_{in\ rated}$	100 ... 230 V	100 ... 230 V	100 ... 230 V
Voltage range AC	85 ... 264 V	85 ... 264 V	85 ... 264 V
Input voltage			
• at DC	110 ... 300 V	110 ... 300 V	110 ... 300 V
Wide-range input	Yes	Yes	Yes
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	20 ms; at V_{in} = 230 V	20 ms; at V_{in} = 230 V	20 ms; at V_{in} = 230 V
Rated line frequency 1	50 Hz	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz	60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz	47 ... 63 Hz
Input current			
• at rated input voltage 100 V	0.28 A	0.63 A	1.21 A
• at rated input voltage 230 V	0.18 A	0.31 A	0.67 A
Switch-on current limiting (+25 °C), max.	28 A	34 A	31 A
I^2t, max.	0.7 $A^2 \cdot s$	1.2 $A^2 \cdot s$	2.4 $A^2 \cdot s$
Built-in incoming fuse	internal	internal	internal
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 16 A characteristic B or from 10 A characteristic C	Recommended miniature circuit breaker: from 16 A characteristic B or from 10 A characteristic C	Recommended miniature circuit breaker: from 16 A characteristic B or from 10 A characteristic C

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Technical specifications (continued)

Article number	6EP1331-5BA00	6EP1331-5BA10	6EP1332-5BA00
Product	SITOP PSU100C	SITOP PSU100C	SITOP PSU100C
Power supply, type	24 V/0.6 A	24 V/1.3 A	24 V/2.5 A
Output			
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V	24 V	24 V
Total tolerance, static ±	3 %	3 %	3 %
Static mains compensation, approx.	0.1 %	0.1 %	0.1 %
Static load balancing, approx.	0.2 %	0.2 %	0.2 %
Residual ripple peak-peak, max.	200 mV	200 mV	200 mV
Residual ripple peak-peak, typ.	40 mV	25 mV	55 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	300 mV	300 mV	300 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	20 mV	20 mV	50 mV
Adjustment range	-	22.2 ... 26.4 V	22.2 ... 26.4 V
Product function Output voltage adjustable	No	Yes	Yes
Output voltage setting	-	via potentiometer	via potentiometer
Status display	Green LED for output voltage OK	Green LED for output voltage OK	Green LED for output voltage OK
On/off behavior	Overshoot of V_{out} approx. 5 %	Overshoot of V_{out} approx. 5 %	Overshoot of V_{out} approx. 1 %
Startup delay, max.	1 s	0.6 s	0.7 s
Voltage rise, typ.	25 ms	90 ms	100 ms
Rated current value $I_{out\ rated}$	0.6 A	1.3 A	2.5 A
Current range	0 ... 0.6 A	0 ... 1.3 A	0 ... 2.5 A
• Note	+55 ... +70 °C: Derating 3%/K	+55 ... +70 °C: Derating 3%/K	+55 ... +70 °C: Derating 3,5%/K
Supplied active power typical	14 W	30 W	60 W
Short-term overload current			
• at short-circuit during operation typical	1 A	3.1 A	-
Parallel switching for enhanced performance	No	Yes; Start-up with single nominal load only	Yes; Start-up with single nominal load only
Numbers of parallel switchable units for enhanced performance	-	2	2
Efficiency			
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	82 %	86 %	87 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	2.6 W	4.5 W	9 W
Power loss [W] during no-load operation maximum	0.75 W	0.75 W	0.75 W
Closed-loop control			
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.1 %	0.1 %	0.1 %
Dynamic load smoothing (I_{out}: 10/90/10 %), U_{out} ± typ.	3 %	3 %	3 %
Load step setting time 10 to 90%, typ.	3 ms	5 ms	4 ms
Load step setting time 90 to 10%, typ.	3 ms	5 ms	4 ms
Protection and monitoring			
Output overvoltage protection	Yes, according to EN 60950-1	Yes, according to EN 60950-1	Yes, according to EN 60950-1
Current limitation, typ.	0.7 A	1.4 A	3 A
Property of the output Short-circuit proof	Yes	Yes	Yes
Short-circuit protection	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart
Overload/short-circuit indicator	-	-	-

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Technical specifications (continued)

Article number	6EP1331-5BA00	6EP1331-5BA10	6EP1332-5BA00
Product	SITOP PSU100C	SITOP PSU100C	SITOP PSU100C
Power supply, type	24 V/0.6 A	24 V/1.3 A	24 V/2.5 A
Safety			
Primary/secondary isolation	Yes	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I	Class I	Class I
Leakage current			
• maximum	3.5 mA	3.5 mA	3.5 mA
• typical	0.4 mA	0.4 mA	0.4 mA
CE mark	Yes	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273, NEC class 2 (acc. to UL 1310)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273, NEC class 2 (acc. to UL 1310)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273, NEC class 2 (acc. to UL 1310)
Explosion protection	ATEX (EX) II 3G Ex nA IIC T4; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007) Class I, Div. 2, Group ABCD, T4	ATEX (EX) II 3G Ex nA IIC T4; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007) Class I, Div. 2, Group ABCD, T4	ATEX (EX) II 3G Ex nA IIC T4; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007) Class I, Div. 2, Group ABCD, T4
FM approval	-	-	-
CB approval	Yes	Yes	Yes
Marine approval	GL, ABS	GL, ABS	GL, ABS
Degree of protection (EN 60529)	IP20	IP20	IP20
EMC			
Emitted interference	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	not applicable	not applicable	not applicable
Noise immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Operating data			
Ambient temperature			
• during operation	-20 ... +70 °C	-20 ... +70 °C	-20 ... +70 °C
- Note	with natural convection	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation
Mechanics			
Connection technology	screw-type terminals	screw-type terminals	screw-type terminals
Connections			
• Supply input	L, N, PE: Removable screw terminal, each for 1 x 0.5 ... 2.5 mm^2	L, N, PE: Removable screw terminal, each for 1 x 0.5 ... 2.5 mm^2	L, N, PE: Removable screw terminal, each for 1 x 0.5 ... 2.5 mm^2
• Output	+: 1 screw terminal for 0.5 ... 2.5 mm^2; -: 2 screw terminals for 0.5 ... 2.5 mm^2	+: 1 screw terminal for 0.5 ... 2.5 mm^2; -: 2 screw terminals for 0.5 ... 2.5 mm^2	+: 1 screw terminal for 0.5 ... 2.5 mm^2; -: 2 screw terminals for 0.5 ... 2.5 mm^2
• Auxiliary	-	-	-
Width of the enclosure	22.5 mm	30 mm	45 mm
Height of the enclosure	80 mm	80 mm	80 mm
Depth of the enclosure	100 mm	100 mm	100 mm
Weight, approx.	0.12 kg	0.17 kg	0.22 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15
Electrical accessories	Removable spring-type terminal 6EP1971-5BA00	Removable spring-type terminal 6EP1971-5BA00	Removable spring-type terminal 6EP1971-5BA00
MTBF at 40 °C	3 910 833 h	3 838 624 h	2 881 014 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

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Technical specifications (continued)

Article number	6EP1332-5BA20	6EP1332-5BA10
Product	**SITOP PSU100C**	**SITOP PSU100C**
Power supply, type	**24 V/3.7 A**	**24 V/4 A**
Input		
Input	1-phase AC or DC	1-phase AC or DC
Rated voltage value $V_{in\ rated}$	100 ... 230 V	100 ... 230 V
Voltage range AC	85 ... 264 V	85 ... 264 V
Input voltage		
• at DC	110 ... 300 V	110 ... 300 V
Wide-range input	Yes	Yes
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	20 ms; at V_{in} = 230 V	20 ms; at V_{in} = 230 V
Rated line frequency 1	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz
Input current		
• at rated input voltage 100 V	1.88 A	2.25 A
• at rated input voltage 230 V	0.95 A	1.15 A
Switch-on current limiting (+25 °C), max.	30 A	34 A
I^2t, max.	3 $A^2 \cdot s$	3 $A^2 \cdot s$
Built-in incoming fuse	internal	internal
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 16 A characteristic B or from 10 A characteristic C	Recommended miniature circuit breaker: from 16 A characteristic B or from 10 A characteristic C
Output		
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V	24 V
Total tolerance, static ±	3 %	3 %
Static mains compensation, approx.	0.1 %	0.1 %
Static load balancing, approx.	0.2 %	0.2 %
Residual ripple peak-peak, max.	200 mV	200 mV
Residual ripple peak-peak, typ.	90 mV	80 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	300 mV	300 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	60 mV	80 mV
Adjustment range		22.2 ... 26.4 V
Product function Output voltage adjustable	No	Yes
Output voltage setting	-	via potentiometer
Status display	Green LED for output voltage OK	Green LED for output voltage OK
On/off behavior	Overshoot of V_{out} approx. 1 %	Overshoot of V_{out} approx. 1 %
Startup delay, max.	1.5 s	1.5 s
Voltage rise, typ.	500 ms	400 ms
Rated current value $I_{out\ rated}$	3.7 A	4 A
Current range	0 ... 3.7 A	0 ... 4 A
• Note	+55 ... +70 °C: Derating 3,5%/K	+55 ... +70 °C: Derating 3,5%/K
Supplied active power typical	89 W	96 W
Short-term overload current		
• at short-circuit during operation typical	-	-
Parallel switching for enhanced performance	No	Yes; Start-up with single nominal load only
Numbers of parallel switchable units for enhanced performance	-	2

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Technical specifications (continued)

Article number	6EP1332-5BA20	6EP1332-5BA10
Product	SITOP PSU100C	SITOP PSU100C
Power supply, type	24 V/3.7 A	24 V/4 A
Efficiency		
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	87 %	88 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	14 W	13 W
Power loss [W] during no-load operation maximum	0.75 W	0.75 W
Closed-loop control		
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.1 %	0.1 %
Dynamic load smoothing (I_{out}: 10/90/10 %), U_{out} ± typ.	3 %	3 %
Load step setting time 10 to 90%, typ.	4 ms	4 ms
Load step setting time 90 to 10%, typ.	4 ms	4 ms
Protection and monitoring		
Output overvoltage protection	Yes, according to EN 60950-1	Yes, according to EN 60950-1
Current limitation, typ.	4 A	4.8 A
Property of the output Short-circuit proof	Yes	Yes
Short-circuit protection	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart
Overload/short-circuit indicator	-	-
Safety		
Primary/secondary isolation	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I	Class I
Leakage current		
• maximum	3.5 mA	3.5 mA
• typical	0.4 mA	0.4 mA
CE mark	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273, NEC class 2 (acc. to UL 1310)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)
Explosion protection	ATEX (EX) II 3G Ex nA IIC T4; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007) Class I, Div. 2, Group ABCD, T4	ATEX (EX) II 3G Ex nA IIC T4; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007) Class I, Div. 2, Group ABCD, T4
FM approval	-	-
CB approval	Yes	Yes
Marine approval	GL, ABS	GL, ABS
Degree of protection (EN 60529)	IP20	IP20

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Technical specifications (continued)

Article number	6EP1332-5BA20	6EP1332-5BA10
Product	**SITOP PSU100C**	**SITOP PSU100C**
Power supply, type	**24 V/3.7 A**	**24 V/4 A**
EMC		
Emitted interference	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	EN 61000-3-2	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2
Operating data		
Ambient temperature		
• during operation	-20 ... +70 °C	-20 ... +70 °C
- Note	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation
Mechanics		
Connection technology	screw-type terminals	screw-type terminals
Connections		
• Supply input	L, N, PE: Removable screw terminal, each for 1 x 0.5 ... 2.5 mm^2	L, N, PE: Removable screw terminal, each for 1 x 0.5 ... 2.5 mm^2
• Output	+: 1 screw terminal for 0.5 ... 2.5 mm^2; -: 2 screw terminals for 0.5 ... 2.5 mm^2	+: 1 screw terminal for 0.5 ... 2.5 mm^2; -: 2 screw terminals for 0.5 ... 2.5 mm^2
• Auxiliary	-	-
Width of the enclosure	52.5 mm	52.5 mm
Height of the enclosure	80 mm	80 mm
Depth of the enclosure	100 mm	100 mm
Weight, approx.	0.32 kg	0.32 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15
Electrical accessories	Removable spring-type terminal 6EP1971-5BA00	Removable spring-type terminal 6EP1971-5BA00
MTBF at 40 °C	2 776 544 h	2 726 727 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

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Ordering data	Article No.
SITOP PSU100C 1-phase, 24 V DC/0.6 A Stabilized power supply Input: 100 … 230 V AC (110 … 300 V DC) Output: 24 V DC/0.6 A	**6EP1331-5BA00**
SITOP PSU100C 1-phase, 24 V DC/1.3 A Stabilized power supply Input: 100 … 230 V AC (110 … 300 V DC) Output: 24 V DC/1.3 A	**6EP1331-5BA10**
SITOP PSU100C 1-phase, 24 V DC/2.5 A Stabilized power supply Input: 100 … 230 V AC (110 … 300 V DC) Output: 24 V DC/2.5 A	**6EP1332-5BA00**
SITOP PSU100C 1-phase, 24 V DC/3.7 A Stabilized power supply Input: 100 … 230 V AC (110 … 300 V DC) Output: 24 V DC/3.7 A limited output power NEC Class 2	**6EP1332-5BA20**
SITOP PSU100C 1-phase, 24 V DC/4 A Stabilized power supply Input: 100 … 230 V AC (110 … 300 V DC) Output: 24 V DC/4 A	**6EP1332-5BA10**

Accessories	Article No.
SITOP PSE202U redundancy module Input/output: 24 V DC/NEC Class 2 suitable for decoupling two SITOP power supplies output power limited < 100 VA	**6EP1962-2BA00**
SITOP PSE202U redundancy module Input/output: 24 V DC/10 A suitable for decoupling two SITOP power supplies with a maximum of 5 A output current	**6EP1964-2BA00**
SITOP PSE200U 3 A selectivity module 4-channel selectivity module Input: 24 V DC Output: 24 V DC/3A per each channel output current adjustable 0.5 … 3 A	
• With common alarm signal	**6EP1961-2BA11**
• With single-channel signaling	**6EP1961-2BA31**
SITOP Power PSU100C accessories Removable spring-loaded terminal, 100 units, for SITOP PSU100C	**6EP1971-5BA00**

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3/2 **Introduction**
3/3 1-phase, 5 V DC
3/6 1-phase, 12 V DC
3/9 1-phase, 15 V DC
3/12 1-phase, 24 V DC

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Overview



The flat power supply unit for distribution boards

Our miniature power supply units in the same design as the logic modules offer great performance in the smallest space:
The excellent efficiency across the entire load range, and the low power losses in no-load operation ensure efficient operation.
The wide-range input for 1-phase networks as well as operation with direct voltage, the wide operating temperature range, comprehensive certifications as well as the switch-on behavior optimized for capacitive loads makes them suitable for universal use. These reliable power supplies with their flat, stepped profile can be used extremely flexibly in numerous applications such as in distribution boards, for example.

To further increase the 24 V availability, the LOGO!Power power supplies can be combined with **DC UPS**, **redundancy** and **selectivity modules**.

Main product highlights

- 5 V DC/ 3 A and 6.3 A, 12 V DC/ 1.9 A and 4.5 A, 15 V DC/ 1.9 A and 4 A as well as 24 V DC/ 1.3 A, 2.5 A and 4 A
- 1-phase, wide-range input for 85 V to 264 V AC or 110 V to 300 V DC
- Flat LOGO! design with an installation depth of only 55 mm
- High efficiency across the entire load range, low no-load losses
- Power reserve on starting up through 1.5 times the rated current for capacitive loads
- Wide temperature range from -20 to +70 °C
- Comprehensive certifications, such as cULus, CB, FM, ATEX, cCSAus Class I Div. 2, GL and ABS

More information

Select the appropriate power supply quickly and easily with the SITOP Selection Tool:

http://www.siemens.com/sitop-selection-tool

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Overview



Our miniature power supply units in the same design as the logic modules offer great performance in the smallest space: The excellent efficiency across the entire load range, and the low power losses in no-load operation ensure efficient operation. The wide-range input for 1-phase networks as well as operation with direct voltage, the wide operating temperature range, comprehensive certifications as well as the switch-on behavior optimized for capacitive loads makes them suitable for universal use. These reliable power supplies with their flat, stepped profile can be used extremely flexibly in numerous applications such as in distribution boards, for example.

Main product highlights

- 5 V DC/ 3 A and 6.3 A
- 1-phase, wide-range input for 85 V to 264 V AC or 110 V to 300 V DC
- Flat LOGO! design with an installation depth of only 55 mm
- High efficiency across the entire load range, low no-load losses
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- Comprehensive certifications, such as cULus, CB, FM, ATEX, cCSAus Class I Div. 2, GL and ABS

Technical specifications

Article number	**6EP1311-1SH03**	**6EP1311-1SH13**
Product	**LOGO!Power**	**LOGO!Power**
Power supply, type	**5 V/3 A**	**5 V/6.3 A**
Input		
Input	1-phase AC or DC	1-phase AC or DC
Rated voltage value $V_{in\ rated}$	100 ... 240 V	100 ... 240 V
Voltage range AC	85 ... 264 V	85 ... 264 V
Input voltage		
• at DC	110 ... 300 V	110 ... 300 V
Wide-range input	Yes	Yes
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	40 ms; at V_{in} = 187 V	40 ms; at V_{in} = 187 V
Rated line frequency 1	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz
Input current		
• at rated input voltage 120 V	0.36 A	0.71 A
• at rated input voltage 230 V	0.22 A	0.37 A
Switch-on current limiting (+25 °C), max.	26 A	50 A
I^2t, max.	0.8 $A^2 \cdot s$	3 $A^2 \cdot s$
Built-in incoming fuse	internal	internal
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 16 A characteristic B or from 10 A characteristic C	Recommended miniature circuit breaker: from 16 A characteristic B or from 10 A characteristic C

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Technical specifications (continued)

Article number	6EP1311-1SH03	6EP1311-1SH13
Product	**LOGO!Power**	**LOGO!Power**
Power supply, type	**5 V/3 A**	**5 V/6.3 A**
Output		
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	5 V	5 V
Total tolerance, static ±	3 %	3 %
Static mains compensation, approx.	0.2 %	0.1 %
Static load balancing, approx.	1.5 %	2 %
Residual ripple peak-peak, max.	100 mV	100 mV
Residual ripple peak-peak, typ.	10 mV	15 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	100 mV	100 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	20 mV	70 mV
Adjustment range	4.6 ... 5.4 V	4.6 ... 5.4 V
Product function Output voltage adjustable	Yes	Yes
Output voltage setting	via potentiometer	via potentiometer
Status display	Green LED for output voltage OK	Green LED for output voltage OK
On/off behavior	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)
Startup delay, max.	0.5 s	0.5 s
Voltage rise, typ.	20 ms	10 ms
Rated current value $I_{out\ rated}$	3 A	6.3 A
Current range	0 ... 3 A	0 ... 6.3 A
• Note	+55 ... +70 °C: Derating 2%/K	+55 ... +70 °C: Derating 2%/K
Supplied active power typical	15 W	30 W
Parallel switching for enhanced performance	Yes	Yes
Numbers of parallel switchable units for enhanced performance	2	2
Efficiency		
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	77 %	83 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	4 W	6 W
Power loss [W] during no-load operation maximum	1.5 W	1.5 W
Closed-loop control		
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.2 %	0.2 %
Dynamic load smoothing (I_{out}: 10/90/10 %), U_{out} ± typ.	3 %	3 %
Load step setting time 10 to 90%, typ.	2 ms	2 ms
Load step setting time 90 to 10%, typ.	2 ms	2 ms
Protection and monitoring		
Output overvoltage protection	Yes, according to EN 60950-1	Yes, according to EN 60950-1
Current limitation, typ.	3.8 A	8.2 A
Property of the output Short-circuit proof	Yes	Yes
Short-circuit protection	Constant current characteristic	Constant current characteristic
Enduring short circuit current RMS value		
• maximum	5 A	10 A
Overload/short-circuit indicator	-	-
Safety		
Primary/secondary isolation	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class II (without protective conductor)	Class II (without protective conductor)
CE mark	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273, NEC class 2 (acc. to UL 1310)	cULus-listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-recognized (UL 60950, CSA C22.2 No. 60950), File E151273
Explosion protection	ATEX (EX) II 3G Ex nA IIC T3; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007) Class I, Div. 2, Group ABCD, T4	ATEX (EX) II 3G Ex nA IIC T3; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007) Class I, Div. 2, Group ABCD, T4
FM approval	Class I, Div. 2, Group ABCD, T4	Class I, Div. 2, Group ABCD, T4
CB approval	Yes	Yes
Marine approval	GL, ABS	GL, ABS
Degree of protection (EN 60529)	IP20	IP20

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Technical specifications (continued)

Article number	6EP1311-1SH03	6EP1311-1SH13
Product	**LOGO!Power**	**LOGO!Power**
Power supply, type	**5 V/3 A**	**5 V/6.3 A**
EMC		
Emitted interference	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	not applicable	not applicable
Noise immunity	EN 61000-6-2	EN 61000-6-2
Operating data		
Ambient temperature		
• during operation	-20 ... +70 °C	-20 ... +70 °C
- Note	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation
Mechanics		
Connection technology	screw-type terminals	screw-type terminals
Connections		
• Supply input	L, N: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded	L, N: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded
• Output	+, -: 2 screw terminals each for 0.5 ... 2.5 mm^2	+, -: 2 screw terminals each for 0.5 ... 2.5 mm^2
• Auxiliary	-	-
Width of the enclosure	54 mm	72 mm
Height of the enclosure	90 mm	90 mm
Depth of the enclosure	52.6 mm	52.6 mm
Weight, approx.	0.17 kg	0.25 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15
MTBF at 40 °C	3 543 963 h	3 741 955 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
LOGO!Power 1-phase, 5 V DC/3 A Stabilized power supply Input: 100 … 240 V AC (110 … 300 V DC) Output: 5 V DC/3 A	**6EP1311-1SH03**
LOGO!Power 1-phase, 5 V DC/6.3 A Stabilized power supply Input: 100 … 240 V AC (110 … 300 V DC) Output: 5 V DC/6.3 A	**6EP1311-1SH13**

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Overview



Our miniature power supply units in the same design as the logic modules offer great performance in the smallest space: The excellent efficiency across the entire load range, and the low power losses in no-load operation ensure efficient operation. The wide-range input for 1-phase networks as well as operation with direct voltage, the wide operating temperature range, comprehensive certifications as well as the switch-on behavior optimized for capacitive loads makes them suitable for universal use. These reliable power supplies with their flat, stepped profile can be used extremely flexibly in numerous applications such as in distribution boards, for example.

Main product highlights

- 12 V DC, 1.9 A and 4.5 A
- 1-phase, wide-range input for 85 V to 264 V AC or 110 V to 300 V DC
- Flat LOGO! design with an installation depth of only 55 mm
- High efficiency across the entire load range, low no-load losses
- Power reserve on starting up through 1.5 times the rated current for capacitive loads
- Wide temperature range from -20 to +70 °C
- Comprehensive certifications, such as cULus, CB, FM, ATEX, cCSAus Class I Div. 2, GL and ABS

Technical specifications

Article number	**6EP1321-1SH03**	**6EP1322-1SH03**
Product	**LOGO!Power**	**LOGO!Power**
Power supply, type	**12 V/1.9 A**	**12 V/4.5 A**
Input		
Input	1-phase AC or DC	1-phase AC or DC
Rated voltage value $V_{in\ rated}$	100 ... 240 V	100 ... 240 V
Voltage range AC	85 ... 264 V	85 ... 264 V
Input voltage		
• at DC	110 ... 300 V	110 ... 300 V
Wide-range input	Yes	Yes
Overvoltage resistance	2.3 × V_{in} rated, 1.3 ms	2.3 × V_{in} rated, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	40 ms; at V_{in} = 187 V	40 ms; at V_{in} = 187 V
Rated line frequency 1	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz
Input current		
• at rated input voltage 120 V	0.53 A	1.13 A
• at rated input voltage 230 V	0.3 A	0.61 A
Switch-on current limiting (+25 °C), max.	25 A	55 A
I^2t, max.	0.8 $A^2 \cdot s$	3 $A^2 \cdot s$
Built-in incoming fuse	internal	internal
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 16 A characteristic B or from 10 A characteristic C	Recommended miniature circuit breaker: from 16 A characteristic B or from 10 A characteristic C

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Technical specifications (continued)

Article number	6EP1321-1SH03	6EP1322-1SH03
Product	**LOGO!Power**	**LOGO!Power**
Power supply, type	**12 V/1.9 A**	**12 V/4.5 A**
Output		
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	12 V	12 V
Total tolerance, static ±	3 %	3 %
Static mains compensation, approx.	0.1 %	0.1 %
Static load balancing, approx.	1.5 %	1.5 %
Residual ripple peak-peak, max.	200 mV	200 mV
Residual ripple peak-peak, typ.	10 mV	10 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	300 mV	300 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	20 mV	70 mV
Adjustment range	10.5 ... 16.1 V	10.5 ... 16.1 V
Product function Output voltage adjustable	Yes	Yes
Output voltage setting	via potentiometer	via potentiometer
Status display	Green LED for output voltage OK	Green LED for output voltage OK
On/off behavior	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)
Startup delay, max.	0.5 s	0.5 s
Voltage rise, typ.	10 ms	10 ms
Rated current value I_{out} rated	1.9 A	4.5 A
Current range	0 ... 1.9 A	0 ... 4.5 A
• Note	+55 ... +70 °C: Derating 2%/K	+55 ... +70 °C: Derating 2%/K
Supplied active power typical	23 W	50 W
Parallel switching for enhanced performance	Yes	Yes
Numbers of parallel switchable units for enhanced performance	2	2
Efficiency		
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	80 %	85 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	5 W	10 W
Power loss [W] during no-load operation maximum	1.8 W	1.9 W
Closed-loop control		
Dynamic mains compensation (V_{in} rated ±15 %), max.	0.2 %	0.2 %
Dynamic load smoothing (I_{out}: 10/90/10 %), U_{out} ± typ.	3 %	4 %
Load step setting time 10 to 90%, typ.	1 ms	1 ms
Load step setting time 90 to 10%, typ.	1 ms	1 ms
Protection and monitoring		
Output overvoltage protection	Yes, according to EN 60950-1	Yes, according to EN 60950-1
Current limitation, typ.	2.8 A	5.8 A
Property of the output Short-circuit proof	Yes	Yes
Short-circuit protection	Constant current characteristic	Constant current characteristic
Enduring short circuit current RMS value		
• maximum	3.6 A	7 A
Overload/short-circuit indicator	-	-
Safety		
Primary/secondary isolation	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class II (without protective conductor)	Class II (without protective conductor)
CE mark	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273, NEC class 2 (acc. to UL 1310)	cULus-listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-recognized (UL 60950, CSA C22.2 No. 60950), File E151273
Explosion protection	ATEX (EX) II 3G Ex nA IIC T3; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007) Class I, Div. 2, Group ABCD, T4	ATEX (EX) II 3G Ex nA IIC T3; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007) Class I, Div. 2, Group ABCD, T4
FM approval	Class I, Div. 2, Group ABCD, T4	Class I, Div. 2, Group ABCD, T4
CB approval	Yes	Yes
Marine approval	GL, ABS	GL, ABS
Degree of protection (EN 60529)	IP20	IP20

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Technical specifications (continued)

Article number	6EP1321-1SH03	6EP1322-1SH03
Product	**LOGO!Power**	**LOGO!Power**
Power supply, type	**12 V/1.9 A**	**12 V/4.5 A**
EMC		
Emitted interference	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	not applicable	not applicable
Noise immunity	EN 61000-6-2	EN 61000-6-2
Operating data		
Ambient temperature		
• during operation	-20 ... +70 °C	-20 ... +70 °C
- Note	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation
Mechanics		
Connection technology	screw-type terminals	screw-type terminals
Connections		
• Supply input	L, N: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded	L, N: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded
• Output	+, -: 2 screw terminals each for 0.5 ... 2.5 mm^2	+, -: 2 screw terminals each for 0.5 ... 2.5 mm^2
• Auxiliary	-	-
Width of the enclosure	54 mm	72 mm
Height of the enclosure	90 mm	90 mm
Depth of the enclosure	52.6 mm	52.6 mm
Weight, approx.	0.17 kg	0.25 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15
MTBF at 40 °C	3 593 503 h	3 800 981 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
LOGO!Power 1-phase, 12 V DC/1.9 A Stabilized power supply Input: 100 … 240 V AC (110 … 300 V DC) Output: 12 V DC/1.9 A	**6EP1321-1SH03**
LOGO!Power 1-phase, 12 V DC/4.5 A Stabilized power supply Input: 100 … 240 V AC (110 … 300 V DC) Output: 12 V DC/4.5 A	**6EP1322-1SH03**

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Overview



Our miniature power supply units in the same design as the logic modules offer great performance in the smallest space: The excellent efficiency across the entire load range, and the low power losses in no-load operation ensure efficient operation. The wide-range input for 1-phase networks as well as operation with direct voltage, the wide operating temperature range, comprehensive certifications as well as the switch-on behavior optimized for capacitive loads makes them suitable for universal use. These reliable power supplies with their flat, stepped profile can be used extremely flexibly in numerous applications such as in distribution boards, for example.

Main product highlights

- 15 V DC/ 1.9 A and 4 A
- 1-phase, wide-range input for 85 V to 264 V AC or 110 V to 300 V DC
- Flat LOGO! design with an installation depth of only 55 mm
- High efficiency across the entire load range, low no-load losses
- Power reserve on starting up through 1.5 times the rated current for capacitive loads
- Wide temperature range from -20 to +70 °C
- Comprehensive certifications, such as cULus, CB, FM, ATEX, cCSAus Class I Div. 2, GL and ABS

Technical specifications

Article number	**6EP1351-1SH03**	**6EP1352-1SH03**
Product	**LOGO!Power**	**LOGO!Power**
Power supply, type	**15 V/1.9 A**	**15 V/4 A**
Input		
Input	1-phase AC or DC	1-phase AC or DC
Rated voltage value $V_{in\ rated}$	100 ... 240 V	100 ... 240 V
Voltage range AC	85 ... 264 V	85 ... 264 V
Input voltage		
• at DC	110 ... 300 V	110 ... 300 V
Wide-range input	Yes	Yes
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	40 ms; at V_{in} = 187 V	40 ms; at V_{in} = 187 V
Rated line frequency 1	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz
Input current		
• at rated input voltage 120 V	0.63 A	1.24 A
• at rated input voltage 230 V	0.33 A	0.68 A
Switch-on current limiting (+25 °C), max.	25 A	55 A
I^2t, max.	0.8 $A^2 \cdot s$	3 $A^2 \cdot s$
Built-in incoming fuse	internal	internal
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 16 A characteristic B or from 10 A characteristic C	Recommended miniature circuit breaker: from 16 A characteristic B or from 10 A characteristic C

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Technical specifications (continued)

Article number	6EP1351-1SH03	6EP1352-1SH03
Product	LOGO!Power	LOGO!Power
Power supply, type	15 V/1.9 A	15 V/4 A
Output		
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	15 V	15 V
Total tolerance, static ±	3 %	3 %
Static mains compensation, approx.	0.1 %	0.1 %
Static load balancing, approx.	1.5 %	1.5 %
Residual ripple peak-peak, max.	200 mV	200 mV
Residual ripple peak-peak, typ.	10 mV	10 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	300 mV	300 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	30 mV	70 mV
Adjustment range	10.5 ... 16.1 V	10.5 ... 16.1 V
Product function Output voltage adjustable	Yes	Yes
Output voltage setting	via potentiometer	via potentiometer
Status display	Green LED for output voltage OK	Green LED for output voltage OK
On/off behavior	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)
Startup delay, max.	0.5 s	0.5 s
Voltage rise, typ.	15 ms	15 ms
Rated current value $I_{out\ rated}$	1.9 A	4 A
Current range	0 ... 1.9 A	0 ... 4 A
• Note	+55 ... +70 °C: Derating 2%/K	+55 ... +70 °C: Derating 2%/K
Supplied active power typical	23 W	50 W
Parallel switching for enhanced performance	Yes	Yes
Numbers of parallel switchable units for enhanced performance	2	2
Efficiency		
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	81 %	85 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	7 W	11 W
Power loss [W] during no-load operation maximum	2 W	2.3 W
Closed-loop control		
Dynamic mains compensation (V_{in} rated ±15 %), max.	0.2 %	0.2 %
Dynamic load smoothing (I_{out}: 10/90/10 %), U_{out} ± typ.	2.8 %	3 %
Load step setting time 10 to 90%, typ.	1 ms	1 ms
Load step setting time 90 to 10%, typ.	1 ms	1 ms
Protection and monitoring		
Output overvoltage protection	Yes, according to EN 60950-1	Yes, according to EN 60950-1
Current limitation, typ.	2.7 A	5.7 A
Property of the output Short-circuit proof	Yes	Yes
Short-circuit protection	Constant current characteristic	Constant current characteristic
Enduring short circuit current RMS value		
• maximum	3.6 A	7 A
Overload/short-circuit indicator	-	-
Safety		
Primary/secondary isolation	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class II (without protective conductor)	Class II (without protective conductor)
CE mark	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273, NEC class 2 (acc. to UL 1310)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), F ile E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273, NEC class 2 (acc. to UL 1310)
Explosion protection	ATEX (EX) II 3G Ex nA IIC T3; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007) Class I, Div. 2, Group ABCD, T4	ATEX (EX) II 3G Ex nA IIC T3; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007) Class I, Div. 2, Group ABCD, T4
FM approval	Class I, Div. 2, Group ABCD, T4	Class I, Div. 2, Group ABCD, T4
CB approval	Yes	Yes
Marine approval	GL, ABS	GL, ABS
Degree of protection (EN 60529)	IP20	IP20

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Technical specifications (continued)

Article number	6EP1351-1SH03	6EP1352-1SH03
Product	**LOGO!Power**	**LOGO!Power**
Power supply, type	**15 V/1.9 A**	**15 V/4 A**
EMC		
Emitted interference	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	not applicable	not applicable
Noise immunity	EN 61000-6-2	EN 61000-6-2
Operating data		
Ambient temperature		
• during operation	-20 ... +70 °C	-20 ... +70 °C
- Note	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation
Mechanics		
Connection technology	screw-type terminals	screw-type terminals
Connections		
• Supply input	L, N: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded	L, N: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded
• Output	+, -: 2 screw terminals each for 0.5 ... 2.5 mm^2	+, -: 2 screw terminals each for 0.5 ... 2.5 mm^2
• Auxiliary	-	-
Width of the enclosure	54 mm	72 mm
Height of the enclosure	90 mm	90 mm
Depth of the enclosure	52.6 mm	52.6 mm
Weight, approx.	0.17 kg	0.25 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15
MTBF at 40 °C	3 593 503 h	3 800 981 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
LOGO!Power 1-phase, 15 V DC/1.9 A Stabilized power supply Input: 100 … 240 V AC (110 … 300 V DC) Output: 15 V DC/1.9 A	**6EP1351-1SH03**
LOGO!Power 1-phase, 15 V DC/4 A Stabilized power supply Input: 100 … 240 V AC (110 … 300 V DC) Output: 15 V DC/4 A	**6EP1352-1SH03**

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Overview



Our miniature power supply units in the same design as the logic modules offer great performance in the smallest space: The excellent efficiency across the entire load range, and the low power losses in no-load operation ensure efficient operation. The wide-range input for 1-phase networks as well as operation with direct voltage, the wide operating temperature range, comprehensive certifications as well as the switch-on behavior optimized for capacitive loads makes them suitable for universal use. These reliable power supplies with their flat, stepped profile can be used extremely flexibly in numerous applications such as in distribution boards, for example.

To further increase the 24 V availability, the LOGO!Power power supplies can be combined with **DC UPS**, **redundancy** and **selectivity modules**.

Main product highlights

- 24 V DC/ 1.3 A, 2.5 A, and 4 A
- 1-phase, wide-range input for 85 V to 264 V AC or 110 V to 300 V DC
- Flat LOGO! design with an installation depth of only 55 mm
- High efficiency across the entire load range, low no-load losses
- Power reserve on starting up through 1.5 times the rated current for capacitive loads
- Wide temperature range from -20 to +70 °C
- Comprehensive certifications, such as cULus, CB, FM, SEMI F47, ATEX, cCSAus Class I Div. 2, GL, ABS, DNV, BV and LRS

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Technical specifications

Article number	6EP1331-1SH03	6EP1332-1SH43	6EP1332-1SH52
Product	LOGO!Power	LOGO!Power	LOGO!Power
Power supply, type	24 V/1.3 A	24 V/2.5 A	24 V/4 A
Input			
Input	1-phase AC or DC	1-phase AC or DC	1-phase AC or DC
Rated voltage value $V_{in\ rated}$	100 ... 240 V	100 ... 240 V	100 ... 240 V
Voltage range AC	85 ... 264 V	85 ... 264 V	85 ... 264 V
Input voltage			
• at DC	110 ... 300 V	110 ... 300 V	110 ... 300 V
Wide-range input	Yes	Yes	Yes
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	40 ms; at V_{in} = 187 V	40 ms; at V_{in} = 187 V	40 ms; at V_{in} = 187 V
Rated line frequency 1	50 Hz	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz	60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz	47 ... 63 Hz
Input current			
• at rated input voltage 120 V	0.7 A	1.22 A	1.95 A
• at rated input voltage 230 V	0.35 A	0.66 A	0.97 A
Switch-on current limiting (+25 °C), max.	25 A	46 A	30 A
I^2t, max.	0.8 $A^2 \cdot s$	3 $A^2 \cdot s$	2.5 $A^2 \cdot s$
Built-in incoming fuse	internal	internal	internal
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 16 A characteristic B or from 10 A characteristic C	Recommended miniature circuit breaker: from 16 A characteristic B or from 10 A characteristic C	Recommended miniature circuit breaker: from 16 A characteristic B or from 10 A characteristic C
Output			
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V	24 V	24 V
Total tolerance, static ±	3 %	3 %	3 %
Static mains compensation, approx.	0.1 %	0.1 %	0.1 %
Static load balancing, approx.	1.5 %	1.5 %	1.5 %
Residual ripple peak-peak, max.	200 mV	200 mV	200 mV
Residual ripple peak-peak, typ.	10 mV	10 mV	30 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	300 mV	300 mV	300 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	20 mV	50 mV	60 mV
Adjustment range	22.2 ... 26.4 V	22.2 ... 26.4 V	22.2 ... 26.4 V
Product function Output voltage adjustable	Yes	Yes	Yes
Output voltage setting	via potentiometer	via potentiometer	via potentiometer
Status display	Green LED for output voltage OK	Green LED for output voltage OK	Green LED for output voltage OK
On/off behavior	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)
Startup delay, max.	0.5 s	0.5 s	0.5 s
Voltage rise, typ.	15 ms	10 ms	15 ms
Rated current value I_{out} rated	1.3 A	2.5 A	4 A
Current range	0 ... 1.3 A	0 ... 2.5 A	0 ... 4 A
• Note	+55 ... +70 °C: Derating 2%/K	+55 ... +70 °C: Derating 2%/K	+55 ... +70 °C: Derating 2%/K
Supplied active power typical	30 W	60 W	96 W
Parallel switching for enhanced performance	Yes	Yes	Yes
Numbers of parallel switchable units for enhanced performance	2	2	2

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Technical specifications (continued)

Article number	6EP1331-1SH03	6EP1332-1SH43	6EP1332-1SH52
Product	**LOGO!Power**	**LOGO!Power**	**LOGO!Power**
Power supply, type	**24 V/1.3 A**	**24 V/2.5 A**	**24 V/4 A**
Efficiency			
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	85 %	88 %	89 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	6 W	8 W	12 W
Power loss [W] during no-load operation maximum	2 W	1.8 W	2 W
Closed-loop control			
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.2 %	0.2 %	0.2 %
Dynamic load smoothing (I_{out}: 10/90/10 %), U_{out} ± typ.	1 %	2 %	1.5 %
Load step setting time 10 to 90%, typ.	1 ms	1 ms	1 ms
Load step setting time 90 to 10%, typ.	1 ms	1 ms	1 ms
Protection and monitoring			
Output overvoltage protection	Yes, according to EN 60950-1	Yes, according to EN 60950-1	Yes, according to EN 60950-1
Current limitation, typ.	1.7 A	3.3 A	5.2 A
Property of the output Short-circuit proof	Yes	Yes	Yes
Short-circuit protection	Constant current characteristic	Constant current characteristic	Constant current characteristic
Enduring short circuit current RMS value			
• maximum	2.4 A	4.8 A	7.9 A
Overload/short-circuit indicator	-	-	-
Safety			
Primary/secondary isolation	Yes	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class II (without protective conductor)	Class II (without protective conductor)	Class II (without protective conductor)
CE mark	Yes	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273, NEC class 2 (acc. to UL 1310)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273, NEC class 2 (acc. to UL 1310)	cULus-listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-recognized (UL 60950, CSA C22.2 No. 60950), File E151273
Explosion protection	ATEX (EX) II 3G Ex nA IIC T3; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007) Class I, Div. 2, Group ABCD, T4	ATEX (EX) II 3G Ex nA IIC T3; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007) Class I, Div. 2, Group ABCD, T4	ATEX (EX) II 3G Ex nA IIC T3; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007) Class I, Div. 2, Group ABCD, T4
FM approval	Class I, Div. 2, Group ABCD, T4	Class I, Div. 2, Group ABCD, T4	Class I, Div. 2, Group ABCD, T4
CB approval	Yes	Yes	Yes
Marine approval	GL, ABS, BV, DNV, LRS	GL, ABS, BV, DNV, LRS	GL, ABS, BV, DNV, LRS
Degree of protection (EN 60529)	IP20	IP20	IP20

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Technical specifications (continued)

Article number	6EP1331-1SH03	6EP1332-1SH43	6EP1332-1SH52
Product	LOGO!Power	LOGO!Power	LOGO!Power
Power supply, type	24 V/1.3 A	24 V/2.5 A	24 V/4 A
EMC			
Emitted interference	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	not applicable	not applicable	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Operating data			
Ambient temperature			
• during operation	-20 ... +70 °C	-20 ... +70 °C	-20 ... +70 °C
- Note	with natural convection	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation
Mechanics			
Connection technology	screw-type terminals	screw-type terminals	screw-type terminals
Connections			
• Supply input	L, N: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded	L, N: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded	L, N: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded
• Output	+, -: 2 screw terminals each for 0.5 ... 2.5 mm^2	+, -: 2 screw terminals each for 0.5 ... 2.5 mm^2	+, -: 2 screw terminals each for 0.5 ... 2.5 mm^2
• Auxiliary	-	-	-
Width of the enclosure	54 mm	72 mm	90 mm
Height of the enclosure	90 mm	90 mm	90 mm
Depth of the enclosure	52.6 mm	52.6 mm	52.6 mm
Weight, approx.	0.17 kg	0.25 kg	0.34 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15
MTBF at 40 °C	3 586 929 h	3 723 563 h	3 608 805 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

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Ordering data	Article No.
LOGO!Power 1-phase, 24 V DC/1.3 A Stabilized power supply Input: 100 … 240 V AC (110 … 300 V DC) Output: 24 V DC/1.3 A	**6EP1331-1SH03**
LOGO!Power 1-phase, 24 V DC/2.5 A Stabilized power supply Input: 100 … 240 V AC (110 … 300 V DC) Output: 24 V DC/2.5 A	**6EP1332-1SH43**
LOGO!Power 1-phase, 24 V DC/4 A Stabilized power supply Input: 100 … 240 V AC (110 … 300 V DC) Output: 24 V DC/4 A	**6EP1332-1SH52**

Accessories	Article No.
SITOP PSE202U redundancy module Input/output: 24 V DC/NEC Class 2 suitable for decoupling two SITOP power supplies output power limited < 100 VA	**6EP1962-2BA00**
SITOP PSE202U redundancy module Input/output: 24 V DC/10 A suitable for decoupling two SITOP power supplies with a maximum of 5 A output current	**6EP1964-2BA00**
SITOP PSE200U 3 A selectivity module 4-channel selectivity module Input: 24 V DC Output: 24 V DC/3A per each channel output current adjustable 0.5 … 3 A	
• With common alarm signal	**6EP1961-2BA11**
• With single-channel signaling	**6EP1961-2BA31**

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4/2 1-phase, DC 24 V

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Overview



The single-phase SITOP lite power supplies are designed for basic requirements in industrial environments and offer all the key functions at an attractive price. Thanks to the slim design, the power supplies require little space on the standard mounting rail, and their excellent efficiency ensures low thermal losses in the control cabinet.

To further increase 24 V availability, the SITOP lite power supplies can be combined with **DC UPS**, **redundancy** and **selectivity modules**.

Main product highlights

- 24 V DC/ 2.5 A, 5 A and 10 A
- 1-phase wide-range input with manual switchover
- Slim design - no lateral installation clearances required
- High degree of efficiency
- Green LED for "24 V OK"
- Adjustable output voltage for compensating voltage drops
- Parallel connection possible
- Ambient temperature range of 0 °C to 60 °C (above 45 °C with derating)
- Short-circuit and overload protection
- Certification to CE, cULus and CD

Technical specifications

Article number	**6EP1332-1LB00**	**6EP1333-1LB00**	**6EP1334-1LB00**
Product	**SITOP PSU100L**	**SITOP PSU100L**	**SITOP PSU100L**
Power supply, type	**24 V/2.5 A**	**24 V/5 A**	**24 V/10 A**
Input			
Input	1-phase AC	1-phase AC	1-phase AC
Supply voltage			
• 1 at AC Rated value	120 V	120 V	120 V
• 2 at AC Rated value	230 V	230 V	230 V
• Note	Set by means of selector switch on the device	Set by means of selector switch on the device	Set by means of selector switch on the device
Input voltage			
• 1 at AC	93 ... 132 V	93 ... 132 V	93 ... 132 V
• 2 at AC	187 ... 264 V	187 ... 264 V	187 ... 264 V
Wide-range input	No	No	No
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	20 ms; at V_{in} = 93/187 V	20 ms; at V_{in} = 93/187 V	20 ms; at V_{in} = 93/187 V
Rated line frequency 1	50 Hz	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz	60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz	47 ... 63 Hz
Input current			
• at rated input voltage 120 V	1.1 A	2.1 A	4.1 A
• at rated input voltage 230 V	0.65 A	1.15 A	2 A

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Technical specifications (continued)

Article number	6EP1332-1LB00	6EP1333-1LB00	6EP1334-1LB00
Product	**SITOP PSU100L**	**SITOP PSU100L**	**SITOP PSU100L**
Power supply, type	**24 V/2.5 A**	**24 V/5 A**	**24 V/10 A**
Switch-on current limiting (+25 °C), max.	27 A	32 A	65 A
Duration of inrush current limiting at 25 °C			
• typical	3 ms	3 ms	3 ms
I^2t, max.	0.3 $A^2 \cdot s$	0.8 $A^2 \cdot s$	3.3 $A^2 \cdot s$
Built-in incoming fuse	T 2 A/250 V (not accessible)	T 3,15 A/250 V (not accessible)	T 6.3 A/250 V (not accessible)
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 3 A characteristic C	Recommended miniature circuit breaker: from 6 A characteristic C	Recommended miniature circuit breaker: from 10 A characteristic C
Output			
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V	24 V	24 V
Total tolerance, static ±	3 %	3 %	3 %
Static mains compensation, approx.	0.1 %	0.1 %	0.1 %
Static load balancing, approx.	0.5 %	0.5 %	0.5 %
Residual ripple peak-peak, max.	150 mV	150 mV	150 mV
Residual ripple peak-peak, typ.	10 mV	50 mV	50 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	240 mV	240 mV	240 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	50 mV	150 mV	150 mV
Adjustment range	22.8 ... 26.4 V	22.8 ... 26.4 V	22.8 ... 26.4 V
Product function Output voltage adjustable	Yes	Yes	Yes
Output voltage setting	via potentiometer	via potentiometer	via potentiometer
Status display	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK
On/off behavior	Overshoot of V_{out} approx. 4 %	Overshoot of V_{out} approx. 4 %	Overshoot of V_{out} approx. 4 %
Startup delay, max.	1.5 s	1.5 s	1.5 s
Voltage rise, typ.	150 ms	130 ms	170 ms
Rated current value $I_{out\ rated}$	2.5 A	5 A	10 A
Current range	0 ... 2.5 A	0 ... 5 A	0 ... 10 A
• Note	+45 ... +60 °C: Derating 2%/K	+45 ... +60 °C: Derating 2%/K	+45 ... +60 °C: Derating 2%/K
Supplied active power typical	60 W	120 W	240 W
Parallel switching for enhanced performance	Yes	Yes	Yes
Numbers of parallel switchable units for enhanced performance	2	2	2
Efficiency			
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	85 %	86 %	89 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	9 W	17 W	34 W

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Technical specifications (continued)

Article number	6EP1332-1LB00	6EP1333-1LB00	6EP1334-1LB00
Product	**SITOP PSU100L**	**SITOP PSU100L**	**SITOP PSU100L**
Power supply, type	**24 V/2.5 A**	**24 V/5 A**	**24 V/10 A**
Closed-loop control			
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.3 %	0.3 %	0.3 %
Dynamic load smoothing (Iout: 10/90/10 %), U_{out} ± typ.	2 %	2 %	2 %
Load step setting time 10 to 90%, typ.	0.5 ms	0.4 ms	0.5 ms
Load step setting time 90 to 10%, typ.	0.7 ms	0.4 ms	0.7 ms
Protection and monitoring			
Output overvoltage protection	< 33 V	< 33 V	< 33 V
Current limitation, typ.	2.6 A	5.25 A	10.5 A
Property of the output Short-circuit proof	Yes	Yes	Yes
Short-circuit protection	Constant current characteristic	Constant current characteristic	Constant current characteristic
Enduring short circuit current RMS value			
• typical	4 A	8 A	16 A
Overload/short-circuit indicator	-	-	-
Safety			
Primary/secondary isolation	Yes	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I	Class I	Class I
Leakage current			
• maximum	3.5 mA	3.5 mA	3.5 mA
• typical	0.4 mA	0.4 mA	0.8 mA
CE mark	Yes	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259
Explosion protection	-	-	-
FM approval	-	-	-
CB approval	Yes	Yes	Yes
Marine approval	-	-	-
Degree of protection (EN 60529)	IP20	IP20	IP20

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Technical specifications (continued)

Article number	6EP1332-1LB00	6EP1333-1LB00	6EP1334-1LB00
Product	**SITOP PSU100L**	**SITOP PSU100L**	**SITOP PSU100L**
Power supply, type	**24 V/2.5 A**	**24 V/5 A**	**24 V/10 A**
EMC			
Emitted interference	EN 55022 Class A	EN 55022 Class A	EN 55022 Class A
Supply harmonics limitation	not applicable	-	-
Noise immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Operating data			
Ambient temperature			
• during operation	0 ... 60 °C	0 ... 60 °C	0 ... 60 °C
- Note	with natural convection	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation
Mechanics			
Connection technology	screw-type terminals	screw-type terminals	screw-type terminals
Connections			
• Supply input	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded
• Output	+, -: 2 screw terminals each for 0.5 ... 2.5 mm^2	+, -: 2 screw terminals each for 0.5 ... 2.5 mm^2	+, -: 2 screw terminals each for 0.5 ... 2.5 mm^2
• Auxiliary	-	-	-
Width of the enclosure	32.5 mm	50 mm	70 mm
Height of the enclosure	125 mm	125 mm	125 mm
Depth of the enclosure	120 mm	120 mm	120 mm
Weight, approx.		0.5 kg	0.75 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15
MTBF at 40 °C	3 153 082 h	3 076 166 h	2 333 396 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

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1-phase, 24 V

Ordering data	Article No.
SITOP PSU100L 1-phase, 24 V DC/2.5 A Stabilized power supply Input: 120/230 V AC Output: 24 V DC/2.5 A	**6EP1332-1LB00**
SITOP PSU100L 1-phase, 24 V DC/5 A Stabilized power supply Input: 120/230 V AC Output: 24 V DC/5 A	**6EP1333-1LB00**
SITOP PSU100L 1-phase, 24 V DC/10 A Stabilized power supply Input: 120/230 V AC Output: 24 V DC/10 A	**6EP1334-1LB00**

Accessories	Article No.
SITOP PSE202U redundancy module Input/output: 24 V DC/NEC Class 2 suitable for decoupling two SITOP power supplies output power limited < 100 VA	**6EP1962-2BA00**
SITOP PSE202U redundancy module Input/output: 24 V DC/10 A suitable for decoupling two SITOP power supplies with a maximum of 5 A output current	**6EP1964-2BA00**
SITOP PSE200U 3 A selectivity module 4-channel selectivity module Input: 24 V DC Output: 24 V DC/3A per each channel output current adjustable 0.5 … 3 A	
• With common alarm signal	**6EP1961-2BA11**
• With single-channel signaling	**6EP1961-2BA31**
SITOP PSE200U 10 A selectivity module 4-channel selectivity module Input: 24 V DC Output: 24 V DC/10 A per channel output current adjustable 3 ... 10 A	
• With common alarm signal	**6EP1961-2BA21**
• With single-channel signaling	**6EP1961-2BA41**

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5/2 **Introduction**
5/3 1-phase, 12 V DC
5/7 1-phase, 24 V DC
5/13 3-phase, 24 V DC

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Overview



The powerful standard power supply

The one-phase and three-phase SITOP smart are the universal and powerful standard power supplies for machinery and plant engineering. Despite their compact design, they offer an excellent overload response: Thanks to an extra power of 150 %, loads with high power consumption can be connected without any problems and the permanent overload capability of 120% offers power reserves in case of expansions. The high degree of efficiency results in low energy consumption and minimal heat generation inside the control cabinet.

To further increase the 24 V availability, the SITOP smart power supplies can be combined with **buffer**, **DC UPS**, **redundancy** and **selectivity modules**.

Main product highlights

- 1-phase, 24 V DC/2.5 A, 5 A, 10 A and 20 A as well as 12 V/7 A and 14 A
- 3-phase, 24 V DC/5 A, 10 A, 20 A and 40 A
- Compact design - no lateral clearances required
- Extra power with 1.5 times the rated current (5 s/min) for brief functional overload
- Permanent overload capability with 1.2 times the rated current up to 45 °C ambient temperature (24 V versions)
- High degree of efficiency up to 91.5 %
- Adjustable output voltage for compensating voltage drops
- Signaling contact for easy integration in the plant monitoring system
- Wide temperature range from -25 or -10 to +70 °C
- Comprehensive certifications, such as cULus, cCSAus, ATEX, IECEx and GL

More information

Select the appropriate power supply quickly and easily with the SITOP Selection Tool:

http://www.siemens.com/sitop-selection-tool

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Overview



The one-phase SITOP smart are the universal and powerful standard power supplies for machinery and plant engineering. Despite their compact design, they offer an excellent overload response: Thanks to an extra power of 150 %, loads with high power consumption can be connected without any problems. The high degree of efficiency results in low energy consumption and minimal heat generation inside the control cabinet.

Main product highlights

- 1-phase, 12 V DC/7 A and 14 A
- Input voltage 120 V and 230 V AC with automatic range switching
- Compact design - no lateral clearances required
- Extra power with 1.5 times the rated current (5 s/min) for brief functional overload
- Adjustable output voltage for compensating voltage drops
- Signaling contact for easy integration in the plant monitoring system
- Wide temperature range from -25 to +70 °C
- Comprehensive certifications, such as cULus, cCSAus, ATEX, IECEx and GL

Technical specifications

Article number	**6EP1322-2BA00**	**6EP1323-2BA00**
Product	**SITOP PSU100S**	**SITOP PSU100S**
Power supply, type	**12 V/7 A**	**12 V/14 A**
Input		
Input	1-phase AC	1-phase AC
Supply voltage		
• 1 at AC Rated value	120 V	120 V
• 2 at AC Rated value	230 V	230 V
• Note	Automatic range selection	Automatic range selection
Input voltage		
• 1 at AC	85 ... 132 V	85 ... 132 V
• 2 at AC	170 ... 264 V	170 ... 264 V
Wide-range input	No	No
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	20 ms; at V_{in} = 93/187 V	20 ms; at V_{in} = 93/187 V
Rated line frequency 1	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz
Input current		
• at rated input voltage 120 V	1.73 A	3.24 A
• at rated input voltage 230 V	0.99 A	1.41 A
Switch-on current limiting (+25 °C), max.	45 A	60 A
Built-in incoming fuse	T 3,15 A/250 V (not accessible)	T 6.3 A/250 V (not accessible)
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 6 A characteristic C	Recommended miniature circuit breaker: from 10 A characteristic C

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Technical specifications (continued)

Article number	6EP1322-2BA00	6EP1323-2BA00
Product	**SITOP PSU100S**	**SITOP PSU100S**
Power supply, type	**12 V/7 A**	**12 V/14 A**
Output		
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	12 V	12 V
Total tolerance, static ±	3 %	3 %
Static mains compensation, approx.	0.1 %	0.1 %
Static load balancing, approx.	1 %	1 %
Residual ripple peak-peak, max.	150 mV	150 mV
Residual ripple peak-peak, typ.	20 mV	20 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	240 mV	240 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	100 mV	100 mV
Adjustment range	11.5 ... 15.5 V	11.5 ... 15.5 V
Product function Output voltage adjustable	Yes	Yes
Output voltage setting	via potentiometer	via potentiometer
Status display	Green LED for 12 V OK	Green LED for 12 V OK
Signaling	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for 12 V OK	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for 12 V OK
On/off behavior	Overshoot of V_{out} < 3 %	Overshoot of V_{out} < 3 %
Startup delay, max.	0.3 s	0.3 s
Voltage rise, typ.	10 ms	10 ms
Rated current value $I_{out\ rated}$	7 A	14 A
Current range	0 ... 7 A	0 ... 14 A
• Note	+50 ... +70 °C: Derating 0.75%/K	+50 ... +70 °C: Derating 3.5%/K
Supplied active power typical	84 W	168 W
Short-term overload current		
• on short-circuiting during the start-up typical	25 A	40 A
• at short-circuit during operation typical	25 A	40 A
Duration of overloading capability for excess current		
• on short-circuiting during the start-up	800 ms	800 ms
• at short-circuit during operation	800 ms	800 ms
Parallel switching for enhanced performance	Yes	Yes
Numbers of parallel switchable units for enhanced performance	2	2
Efficiency		
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	84 %	87 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	15 W	24 W
Closed-loop control		
Dynamic load smoothing (I_{out}: 10/90/10 %), U_{out} ± typ.	5 %	5 %
Load step setting time 10 to 90%, typ.	1 ms	1 ms
Load step setting time 90 to 10%, typ.	1 ms	1 ms

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Technical specifications (continued)

Article number	6EP1322-2BA00	6EP1323-2BA00
Product	**SITOP PSU100S**	**SITOP PSU100S**
Power supply, type	**12 V/7 A**	**12 V/14 A**
Protection and monitoring		
Output overvoltage protection	< 20 V	< 20 V
Current limitation	7 ... 8.8 A	14 ... 16.4 A
Property of the output Short-circuit proof	Yes	Yes
Short-circuit protection	Constant current characteristic	Constant current characteristic
Enduring short circuit current RMS value		
• typical	8.8 A	16.4 A
Overcurrent overload capability in normal operation	overload capability 150 % $I_{out\ rated}$ up to 5 s/min	overload capability 150 % $I_{out\ rated}$ up to 5 s/min
Overload/short-circuit indicator	-	-
Safety		
Primary/secondary isolation	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I	Class I
Leakage current		
• maximum	3.5 mA	3.5 mA
• typical	0.4 mA	0.8 mA
CE mark	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259, cCSAus (CSA C22.2 No. 60950-1, UL 60950-1, UL 1604)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259, cCSAus (CSA C22.2 No. 60950-1, UL 60950-1, UL 1604)
Explosion protection	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007) Class I, Div. 2, Group ABCD, T4	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007) Class I, Div. 2, Group ABCD, T4
FM approval	-	-
CB approval	Yes	Yes
Marine approval	GL	GL
Degree of protection (EN 60529)	IP20	IP20
EMC		
Emitted interference	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	EN 61000-3-2	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2
Operating data		
Ambient temperature		
• during operation	-25 ... +70 °C	-25 ... +70 °C
- Note	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation

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Technical specifications (continued)

Article number	6EP1322-2BA00	6EP1323-2BA00
Product	**SITOP PSU100S**	**SITOP PSU100S**
Power supply, type	**12 V/7 A**	**12 V/14 A**
Mechanics		
Connection technology	screw-type terminals	screw-type terminals
Connections		
• Supply input	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded
• Output	+, -: 2 screw terminals each for 0.5 ... 2.5 mm^2	+, -: 2 screw terminals each for 0.5 ... 2.5 mm^2
• Auxiliary	Alarm signals: 2 screw terminals for 0.5 ... 2.5 mm^2	Alarm signals: 2 screw terminals for 0.5 ... 2.5 mm^2
Connections signaling contact	2 screw terminals for 0.5 ... 2.5 mm^2	2 screw terminals for 0.5 ... 2.5 mm^2
Width of the enclosure	50 mm	70 mm
Height of the enclosure	125 mm	125 mm
Depth of the enclosure	120 mm	120 mm
Weight, approx.	0.5 kg	0.7 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15
MTBF at 40 °C	1 998 441 h	1 614 510 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SITOP PSU100S 1-phase, 12 V DC/7 A Stabilized power supply Input: 120/230 V AC Output: 12 V DC/7 A	**6EP1322-2BA00**
SITOP PSU100S 1-phase, 12 V DC/14 A Stabilized power supply Input: 120/230 V AC Output: 12 V DC/14 A	**6EP1323-2BA00**

More information

Select the appropriate power supply quickly and easily with the SITOP Selection Tool:

http://www.siemens.com/sitop-selection-tool

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Overview



The one-phase SITOP smart are the universal and powerful standard power supplies for machinery and plant engineering. Despite their compact design, they offer an excellent overload response: Thanks to an extra power of 150 %, loads with high power consumption can be connected without any problems and the permanent overload capability of 120% offers power reserves in case of expansions. The high degree of efficiency results in low energy consumption and minimal heat generation inside the control cabinet.

To further increase 24 V availability, the SITOP smart power supplies can be combined with **buffer**, **DC UPS**, **redundancy** and **selectivity modules**.

Main product highlights

- 1-phase, 24 V DC/2.5 A, 5 A, 10 A and 20 A
- Input voltage 120 V and 230 V AC with automatic range switching
- Compact design - no lateral clearances required
- Extra power with 1.5 times the rated current (5 s/min) for brief functional overload
- Permanent overload capability with 1.2 times the rated current up to 45 °C ambient temperature
- Adjustable output voltage for compensating voltage drops
- Signaling contact for easy integration in the plant monitoring system
- Wide temperature range from -25 or 0 to +70 °C
- Comprehensive certifications, such as cULus, cCSAus, ATEX, IECEx and GL

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Technical specifications

Article number	6EP1332-2BA20	6EP1333-2BA20	6EP1334-2BA20	6EP1336-2BA10
Product	**SITOP PSU100S**	**SITOP PSU100S**	**SITOP PSU100S**	**SITOP PSU100S**
Power supply, type	**24 V/2.5 A**	**24 V/5 A**	**24 V/10 A**	**24 V/20 A**
Input				
Input	1-phase AC	1-phase AC	1-phase AC	1-phase AC
Supply voltage				
• 1 at AC Rated value	120 V	120 V	120 V	120 V
• 2 at AC Rated value	230 V	230 V	230 V	230 V
• Note	Automatic range selection	Automatic range selection	Automatic range selection	Automatic range selection
Input voltage				
• 1 at AC	85 ... 132 V	85 ... 132 V	85 ... 132 V	85 ... 132 V
• 2 at AC	170 ... 264 V	170 ... 264 V	170 ... 264 V	176 ... 264 V
Wide-range input	No	No	No	No
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	20 ms; at V_{in} = 93/187 V	20 ms; at V_{in} = 93/187 V	20 ms; at V_{in} = 93/187 V	20 ms; at V_{in} = 120/230 V
Rated line frequency 1	50 Hz	50 Hz	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz	60 Hz	60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz	47 ... 63 Hz	47 ... 63 Hz
Input current				
• at rated input voltage 120 V	1.25 A	2.34 A	4.49 A	7.5 A
• at rated input voltage 230 V	0.74 A	1.36 A	1.91 A	3.5 A
Switch-on current limiting (+25 °C), max.	33 A	40 A	60 A	11 A
I^2t, max.	0.4 $A^2 \cdot s$	1 $A^2 \cdot s$	5.6 $A^2 \cdot s$	10 $A^2 \cdot s$
Built-in incoming fuse	T 3,15 A/250 V (not accessible)	T 3,15 A/250 V (not accessible)	T 6.3 A/250 V (not accessible)	T 10 A (not accessible)
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 3 A characteristic C	Recommended miniature circuit breaker: from 6 A characteristic C	Recommended miniature circuit breaker: from 10 A characteristic C	Recommended miniature circuit breaker: from 10 A characteristic C or circuit-breaker 3RV2411-1JA10 (120 V) or 3RV2411-1FA10 (230 V)

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Technical specifications (continued)

Article number	6EP1332-2BA20	6EP1333-2BA20	6EP1334-2BA20	6EP1336-2BA10
Product	SITOP PSU100S	SITOP PSU100S	SITOP PSU100S	SITOP PSU100S
Power supply, type	24 V/2.5 A	24 V/5 A	24 V/10 A	24 V/20 A
Output				
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V	24 V	24 V	24 V
Total tolerance, static ±	3 %	3 %	3 %	3 %
Static mains compensation, approx.	0.1 %	0.1 %	0.1 %	0.5 %
Static load balancing, approx.	1 %	1 %	1 %	1 %
Residual ripple peak-peak, max.	150 mV	150 mV	150 mV	150 mV
Residual ripple peak-peak, typ.	30 mV	30 mV	20 mV	
Spikes peak-peak, max. (bandwidth: 20 MHz)	240 mV	240 mV	240 mV	240 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	70 mV	140 mV	160 mV	
Adjustment range	22.8 ... 28 V	22.8 ... 28 V	22.8 ... 28 V	24 ... 28 V
Product function Output voltage adjustable	Yes	Yes	Yes	Yes
Output voltage setting	via potentiometer	via potentiometer	via potentiometer	via potentiometer; max. 480 W
Status display	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK
Signaling	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for "24 V OK"	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for "24 V OK"	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for "24 V OK"	Relay contact (NO contact, rating 50 V DC/ 0.3 A) for "24 V OK"
On/off behavior	Overshoot of V_{out} < 3 %	Overshoot of V_{out} < 3 %	Overshoot of V_{out} < 3 %	No overshoot of V_{out} (soft start)
Startup delay, max.	0.3 s	0.3 s	0.3 s	1.5 s
Voltage rise, typ.	15 ms	15 ms	20 ms	50 ms
Voltage increase time of the output voltage maximum				500 ms
Rated current value $I_{out\ rated}$	2.5 A	5 A	10 A	20 A
Current range	0 ... 3 A	0 ... 6 A	0 ... 12 A	0 ... 20 A
• Note	3 A up to +45°C; +60 ... +70 °C: Derating 3%/K	6 A up to +45°C; +60 ... +70 °C: Derating 1.6%/K	12 A up to +45°C; +60 ... +70 °C: Derating 3%/K	24 A up to +45°C; +60 ... +70 °C: Derating 5%/K
Supplied active power typical	60 W	144 W	288 W	480 W
Short-term overload current				
• on short-circuiting during the start-up typical	9 A	18 A	32 A	35 A
• at short-circuit during operation typical	9 A	18 A	32 A	35 A
Duration of overloading capability or excess current				
• on short-circuiting during the start-up	100 ms	800 ms	1 000 ms	100 ms
• at short-circuit during operation	800 ms	800 ms	1 000 ms	100 ms
Parallel switching for enhanced performance	Yes	Yes	Yes	Yes
Numbers of parallel switchable units for enhanced performance	2	2	2	2

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Technical specifications (continued)

Article number	6EP1332-2BA20	6EP1333-2BA20	6EP1334-2BA20	6EP1336-2BA10
Product	SITOP PSU100S	SITOP PSU100S	SITOP PSU100S	SITOP PSU100S
Power supply, type	24 V/2.5 A	24 V/5 A	24 V/10 A	24 V/20 A
Efficiency				
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	85 %	88 %	90 %	90 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	10 W	16 W	25 W	53 W
Closed-loop control				
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.3 %	0.3 %	0.3 %	1 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	-	-	-	3 %
Dynamic load smoothing (I_{out}: 10/90/10 %), U_{out} ± typ.	5 %	3 %	3 %	-
Load step setting time 10 to 90%, typ.	1 ms	1 ms	1 ms	-
Load step setting time 90 to 10%, typ.	1 ms	1 ms	1 ms	-
Setting time maximum	-	-	-	10 ms
Protection and monitoring				
Output overvoltage protection	protection against overvoltage in case of internal fault V_{out} < 33 V	protection against overvoltage in case of internal fault V_{out} < 33 V	protection against overvoltage in case of internal fault V_{out} < 33 V	Yes, according to EN 60950-1
Current limitation	3 ... 3.4 A	6 ... 7.1 A	12 ... 14.6 A	
Current limitation, typ.	-	-	-	21 A
Property of the output Short-circuit proof	Yes	Yes	Yes	Yes
Short-circuit protection	Constant current characteristic	Constant current characteristic	Constant current characteristic	Electronic shutdown, automatic restart
Enduring short circuit current RMS value				
• maximum	-	-	-	7 A
• typical	3.4 A	7.1 A	14.6 A	-
Overcurrent overload capability in normal operation	overload capability 150 % $I_{out\ rated}$ up to 5 s/min	overload capability 150 % $I_{out\ rated}$ up to 5 s/min	overload capability 150 % $I_{out\ rated}$ up to 5 s/min	overload capability 150 % $I_{out\ rated}$ up to 5 s/min
Overload/short-circuit indicator	-	-	-	-
Safety				
Primary/secondary isolation	Yes	Yes	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I	Class I	Class I	Class I
Leakage current				
• maximum	3.5 mA	3.5 mA	3.5 mA	3.5 mA
• typical	0.4 mA	0.4 mA	0.8 mA	1 mA
CE mark	Yes	Yes	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259, cCSAus (CSA C22.2 No. 60950-1, UL 60950-1, UL 1604)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259, cCSAus (CSA C22.2 No. 60950-1, UL 60950-1, UL 1604)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259, cCSAus (CSA C22.2 No. 60950-1, UL 60950-1, UL 1604)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)
Explosion protection	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007) Class I, Div. 2, Group ABCD, T4	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007) Class I, Div. 2, Group ABCD, T4	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007) Class I, Div. 2, Group ABCD, T4	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T4
FM approval	-	-	-	-
CB approval	Yes	Yes	Yes	Yes
Marine approval	GL, BV	GL, BV	GL, BV	GL
Degree of protection (EN 60529)	IP20	IP20	IP20	IP20

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Technical specifications (continued)

Article number	6EP1332-2BA20	6EP1333-2BA20	6EP1334-2BA20	6EP1336-2BA10
Product	SITOP PSU100S	SITOP PSU100S	SITOP PSU100S	SITOP PSU100S
Power supply, type	24 V/2.5 A	24 V/5 A	24 V/10 A	24 V/20 A
EMC				
Emitted interference	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	not applicable	EN 61000-3-2	EN 61000-3-2	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Operating data				
Ambient temperature				
• during operation	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	0 ... 70 °C
- Note	with natural convection	with natural convection	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation
Mechanics				
Connection technology	screw-type terminals	screw-type terminals	screw-type terminals	screw-type terminals
Connections				
• Supply input	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded	L1, N, PE: 1 screw terminal each for 0.2 ... 4 mm^2 single-core/finely stranded
• Output	+, -: 2 screw terminals each for 0.5 ... 2.5 mm^2	+, -: 2 screw terminals each for 0.5 ... 2.5 mm^2	+, -: 2 screw terminals each for 0.5 ... 2.5 mm^2	+, -: 2 screw terminals each for 0.2 ... 4 mm^2
• Auxiliary	Alarm signals: 2 screw terminals for 0.5 ... 2.5 mm^2	Alarm signals: 2 screw terminals for 0.5 ... 2.5 mm^2	Alarm signals: 2 screw terminals for 0.5 ... 2.5 mm^2	13, 14 (alarm signal): 1 screw terminal each for 0.14 ... 1.5 mm^2
Connections signaling contact	2 screw terminals for 0.5 ... 2.5 mm^2	2 screw terminals for 0.5 ... 2.5 mm^2	2 screw terminals for 0.5 ... 2.5 mm^2	
Width of the enclosure	32.5 mm	50 mm	70 mm	115 mm
Height of the enclosure	125 mm	125 mm	125 mm	145 mm
Depth of the enclosure	120 mm	120 mm	120 mm	150 mm
Weight, approx.	0.32 kg	0.5 kg	0.8 kg	2.4 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes	Yes	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15
Electrical accessories	Buffer module	Buffer module	Buffer module	Buffer module
Mechanical accessories	-	-	-	Device identification label 20 mm × 7 mm, pale turquoise 3RT1900-1SB20
MTBF at 40 °C	1 804 044 h	1 998 441 h	1 614 510 h	1 778 916 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

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Ordering data

	Article No.
SITOP PSU100S 1-phase, 24 V DC/2.5 A Stabilized power supply Input: 120/230 V AC Output: 24 V DC/2.5 A	**6EP1332-2BA20**
SITOP PSU100S 1-phase, 24 V DC/5 A Stabilized power supply Input: 120/230 V AC Output: 24 V DC/5 A	**6EP1333-2BA20**
SITOP PSU100S 1-phase, 24 V DC/10 A Stabilized power supply Input: 120/230 V AC Output: 24 V DC / 10 A	**6EP1334-2BA20**
SITOP PSU100S 1-phase, 24 V DC/20 A Stabilized power supply Input: 120/230 V AC Output: 24 V DC/20 A	**6EP1336-2BA10**

Accessories

	Article No.
SITOP PSE202U redundancy module Input/output: 24 V DC/40 A suitable for decoupling two SITOP power supplies with a maximum of 20 A output current	**6EP1961-3BA21**
SITOP PSE202U redundancy module Input/output: 24 V DC/NEC Class 2 suitable for decoupling two SITOP power supplies output power limited < 100 VA	**6EP1962-2BA00**
SITOP PSE202U redundancy module Input/output: 24 V DC/10 A suitable for decoupling two SITOP power supplies with a maximum of 5 A output current	**6EP1964-2BA00**
SITOP PSE200U 3 A selectivity module 4-channel selectivity module Input: 24 V DC Output: 24 V DC/3A per each channel output current adjustable 0.5 … 3 A	
• With common alarm signal	**6EP1961-2BA11**
• With single-channel signaling	**6EP1961-2BA31**
SITOP PSE200U 10 A selectivity module 4-channel selectivity module Input: 24 V DC Output: 24 V DC/10 A per channel output current adjustable 3 ... 10 A	
• With common alarm signal	**6EP1961-2BA21**
• With single-channel signaling	**6EP1961-2BA41**
SITOP PSE201U buffer module For SITOP smart and SITOP modular buffer time 100 ms to 10 s dependent on load current	**6EP1961-3BA01**

More information

Select the appropriate power supply quickly and easily with the SITOP Selection Tool:

http://www.siemens.com/sitop-selection-tool

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Overview



The three-phase SITOP smart are the universal and powerful standard power supplies for machinery and plant engineering. Despite their compact design, they offer an excellent overload response: Thanks to an extra power of 150 %, loads with high power consumption can be connected without any problems and the permanent overload capability of 120% offers power reserves in case of expansions.

The high degree of efficiency results in low energy consumption and minimal heat generation inside the control cabinet.

To further increase 24 V availability, the SITOP smart power supplies can be combined with **buffer**, **DC UPS**, **redundancy** and **selectivity modules**.

Main product highlights

- 3-phase, 24 V DC/5 A, 10 A, 20 A and 40 A
- Wide-range input from 340 to 550 V AC for global use
- Compact design - no lateral clearances required
- Extra power with 1.5 times the rated current (5 s/min) for brief functional overload
- Permanent overload capability with 1.2 times the rated current up to 45 °C ambient temperature
- Adjustable output voltage for compensating voltage drops
- Signaling contact for easy integration in the plant monitoring system
- Wide temperature range from -25 or 0 to +70 °C
- Comprehensive certifications, such as cULus, cCSAus, ATEX, IECEx and GL

5

Technical specifications

Article number	**6EP1433-2BA20**	**6EP1434-2BA20**	**6EP1436-2BA10**	**6EP1437-2BA20**
Product	**SITOP PSU300S**	**SITOP PSU300S**	**SITOP PSU300S**	**SITOP PSU300S**
Power supply, type	**24 V/5 A**	**24 V/10 A**	**24 V/20 A**	**24 V/40 A**
Input				
Input	3-phase AC	3-phase AC	3-phase AC	3-phase AC
Rated voltage value $V_{in\ rated}$	400 ... 500 V	400 ... 500 V	400 ... 500 V	400 ... 500 V
Voltage range AC	340 ... 550 V	340 ... 550 V	340 ... 550 V	340 ... 550 V
Wide-range input	Yes	Yes	Yes	Yes
Mains buffering at $I_{out\ rated}$, min.	6 ms; at V_{in} = 400 V	6 ms; at V_{in} = 400 V	6 ms; at V_{in} = 400 V	6 ms; at V_{in} = 400 V
Rated line frequency 1	50 Hz	50 Hz	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz	60 Hz	60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz	47 ... 63 Hz	47 ... 63 Hz
Input current				
• at rated input voltage 400 V	0.45 A	0.7 A	1.2 A	2 A
• at rated input voltage 500 V	0.4 A	0.6 A	1 A	1.7 A
Switch-on current limiting (+25 °C), max.	20 A	20 A	36 A	60 A
I^2t, max.	0.5 $A^2 \cdot s$	0.5 $A^2 \cdot s$	0.9 $A^2 \cdot s$	3.4 $A^2 \cdot s$
Built-in incoming fuse	none	none	none	none
Protection in the mains power input (IEC 898)	Required: 3-pole connected miniature circuit breaker 3 ... 16 A characteristic C or circuit breaker 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489)	Required: 3-pole connected miniature circuit breaker 3 ... 16 A characteristic C or circuit breaker 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489)	Required: 3-pole connected miniature circuit breaker 6 ... 16 A characteristic C or circuit breaker 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489)	Required: 3-pole connected miniature circuit breaker 10 ... 16 A characteristic C or circuit breaker 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489)

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Technical specifications (continued)

Article number	6EP1433-2BA20	6EP1434-2BA20	6EP1436-2BA10	6EP1437-2BA20
Product	SITOP PSU300S	SITOP PSU300S	SITOP PSU300S	SITOP PSU300S
Power supply, type	24 V/5 A	24 V/10 A	24 V/20 A	24 V/40 A
Output				
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V	24 V	24 V	24 V
Total tolerance, static ±	3 %	3 %	3 %	3 %
Static mains compensation, approx.	0.1 %	0.1 %	0.5 %	1 %
Static load balancing, approx.	0.1 %	0.15 %	1 %	2 %
Residual ripple peak-peak, max.	200 mV	200 mV	150 mV	150 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	240 mV	240 mV	240 mV	240 mV
Adjustment range	24 ... 28 V	24 ... 28 V	24 ... 28 V	24 ... 28 V
Product function Output voltage adjustable	Yes	Yes	Yes	Yes
Output voltage setting	via potentiometer; max. 120 W	via potentiometer; max. 240 W	via potentiometer; max. 480 W	via potentiometer; max. 960 W
Status display	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK
Signaling	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for "24 V OK"	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for "24 V OK"	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for "24 V OK"	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for "24 V OK"
On/off behavior	Overshoot of V_{out} < 5 %	Overshoot of V_{out} < 5 %	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)
Startup delay, max.	1.5 s	1.5 s	1.5 s	1.5 s
Voltage rise, typ.	60 ms	50 ms	30 ms	15 ms
Voltage increase time of the output voltage maximum	500 ms	500 ms	500 ms	500 ms
Rated current value $I_{out\ rated}$	5 A	10 A	20 A	40 A
Current range	0 ... 5 A	0 ... 10 A	0 ... 20 A	0 ... 40 A
• Note	6 A up to +45 °C	12 A up to +45 °C	24 A up to +45°C; +60 ... +70 °C: Derating 5%/K	48 A up to +45°C; +60 ... +70 °C: Derating 2.5%/K
Supplied active power typical	120 W	240 W	480 W	960 W
Short-term overload current				
• on short-circuiting during the start-up typical	-	-	35 A	65 A
• at short-circuit during operation typical	-	-	35 A	65 A
Duration of overloading capability for excess current				
• on short-circuiting during the start-up	-	-	100 ms	120 ms
• at short-circuit during operation	-	-	100 ms	120 ms
Parallel switching for enhanced performance	Yes	Yes	Yes	Yes
Numbers of parallel switchable units for enhanced performance	2	2	2	2
Efficiency				
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	89 %	91 %	91 %	91.5 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	14 W	23 W	47 W	89 W
Closed-loop control				
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	1 %	1 %	3 %	3 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	1 %	1 %	3 %	1.5 %
Load step setting time 50 to 100%, typ.	3 ms	3 ms	2 ms	1 ms
Load step setting time 100 to 50%, typ.	3 ms	3 ms	2 ms	1 ms
Dynamic load smoothing (I_{out}: 10/90/10 %), U_{out} ± typ.	3 %	3 %	3 %	3 %
Load step setting time 10 to 90%, typ.	4 ms	4 ms	2 ms	1 ms
Load step setting time 90 to 10%, typ.	4 ms	4 ms	2 ms	1 ms
Setting time maximum	10 ms	10 ms	10 ms	10 ms

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Technical specifications (continued)

Article number	6EP1433-2BA20	6EP1434-2BA20	6EP1436-2BA10	6EP1437-2BA20
Product	SITOP PSU300S	SITOP PSU300S	SITOP PSU300S	SITOP PSU300S
Power supply, type	24 V/5 A	24 V/10 A	24 V/20 A	24 V/40 A
Protection and monitoring				
Output overvoltage protection	protection against overvoltage in case of internal fault V_{out} < 35 V	protection against overvoltage in case of internal fault V_{out} < 35 V	protection against overvoltage in case of internal fault V_{out} < 35 V	protection against overvoltage in case of internal fault V_{out} < 35 V
Current limitation, typ.	6.6 A	13 A	25 A	50 A
Property of the output Short-circuit proof	Yes	Yes	Yes	Yes
Short-circuit protection	Constant current characteristic	Constant current characteristic	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart
Enduring short circuit current RMS value				
• maximum	8 A	16 A	7 A	14 A
Overcurrent overload capability in normal operation	overload capability 150 % $I_{out\ rated}$ up to 5 s/min	overload capability 150 % $I_{out\ rated}$ up to 5 s/min	overload capability 150 % $I_{out\ rated}$ up to 5 s/min	overload capability 150 % $I_{out\ rated}$ up to 5 s/min
Safety				
Primary/secondary isolation	Yes	Yes	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I	Class I	Class I	Class I
Leakage current				
• maximum	-	-	3.5 mA	-
• typical	-	-	1 mA	-
CE mark	Yes	Yes	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)
Explosion protection	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T4	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T4	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nAC IIC T4 Gc; cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T4	IECEx Ex nA nC IIC T3 Gc; ATEX (EX) II 3G Ex nA nC IIC T3 Gc; cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T3
FM approval	-	-	-	-
CB approval	Yes	Yes	Yes	Yes
Marine approval	GL and ABS in process	GL and ABS in process	GL, ABS	GL, ABS
Degree of protection (EN 60529)	IP20	IP20	IP20	IP20
EMC				
Emitted interference	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	EN 61000-3-2	EN 61000-3-2	EN 61000-3-2	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Operating data				
Ambient temperature				
• during operation	-25 ... +70 °C	-25 ... +70 °C	0 ... 70 °C	0 ... 70 °C
- Note	with natural convection	with natural convection	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation
Mechanics				
Connection technology	screw-type terminals	screw-type terminals	screw-type terminals	screw-type terminals
Connections				
• Supply input	L1, L2, L3, PE: 1 screw terminal each for 0.2 ... 4 mm^2 single-core/ finely stranded	L1, L2, L3, PE: 1 screw terminal each for 0.2 ... 4 mm^2 single-core/ finely stranded	L1, L2, L3, PE: 1 screw terminal each for 0.2 ... 4 mm^2 single-core/ finely stranded	L1, L2, L3, PE: 1 screw terminal each for 0.2 ... 4 mm^2 single-core/ finely stranded
• Output	+, -: 2 screw terminals each for 0.2 ... 4 mm^2	+, -: 2 screw terminals each for 0.2 ... 4 mm^2	+, -: 2 screw terminals each for 0.2 ... 4 mm^2	+, -: 2 screw terminals each for 0.5 ... 10 mm^2
• Auxiliary	13, 14 (alarm signal): 1 screw terminal each for 0.14 ... 1.5 mm^2	13, 14 (alarm signal): 1 screw terminal each for 0.14 ... 1.5 mm^2	13, 14 (alarm signal): 1 screw terminal each for 0.14 ... 1.5 mm^2	13, 14 (alarm signal): 1 screw terminal each for 0.14 ... 1.5 mm^2

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Technical specifications (continued)

Article number	6EP1433-2BA20	6EP1434-2BA20	6EP1436-2BA10	6EP1437-2BA20
Product	SITOP PSU300S	SITOP PSU300S	SITOP PSU300S	SITOP PSU300S
Power supply, type	24 V/5 A	24 V/10 A	24 V/20 A	24 V/40 A
Width of the enclosure	50 mm	70 mm	90 mm	150 mm
Height of the enclosure	125 mm	125 mm	145 mm	145 mm
Depth of the enclosure	120 mm	120 mm	150 mm	150 mm
Weight, approx.	0.5 kg	0.7 kg	1.6 kg	3.7 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes	Yes	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x15
Electrical accessories	Buffer module	Buffer module	Buffer module	Buffer module
Mechanical accessories	Device identification label 20 mm × 7 mm, pale turquoise 3RT1900-1SB20	Device identification label 20 mm × 7 mm, pale turquoise 3RT1900-1SB20	Device identification label 20 mm × 7 mm, pale turquoise 3RT1900-1SB20	Device identification label 20 mm × 7 mm, pale turquoise 3RT1900-1SB20
MTBF at 40 °C	1 506 720 h	1 458 540 h	571 429 h	718 292 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SITOP PSU300S 3-phase, 24 V DC/5 A Stabilized power supply Input: 400 … 500 V 3 AC Output: 24 V DC/5 A	**6EP1433-2BA20**
SITOP PSU300S 3-phase, 24 V DC/10 A Stabilized power supply Input: 3 AC 400 … 500 V Output: 24 V DC/10 A	**6EP1434-2BA20**
SITOP PSU300S 3-phase, 24 V DC/20 A Stabilized power supply Input: 3 AC 400 … 500 V Output: 24 V DC/20 A	**6EP1436-2BA10**
SITOP PSU300S 3-phase, 24 V DC/40 A Stabilized power supply Input: 3 AC 400 … 500 V Output: 24 V DC/40 A	**6EP1437-2BA20**

More information

Select the appropriate power supply quickly and easily with the SITOP Selection Tool:

http://www.siemens.com/sitop-selection-tool

Accessories

	Article No.
Device labeling plates	**3RT1900-1SB20**
SITOP PSE202U redundancy module Input/output: 24 V DC/40 A suitable for decoupling two SITOP power supplies with a maximum of 20 A output current	**6EP1961-3BA21**
SITOP PSE202U redundancy module Input/output: 24 V DC/NEC Class 2 suitable for decoupling two SITOP power supplies output power limited < 100 VA	**6EP1962-2BA00**
SITOP PSE202U redundancy module Input/output: 24 V DC/10 A suitable for decoupling two SITOP power supplies with a maximum of 5 A output current	**6EP1964-2BA00**
SITOP PSE200U 3 A selectivity module 4-channel selectivity module Input: 24 V DC Output: 24 V DC/3A per each channel output current adjustable 0.5 … 3 A	
• With common alarm signal	**6EP1961-2BA11**
• With single-channel signaling	**6EP1961-2BA31**
SITOP PSE200U 10 A selectivity module 4-channel selectivity module Input: 24 V DC Output: 24 V DC/10 A per channel output current adjustable 3 ... 10 A	
• With common alarm signal	**6EP1961-2BA21**
• With single-channel signaling	**6EP1961-2BA41**
SITOP PSE201U buffer module For SITOP smart and SITOP modular buffer time 100 ms to 10 s dependent on load current	**6EP1961-3BA01**

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6/2 **Introduction**
6/3 1-phase, 24 V DC
6/8 1- and 2-phase, 24 V DC
6/13 3-phase, 24 V DC
6/17 3-phase, 36 V DC
6/19 3-phase, 48 V DC

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Overview



The technology power supply for demanding solutions

The one, two and three-phase SITOP modular units are the technology power supplies for demanding solutions. They offer maximum functionality for use in complex plants and machines. The wide-range input allows a connection to almost any electrical power system worldwide and ensures a high degree of safety even if there are large voltage fluctuations. They offer outstanding overload characteristics: Power boost delivers up to three-times the rated current for short periods of time, and with extra power of 150%, loads with high power consumption can be connected without any problems. And in the event of an overload, you can choose between constant current or latching shutdown. The extremely high efficiency keeps energy consumption and heat buildup in the control cabinet low, and the compact metal enclosure also saves space.

To further increase the 24 V availability, the SITOP smart power supplies can be combined with **buffer**, **DC UPS**, **redundancy** and **selectivity modules**.

Main product highlights

- 1-phase, 24 V DC / 5 A, 10 A, 20 A, 40 A
- 1-phase and 2-phase, 24 V DC / 5A, 10 A
- 3-phase, 24 V DC/ 20 A, 40 A, 36 V/ 13 A and 48 V/ 10 A, 20 A
- Extremely slim design – no lateral installation clearances required
- Power boost with 3 times rated current (for 25 ms) for tripping protective devices
- Extra power with 1.5 times rated current (5 s/min) for brief functional overload
- Selectable short-circuit response between constant current and latching shutdown
- Symmetrical load distribution can be selected for parallel operation
- Operating state on 3 LEDs
- Extremely high efficiency up to 94 %
- Large temperature range from -25 to +70 °C
- Comprehensive certifications, such as cULus, ATEX, IECex and GL

More information

Select the appropriate power supply quickly and easily with the SITOP Selection Tool:

http://www.siemens.com/sitop-selection-tool

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Overview



The 1-phase SITOP modular are technology power supplies for sophisticated solutions and offer maximum functionality for use in complex plants and machines. The wide-range input allows a connection to almost any electrical power system worldwide and ensures a high degree of safety even if there are large voltage fluctuations. The power boost provides up to three times the rated current for brief periods. In case of overload, you can choose between constant current with automatic restart or latching shutdown.

The high degree of efficiency keeps energy consumption and heating in the control cabinet low, and the compact metal housing also saves space.

To further increase the 24 V availability, the SITOP modular power supplies can be combined with **buffer**, **DC UPS**, **redundancy** and **selectivity modules**.

Main product highlights

- 24 V DC/ 5 A, 10 A, 20 A and 40 A
- 1-phase wide-range input for connection to any supply system and for safety in case of voltage supply deviations
- Extremely slim design – no lateral installation clearances required
- Power Boost with 3 times the rated current (for 25 ms) for tripping protective devices
- Extra power with 1.5 times the rated current (5 s/min) for brief functional overload
- Selectable short-circuit response between constant current and latching shutdown
- Optional symmetrical load distribution for parallel operation
- Operating status on 3 LEDs
- Extremely high efficiency to 94 %
- Wide temperature range from -25 to +70 °C
- Comprehensive certifications, such as cULus, ATEX and GL

Technical specifications

Article number	**6EP3333-8SB00-0AY0**	**6EP3334-8SB00-0AY0**	**6EP1336-3BA10**	**6EP1337-3BA00**
Product	**SITOP PSU8200**	**SITOP PSU8200**	**SITOP PSU8200**	**SITOP PSU100M**
Power supply, type	**24 V/5 A**	**24 V/10 A**	**24 V/20 A**	**24 V/40 A**
Input				
Input	1-phase AC	1-phase AC	1-phase AC or DC	1-phase AC
Supply voltage				
• 1 at AC Rated value	120 V	120 V	-	120 V
• 2 at AC Rated value	230 V	230 V	-	230 V
• at DC	-	-	110 ... 220 V	-
Rated voltage value $V_{in\ rated}$	-	-	120 ... 230 V	-
Voltage range AC	-	-	85 ... 275 V	-
• Note	Automatic range selection	Automatic range selection	Derating of temperature necessary down to 50 °C at V_{in} < 100 V AC or DC	Set by means of wire jumper on the device; starting from V_{in} > 95/190 V
Input voltage				
• 1 at AC	85 ... 132 V	85 ... 132 V	-	85 ... 132 V
• 2 at AC	170 ... 264 V	170 ... 264 V	-	176 ... 264 V
• at DC	-	-	88 ... 350 V	-
Wide-range input	No	No	Yes	No
Overvoltage resistance	-	-	-	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	35 ms; at V_{in} = 120/230 V	35 ms; at V_{in} = 120/230 V	20 ms; at V_{in} = 230 V	20 ms; at V_{in} = 230 V
Rated line frequency 1	50 Hz	50 Hz	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz	60 Hz	60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz	45 ... 65 Hz	47 ... 63 Hz

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Technical specifications (continued)

Article number	6EP3333-8SB00-0AY0	6EP3334-8SB00-0AY0	6EP1336-3BA10	6EP1337-3BA00
Product	SITOP PSU8200	SITOP PSU8200	SITOP PSU8200	SITOP PSU100M
Power supply, type	24 V/5 A	24 V/10 A	24 V/20 A	24 V/40 A
Input current				
• at rated input voltage 120 V	2.1 A	4 A	4.6 A	15 A
• at rated input voltage 230 V	1.2 A	1.9 A	2.5 A	8 A
Switch-on current limiting (+25 °C), max.	10 A	10 A	20 A	125 A
I^2t, max.	0.2 $A^2 \cdot s$	0.3 $A^2 \cdot s$	5 $A^2 \cdot s$	26 $A^2 \cdot s$
Built-in incoming fuse	T 3.15 A (not accessible)	T 6.3 A (not accessible)	Yes	Yes
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker at 1-phase operation: from 6 A (10 A) characteristic C (B); required at 2-phase operation: circuit breaker 2-pole connected or circuit breaker 3RV2011-1EA10 (setting 3.8 A) or 3RV2711-1ED10 (UL 489) at 230 V; 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489) at 400/500 V	Recommended miniature circuit breaker at 1-phase operation: from 6 A (10 A) characteristic C (B); required at 2-phase operation: circuit breaker 2-pole connected or circuit breaker 3RV2011-1EA10 (setting 3.8 A) or 3RV2711-1ED10 (UL 489) at 230 V; 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489) at 400/500 V	Recommended miniature circuit breaker at 1-phase operation: 10 A characteristic C; required at 2-phase operation: circuit breaker 2-pole connected or circuit breaker 3RV2711-1HD10 (UL 489) at 120 V or 3RV2711-1ED10 (UL 489) at 230 V	Recommended miniature circuit breaker at 1-phase operation: 20 A characteristic C; required at 2-phase operation: circuit breaker 2-pole connected or circuit breaker 3RV2421-4BA10 (120 V) or 3RV2411-1JA10 (230 V)
Output				
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V	24 V	24 V	24 V
Total tolerance, static ±	3 %	3 %	3 %	3 %
Static mains compensation, approx.	0.1 %	0.1 %	0.1 %	0.1 %
Static load balancing, approx.	0.2 %	0.3 %	0.3 %	0.1 %
Residual ripple peak-peak, max.	50 mV	50 mV	100 mV	100 mV
Residual ripple peak-peak, typ.	-	-	80 mV	60 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	200 mV	200 mV	200 mV	200 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	-	-	100 mV	120 mV
Adjustment range	24 ... 28.8 V	24 ... 28.8 V	24 ... 28.8 V	24 ... 28.8 V
Product function Output voltage adjustable	Yes	Yes	Yes	Yes
Output voltage setting	via potentiometer; max. 120 W	via potentiometer; max. 240 W	via potentiometer	via potentiometer
Status display	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK
Signaling	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for "24 V OK"	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for "24 V OK"	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for "24 V OK"	via signaling module (6EP1961-3BA10)
On/off behavior	Overshoot of V_{out} approx. 3 %	Overshoot of V_{out} approx. 3 %	No overshoot of V_{out} (soft start)	Overshoot of V_{out} approx. 3 %
Startup delay, max.	1 s	1 s	0.25 s	0.1 s
Voltage rise, typ.	30 ms	70 ms	50 ms	50 ms
Rated current value $I_{out\ rated}$	5 A	10 A	20 A	40 A
Current range	0 ... 5 A	0 ... 10 A	0 ... 20 A	0 ... 40 A
• Note	As of U_a>24 V: 4% [I_a]/V [U_a]; at U_e<100 V/<200 V: 80% $I_{a\ rated}$	+60 ... +70 °C: Derating 2%/K; as of U_a>24 V: 4% [I_a]/V [U_a]; at U_e<100 V/<200 V: 80% $I_{a\ rated}$	+60 ... +70 °C: Derating 3%/K	+60 ... +70 °C: Derating 2.5%/K
Supplied active power typical	120 W	240 W	480 W	960 W
Short-term overload current				
• at short-circuit during operation typical	15 A	30 A	60 A	120 A
Duration of overloading capability for excess current				
• at short-circuit during operation	25 ms	25 ms	25 ms	25 ms
Constant overload current				
• on short-circuiting during the start-up typical	6 A	12 A	30 A	46 A
Parallel switching for enhanced performance	Yes; switchable characteristic	Yes; switchable characteristic	Yes; switchable characteristic	Yes; switchable characteristic
Numbers of parallel switchable units for enhanced performance	2	2	2	2

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Technical specifications (continued)

Article number	6EP3333-8SB00-0AY0	6EP3334-8SB00-0AY0	6EP1336-3BA10	6EP1337-3BA00
Product	SITOP PSU8200	SITOP PSU8200	SITOP PSU8200	SITOP PSU100M
Power supply, type	24 V/5 A	24 V/10 A	24 V/20 A	24 V/40 A
Efficiency				
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	93 %	94 %	93 %	88 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	9 W	18 W	42 W	131 W
Power loss [W] during no-load operation maximum	1.5 W	1.5 W	-	-
Closed-loop control				
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.1 %	0.1 %	0.5 %	1 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	2 %	4 %	1 %	2 %
Load step setting time 50 to 100 %, typ.	0.25 ms	0.25 ms	1 ms	2 ms
Load step setting time 100 to 50 %, typ.	0.5 ms	0.5 ms	1 ms	2 ms
Dynamic load smoothing (I_{out}: 10/90/10 %), U_{out} ± typ.	2 %	4 %	-	-
Load step setting time 10 to 90%, typ.	0.25 ms	0.25 ms	-	-
Load step setting time 90 to 10%, typ.	0.5 ms	0.5 ms	-	-
Setting time maximum	1 ms	1 ms	5 ms	5 ms
Protection and monitoring				
Output overvoltage protection	< 33 V	< 33 V	< 33 V	< 35 V
Current limitation, typ.	6 A	12 A	21.5 A	46 A
Property of the output Short-circuit proof	Yes	Yes	Yes	Yes
Short-circuit protection	Alternatively, constant current characteristic approx. 6 A or latching shutdown	Alternatively, constant current characteristic approx. 12 A or latching shutdown	Alternatively, constant current characteristic approx. 23 A or latching shutdown	Alternatively, constant current characteristic approx. 46 A or latching shutdown
Enduring short circuit current RMS value				
• typical	6 A	12 A	23 A	46 A
Overcurrent overload capability in normal operation	overload capability 150 % $I_{out\ rated}$ up to 5 s/min	overload capability 150 % $I_{out\ rated}$ up to 5 s/min	overload capability 150 % $I_{out\ rated}$ up to 5 s/min	
Overload/short-circuit indicator	LED yellow for "overload", LED red for "latching shutdown"	LED yellow for "overload", LED red for "latching shutdown"	LED yellow for "overload", LED red for "latching shutdown"	LED yellow for "overload", LED red for "latching shutdown"
Safety				
Primary/secondary isolation	Yes	Yes	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I	Class I	Class I	Class I
Leakage current				
• maximum	3.5 mA	3.5 mA	3.5 mA	3.5 mA
• typical	1 mA	1 mA	1 mA	0.4 mA
CE mark	Yes	Yes	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259, cCSAus (CSA C22.2 No. 60950-1, UL 60950-1, UL 1604)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259, cCSAus (CSA C22.2 No. 60950-1, UL 60950-1, UL 1604)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259
Explosion protection	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T3	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T3	IECEx Ex nA nC IIC T3 Gc; ATEX (EX) II 3G Ex nA nC IIC T3 Gc; cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T3	IECEx Ex nA IIC T3 Gc; ATEX (EX) II 3G Ex nA IIC T3 Gc; cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T3
FM approval	-	-	-	-
CB approval	Yes	Yes	No	No
Marine approval	GL, ABS	GL, ABS	GL, ABS	-
Degree of protection (EN 60529)	IP20	IP20	IP20	IP20

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Technical specifications (continued)

Article number	6EP3333-8SB00-0AY0	6EP3334-8SB00-0AY0	6EP1336-3BA10	6EP1337-3BA00
Product	SITOP PSU8200	SITOP PSU8200	SITOP PSU8200	SITOP PSU100M
Power supply, type	24 V/5 A	24 V/10 A	24 V/20 A	24 V/40 A
EMC				
Emitted interference	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	EN 61000-3-2	EN 61000-3-2	EN 61000-3-2	-
Noise immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Operating data				
Ambient temperature				
• during operation	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	0 ... 70 °C
- Note	with natural convection; Startup tested from -40 °C Rated voltage	with natural convection; Startup tested from -40 °C Rated voltage	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation
Mechanics				
Connection technology	screw-type terminals	screw-type terminals	screw-type terminals	screw-type terminals
Connections				
• Supply input	L, N, PE: 1 screw terminal each for 0.2 ... 2.5 mm^2 single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.2 ... 2.5 mm^2 single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.2 ... 4 mm^2 single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.2 ... 4 mm^2 single-core/finely stranded
• Output	+, -: 2 screw terminals each for 0.2 ... 2.5 mm^2	+, -: 2 screw terminals each for 0.2 ... 2.5 mm^2	+, -: 2 screw terminals each for 0.2 ... 4 mm^2	+, -: 2 screw terminals each for 0.5 ... 10 mm^2
• Auxiliary	13, 14 (alarm signal): 1 screw terminal each for 0.14 ... 1.5 mm^2; 15, 16 (Remote): 1 screw terminal each for 0.14 ... 1.5 mm^2	13, 14 (alarm signal): 1 screw terminal each for 0.14 ... 1.5 mm^2; 15, 16 (Remote): 1 screw terminal each for 0.14 ... 1.5 mm^2	13, 14 (alarm signal): 1 screw terminal each for 0.14 ... 1.5 mm^2	-
Width of the enclosure	45 mm	55 mm	90 mm	240 mm
Height of the enclosure	125 mm	125 mm	125 mm	125 mm
Depth of the enclosure	125 mm	125 mm	125 mm	125 mm
Weight, approx.	0.8 kg	1 kg	1.2 kg	2.9 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes	Yes	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x15
Electrical accessories	Buffer module	Buffer module	Buffer module	Buffer module, signaling module
Mechanical accessories	-	-	Device identification label 20 mm × 7 mm, pale turquoise 3RT1900-1SB20	-
MTBF at 40 °C	1 421 519 h	1 292 102 h	667 048 h	540 249 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

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Ordering data	Article No.
SITOP PSU8200 1-phase, 24 V DC/5 A Stabilized power supply Input: 120/230 V AC Output: 24 V DC/5 A	**6EP3333-8SB00-0AY0**
SITOP PSU8200 1-phase, 24 V DC/10 A Stabilized power supply Input: 120/230 V AC Output: 24 V DC/10 A	**6EP3334-8SB00-0AY0**
SITOP PSU8200, 1-phase, 24 V DC/20 A Stabilized power supply Input: 120 … 230 V AC/ 110-220 V DC Output: 24 V DC/20 A	**6EP1336-3BA10**
SITOP PSU100M 1-phase, 24 V DC/40 A Stabilized power supply Input: 120/230 V AC Output: 24 V DC/40 A	**6EP1337-3BA00**

Accessories	Article No.
SITOP PSE201U buffer module For SITOP smart and SITOP modular buffer time 100 ms to 10 s dependent on load current	**6EP1961-3BA01**
SITOP modular signaling module For 6EP1XXX-3BA00 signaling contacts: Output voltage OK, readiness for operation OK, remote ON/OFF	**6EP1961-3BA10**
SITOP PSE202U redundancy module Input/output: 24 V DC/40 A suitable for decoupling two SITOP power supplies with a maximum of 20 A output current	**6EP1961-3BA21**
SITOP PSE202U redundancy module Input/output: 24 V DC/NEC Class 2 suitable for decoupling two SITOP power supplies; output power limited < 100 VA	**6EP1962-2BA00**
SITOP PSE202U redundancy module Input/output: 24 V DC/10 A suitable for decoupling two SITOP power supplies with a maximum of 5 A output current	**6EP1964-2BA00**
SITOP PSE200U selectivity module 3 A 4-channel Input: 24 V DC Output: 24 V DC/3 A per channel Adjustable output current 0.5 … 3 A	
• With common alarm signal	**6EP1961-2BA11**
• With single-channel signaling	**6EP1961-2BA31**
SITOP PSE200U selectivity module 10 A 4-channel Input: 24 V DC Output: 24 V DC/10 A per channel Adjustable output current 3 ... 10 A	
• With common alarm signal	**6EP1961-2BA21**
• With single-channel signaling	**6EP1961-2BA41**
Device labeling plates	**3RT1900-1SB20**

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Overview



The 1-phase and 2-phase SITOP modular are technology power supplies for sophisticated solutions and offer maximum functionality for use in complex plants and machines. The ultra-wide input range allows connections to almost any 1-phase power supply system or directly between the line conductors of three-phase networks (2-phase) and ensures a high degree of safety even if there are large voltage fluctuations. The power boost provides up to three times the rated current for brief periods. In case of overload, you can choose between constant current with automatic restart or latching shutdown. The high degree of efficiency keeps energy consumption and heating in the control cabinet low, and the compact metal housing also saves space.

To further increase 24 V availability, the SITOP modular power supplies can be combined with **buffer**, **DC UPS**, **redundancy** and **selectivity modules**.

Main product highlights

- 24 V/5 A and 10 A, also available as version with PCB with protective coating.
- 1-phase and 2-phase ultra-wide input range
- Extremely slim design – no lateral installation clearances required
- Power Boost with 3 times the rated current (for 25 ms) for tripping protective devices
- Extra power with 1.5 times the rated current (5 s/min) for brief functional overload
- Selectable short-circuit response between constant current and latching shutdown
- Optional symmetrical load distribution for parallel operation
- Operating status on 3 LEDs
- High degree of efficiency up to 91 %
- Wide temperature range from -25 to +70 °C
- Comprehensive certifications, such as cULus, ATEX and GL

Technical specifications

Article number	**6EP1333-3BA10**	**6EP1333-3BA10-8AC0**	**6EP1334-3BA10**	**6EP1334-3BA10-8AB0**
Product	**SITOP PSU200M**	**SITOP PSU200M with protective coating**	**SITOP PSU200M**	**SITOP PSU200M with protective coating**
Power supply, type	**24 V/5 A**	**24 V/5 A**	**24 V/10 A**	**24 V/10 A**
Input				
Input	1-phase and 2-phase AC	1-phase and 2-phase AC	1-phase and 2-phase AC	1-phase and 2-phase AC
Supply voltage				
• 1 at AC	120 ... 230 V	120 ... 230 V	120 ... 230 V	120 ... 230 V
• 2 at AC	230 ... 500 V	230 ... 500 V	230 ... 500 V	230 ... 500 V
• Note	Set by means of selector switch on the device; starting from V_{in} > 90/180 V	Set by means of selector switch on the device; starting from V_{in} > 90/180 V	Set by means of selector switch on the device	Set by means of selector switch on the device
Input voltage				
• 1 at AC	85 ... 264 V	85 ... 264 V	85 ... 264 V	85 ... 264 V
• 2 at AC	176 ... 550 V	176 ... 550 V	176 ... 550 V	176 ... 550 V
Wide-range input	Yes	Yes	Yes	Yes
Overvoltage resistance	1300 V_{peak}, 1.3 ms	1300 V_{peak}, 1.3 ms	1300 V_{peak}, 1.3 ms	1300 V_{peak}, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	25 ms; at V_{in} = 120/230 V, typ. 150 ms at V_{in} = 400 V	25 ms; at V_{in} = 120/230 V, typ. 150 ms at V_{in} = 400 V	25 ms; at V_{in} = 120/230 V, typ. 150 ms at V_{in} = 400 V	25 ms; at V_{in} = 120/230 V, typ. 150 ms at V_{in} = 400 V
Rated line frequency 1	50 Hz	50 Hz	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz	60 Hz	60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz	47 ... 63 Hz	47 ... 63 Hz

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Technical specifications (continued)

Article number	6EP1333-3BA10	6EP1333-3BA10-8AC0	6EP1334-3BA10	6EP1334-3BA10-8AB0
Product	**SITOP PSU200M**	**SITOP PSU200M with protective coating**	**SITOP PSU200M**	**SITOP PSU200M with protective coating**
Power supply, type	**24 V/5 A**	**24 V/5 A**	**24 V/10 A**	**24 V/10 A**
Input current				
• at rated input voltage 120 V	2.2 A	2.2 A	4.4 A	4.4 A
• at rated input voltage 230 V	1.2 A	1.2 A	2.4 A	2.4 A
• at rated input voltage 500 V	0.61 A	0.61 A	1.1 A	1.1 A
Switch-on current limiting (+25 °C), max.	35 A	35 A	35 A	35 A
I^2t, max.	1.7 $A^2 \cdot s$	1.7 $A^2 \cdot s$	4 $A^2 \cdot s$	4 $A^2 \cdot s$
Built-in incoming fuse	T 3.15 A (not accessible)	T 3.15 A (not accessible)	T 6.3 A (not accessible)	T 6.3 A (not accessible)
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker at 1-phase operation: from 6 A (10 A) characteristic C (B); required at 2-phase operation: circuit breaker 2-pole connected or circuit breaker 3RV2011-1EA10 (setting 3.8 A) or 3RV2711-1ED10 (UL 489) at 230 V; 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489) at 400/500 V	Recommended miniature circuit breaker at 1-phase operation: from 6 A (10 A) characteristic C (B); required at 2-phase operation: circuit breaker 2-pole connected or circuit breaker 3RV2011-1EA10 (setting 3.8 A) or 3RV2711-1ED10 (UL 489) at 230 V; 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489) at 400/500 V	Recommended miniature circuit breaker at 1-phase operation: from 6 A (10 A) characteristic C (B); required at 2-phase operation: circuit breaker 2-pole connected or circuit breaker 3RV2011-1EA10 (setting 3.8 A) or 3RV2711-1ED10 (UL 489) at 230 V; 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489) at 400/500 V	Recommended miniature circuit breaker at 1-phase operation: from 6 A (10 A) characteristic C (B); required at 2-phase operation: circuit breaker 2-pole connected or circuit breaker 3RV2011-1EA10 (setting 3.8 A) or 3RV2711-1ED10 (UL 489) at 230 V; 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489) at 400/500 V
Output				
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V	24 V	24 V	24 V
Total tolerance, static ±	3 %	3 %	3 %	3 %
Static mains compensation, approx.	0.1 %	0.1 %	0.1 %	0.1 %
Static load balancing, approx.	0.1 %	0.1 %	0.1 %	0.1 %
Residual ripple peak-peak, max.	50 mV	50 mV	50 mV	50 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	200 mV	200 mV	200 mV	200 mV
Adjustment range	24 ... 28.8 V	24 ... 28.8 V	24 ... 28.8 V	24 ... 28.8 V
Product function Output voltage adjustable	Yes	Yes	Yes	Yes
Output voltage setting	via potentiometer	via potentiometer	via potentiometer	via potentiometer
Status display	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK
Signaling	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for "24 V OK"	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for "24 V OK"	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for "24 V OK"	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for "24 V OK"
On/off behavior	Overshoot of V_{out} approx. 3 %	Overshoot of V_{out} approx. 3 %	Overshoot of V_{out} approx. 3 %	Overshoot of V_{out} approx. 3 %
Startup delay, max.	1 s	1 s	1 s	1 s
Voltage rise, typ.	50 ms	50 ms	50 ms	50 ms
Rated current value $I_{out\ rated}$	5 A	5 A	10 A	10 A
Current range	0 ... 5 A	0 ... 5 A	0 ... 10 A	0 ... 10 A
• Note	-	-	+60 ... +70 °C: Derating 2%/K (at 120 V, 230 V) or 3.5%/K (at 400 V)	+60 ... +70 °C: Derating 2%/K (at 120 V, 230 V) or 3.5%/K (at 400 V)
Supplied active power typical	120 W	120 W	240 W	240 W
Short-term overload current				
• at short-circuit during operation typical	15 A	15 A	30 A	30 A
Duration of overloading capability for excess current				
• at short-circuit during operation	25 ms	25 ms	25 ms	25 ms
Constant overload current				
• on short-circuiting during the start-up typical	6 A	6 A	12 A	12 A
Parallel switching for enhanced performance	Yes; switchable characteristic	Yes; switchable characteristic	Yes; switchable characteristic	Yes; switchable characteristic
Numbers of parallel switchable units for enhanced performance	2	2	2	2

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Technical specifications (continued)

Article number	6EP1333-3BA10	6EP1333-3BA10-8AC0	6EP1334-3BA10	6EP1334-3BA10-8AB0
Product	SITOP PSU200M	SITOP PSU200M with protective coating	SITOP PSU200M	SITOP PSU200M with protective coating
Power supply, type	24 V/5 A	24 V/5 A	24 V/10 A	24 V/10 A
Efficiency				
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	88 %	88 %	91 %	91 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	17 W	17 W	24 W	24 W
Power loss [W] during no-load operation maximum	4 W	4 W	6 W	6 W
Closed-loop control				
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.1 %	0.1 %	0.1 %	0.1 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	3 %	3 %	3 %	3 %
Load step setting time 50 to 100 %, typ.	2 ms	2 ms	2 ms	2 ms
Load step setting time 100 to 50 %, typ.	2 ms	2 ms	2 ms	2 ms
Setting time maximum	5 ms	5 ms	5 ms	5 ms
Protection and monitoring				
Output overvoltage protection	< 35 V	< 35 V	< 35 V	< 35 V
Current limitation, typ.	6 A	6 A	12 A	12 A
Property of the output Short-circuit proof	Yes	Yes	Yes	Yes
Short-circuit protection	Alternatively, constant current characteristic approx. 5.5 A or latching shutdown	Alternatively, constant current characteristic approx. 5.5 A or latching shutdown	Alternatively, constant current characteristic approx. 12 A or latching shutdown	Alternatively, constant current characteristic approx. 12 A or latching shutdown
Enduring short circuit current RMS value				
• typical	6 A	6 A	12 A	12 A
Overload/short-circuit indicator	LED yellow for "overload", LED red for "latching shutdown"	LED yellow for "overload", LED red for "latching shutdown"	LED yellow for "overload", LED red for "latching shutdown"	LED yellow for "overload", LED red for "latching shutdown"
Safety				
Primary/secondary isolation	Yes	Yes	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I	Class I	Class I	Class I
Leakage current				
• maximum	3.5 mA	3.5 mA	3.5 mA	3.5 mA
• typical	0.25 mA	0.25 mA	0.32 mA	0.32 mA
CE mark	Yes	Yes	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259
Explosion protection	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc (for AC 120-230/ 230-400 V); cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T3	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc (for AC 120-230/ 230-400 V); cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T3	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc (for AC 120-230/ 230-400 V); cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T3	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc (for AC 120-230/ 230-400 V); cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T3
CB approval	Yes	Yes	Yes	Yes
Marine approval	GL, ABS	GL	GL, ABS	GL, ABS
Degree of protection (EN 60529)	IP20	IP20	IP20	IP20

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Technical specifications (continued)

Article number	6EP1333-3BA10	6EP1333-3BA10-8AC0	6EP1334-3BA10	6EP1334-3BA10-8AB0
Product	**SITOP PSU200M**	**SITOP PSU200M with protective coating**	**SITOP PSU200M**	**SITOP PSU200M with protective coating**
Power supply, type	**24 V/5 A**	**24 V/5 A**	**24 V/10 A**	**24 V/10 A**
EMC				
Emitted interference	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	EN 61000-3-2	EN 61000-3-2	EN 61000-3-2	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Operating data				
Ambient temperature				
• during operation	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
- Note	with natural convection	with natural convection	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation
Mechanics				
Connection technology	screw-type terminals	screw-type terminals	screw-type terminals	screw-type terminals
Connections				
• Supply input	L, N, PE: 1 screw terminal each for 0.2 ... 2.5 mm^2 single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.2 ... 2.5 mm^2 single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.2 ... 2.5 mm^2 single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.2 ... 2.5 mm^2 single-core/finely stranded
• Output	+, -: 2 screw terminals each for 0.2 ... 2.5 mm^2	+, -: 2 screw terminals each for 0.2 ... 2.5 mm^2	+, -: 2 screw terminals each for 0.2 ... 2.5 mm^2	+, -: 2 screw terminals each for 0.2 ... 2.5 mm^2
• Auxiliary	13, 14 (alarm signal): 1 screw terminal each for 0.14 ... 1.5 mm^2	13, 14 (alarm signal): 1 screw terminal each for 0.14 ... 1.5 mm^2	13, 14 (alarm signal): 1 screw terminal each for 0.14 ... 1.5 mm^2	13, 14 (alarm signal): 1 screw terminal each for 0.14 ... 1.5 mm^2
Width of the enclosure	70 mm	70 mm	70 mm	70 mm
Height of the enclosure	125 mm	125 mm	125 mm	125 mm
Depth of the enclosure	121 mm	121 mm	121 mm	121 mm
Weight, approx.	0.6 kg	0.6 kg	0.8 kg	0.8 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes	Yes	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15
Electrical accessories	Buffer module	Buffer module	Buffer module	Buffer module
MTBF at 40 °C	1 123 973 h	1 123 973 h	1 055 408 h	1 055 408 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

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Ordering data	Article No.
SITOP PSU200M 1-phase and 2-phase, 24 V DC/5 A Stabilized power supply Input: 120 ... 230/230 … 500 V AC Output: 24 V DC/5 A	**6EP1333-3BA10**
SITOP modular 1-phase and 2-phase, 24 V DC /5 A Stabilized power supply Input: 120 … 230/230 … 500 V AC Output: 24 V DC/5 A Version with protective coating	**6EP1333-3BA10-8AC0**
SITOP PSU200M 1-phase and 2-phase, 24 V DC/10 A Stabilized power supply Input: 120 ... 230 V/ 230 … 500 V AC Output: 24 V DC/10 A	**6EP1334-3BA10**
SITOP modular 1-phase and 2-phase, 24 V DC /10 A Stabilized power supply Input: 120 … 230/230 … 500 V AC Output: 24 V DC/10 A version with protective coating	**6EP1334-3BA10-8AB0**

Accessories	Article No.
SITOP PSE201U buffer module For SITOP smart and SITOP modular buffer time 100 ms to 10 s dependent on load current	**6EP1961-3BA01**
SITOP PSE202U redundancy module Input/output: 24 V DC/40 A suitable for decoupling two SITOP power supplies with a maximum of 20 A output current	**6EP1961-3BA21**
SITOP PSE202U redundancy module Input/output: 24 V DC/NEC Class 2 suitable for decoupling two SITOP power supplies; output power limited < 100 VA	**6EP1962-2BA00**
SITOP PSE202U redundancy module Input/output: 24 V DC/10 A suitable for decoupling two SITOP power supplies with a maximum of 5 A output current	**6EP1964-2BA00**
SITOP PSE200U selectivity module 3 A 4-channel Input: 24 V DC Output: 24 V DC/3 A per channel output current adjustable 0.5 … 3 A	
• With common alarm signal	**6EP1961-2BA11**
• With single-channel signaling	**6EP1961-2BA31**
SITOP PSE200U selectivity module 10 A 4-channel Input: 24 V DC Output: 24 V DC/10 A per channel output current adjustable 3 ... 10 A	
• With common alarm signal	**6EP1961-2BA21**
• With single-channel signaling	**6EP1961-2BA41**
Device labeling plates	**3RT1900-1SB20**

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Overview



The 3-phase SITOP modular are technology power supplies for sophisticated solutions and offer maximum functionality for use in complex plants and machines. The wide-range input allows a connection to almost any electrical power system worldwide and ensures a high degree of safety even if there are large voltage fluctuations. The power boost provides up to three times the rated current for brief periods. In case of overload, you can choose between constant current with automatic restart or latching shutdown. The high degree of efficiency keeps energy consumption and heating in the control cabinet low, and the compact metal housing also saves space.

To further increase 24 V availability, the SITOP modular power supplies can be combined with **buffer**, **DC UPS**, **redundancy** and **selectivity modules**.

Main product highlights

- 24 V DC/ 20 A and 40 A
- 3-phase wide-range input from 320 to 575 V AC for global use
- Extremely slim design – no lateral installation clearances required
- Power Boost with 3 times the rated current (for 25 ms) for tripping protective devices
- Extra power with 1.5 times the rated current (5 s/min) for brief functional overload
- Selectable short-circuit response between constant current and latching shutdown
- Optional symmetrical load distribution for parallel operation
- Operating status on 3 LEDs
- Extremely high efficiency up to 94%
- Wide temperature range from -25 to +70 °C
- Comprehensive certifications, such as cULus, ATEX, IECex and GL

Technical specifications

Article number	**6EP3436-8SB00-0AY0**	**6EP1437-3BA10**
Product	**SITOP PSU8200**	**SITOP PSU8200**
Power supply, type	**24 V/20 A**	**24 V/40 A**
Input		
Input	3-phase AC	3-phase AC
Rated voltage value $V_{in\ rated}$	400 ... 500 V	400 ... 500 V
Voltage range AC	320 ... 575 V	320 ... 575 V
Wide-range input	Yes	Yes
Mains buffering at $I_{out\ rated}$, min.	15 ms; at V_{in} = 400 V	15 ms; at V_{in} = 400 V
Rated line frequency 1	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz
Input current		
• at rated input voltage 400 V	1.2 A	2.6 A
• at rated input voltage 500 V	1 A	2.1 A
Switch-on current limiting (+25 °C), max.	16 A	56 A
I^2t, max.	0.8 $A^2 \cdot s$	2.24 $A^2 \cdot s$
Built-in incoming fuse	none	none
Protection in the mains power input (IEC 898)	Required: 3-pole connected miniature circuit breaker 6 ... 16 A characteristic C or circuit breaker 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489)	Required: 3-pole connected miniature circuit breaker 10 ... 16 A characteristic C or circuit breaker 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489)

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Technical specifications (continued)

Article number	6EP3436-8SB00-0AY0	6EP1437-3BA10
Product	SITOP PSU8200	SITOP PSU8200
Power supply, type	24 V/20 A	24 V/40 A
Output		
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V	24 V
Total tolerance, static ±	3 %	3 %
Static mains compensation, approx.	0.1 %	0.1 %
Static load balancing, approx.	0.2 %	0.2 %
Residual ripple peak-peak, max.	100 mV	100 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	200 mV	200 mV
Adjustment range	24 ... 28 V	24 ... 28.8 V
Product function Output voltage adjustable	Yes	Yes
Output voltage setting	via potentiometer; max. 480 W	via potentiometer; max. 960 W
Status display	Green LED for 24 V OK	Green LED for 24 V OK
Signaling	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for "24 V OK"	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for "24 V OK"
On/off behavior	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)
Startup delay, max.	2.5 s	2.5 s
Voltage increase time of the output voltage maximum	500 ms	500 ms
Rated current value $I_{out\ rated}$	20 A	40 A
Current range	0 ... 20 A	0 ... 40 A
• Note	+60 ... +70 °C: Derating 2%/K	+60 ... +70 °C: Derating 3.75%/K
Supplied active power typical	480 W	960 W
Short-term overload current		
• at short-circuit during operation typical	60 A	120 A
Duration of overloading capability for excess current		
• at short-circuit during operation	25 ms	25 ms
Constant overload current		
• on short-circuiting during the start-up typical	22 A	44 A
Parallel switching for enhanced performance	Yes; switchable characteristic	Yes; switchable characteristic
Numbers of parallel switchable units for enhanced performance	2	2
Efficiency		
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	94 %	92 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	31 W	83 W
Closed-loop control		
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.1 %	1 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	1 %	3 %
Load step setting time 50 to 100 %, typ.	0.2 ms	-
Load step setting time 100 to 50 %, typ.	0.2 ms	-
Dynamic load smoothing (I_{out}: 10/90/10 %), U_{out} ± typ.	2 %	-
Load step setting time 10 to 90%, typ.	0.2 ms	-
Load step setting time 90 to 10%, typ.	0.2 ms	-
Setting time maximum	10 ms	10 ms
Protection and monitoring		
Output overvoltage protection	< 32 V	< 35 V
Current limitation, typ.	22 A	44 A
Property of the output Short-circuit proof	Yes	Yes
Short-circuit protection	Alternatively, constant current characteristic approx. 22 A or latching shutdown	Alternatively, constant current characteristic approx. 44 A or latching shutdown
Enduring short circuit current RMS value		
• typical	22 A	44 A
Overcurrent overload capability in normal operation	overload capability 150 % $I_{out\ rated}$ up to 5 s/min	overload capability 150 % $I_{out\ rated}$ up to 5 s/min
Overload/short-circuit indicator	LED yellow for "overload", LED red for "latching shutdown"	LED yellow for "overload", LED red for "latching shutdown"

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Technical specifications (continued)

Article number	6EP3436-8SB00-0AY0	6EP1437-3BA10
Product	SITOP PSU8200	SITOP PSU8200
Power supply, type	24 V/20 A	24 V/40 A
Safety		
Primary/secondary isolation	Yes	Yes
Galvanic isolation	Safety extra low output voltage V_{out} according to EN 60950-1	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I	Class I
Leakage current		
• maximum	3.5 mA	3.5 mA
• typical	0.9 mA	-
CE mark	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259
Explosion protection	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T4	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T4
FM approval	-	-
CB approval	Yes	Yes
Marine approval	GL, ABS	GL, ABS
Degree of protection (EN 60529)	IP20	IP20
EMC		
Emitted interference	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	EN 61000-3-2	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2
Operating data		
Ambient temperature		
• during operation	-25 ... +70 °C	-25 ... +70 °C
- Note	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation
Mechanics		
Connection technology	screw-type terminals	screw-type terminals
Connections		
• Supply input	L1, L2, L3, PE: 1 screw terminal each for 0.2 ... 4 mm^2 single-core/finely stranded	L1, L2, L3, PE: 1 screw terminal each for 0.2 ... 4 mm^2 single-core/finely stranded
• Output	+, -: 2 screw terminals each for 0.2 ... 4 mm^2	+, -: 2 screw terminals each for 0.33 ... 10 mm^2
• Auxiliary	13, 14 (alarm signal): 1 screw terminal each for 0.14 ... 1.5 mm^2; 15, 16 (Remote): 1 screw terminal each for 0.14 ... 1.5 mm^2	13, 14 (alarm signal): 1 screw terminal each for 0.14 ... 1.5 mm^2
Width of the enclosure	70 mm	150 mm
Height of the enclosure	125 mm	125 mm
Depth of the enclosure	125 mm	150 mm
Required spacing		
• top	50 mm	-
• bottom	50 mm	-
• left	0 mm	-
• right	0 mm	-
Weight, approx.	1.2 kg	3.4 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x15
Electrical accessories	Buffer module	Buffer module
Mechanical accessories	Device identification label 20 mm × 7 mm, pale turquoise 3RT1900-1SB20	Device identification label 20 mm × 7 mm, pale turquoise 3RT1900-1SB20
MTBF at 40 °C	590 573 h	885 739 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

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3-phase, 24 V DC

Ordering data	Article No.
SITOP PSU8200, 3-phase, 24 V DC/20 A Stabilized power supply Input: 400 … 500 V 3 AC Output: 24 V DC/20 A	**6EP3436-8SB00-0AY0**
SITOP PSU8200 3-phase, 24 V DC/40 A Stabilized power supply Input: 400 … 500 V 3 AC Output: 24 V DC/20 A	**6EP1437-3BA10**

Accessories	Article No.
SITOP PSE201U buffer module For SITOP smart and SITOP modular buffer time 100 ms to 10 s dependent on load current	**6EP1961-3BA01**
SITOP PSE202U redundancy module Input/output: 24 V DC/40 A suitable for decoupling two SITOP power supplies with a maximum of 20 A output current	**6EP1961-3BA21**
SITOP PSE202U redundancy module Input/output: 24 V DC/NEC Class 2 suitable for decoupling two SITOP power supplies; output power limited < 100 VA	**6EP1962-2BA00**
SITOP PSE202U redundancy module Input/output: 24 V DC/10 A suitable for decoupling two SITOP power supplies with a maximum of 5 A output current	**6EP1964-2BA00**
SITOP PSE200U selectivity module 3 A 4-channel Input: 24 V DC Output: 24 V DC/3 A per channel output current adjustable 0.5 … 3 A	
• With common alarm signal	**6EP1961-2BA11**
• With single-channel signaling	**6EP1961-2BA31**
SITOP PSE200U selectivity module 10 A 4-channel Input: 24 V DC Output: 24 V DC/10 A per channel output current adjustable 3 ... 10 A	
• With common alarm signal	**6EP1961-2BA21**
• With single-channel signaling	**6EP1961-2BA41**
Device labeling plates	**3RT1900-1SB20**

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Overview



The 3-phase SITOP modular are technology power supplies for sophisticated solutions and offer maximum functionality for use in complex plants and machines. The wide-range input allows connection to almost any electrical power system worldwide and ensures a high degree of safety, even if there are large voltage fluctuations. The power boost provides up to three times the rated current for brief periods. In case of overload, you can choose between constant current with automatic restart or latching shutdown. The high degree of efficiency keeps energy consumption and heating in the control cabinet low, and the compact metal housing also saves space.

Main product highlights

- 36 V DC/13 A
- 3-phase AC input 400 to 500 volts
- Extremely slim design – no lateral installation clearances required
- Power Boost with 3 times the rated current (for 25 ms) for tripping protective devices
- Extra power with 1.5 times the rated current (5 s/min) for brief functional overload
- Choice of constant current or latching shutdown short-circuit response
- Optional symmetrical load distribution for parallel operation
- Operating state on 3 LEDs
- Extremely high efficiency up to 94%
- Wide temperature range from -25 to +70 °C
- Comprehensive certifications, such as cULus, ATEX

Technical specifications

Article number	**6EP3446-8SB10-0AY0**
Product	**SITOP PSU8200**
Power supply, type	**36 V/13 A**
Input	
Input	3-phase AC
Rated voltage value $V_{in\ rated}$	400 ... 500 V
Voltage range AC	320 ... 575 V
Wide-range input	Yes
Mains buffering at $I_{out\ rated}$, min.	15 ms; at V_{in} = 400 V
Rated line frequency 1	50 Hz
Rated line frequency 2	60 Hz
Rated line range	47 ... 63 Hz
Input current	
• at rated input voltage 400 V	1.2 A
• at rated input voltage 500 V	1 A
Switch-on current limiting (+25 °C), max.	16 A
I^2t, max.	0.8 $A^2 \cdot s$
Built-in incoming fuse	none
Protection in the mains power input (IEC 898)	Required: 3-pole connected miniature circuit breaker 6 ... 16 A characteristic C or circuit breaker 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489)
Output	
Output	Controlled, isolated DC voltage
Rated voltage V_{out} DC	36 V
Total tolerance, static ±	3 %
Static mains compensation, approx.	0.1 %
Static load balancing, approx.	0.2 %
Residual ripple peak-peak, max.	100 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	200 mV
Adjustment range	36 ... 42 V
Product function Output voltage adjustable	Yes
Output voltage setting	via potentiometer; max. 480 W
Status display	Green LED for 36 V OK
Signaling	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for 36 V OK
On/off behavior	No overshoot of V_{out} (soft start)
Startup delay, max.	2.5 s
Voltage increase time of the output voltage maximum	500 ms
Rated current value $I_{out\ rated}$	13 A
Current range	0 ... 13 A
• Note	+60 ... +70 °C: Derating 2%/K
Supplied active power typical	468 W
Short-term overload current	
• at short-circuit during operation typical	39 A
Duration of overloading capability for excess current	
• at short-circuit during operation	25 ms
Constant overload current	
• on short-circuiting during the start-up typical	14 A
Parallel switching for enhanced performance	Yes; switchable characteristic
Numbers of parallel switchable units for enhanced performance	2

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Technical specifications (continued)

Article number	6EP3446-8SB10-0AY0
Product	SITOP PSU8200
Power supply, type	36 V/13 A
Efficiency	
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	94 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	30 W
Closed-loop control	
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.1 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	1 %
Load step setting time 50 to 100%, typ.	0.2 ms
Load step setting time 100 to 50%, typ.	0.2 ms
Dynamic load smoothing (I_{out}: 10/90/10 %), U_{out} ± typ.	2 %
Load step setting time 10 to 90%, typ.	0.2 ms
Load step setting time 90 to 10%, typ.	0.2 ms
Setting time maximum	10 ms
Protection and monitoring	
Output overvoltage protection	< 48 V
Current limitation, typ.	14 A
Property of the output Short-circuit proof	Yes
Short-circuit protection	Alternatively, constant current characteristic approx. 14 A or latching shutdown
Enduring short circuit current RMS value	
• typical	14 A
Overcurrent overload capability in normal operation	overload capability 150 % $I_{out\ rated}$ up to 5 s/min
Overload/short-circuit indicator	LED yellow for "overload", LED red for "latching shutdown"
Safety	
Primary/secondary isolation	Yes
Galvanic isolation	Safety extra low output voltage V_{out} according to EN 60950-1
Protection class	Class I
Leakage current	
• maximum	3.5 mA
• typical	0.9 mA
CE mark	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259
Explosion protection	No
FM approval	-
CB approval	Yes
Marine approval	GL, ABS
Degree of protection (EN 60529)	IP20
EMC	
Emitted interference	EN 55022 Class B
Supply harmonics limitation	EN 61000-3-2
Noise immunity	EN 61000-6-2
Operating data	
Ambient temperature	
• during operation	-25 ... +70 °C
- Note	with natural convection
• during transport	-40 ... +85 °C
• during storage	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation

Article number	6EP3446-8SB10-0AY0
Product	SITOP PSU8200
Power supply, type	36 V/13 A
Mechanics	
Connection technology	screw-type terminals
Connections	
• Supply input	L1, L2, L3, PE: 1 screw terminal each for 0.2 ... 4 mm² single-core/finely stranded
• Output	+, -: 2 screw terminals each for 0.2 ... 4 mm²
• Auxiliary	13, 14 (alarm signal): 1 screw terminal each for 0.14 ... 1.5 mm²; 15, 16 (Remote): 1 screw terminal each for 0.14 ... 1.5 mm²
Width of the enclosure	70 mm
Height of the enclosure	125 mm
Depth of the enclosure	125 mm
Required spacing	
• top	50 mm
• bottom	50 mm
• left	0 mm
• right	0 mm
Weight, approx.	1.2 kg
Product feature of the enclosure housing for side-by-side mounting	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15
Electrical accessories	Buffer module
Mechanical accessories	Device identification label 20 mm × 7 mm, pale turquoise 3RT1900-1SB20
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SITOP PSU8200 3-phase, 36 V DC/13 A Stabilized power supply Input: 400 ... 500 V 3 AC Output: 36 V DC/13 A	**6EP3446-8SB10-0AY0**

Accessories

	Article No.
Device labeling plates	**3RT1900-1SB20**

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Overview



The 3-phase SITOP modular are technology power supplies for sophisticated solutions and offer maximum functionality for use in complex plants and machines. The wide-range input allows a connection to almost any electrical power system worldwide and ensures a high degree of safety even if there are large voltage fluctuations. The power boost provides up to three times the rated current for brief periods. In case of overload, you can choose between constant current with automatic restart or latching shutdown. The high degree of efficiency keeps energy consumption and heating in the control cabinet low, and the compact metal housing also saves space.

Main product highlights

- 48 V DC / 10 A and 20 A
- 3-phase wide-range input
- Extremely slim design – no lateral installation clearances required
- Power Boost with 3 times the rated current (for 25 ms) for tripping protective devices
- Extra power with 1.5 times the rated current (5 s/min) for brief functional overload
- Selectable short-circuit response between constant current and latching shutdown
- Optional symmetrical load distribution for parallel operation
- Operating status on 3 LEDs
- Extremely high efficiency to 94 %
- Wide temperature range from -25 to +70 °C
- Comprehensive certifications, such as cULus, ATEX and GL

Technical specifications

Article number	**6EP1456-3BA00**	**6EP1457-3BA00**
Product	**SITOP PSU300M**	**SITOP PSU300M**
Power supply, type	**48 V/10 A**	**48 V/20 A**
Input		
Input	3-phase AC	3-phase AC
Rated voltage value $V_{in\ rated}$	400 ... 500 V	400 ... 500 V
Voltage range AC	320 ... 575 V	320 ... 550 V
• Note	-	Starting from V_{in} > 340 V
Wide-range input	Yes	Yes
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	15 ms; at V_{in} = 400 V	6 ms; at V_{in} = 400 V
Rated line frequency 1	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz
Input current		
• at rated input voltage 400 V	1.2 A	2.2 A
• at rated input voltage 500 V	1 A	
Switch-on current limiting (+25 °C), max.	18 A	70 A
I^2t, max.	0.8 $A^2 \cdot s$	2.8 $A^2 \cdot s$
Built-in incoming fuse	none	none
Protection in the mains power input (IEC 898)	Required: 3-pole connected miniature circuit breaker 6 ... 16 A characteristic C or circuit breaker 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489)	Required: 3-pole connected miniature circuit breaker 10 ... 16 A characteristic C or circuit breaker 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489)

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Technical specifications (continued)

Article number	6EP1456-3BA00	6EP1457-3BA00
Product	**SITOP PSU300M**	**SITOP PSU300M**
Power supply, type	**48 V/10 A**	**48 V/20 A**
Output		
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	48 V	48 V
Total tolerance, static ±	3 %	3 %
Static mains compensation, approx.	0.1 %	0.1 %
Static load balancing, approx.	0.2 %	0.2 %
Residual ripple peak-peak, max.	100 mV	100 mV
Residual ripple peak-peak, typ.	-	10 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	200 mV	200 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	-	80 mV
Adjustment range	42 ... 56 V	42 ... 56 V
Product function Output voltage adjustable	Yes	Yes
Output voltage setting	via potentiometer; max. 480 W	via potentiometer; max. 960 W
Status display	Green LED for 48 V OK	Green LED for 48 V OK
Signaling	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for 48 V OK	via signaling module (6EP1961-3BA10)
On/off behavior	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)
Startup delay, max.	2.5 s	2.5 s
Voltage rise, typ.	150 ms	20 ms
Voltage increase time of the output voltage maximum	500 ms	-
Rated current value $I_{out\ rated}$	10 A	20 A
Current range	0 ... 10 A	0 ... 20 A
• Note	+60 ... +70 °C: Derating 3%/K	-
Supplied active power typical	480 W	960 W
Short-term overload current		
• at short-circuit during operation typical	23 A	60 A
Duration of overloading capability for excess current		
• at short-circuit during operation	25 ms	25 ms
Constant overload current		
• on short-circuiting during the start-up typical	11 A	23 A
Parallel switching for enhanced performance	Yes; switchable characteristic	Yes; switchable characteristic
Numbers of parallel switchable units for enhanced performance	2	2
Efficiency		
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	93 %	90 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	36 W	106 W
Closed-loop control		
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	1 %	-
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	2 %	-
Load step setting time 50 to 100%, typ.	2 ms	-
Load step setting time 100 to 50%, typ.	2 ms	-
Setting time maximum	10 ms	-
Protection and monitoring		
Output overvoltage protection	Yes, according to EN 60950-1	Yes, according to EN 60950-1
Current limitation, typ.	11 A	23 A
Property of the output Short-circuit proof	Yes	Yes
Short-circuit protection	Alternatively, constant current characteristic approx. 11 A or latching shutdown	Alternatively, constant current characteristic approx. 23 A or latching shutdown
Enduring short circuit current RMS value		
• typical	11 A	23 A
Overcurrent overload capability in normal operation	overload capability 150 % $I_{out\ rated}$ up to 5 s/min	-
Overload/short-circuit indicator	LED yellow for "overload", LED red for "latching shutdown"	LED yellow for "overload", LED red for "latching shutdown"

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Technical specifications (continued)

Article number	6EP1456-3BA00	6EP1457-3BA00
Product	**SITOP PSU300M**	**SITOP PSU300M**
Power supply, type	**48 V/10 A**	**48 V/20 A**
Safety		
Primary/secondary isolation	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} according to EN 60950-1 and EN 50178	Safety extra low output voltage V_{out} according to EN 60950-1
Protection class	Class I	Class I
Leakage current		
• maximum	3.5 mA	3.5 mA
• typical	-	0.68 mA
CE mark	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cCSAus (CSA C22.2 No. 60950, UL 60950)
Explosion protection	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T4	-
FM approval	-	-
CB approval	Yes	No
Marine approval	GL, ABS	GL, ABS
Degree of protection (EN 60529)	IP20	IP20
EMC		
Emitted interference	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	EN 61000-3-2	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2
Operating data		
Ambient temperature		
• during operation	-10 ... +70 °C	0 ... 60 °C
- Note	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation
Mechanics		
Connection technology	screw-type terminals	screw-type terminals
Connections		
• Supply input	L1, L2, L3, PE: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded	L1, L2, L3, PE: 1 screw terminal each for 0.2 ... 4 mm^2 single-core/finely stranded
• Output	+, -: 2 screw terminals each for 0.2 ... 4 mm^2	+, -: 2 screw terminals each for 0.33 ... 10 mm^2
• Auxiliary	13, 14 (alarm signal): 1 screw terminal each for 0.14 ... 1.5 mm^2	-
Width of the enclosure	70 mm	240 mm
Height of the enclosure	125 mm	125 mm
Depth of the enclosure	125 mm	125 mm
Weight, approx.	1.2 kg	3.2 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x15
Electrical accessories		Signaling module
Mechanical accessories	Device identification label 20 mm × 7 mm, pale turquoise 3RT1900-1SB20	-
MTBF at 40 °C	664 995 h	-
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

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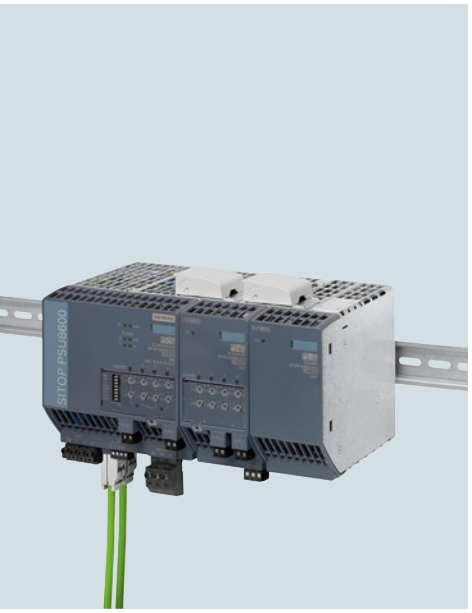
3-phase, 48 V DC

Ordering data	Article No.
SITOP PSU300M 3-phase, 48 V DC/10 A Stabilized power supply Input: 3 AC 400 … 500 V Output: 48 V DC / 10 A	**6EP1456-3BA00**
SITOP PSU300M 3-phase, 48 V DC / 20 A Stabilized power supply Input: 3 AC 400 … 500 V Output: 48 V DC/20 A	**6EP1457-3BA00**

Accessories	Article No.
Device labeling plates	**3RT1900-1SB20**

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SITOP modular,
PSU8600 power supply system



7/2 **Introduction**
7/5 3-phase, basic units 24 V DC (PSU8600)
7/10 Modular system, expansions of outputs (CNX8600)
7/13 Modular system, buffering (BUF8600)

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Introduction

Overview



As a unique power supply system with complete integration in Totally Integrated Automation (TIA), SITOP PSU8600 sets new standards in industrial power supplies. The benefits of this integration are not only apparent during engineering in TIA Portal but also result in reliable operation. Voltage and current response thresholds can be set individually for each output of the power supply system, and selective monitoring of each output for overload results in fast fault location. Depending on requirements additional modules from the modular system, such as are used for buffering short power failures, can be added without wiring overhead.

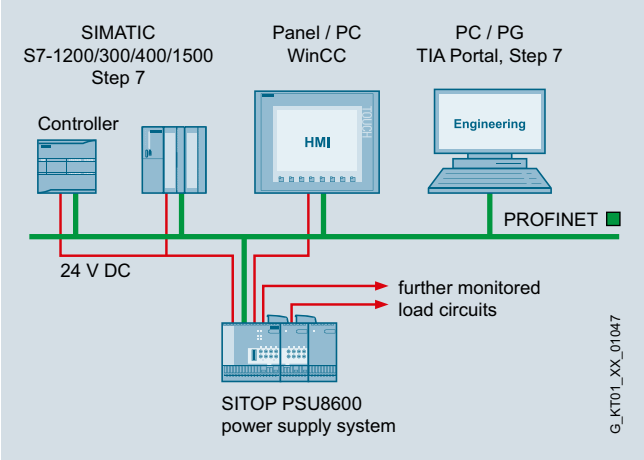
Comprehensive diagnostic and maintenance information is available via PROFINET. It can be evaluated directly in SIMATIC S7 and visualized in SIMATIC WinCC. Optimal support is also provided for energy management of plant or machines: From the acquisition of energy data from individual outputs, the specific activation and deactivation of outputs via PROFIenergy, to direct integration in power management systems.

Benefits

- Reduced space requirement and costs due to multiple integrated outputs with selective monitoring
- Individually configurable outputs (no need for additional power supply for 5 V, 12 V or 15 V)
- Compensation for power losses can be set separately for each output
- Narrow width without lateral installation clearances
- Low temperature rise in the control cabinet due to very high efficiency
- If required, extra units from the modular system (more outputs, buffer module) can be added without wiring effort
- Reliable operation due to bridging of short-term power failures
- Two integrated Ethernet/PROFINET ports (no external switch required)
- Complete integration in TIA requires less time and reduces costs during configuration (TIA Portal) and in operation
- SIMATIC S7 function blocks for easy integration in STEP 7 user programs
- Fast integration in operator control and monitoring with WinCC faceplates
- Preventive maintenance reduces downtimes
- Energy savings during breaks through targeted switching of outputs
- Easy integration in energy management systems (PROFIenergy protocol)

Application

The SITOP PSU8600 power supply system is used as the central DC power supply of larger plants or machines with networked automation systems. The PSU8600 can be directly integrated into the LAN infrastructure by means of the two integrated PROFINET ports.



An extremely high level of reliability is achieved for the DC voltage supply by monitoring the individual DC branches for overload and bridging short-term power failures (brownouts). Complete transparency and fast fault localization are achieved by providing comprehensive diagnostic and maintenance information (e.g. load states of the outputs, phase/network failure, overtemperature) via PROFINET.

Energy-optimized operation is supported by measuring the current power and voltage values of the individual outputs as well as the individual activation and deactivation of the DC outputs via PROFIenergy during break times.

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Design

Basic devices

- SITOP PSU8600, 3-phase power supply, 24 V DC/20 A/4x 5 A with four outputs (max. 5 A per output) and two Ethernet/ PROFINET ports
- SITOP PSU8600, 3-phase power supply, 24 V DC/20 A with one output and two Ethernet/PROFINET ports
- SITOP PSU8600, 3-phase power supply, 24 V DC/40 A/ 4x 10 A with four outputs (max. 10 A per output) and two Ethernet/PROFINET ports
- SITOP PSU8600, 3-phase power supply, 24 V DC/40 A with one output and two Ethernet/PROFINET ports

Modular system, consisting of:

- SITOP CNX8600 4x 5 A (expansion module with 4 outputs at 5 A each)
- SITOP CNX8600 4x 10 A (expansion module with 4 outputs at 10 A each)
- SITOP BUF8600 100 ms/40 A (buffer module with 100 ms at 40 A)
- SITOP BUF8600 300 ms/40 A (buffer module with 300 ms at 40 A)
- SITOP BUF8600 4 s/40 A (buffer module with 4 s at 40 A)
- SITOP BUF8600 10 s/40 A (buffer module with 10 s at 40 A)

You can connect up to four CNX8600 expansion modules as well as up to two BUF8600 buffer modules to the PSU8600 basic device. Connection takes place on top of the modules without any wiring by means of the System Clip Link, a connecting plug for system data and power supply. The order of the up to six possible add-on modules is random so that an existing configuration does not have to be altered if a module is added later.

Function

Supply of connected loads

An individual supply voltage can be set at each output of the power supply system. This means you can supply loads with different rated voltages simultaneously with only one device. Plus the voltage drop caused by the different cable lengths can be compensated individually, which means each load can be supplied with the optimum voltage.

Monitoring of the outputs for overload

Each output of the power supply system is individually monitored for overload. If the load current exceeds the set response threshold, the output is shut down according to specified time-current characteristics. All other outputs continue to be supplied reaction-free.

Enabling and disabling the outputs

Each output can be manually enabled or disabled directly on the device (e.g. for commissioning or service) and an overload tripping can be reset. Outputs disabled due to overload can also be reset remotely using a remote signal signal (24 V input).

In addition, program-controlled enabling and disabling of the outputs is possible using the integrated Ethernet/ PROFINET interface. This also means you can disable individual outputs by means of PROFIenergy during breaks to save energy.

Function (continued)

Communication

Comprehensive diagnostic information can be queried and processed via the integrated Ethernet/PROFINET interface during operation for both the device status as well as the status of the individual outputs. This results in complete transparency, minimal downtimes and quick fault location. The integrated web server also permits remote monitoring of the power supply system.

Buffering

In case of short-term power failure, the buffer module supplies the load current for supplying the outputs by means of its energy storage units Maintenance-free electrolytic capacitors or double-layer capacitors are used as energy-storage units.

Integration

Software for TIA-based automation systems

Different software components are available to facilitate easy integration of the SITOP PSU8600 in the TIA environment.

Engineering is simple via the TIA Portal. Special function blocks for SIMATIC S7-300, S7-400, S7-1200 and S7-1500 also support integration in the STEP 7 user program.

The comprehensive operating and diagnostic data of the power supply system can be visualized using ready-to-use PSU8600 faceplates for WinCC.

TIA Portal

- User-friendly, failsafe integration of SITOP PSU8600 in the PROFINET network by means of drag-and-drop
- Convenient configuration of the PSU8600 basic units and CNX8600 and BUF8600 add-on modules though simple selection from the TIA Portal hardware catalog
- Free download of HSP (Hardware Support Package) for TIA Portal version V13 or higher available at http://support.automation.siemens.com/WW/view/en/102254062
- Free GSD file (Generic Station Description) for STEP 7 V 5.5 http://support.automation.siemens.com/WW/view/en/102254061



Error-free establishment of the PROFINET connection between the SITOP PSU8600 and the controller is easy with the TIA Portal

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Integration (continued)

STEP 7 function blocks

Function blocks are available for STEP 7 user programs on SIMATIC S7-300/400/1200/1500. They allow further processing of the PSU8600 operating data.

- Function blocks for STEP 7 V5.5
- Function blocks for STEP 7 V13

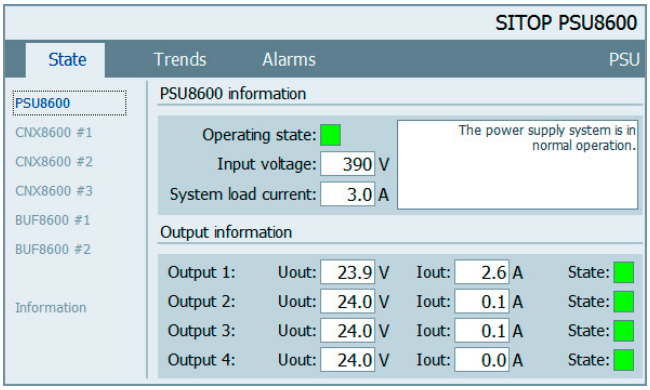
Free download from:
http://support.automation.siemens.com/WW/view/en/102379345

Faceplates for WinCC

Ready-to-use faceplates save programming time during visualization of the SITOP PSU8600. The faceplates show all relevant statuses and values of the power supply system and the individual outputs and are available for the following systems:

- Faceplates for WinCC V7.3
- Faceplates for WinCC flexible 2008 SP3
- Faceplates for WinCC Comfort/Advanced/ Professional V13

Free download from:
http://support.automation.siemens.com/WW/view/en/102379345



The pre-compiled WinCC faceplates show all the relevant data of the power supply system in an easy-to-understand display.

Web server

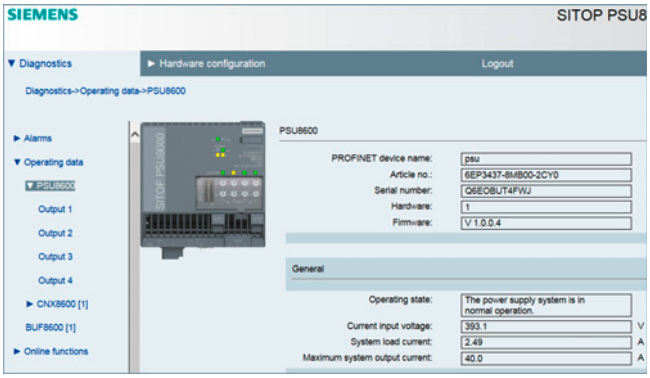
A web server is integrated in the PSU8600 basic unit for remote monitoring of the power supply system.

Remote monitoring of

- Hardware configuration data
- Operating data of the basic unit, all connected add-on modules and the individual outputs
- Alarm messages

Remote access via

- Firefox V29, Internet Explorer 8, 10, 11
- IP address
- User name and password



The password-protected web server offers a view of the configuration and operating data.

More information

Select the appropriate power supply quickly and easily with the PSU8600 SITOP Selection Tool:

http://www.siemens.de/sitop-selection-tool

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Overview



The ultra-slim 3-phase basic units of the SITOP PSU8600 power supply system include one Ethernet/PROFINET interface as well as one or four configurable outputs (voltage and current threshold) with selective monitoring. Additional units from the modular system can be added as required to the basic unit, without wiring overhead, in order to increase the number of outputs (CNX8600) or to extend the mains buffering time (BUF8600). Comprehensive diagnostic and maintenance information is available via PROFINET. It can be evaluated directly in SIMATIC S7 and visualized in SIMATIC WinCC. Energy management is also optimally supported by collecting the energy data for each output as well as individual activation and deactivation of the outputs via PROFIenergy.

Main product highlights

- 3-phase wide-range input 400 to 500 V 3 AC for global use
- Extremely slim design with very high efficiency of up to 94%
- Versions with a configurable output with up to 20 A or 40 A and selective monitoring
- Versions with four integrated, individually configured outputs with up to 5 A or 10 A each and selective monitoring
- Voltage and response threshold can be set separately and are infinitely adjustable for each output
- Extra power with 1.5 times the rated current (5 s/min) for brief, operational overload
- Integrated Ethernet/PROFINET interface (2 ports)
- Easy configuration in the TIA Portal
- Comprehensive diagnostic information during operation
- Outputs can be deactivated and activated in a targeted manner with PROFIenergy
- Individual expansion options from the modular system (expansion modules, buffer modules) without wiring overhead

Technical specifications

Article number	**6EP3436-8SB00-2AY0**	**6EP3437-8SB00-2AY0**	**6EP3436-8MB00-2CY0**	**6EP3437-8MB00-2CY0**
Product	**SITOP PSU8600**	**SITOP PSU8600**	**SITOP PSU8600**	**SITOP PSU8600**
Power supply, type	**24 V/20 A**	**24 V/40 A**	**24 V/20 A/4x 5 A**	**24 V/40 A/4x 10 A**
Input				
Input	3-phase AC	3-phase AC	3-phase AC	3-phase AC
Rated voltage value $V_{in\ rated}$	400 ... 500 V	400 ... 500 V	400 ... 500 V	400 ... 500 V
Voltage range AC	320 ... 575 V	320 ... 575 V	320 ... 575 V	320 ... 575 V
• Note	Derating 320 … 360 and 530 … 575 V	Derating 320 … 360 and 530 … 575 V	Derating 320 … 360 and 530 … 575 V	Derating 320 … 360 and 530 … 575 V
Wide-range input	Yes	Yes	Yes	Yes
Mains buffering at $I_{out\ rated}$, min.	15 ms; at V_{in} = 400 V; Prioritized voltage supply at power failure via DIP switch can be selected (only with expansion module CNX8600)	15 ms; at V_{in} = 400 V; Prioritized voltage supply at power failure via DIP switch can be selected (only with expansion module CNX8600)	15 ms; at V_{in} = 400 V; Prioritized supply Output 1 at power failure can be selected via DIP switch	15 ms; at V_{in} = 400 V; Prioritized supply Output 1 at power failure can be selected via DIP switch
Rated line frequency	50 ... 60 Hz	50 ... 60 Hz	50 ... 60 Hz	50 ... 60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz	47 ... 63 Hz	47 ... 63 Hz
Input current				
• at rated input voltage 400 V	1.4 A	2.75 A	1.4 A	2.75 A
• at rated input voltage 500 V	1.1 A	2.2 A	1.1 A	2.2 A
Switch-on current limiting (+25 °C), max.	14 A	14 A	14 A	14 A
I^2t, max.	1.2 $A^2 \cdot s$	2.24 $A^2 \cdot s$	1.2 $A^2 \cdot s$	2.24 $A^2 \cdot s$
Built-in incoming fuse	none	none	none	none
Protection in the mains power input (IEC 898)	Required: 3-pole connected miniature circuit breaker 6 ... 16 A characteristic C or circuit breaker 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489)	Required: 3-pole connected miniature circuit breaker 10 ... 16 A characteristic C or circuit breaker 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489)	Required: 3-pole connected miniature circuit breaker 6 ... 16 A characteristic C or circuit breaker 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489)	Required: 3-pole connected miniature circuit breaker 10 ... 16 A characteristic C or circuit breaker 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489)

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Technical specifications (continued)

Article number	6EP3436-8SB00-2AY0	6EP3437-8SB00-2AY0	6EP3436-8MB00-2CY0	6EP3437-8MB00-2CY0
Product	SITOP PSU8600	SITOP PSU8600	SITOP PSU8600	SITOP PSU8600
Power supply, type	24 V/20 A	24 V/40 A	24 V/20 A/4x 5 A	24 V/40 A/4x 10 A
Output				
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Number of outputs	1	1	4	4
Rated voltage V_{out} DC	24 V	24 V	24 V	24 V
Output voltage				
• at output 1 at DC Rated value	24 V	24 V	24 V	24 V
• at output 2 at DC Rated value	-	-	24 V	24 V
• at output 3 at DC Rated value	-	-	24 V	24 V
• at output 4 at DC Rated value	-	-	24 V	24 V
Total tolerance, static ±	3 %	3 %	3 %	3 %
Static mains compensation, approx.	0.2 %	0.2 %	0.2 %	0.2 %
Static load balancing, approx.	0.1 %	0.1 %	0.1 %	0.1 %
Residual ripple peak-peak, max.	100 mV	100 mV	100 mV	100 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	200 mV	200 mV	200 mV	200 mV
Adjustment range	5 ... 28 V	5 ... 28 V	5 ... 28 V	5 ... 28 V
Product function Output voltage adjustable	Yes	Yes	Yes	Yes
Output voltage setting	via potentiometer; Derating > 24 V: 4%/V; max. 480 W overall system	via potentiometer; Derating > 24 V: 4%/V; max. 960 W overall system	via potentiometer; Derating > 24 V: 4%/V; max. 120 W per output, max. 480 W overall system	via potentiometer; Derating > 24 V: 4%/V; max. 240 W per output, max. 960 W overall system
Status display	3-color LED for operating state device; LED for operating mode manual/remote; 4 LEDs for communication PROFINET; 3-color LED for operating state output	3-color LED for operating state device; LED for operating mode manual/remote; 4 LEDs for communication PROFINET; 3-color LED for operating state output	3-color LED for operating state device; LED for operating mode manual/remote; 4 LEDs for communication PROFINET; 3-color LED per output for operating state output; LED green for parallel operation Output 1 and 2 / 3 and 4	3-color LED for operating state device; LED for operating mode manual/remote; 4 LEDs for communication PROFINET; 3-color LED per output for operating state output; LED green for parallel operation Output 1 and 2 / 3 and 4
Signaling	Relay contact (changeover contact, contact current capacity DC 60 V/0.3 A) for "Operating state OK"	Relay contact (changeover contact, contact current capacity DC 60 V/0.3 A) for "Operating state OK"	Relay contact (changeover contact, contact current capacity DC 60 V/0.3 A) for "Operating state OK"	Relay contact (changeover contact, contact current capacity DC 60 V/0.3 A) for "Operating state OK"
On/off behavior	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)
Startup delay, max.	1 s	1 s	1 s; Without on-delay of the outputs	1 s; Without on-delay of the outputs
connection of outputs operating	Simultaneous connecting-in of all outputs after device booting or delay time of 25 ms, 100 ms or "load-optimized" for sequential cutting-in of the outputs via DIP switches can be set (only with expansion module CNX8600)	Simultaneous connecting-in of all outputs after device booting or delay time of 25 ms, 100 ms or "load-optimized" for sequential cutting-in of the outputs via DIP switches can be set (only with expansion module CNX8600)	Simultaneous connecting-in of all outputs after device booting or delay time of 25 ms, 100 ms or "load-optimized" for sequential cutting-in of the outputs via DIP switches can be set	Simultaneous connecting-in of all outputs after device booting or delay time of 25 ms, 100 ms or "load-optimized" for sequential cutting-in of the outputs via DIP switches can be set
Voltage increase time of the output voltage maximum	500 ms	500 ms	500 ms	500 ms
Rated current value $I_{out\ rated}$	20 A	40 A	20 A	40 A
Output current				
• per output	20 A	40 A	5 A	10 A
• at output 1 Rated value	20 A	40 A	5 A	10 A
• at output 2 Rated value	-	-	5 A	10 A
• at output 3 Rated value	-	-	5 A	10 A
• at output 4 Rated value	-	-	5 A	10 A
Current range	0 ... 20 A	0 ... 40 A	0 ... 20 A	0 ... 40 A
• Note	+50 ... +60 °C: Derating 2.5%/K; no derating in connection with expansion module CNX8600 and total load of the outputs at the basic device max. 240 W	+50 ... +60 °C: Derating 2.5%/K; no derating in connection with expansion module CNX8600 and total load of the outputs at the basic device max. 480 W	+50 ... +60 °C: Derating 2.5%/K; no derating in connection with expansion module CNX8600 and total load of the outputs at the basic device max. 240 W	+50 ... +60 °C: Derating 2.5%/K; no derating in connection with expansion module CNX8600 and total load of the outputs at the basic device max. 480 W

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Technical specifications (continued)

Article number	6EP3436-8SB00-2AY0	6EP3437-8SB00-2AY0	6EP3436-8MB00-2CY0	6EP3437-8MB00-2CY0
Product	**SITOP PSU8600**	**SITOP PSU8600**	**SITOP PSU8600**	**SITOP PSU8600**
Power supply, type	**24 V/20 A**	**24 V/40 A**	**24 V/20 A/4x 5 A**	**24 V/40 A/4x 10 A**
Supplied active power typical	480 W	960 W	480 W	960 W
Overcurrent overload capability in normal operation	Total system overloadable 150% $I_{a\ rated}$ to 5 s/min	Total system overloadable 150% $I_{a\ rated}$ to 5 s/min	Total system overloadable 150% $I_{a\ rated}$ to 5 s/min	Total system overloadable 150% $I_{a\ rated}$ to 5 s/min
Short-term overload current				
• at short-circuit during operation typical	60 A	120 A	-	-
• Note	only in operation without CNX8600 extension module	only in operation without CNX8600 extension module	-	-
Duration of overloading capability for excess current				
• at short-circuit during operation	25 ms	25 ms	-	-
Product feature parallel switching of outputs	-	-	Yes; Parallel circuit Output 1 with 2 or Output 3 with 4 can be selected via DIP switch	Yes; Parallel circuit Output 1 with 2 or Output 3 with 4 can be selected via DIP switch
Parallel switching for enhanced performance	Yes; suitable output characteristics via DIP switch can be selected	Yes; suitable output characteristics via DIP switch can be selected	No	No
Numbers of parallel switchable units for enhanced performance	2	2	-	-
Efficiency				
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	93 %	93 %	93 %	93 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	34 W	72 W	34 W	72 W
Power loss [W] during no-load operation maximum	12 W	20 W	12 W	20 W
Closed-loop control				
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.1 %	0.1 %	0.1 %	0.1 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	0.4 %	0.4 %	0.4 %	0.4 %
Setting time maximum	10 ms	10 ms	10 ms	10 ms
Protection and monitoring				
Output overvoltage protection	< 35 V	< 35 V	< 35 V	< 35 V
Property of the output Short-circuit proof	Yes	Yes	Yes	Yes
Short-circuit protection	electronic overload cut-off; optionally constant current operation can be selected via DIP switches	electronic overload cut-off; optionally constant current operation can be selected via DIP switches	electronic overload cut-off; optionally constant current operation can be selected for Output 4 via DIP switches	electronic overload cut-off; optionally constant current operation can be selected for Output 4 via DIP switches
adjustable response value current of current-dependent overload trip	2 ... 20 A	4 ... 40 A	0.5 ... 5 A	0.5 ... 10 A
type of threshold value setting	via potentiometer	via potentiometer	via potentiometer	via potentiometer
characteristics of electronic overload switch-off	I_a >1.0…<1.5 x I_a threshold permissible for 5 s; $I_{a\ limit}$ (= 1.5 x I_a threshold) permissible for 200 ms	I_a >1.0…<1.5 x I_a threshold permissible for 5 s; $I_{a\ limit}$ (= 1.5 x I_a threshold) permissible for 200 ms	I_a >1.0…<1.5 x I_a threshold permissible for 5 s; $I_{a\ limit}$ (= 1.5 x I_a threshold) permissible for 200 ms	I_a >1.0…<1.5 x I_a threshold permissible for 5 s; $I_{a\ limit}$ (= 1.5 x I_a threshold) permissible for 200 ms
characteristics of constant current operation	$I_{a\ limit}$ (= 1.5 x I_a threshold) permissible for 5 s, afterwards I_a threshold continuous	$I_{a\ limit}$ (= 1.5 x I_a threshold) permissible for 5 s, afterwards I_a threshold continuous	$I_{a\ limit}$ (= 1.5 x I_a threshold) permissible for 5 s, afterwards I_a threshold continuous	$I_{a\ limit}$ (= 1.5 x I_a threshold) permissible for 5 s, afterwards I_a threshold continuous
Reset	Via sensor	Via sensor	Via sensor per output	Via sensor per output
Remote reset	Non-electrically isolated 24 V input (signal level "high" at > 15 V)	Non-electrically isolated 24 V input (signal level "high" at > 15 V)	Non-electrically isolated 24 V input (signal level "high" at > 15 V)	Non-electrically isolated 24 V input (signal level "high" at > 15 V)
Overload/short-circuit indicator	3-color LED for operating state device; 3-color LED for operating state output	3-color LED for operating state device; 3-color LED for operating state output	3-color LED for operating state device; 3-color LED per output for operating state output	3-color LED for operating state device; 3-color LED per output for operating state output
Interface				
Specification interface	Ethernet/PROFINET	Ethernet/PROFINET	Ethernet/PROFINET	Ethernet/PROFINET

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Technical specifications (continued)

Article number	6EP3436-8SB00-2AY0	6EP3437-8SB00-2AY0	6EP3436-8MB00-2CY0	6EP3437-8MB00-2CY0
Product	SITOP PSU8600	SITOP PSU8600	SITOP PSU8600	SITOP PSU8600
Power supply, type	24 V/20 A	24 V/40 A	24 V/20 A/4x 5 A	24 V/40 A/4x 10 A
Safety				
Primary/secondary isolation	Yes	Yes	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I	Class I	Class I	Class I
Leakage current				
• maximum	3.5 mA	3.5 mA	3.5 mA	3.5 mA
CE mark	Yes	Yes	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)
Explosion protection	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T4
FM approval	-	-	-	-
CB approval	Yes	Yes	Yes	Yes
Marine approval	GL; ABS in process	GL; ABS in process	GL; ABS in process	GL; ABS in process
Degree of protection (EN 60529)	IP20	IP20	IP20	IP20
EMC				
Emitted interference	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	EN 61000-3-2	EN 61000-3-2	EN 61000-3-2	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Operating data				
Ambient temperature				
• during operation	-25 ... +60 °C	-25 ... +60 °C	-25 ... +60 °C	-25 ... +60 °C
- Note	with natural convection	with natural convection	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation
Mechanics				
Connection technology	Plug-in terminals with screwed connection	Plug-in terminals with screwed connection	Plug-in terminals with screwed connection	Plug-in terminals with screwed connection
Connections				
• Supply input	L1, L2, L3, PE: Plug-in terminal with 1 screwed connection each for 0.08 ... 4 mm^2 single-wire/ fine stranded	L1, L2, L3, PE: Plug-in terminal with 1 screwed connection each for 0.08 ... 4 mm^2 single-wire/ fine stranded	L1, L2, L3, PE: Plug-in terminal with 1 screwed connection each for 0.08 ... 4 mm^2 single-wire/ fine stranded	L1, L2, L3, PE: Plug-in terminal with 1 screwed connection each for 0.08 ... 4 mm^2 single-wire/ fine stranded
• Output	Output: plug-in terminals with 2 screw connectors for 0.08 ... 4 mm^2; 0 V: screw terminal with 3 screw connectors for 0.08 ... 4 mm^2	Output: plug-in terminals with 2 screw connectors for 0.2 ... 10 mm^2; 0 V: screw terminal with 3 screw connectors for 0.2 ... 10 mm^2	1, 2, 3, 4: Two plug-in terminals (1, 2 and 3, 4) with 2 screwed connections each for 0.2 ... 2.5 mm^2; 0 V: Plug-in terminal with 3 screwed connections for 0.08 ... 4 mm^2	1, 2, 3, 4: Two plug-in terminals (1, 2 and 3, 4) with 2 screwed connections each for 0.2 ... 2.5 mm^2; 0 V: Plug-in terminal with 3 screwed connections for 0.5 ... 10 mm^2
• Auxiliary	RST (Reset): Plug-in terminal (together with alarm signal) with 1 screwed connection for 0.2 ... 1.5 mm^2	RST (Reset): Plug-in terminal (together with alarm signal) with 1 screwed connection for 0.2 ... 1.5 mm^2	RST (Reset): Plug-in terminal (together with alarm signal) with 1 screwed connection for 0.2 ... 1.5 mm^2	RST (Reset): Plug-in terminal (together with alarm signal) with 1 screwed connection for 0.2 ... 1.5 mm^2
• Signaling contact	11, 12, 14 (alarm signal): Plug-in terminal (together with Reset) with 1 screwed connection each for 0.2 ... 1.5 mm^2	11, 12, 14 (alarm signal): Plug-in terminal (together with Reset) with 1 screwed connection each for 0.2 ... 1.5 mm^2	11, 12, 14 (alarm signal): Plug-in terminal (together with Reset) with 1 screwed connection each for 0.2 ... 1.5 mm^2	11, 12, 14 (alarm signal): Plug-in terminal (together with Reset) with 1 screwed connection each for 0.2 ... 1.5 mm^2
Product function				
• removable terminal at input	Yes	Yes	Yes	Yes
• removable terminal at output	Yes	Yes	Yes	Yes
Design of the interface for communication	PROFINET/Ethernet: two RJ45 sockets (2-port switch)	PROFINET/Ethernet: two RJ45 sockets (2-port switch)	PROFINET/Ethernet: two RJ45 sockets (2-port switch)	PROFINET/Ethernet: two RJ45 sockets (2-port switch)

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Technical specifications (continued)

Article number	6EP3436-8SB00-2AY0	6EP3437-8SB00-2AY0	6EP3436-8MB00-2CY0	6EP3437-8MB00-2CY0
Product	**SITOP PSU8600**	**SITOP PSU8600**	**SITOP PSU8600**	**SITOP PSU8600**
Power supply, type	**24 V/20 A**	**24 V/40 A**	**24 V/20 A/4x 5 A**	**24 V/40 A/4x 10 A**
Suitability for interaction modular system	Yes	Yes	Yes	Yes
Width of the enclosure	80 mm	125 mm	100 mm	125 mm
Height of the enclosure	125 mm	125 mm	125 mm	125 mm
Depth of the enclosure	150 mm	150 mm	150 mm	150 mm
Required spacing				
• top	50 mm	50 mm	50 mm	50 mm
• bottom	50 mm	50 mm	50 mm	50 mm
• left	0 mm	0 mm	0 mm	0 mm
• right	0 mm	0 mm	0 mm	0 mm
Weight, approx.	1.8 kg	2.6 kg	2 kg	2.6 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes	Yes	Yes
Installation	Snaps onto DIN rail EN 60715 35x15	Snaps onto DIN rail EN 60715 35x15	Snaps onto DIN rail EN 60715 35x15	Snaps onto DIN rail EN 60715 35x15
Electrical accessories	Expansion modules CNX8600, buffer modules BUF8600	Expansion modules CNX8600, buffer modules BUF8600	Expansion modules CNX8600, buffer modules BUF8600	Expansion modules CNX8600, buffer modules BUF8600
Mechanical accessories	Device identification label 20 mm × 7 mm, TI-grey 3RT2900-1SB20	Device identification label 20 mm × 7 mm, TI-grey 3RT2900-1SB20	Device identification label 20 mm × 7 mm, TI-grey 3RT2900-1SB20	Device identification label 20 mm × 7 mm, TI-grey 3RT2900-1SB20
MTBF at 40 °C				226 272 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SITOP PSU8600 3-phase, 24 V DC/20 A with PN/IE connection Stabilized power supply Input: 400 … 500 V AC 3 AC Output: 24 V DC/20 A	**6EP3436-8SB00-2AY0**
SITOP PSU8600 3-phase, 24 V DC/40 A with PN/IE connection Stabilized power supply Input: 400 … 500 V AC 3 AC Output: 24 V DC/40 A	**6EP3437-8SB00-2AY0**
SITOP PSU8600 3-phase, 24 V DC/20 A/4 x 5 A with PN/IE connection Stabilized power supply Input: 400 … 500 V AC 3 AC Output: 24 V DC/20 A/4 x 5 A	**6EP3436-8MB00-2CY0**
SITOP PSU8600 3-phase, 24 V DC/40 A/4 x 10 A with PN/IE connection Stabilized power supply Input: 400 … 500 V 3 AC Output: 24 V DC/40 A/4 x 10 A	**6EP3437-8MB00-2CY0**

Accessories

	Article No.
SITOP CNX8600 4 x 5 A expansion module For SITOP PSU8600 Output: 24 V DC/4 x 5 A	**6EP4436-8XB00-0CY0**
SITOP CNX8600 4 x 10 A expansion module For SITOP PSU8600 Output: 24 V DC/4 x 10 A	**6EP4437-8XB00-0CY0**
SITOP BUF8600 100 ms buffer module For SITOP PSU8600 Buffer capacity 100 ms/40 A	**6EP4297-8HB00-0XY0**
SITOP BUF8600 300 ms buffer module For SITOP PSU8600 Buffer capacity 300 ms/40 A	**6EP4297-8HB10-0XY0**
SITOP BUF8600 4 s buffer module For SITOP PSU8600 Buffer capacity 4 s/40 A	**6EP4293-8HB00-0XY0**
SITOP BUF8600 10 s buffer module For SITOP PSU8600 Buffer capacity 10 s/40 A	**6EP4295-8HB00-0XY0**
Device labeling plates	**3RT1900-1SB20**

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Modular system, expansion of outputs (CNX8600)

Overview



The CNX8600 expansion modules are part of the SITOP PSU8600 modular system and expand the basic unit by increasing the number of selectively monitored outputs.

You can connect up to four CNX8600 expansion modules to the PSU8600 basic device. The connection takes place on top of the modules without any wiring by means of the System Clip Link, a connecting plug for system data and power supply.

Main product highlights

- Four integrated outputs with up to 5 A or 10 A each and selective monitoring
- Voltage and response threshold can be set separately and are infinitely adjustable for each output
- Comprehensive diagnostic information during operation via the PSU8600 basic unit
- Outputs can be activated and deactivated in a targeted manner with PROFIenergy via the PSU8600 basic unit
- Easy connection without wiring overhead
- Slim design

Technical specifications

Article number	**6EP4436-8XB00-0CY0**	**6EP4437-8XB00-0CY0**
Product	**SITOP CNX8600**	**SITOP CNX8600**
Power supply, type	**4x 5 A**	**4x 10 A**
Output		
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Number of outputs	4	4
Rated voltage V_{out} DC	24 V	24 V
Output voltage		
• at output 1 at DC Rated value	24 V	24 V
• at output 2 at DC Rated value	24 V	24 V
• at output 3 at DC Rated value	24 V	24 V
• at output 4 at DC Rated value	24 V	24 V
Total tolerance, static ±	3 %	3 %
Static mains compensation, approx.	0.2 %	0.2 %
Static load balancing, approx.	0.1 %	0.1 %
Residual ripple peak-peak, max.	100 mV	100 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	200 mV	200 mV
Adjustment range	5 ... 28 V	5 ... 28 V
Product function Output voltage adjustable	Yes	Yes
Output voltage setting	via potentiometer; Derating > 24 V: 4%/V; max. 120 W per output	via potentiometer; Derating > 24 V: 4%/V; max. 240 W per output
Status display	3-color LED for operating state module; 3-color LED per output for operating state output	3-color LED for operating state module; 3-color LED per output for operating state output
Signaling	Relay contact (changeover contact, contact current capacity DC 60 V/0.3 A) for "Operating state OK" at power supply unit PSU8600	Relay contact (changeover contact, contact current capacity DC 60 V/0.3 A) for "Operating state OK" at power supply unit PSU8600
On/off behavior	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)
Startup delay, max.	1.5 s; Without on-delay of the outputs	1.5 s; Without on-delay of the outputs
connection of outputs operating	Simultaneous connecting-in of all outputs after device booting or delay time of 25 ms, 100 ms or "load-optimized" for sequential cutting-in of the outputs via DIP switches at power supply unit PSU8600 can be set	Simultaneous connecting-in of all outputs after device booting or delay time of 25 ms, 100 ms or "load-optimized" for sequential cutting-in of the outputs via DIP switches at power supply unit PSU8600 can be set
Voltage increase time of the output voltage maximum	500 ms	500 ms
Rated current value $I_{out\ rated}$	20 A	40 A

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Technical specifications (continued)

Article number	6EP4436-8XB00-0CY0	6EP4437-8XB00-0CY0
Product	**SITOP CNX8600**	**SITOP CNX8600**
Power supply, type	**4x 5 A**	**4x 10 A**
Output current		
• per output	5 A	10 A
• at output 1 Rated value	5 A	10 A
• at output 2 Rated value	5 A	10 A
• at output 3 Rated value	5 A	10 A
• at output 4 Rated value	5 A	10 A
Current range	0 ... 20 A	0 ... 40 A
• Note	No increase in the maximum output power of the overall system SITOP PSU8600 via the expansion module SITOP CNX8600 possible	No increase in the maximum output power of the overall system SITOP PSU8600 via the expansion module SITOP CNX8600 possible
Supplied active power typical	480 W	960 W
Product feature parallel switching of outputs	No	No
Parallel switching for enhanced performance	No	No
Efficiency		
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	97 %	97 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	15 W	30 W
Closed-loop control		
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.1 %	0.1 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	0.4 %	0.4 %
Setting time maximum	10 ms	10 ms
Protection and monitoring		
Output overvoltage protection	< 35 V	< 35 V
Property of the output Short-circuit proof	Yes	Yes
Short-circuit protection	electronic overload cut-off	electronic overload cut-off
adjustable response value current of current-dependent overload trip	0.5 ... 5 A	0.5 ... 10 A
type of threshold value setting	via potentiometer	via potentiometer
characteristics of electronic overload switch-off	I_a >1.0…<1.5 x I_a threshold permissible for 5 s; $I_{a\ limit}$ (= 1.5 x I_a threshold) permissible for 200 ms	I_a >1.0…<1.5 x I_a threshold permissible for 5 s; $I_{a\ limit}$ (= 1.5 x I_a threshold) permissible for 200 ms
Reset	Via sensor per output	Via sensor per output
Remote reset	Non-electrically isolated 24 V input (signal level "high" at > 15 V) at power supply unit PSU8600	Non-electrically isolated 24 V input (signal level "high" at > 15 V) at power supply unit PSU8600
Overload/short-circuit indicator	3-color LED for operating state module; 3-color LED per output for operating state output	3-color LED for operating state module; 3-color LED per output for operating state output
Interface		
Specification interface	Ethernet/PROFINET via power supply unit PSU8600	Ethernet/PROFINET via power supply unit PSU8600
Safety		
Primary/secondary isolation	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class III	Class III
CE mark	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)
Explosion protection	IECEx Ex nA IIC T4 Gc; ATEX (EX) II 3G Ex nA IIC T4 Gc; cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T4	IECEx Ex nA IIC T4 Gc; ATEX (EX) II 3G Ex nA IIC T4 Gc; cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T4
FM approval	-	-
CB approval	Yes	Yes
Marine approval	GL; ABS in process	GL; ABS in process
Degree of protection (EN 60529)	IP20	IP20
EMC		
Emitted interference	EN 55022 Class B	EN 55022 Class B
Noise immunity	EN 61000-6-2	EN 61000-6-2

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Technical specifications (continued)

Article number	6EP4436-8XB00-0CY0	6EP4437-8XB00-0CY0
Product	**SITOP CNX8600**	**SITOP CNX8600**
Power supply, type	**4x 5 A**	**4x 10 A**
Operating data		
Ambient temperature		
• during operation	-25 ... +60 °C	-25 ... +60 °C
- Note	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation
Mechanics		
Connection technology	Plug-in terminals with screwed connection	Plug-in terminals with screwed connection
Connections		
• Output	1, 2, 3, 4: Two plug-in terminals (1, 2 and 3, 4) with 2 screwed connections each for 0.2 ... 2.5 mm^2; Ground: Plug-in terminal with 3 screwed connections for 0.2 ... 2.5 mm^2	1, 2, 3, 4: Two plug-in terminals (1, 2 and 3, 4) with 2 screwed connections each for 0.2 ... 2.5 mm^2; Ground: Plug-in terminal with 3 screwed connections for 0.2 ... 2.5 mm^2
Product function		
• removable terminal at output	Yes	Yes
Type of connection to system components	Via integrated connector	Via integrated connector
Width of the enclosure	60 mm	60 mm
Height of the enclosure	125 mm	125 mm
Depth of the enclosure	150 mm	150 mm
Required spacing		
• top	50 mm	50 mm
• bottom	50 mm	50 mm
• left	0 mm	0 mm
• right	0 mm	0 mm
Weight, approx.	1.15 kg	1.15 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes
Installation	Snaps onto DIN rail EN 60715 35x15	Snaps onto DIN rail EN 60715 35x15
Mechanical accessories	Device identification label 20 mm × 7 mm, TI-grey 3RT2900-1SB20	Device identification label 20 mm × 7 mm, TI-grey 3RT2900-1SB20
MTBF at 40 °C	499 861 h	499 861 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SITOP CNX8600 4 x 5 A expansion module For SITOP PSU8600 Output: 24 V DC/4 x 5 A	**6EP4436-8XB00-0CY0**
SITOP CNX8600 4 x 10 A expansion module For SITOP PSU8600 Output: 24 V DC/4 x 10 A	**6EP4437-8XB00-0CY0**

Accessories

	Article No.
Device labeling plates	**3RT1900-1SB20**

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Overview



The BUF8600 buffer modules with maintenance free energy storage units are part of the SITOP PSU8600 modular system and are designed to bridge short-term power failures. They automatically take over the DC power supply in case of a line voltage failure. You can connect up to two BUF8600 buffer modules to the PSU8600 basic unit. Connection takes place on top of the modules without any wiring by means of the System Clip Link, a connecting plug for system data and power supply.

Main product highlights

- Reliable bridging of short-term power failures up to maximum 20 s (at 24 V DC and full load)
- Buffer module with maintenance free electrolytic capacitors for bridging short-term power failures (brownouts) between 100 ms and max. 600 ms (at 24 V DC/40 A)
- Buffer module with maintenance free double-layer capacitors for bridging longer power failures between 4 s and max. 20 s (at 24 V DC/40 A)
- The two buffer modules can be combined as required.
- Easy connection without wiring overhead

Technical specifications

Article number	**6EP4297-8HB00-0XY0**	**6EP4297-8HB10-0XY0**	**6EP4293-8HB00-0XY0**	**6EP4295-8HB00-0XY0**
product brand name	**SITOP BUF8600**	**SITOP BUF8600**	**SITOP BUF8600**	**SITOP BUF8600**
Type of current supply	**100 ms/40 A**	**300 ms/40 A**	**4 s/40 A**	**10 s/40 A**
Mains buffering				
Type of energy storage	electrolytic capacitors	electrolytic capacitors	Double-layer capacitors	Double-layer capacitors
Buffering time for rated value of the output current in the event of power failure	100 ms	300 ms	4 s	10 s
Output				
Output current				
• Rated value	40 A	40 A	40 A	40 A
Signaling				
Display version	3-color LED for operating state module	3-color LED for operating state module	3-color LED for operating state module	3-color LED for operating state module
• for normal operation	LED green for "buffer standby exist"	LED green for "buffer standby exist"	LED green for "buffer standby exist"	LED green for "buffer standby exist"
• in buffering mode	LED yellow for "buffered mode"	LED yellow for "buffered mode"	LED yellow for "buffered mode"	LED yellow for "buffered mode"
Interface				
Specification/Interface	Ethernet/PROFINET via power supply unit PSU8600	Ethernet/PROFINET via power supply unit PSU8600	Ethernet/PROFINET via power supply unit PSU8600	Ethernet/PROFINET via power supply unit PSU8600
Safety				
Protection class	Class III	Class III	Class III	Class III
CE marking	Yes	Yes	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)
Explosion protection	IECEx nA IIC T5 Gc; ATEX (EX) II 3G Ex nA IIC T5 Gc	IECEx nA IIC T5 Gc; ATEX (EX) II 3G Ex nA IIC T5 Gc	IECEx nA IIC T5 Gc; ATEX (EX) II 3G Ex nA IIC T5 Gc	IECEx nA IIC T5 Gc; ATEX (EX) II 3G Ex nA IIC T5 Gc
CB approval	Yes	Yes	Yes	Yes
Shipbuilding approval	GL (ABS in process)	GL (ABS in process)	GL (ABS in process)	GL (ABS in process)
Protection class (EN 60529)	IP20	IP20	IP20	IP20
EMC				
Emitted interference	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B
Noise immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2

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Technical specifications (continued)

Article number	6EP4297-8HB00-0XY0	6EP4297-8HB10-0XY0	6EP4293-8HB00-0XY0	6EP4295-8HB00-0XY0
product brand name	SITOP BUF8600	SITOP BUF8600	SITOP BUF8600	SITOP BUF8600
Type of current supply	100 ms/40 A	300 ms/40 A	4 s/40 A	10 s/40 A
Operating data				
Ambient temperature				
• during operation	-25 ... +60 °C; with natural convection	-25 ... +60 °C; with natural convection	-25 ... +60 °C; with natural convection	-25 ... +60 °C; with natural convection
• during transport	-40 ... +70 °C	-40 ... +70 °C	-40 ... +70 °C	-40 ... +70 °C
• during storage	-40 ... +70 °C	-40 ... +70 °C	-40 ... +70 °C	-40 ... +70 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation
Mechanics				
Connection technology	-	-	Plug-in terminal with screw connectors	Plug-in terminal with screw connectors
• input	-	-	-	-
• output	-	-	-	-
• auxiliary contact and signaling contacts	-	-	X1, X2 (control contact) and 13,14, 23, 24 (message signals): 1 screw terminal each for 0.2 ... 1.5 mm^2	X1, X2 (control contact) and 13,14, 23, 24 (message signals): 1 screw terminal each for 0.2 ... 1.5 mm^2
Type of connection to system components	Via integrated connector	Via integrated connector	Via integrated connector	Via integrated connector
Width of the enclosure	60 mm	125 mm	60 mm	125 mm
Height of the enclosure	125 mm	125 mm	125 mm	125 mm
Depth of the enclosure	150 mm	150 mm	150 mm	150 mm
Required spacing				
• top	50 mm	50 mm	50 mm	50 mm
• bottom	50 mm	50 mm	50 mm	50 mm
• left	0 mm	0 mm	0 mm	0 mm
• right	0 mm	0 mm	0 mm	0 mm
Weight, approx.	1.33 kg	2.26 kg	1.25 kg	1.95 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes	Yes	Yes
Mounting	Snaps onto DIN rail EN 60715 35x15	Snaps onto DIN rail EN 60715 35x15	Snaps onto DIN rail EN 60715 35x15	Snaps onto DIN rail EN 60715 35x15
Mechanical accessories	Device identification label 20 mm × 7 mm, TI-grey 3RT2900-1SB20	Device identification label 20 mm × 7 mm, TI-grey 3RT2900-1SB20	Device identification label 20 mm × 7 mm, TI-grey 3RT2900-1SB20	Device identification label 20 mm × 7 mm, TI-grey 3RT2900-1SB20
MTBF at 40 °C	1 944 258 h	1 944 258 h	-	-
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SITOP BUF8600 100 ms buffer module For SITOP PSU8600 Buffer capacity 100 ms/40 A	**6EP4297-8HB00-0XY0**
SITOP BUF8600 300 ms buffer module For SITOP PSU8600 Buffer capacity 300 ms/40 A	**6EP4297-8HB10-0XY0**
SITOP BUF8600 4 s buffer module For SITOP PSU8600 Buffer capacity 4 s/40 A	**6EP4293-8HB00-0XY0**
SITOP BUF8600 10 s buffer module For SITOP PSU8600 Buffer capacity 10 s/40 A	**6EP4295-8HB00-0XY0**

Accessories

	Article No.
Device labeling plates	**3RT1900-1SB20**

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8/2 **Introduction**
8/3 1-phase, 24 V DC (for S7-300 and ET200M)
8/9 1-phase, 24 V DC (for S7-1200)
8/11 1-phase, 24 V DC (for S7-1500 and ET200MP)
8/14 3-phase, 24 V DC (for ET200pro)

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Introduction

Overview



The optimum supply for SIMATIC S7 and more

The original SIMATIC power supplies harmonize perfectly with the PLC network in terms of their design and functionality.
In addition to the following SIMATIC systems, they also supply further loads reliably with 24 V.

- SIMATIC S7-300
- SIMATIC S7-1200
- SIMATIC S7-1500
- SIMATIC ET200M
- SIMATIC ET200MP
- SIMATIC ET 200pro

More information

Select the appropriate power supply quickly and easily with the SITOP Selection Tool:

http://www.siemens.com/sitop-selection-tool

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Overview



The design and functionality of the SIMATIC PS 307 single-phase load power supply (system and load current supply) with automatic range switchover of the input voltage is an optimal match to the SIMATIC S7-300 PLC. By means of the connecting comb that is supplied with the system and load current supply, the supply to the CPU is quickly established. It is also possible to provide a 24 V supply to other S7-300 system components, input/output circuits of the input/output modules and, if necessary, the sensors and actuators. Comprehensive certifications, such as UL, ATEX or GL facilitate universal use (does not apply to outdoor use).

Design

- The system and load current supplies are screwed directly onto the S7-300 standard mounting rail and can be mounted directly to the left of the CPU (no installation clearance required)
- Diagnostic LED for indicating “Output voltage 24 V DC O.K."
- ON/OFF switches (operation/stand-by) for possible swapping of modules
- Strain-relief assembly for input voltage connection cable

Function

- Connection to all 1-phase 50/60 Hz networks (120 / 230 V AC) through automatic range switching (PS307) or manual switching (PS307, outdoor)
- Short-term power failure backup
- Output voltage 24 V DC, stabilized, short circuit-proof, open circuit-proof
- Parallel connection of two power supplies for enhanced performancee

Technical specifications

Article number	**6ES7307-1BA01-0AA0**	**6ES7305-1BA80-0AA0**
Product	**PS 307**	**PS 305 Outdoor**
Power supply, type	**24 V/2 A**	**24 V/2 A**
Input		
Input	1-phase AC	DC voltage
Supply voltage		
• 1 at AC Rated value	120 V	-
• 2 at AC Rated value	230 V	-
• at DC	-	24 ... 110 V
• Note	Automatic range selection	-
Input voltage		
• 1 at AC	85 ... 132 V	-
• 2 at AC	170 ... 264 V	-
• at DC	-	16.8 ... 138 V
Wide-range input	No	Yes
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms	154 V; 0.1 s
Mains buffering at $I_{out\ rated}$, min.	20 ms; at V_{in} = 93/187 V	10 ms; at $V_{in\ rated}$
Rated line frequency 1	50 Hz	-
Rated line frequency 2	60 Hz	-
Rated line range	47 ... 63 Hz	-
Input current		
• at rated input voltage 120 V	0.9 A	-
• at rated input voltage 230 V	0.5 A	-
• at rated input voltage 24 V	-	2.4 A
• at rated input voltage 110 V	-	0.6 A
Switch-on current limiting (+25 °C), max.	22 A	20 A
Duration of inrush current limiting at 25 °C		
• maximum	3 ms	10 ms
I^2t, max.	1 $A^2 \cdot s$	5 $A^2 \cdot s$
Built-in incoming fuse	T 1.6 A/250 V (not accessible)	T 6.3 A/250 V (not accessible)
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 3 A characteristic C	Recommended miniature circuit breaker: from 10 A characteristic C, suitable for DC

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Technical specifications (continued)

Article number	6ES7307-1BA01-0AA0	6ES7305-1BA80-0AA0
Product	**PS 307**	**PS 305 Outdoor**
Power supply, type	**24 V/2 A**	**24 V/2 A**
Output		
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V	24 V
Total tolerance, static ±	3 %	3 %
Static mains compensation, approx.	0.1 %	0.2 %
Static load balancing, approx.	0.2 %	0.4 %
Residual ripple peak-peak, max.	50 mV	150 mV
Residual ripple peak-peak, typ.	5 mV	30 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	150 mV	240 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	20 mV	150 mV
Product function Output voltage adjustable	No	No
Output voltage setting	-	-
Status display	Green LED for 24 V OK	Green LED for 24 V OK
On/off behavior	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)
Startup delay, max.	2 s	3 s
Voltage rise, typ.	10 ms	5 ms
Rated current value $I_{out\ rated}$	2 A	2 A
Current range	0 ... 2 A	0 ... 3 A
• Note	-	3 A up to +60°C at V_{in} > 24 V
Supplied active power typical	48 W	48 W
Short-term overload current		
• on short-circuiting during the start-up typical	9 A	9 A
• at short-circuit during operation typical	9 A	9 A
Duration of overloading capability for excess current		
• on short-circuiting during the start-up	90 ms	270 ms
• at short-circuit during operation	90 ms	270 ms
Parallel switching for enhanced performance	Yes	Yes
Numbers of parallel switchable units for enhanced performance	2	2
Efficiency		
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	84 %	75 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	9 W	16 W
Closed-loop control		
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.1 %	0.3 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	0.8 %	2.5 %
Load step setting time 50 to 100 %, typ.	0.5 ms	2.5 ms
Load step setting time 100 to 50 %, typ.	0.5 ms	2.5 ms
Setting time maximum	1 ms	5 ms
Protection and monitoring		
Output overvoltage protection	Additional control loop, shutdown at < 28.8 V, automatic restart	Additional control loop, shutdown at approx. 30 V, automatic restart
Current limitation	2.2 ... 2.6 A	3.3 ... 3.9 A
Property of the output Short-circuit proof	Yes	Yes
Short-circuit protection	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart
Enduring short circuit current RMS value		
• maximum	2 A	2 A
Overload/short-circuit indicator	-	-

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Technical specifications (continued)

Article number	6ES7307-1BA01-0AA0	6ES7305-1BA80-0AA0
Product	**PS 307**	**PS 305 Outdoor**
Power supply, type	**24 V/2 A**	**24 V/2 A**
Safety		
Primary/secondary isolation	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra low output voltage V_{out} according to EN 60950-1 and EN 50178, creepage distances and clearances > 5 mm
Protection class	Class I	Class I
Leakage current		
• maximum	3.5 mA	-
• typical	0.5 mA	-
CE mark	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289	UL-Listed (UL 508), File E143289, CSA (CSA C22.2 No. 142)
Explosion protection	ATEX (EX) II 3G Ex nA II T4; cULus (ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T4, File E330455	-
FM approval	Class I, Div. 2, Group ABCD, T4	-
CB approval	No	No
Marine approval	In S7-300 system	-
Degree of protection (EN 60529)	IP20	IP20
EMC		
Emitted interference	EN 55022 Class B	EN 55011 Class A
Supply harmonics limitation	not applicable	not applicable
Noise immunity	EN 61000-6-2	EN 61000-6-2
Operating data		
Ambient temperature		
• during operation	0 ... 60 °C	-25 ... +70 °C
- Note	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K5, transient condensation permitted
Mechanics		
Connection technology	screw-type terminals	screw-type terminals
Connections		
• Supply input	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded	L+1, M1, PE: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded
• Output	L+, M: 2 screw terminals each for 0.5 ... 2.5 mm^2	L+, M: 3 screw terminals each for 0.5 ... 2.5 mm^2
• Auxiliary	-	-
Width of the enclosure	40 mm	80 mm
Height of the enclosure	125 mm	125 mm
Depth of the enclosure	120 mm	120 mm
Weight, approx.	0.4 kg	0.57 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes
Installation	Can be mounted onto S7 rail	Can be mounted onto S7 rail
Mechanical accessories	Mounting adapter for standard mounting rail (6EP1971-1BA00)	Mounting adapter for standard mounting rail (6ES7390-6BA00-0AA0)
MTBF at 40 °C	2 320 078 h	964 506 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

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Technical specifications (continued)

Article number	6ES7307-1EA01-0AA0	6ES7307-1EA80-0AA0	6ES7307-1KA02-0AA0
Product	**PS 307**	**PS 307 Outdoor**	**PS 307**
Power supply, type	**24 V/5 A**	**24 V/5 A**	**24 V/10 A**
Input			
Input	1-phase AC	1-phase AC	1-phase AC
Supply voltage			
• 1 at AC Rated value	120 V	120 V	120 V
• 2 at AC Rated value	230 V	230 V	230 V
• Note	Automatic range selection	Set by means of selector switch on the device	Automatic range selection
Input voltage			
• 1 at AC	85 ... 132 V	93 ... 132 V	85 ... 132 V
• 2 at AC	170 ... 264 V	187 ... 264 V	170 ... 264 V
Wide-range input	No	No	No
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	20 ms; at V_{in} = 93/187 V	20 ms; at V_{in} = 93/187 V	20 ms; at V_{in} = 93/187 V
Rated line frequency 1	50 Hz	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz	60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz	47 ... 63 Hz
Input current			
• at rated input voltage 120 V	2.3 A	2.1 A	4.2 A
• at rated input voltage 230 V	1.2 A	1.2 A	1.9 A
• at rated input voltage 24 V	-	-	-
• at rated input voltage 110 V	-	-	-
Switch-on current limiting (+25 °C), max.	20 A	45 A	55 A
Duration of inrush current limiting at 25 °C			
• maximum	3 ms	3 ms	3 ms
I^2t, max.	1.2 $A^2 \cdot s$	1.8 $A^2 \cdot s$	3.3 $A^2 \cdot s$
Built-in incoming fuse	T 3,15 A/250 V (not accessible)	T 3,15 A/250 V (not accessible)	T 6.3 A/250 V (not accessible)
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 6 A characteristic C	Recommended miniature circuit breaker: from 10 A characteristic C or from 6 A characteristic D	Recommended miniature circuit breaker: from 10 A characteristic C
Output			
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V	24 V	24 V
Total tolerance, static ±	3 %	3 %	3 %
Static mains compensation, approx.	0.1 %	0.2 %	0.1 %
Static load balancing, approx.	0.5 %	0.4 %	0.5 %
Residual ripple peak-peak, max.	50 mV	150 mV	50 mV
Residual ripple peak-peak, typ.	10 mV	40 mV	15 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	150 mV	240 mV	150 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	20 mV	90 mV	60 mV
Product function Output voltage adjustable	No	No	No
Output voltage setting	-	-	-
Status display	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK
On/off behavior	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)
Startup delay, max.	2 s	3 s	2 s
Voltage rise, typ.	10 ms	100 ms	10 ms
Rated current value $I_{out\ rated}$	5 A	5 A	10 A
Current range	0 ... 5 A	0 ... 5 A	0 ... 10 A
• Note			
Supplied active power typical	120 W	120 W	240 W
Short-term overload current			
• on short-circuiting during the start-up typical	20 A	20 A	38 A
• at short-circuit during operation typical	20 A	20 A	38 A
Duration of overloading capability for excess current			
• on short-circuiting during the start-up	100 ms	180 ms	80 ms
• at short-circuit during operation	100 ms	80 ms	80 ms
Parallel switching for enhanced performance	Yes	No	Yes

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Technical specifications (continued)

Article number	6ES7307-1EA01-0AA0	6ES7307-1EA80-0AA0	6ES7307-1KA02-0AA0
Product	**PS 307**	**PS 307 Outdoor**	**PS 307**
Power supply, type	**24 V/5 A**	**24 V/5 A**	**24 V/10 A**
Efficiency			
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	87 %	84 %	90 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	18 W	23 W	27 W
Closed-loop control			
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.1 %	0.3 %	0.1 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	1 %	3 %	2 %
Load step setting time 50 to 100%, typ.	0.3 ms	0.2 ms	-
Load step setting time 100 to 50%, typ.	0.3 ms	0.2 ms	-
Setting time maximum	-	5 ms	0.1 ms
Protection and monitoring			
Output overvoltage protection	Additional control loop, shutdown at < 28.8 V, automatic restart	Additional control loop, shutdown at approx. 30 V, automatic restart	Additional control loop, shutdown at < 28.8 V, automatic restart
Current limitation	5.5 ... 6.5 A	5.5 ... 6.5 A	11 ... 12 A
Property of the output Short-circuit proof	Yes	Yes	Yes
Short-circuit protection	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart
Enduring short circuit current RMS value			
• maximum	7 A	5 A	12 A
Overload/short-circuit indicator	-	-	-
Safety			
Primary/secondary isolation	Yes	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra low output voltage V_{out} according to EN 60950-1 and EN 50178, creepage distances and clearances > 5 mm	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I	Class I	Class I
Leakage current			
• maximum	3.5 mA	3.5 mA	3.5 mA
• typical	0.5 mA	0.3 mA	0.6 mA
CE mark	Yes	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289	UL-Listed (UL 508), File E143289, CSA (CSA C22.2 No. 142)	cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289
Explosion protection	ATEX (EX) II 3G Ex nA II T4; cULus (ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T4, File E330455	-	ATEX (EX) II 3G Ex nA II T4; cULus (ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T4, File E330455
FM approval	Class I, Div. 2, Group ABCD, T4	-	Class I, Div. 2, Group ABCD, T4
CB approval	No	No	No
Marine approval	In S7-300 system	-	In S7-300 system
Degree of protection (EN 60529)	IP20	IP20	IP20
EMC			
Emitted interference	EN 55022 Class B	EN 55011 Class A	EN 55022 Class B
Supply harmonics limitation	EN 61000-3-2	-	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Operating data			
Ambient temperature			
• during operation	0 ... 60 °C	-25 ... +70 °C	0 ... 60 °C
- Note	with natural convection	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K5, transient condensation permitted	Climate class 3K3, no condensation

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Technical specifications (continued)

Article number	6ES7307-1EA01-0AA0	6ES7307-1EA80-0AA0	6ES7307-1KA02-0AA0
Product	**PS 307**	**PS 307 Outdoor**	**PS 307**
Power supply, type	**24 V/5 A**	**24 V/5 A**	**24 V/10 A**
Mechanics			
Connection technology	screw-type terminals	screw-type terminals	screw-type terminals
Connections			
• Supply input	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm² single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm² single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm² single-core/finely stranded
• Output	L+, M: 3 screw terminals each for 0.5 ... 2.5 mm²	L+, M: 3 screw terminals each for 0.5 ... 2.5 mm²	L+, M: 4 screw terminals each for 0.5 ... 2.5 mm²
• Auxiliary	-	-	-
Width of the enclosure	60 mm	80 mm	80 mm
Height of the enclosure	125 mm	125 mm	125 mm
Depth of the enclosure	120 mm	120 mm	120 mm
Weight, approx.	0.6 kg	0.57 kg	0.8 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes	Yes
Installation	Can be mounted onto S7 rail	Can be mounted onto S7 rail	Can be mounted onto S7 rail
Mechanical accessories	Mounting adapter for standard mounting rail (6EP1971-1BA00)	Mounting adapter for standard mounting rail (6ES7390-6BA00-0AA0)	Mounting adapter for standard mounting rail (6EP1971-1BA00)
MTBF at 40 °C	2 480 589 h	2 231 610 h	1 504 280 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

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Ordering data

	Article No.
Load current supply PS 307, 2A Incl. connection bracket Input: 120/230 V AC Output: 24 V DC/2 A	**6ES7307-1BA01-0AA0**
SIMATIC S7-300 Outdoor, 2A Stabilized power supply PS305 Input: 24 … 110 V DC Output: 24 V DC/2 A	**6ES7305-1BA80-0AA0**
PS 307 load power supply, 5 A Incl. connection bracket Input: 120/230 V AC Output: 24 V DC/5 A	**6ES7307-1EA01-0AA0**
SIMATIC S7-300 Outdoor, 5A Stabilized power supply PS307 Input: 120/230 V AC Output: 24 V DC/5 A	**6ES7307-1EA80-0AA0**
PS 307 load power supply, 10 A Input: 120/230 V AC Output: 24 V DC/10 A	**6ES7307-1KA02-0AA0**

Accessoires

	Article No.
SIMATIC S7-300 mounting adapter For snapping the new PS 307 onto a 35 mm DIN rail (EN 60715) Spare part	**6EP1971-1BA00**
SIMATIC S7-300 mounting adapter for snapping the PS307 onto 35 mm DIN rails	**6ES7390-6BA00-0AA0**

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Overview



In terms of design and functionality, the SIMATIC PM 1207 single-phase load power supply (PM = power module) with automatic range selection of the input voltage is an optimal match to the SIMATIC S7-1200 PLC. It provides the supply to CPUs with 24 V input as well as to signal modules, and to 24 V loads connected to the modules. Comprehensive certifications, such as UL, ATEX and GL facilitate universal use.

Design

- The load current supplies are directly fastened to the S7-1200 mounting rail (without connection to the backplane bus) and can be mounted directly to the left of the CPU (no installation clearance required)
- LED for status indicator "24 V OK"
- Two 24 V DC output terminals for connection of 24 V consumers

Function

- Connection to all 1-phase networks (120 V AC/230 V AC) through automatic range switching
- Short-term power failure backup
- Parallel connection of two load current supplies for enhanced performance

Technical specifications

Article number	**6EP1332-1SH71**
Product	**S7-1200 PM1207**
Power supply, type	**24 V/2.5 A**
Input	
Input	1-phase AC
Supply voltage	
• 1 at AC Rated value	120 V
• 2 at AC Rated value	230 V
• Note	Automatic range selection
Input voltage	
• 1 at AC	85 ... 132 V
• 2 at AC	176 ... 264 V
Wide-range input	No
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	20 ms; at V_{in} = 93/187 V
Rated line frequency 1	50 Hz
Rated line frequency 2	60 Hz
Rated line range	47 ... 63 Hz
Input current	
• at rated input voltage 120 V	1.2 A
• at rated input voltage 230 V	0.67 A
Switch-on current limiting (+25 °C), max.	13 A
Duration of inrush current limiting at 25 °C	
• maximum	3 ms
I^2t, max.	0.5 A^2·s
Built-in incoming fuse	T 3,15 A/250 V (not accessible)
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: 16 A characteristic B or 10 A characteristic C
Output	
Output	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V
Total tolerance, static ±	3 %
Static mains compensation, approx.	0.1 %
Static load balancing, approx.	0.2 %
Residual ripple peak-peak, max.	150 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	240 mV
Product function Output voltage adjustable	No
Output voltage setting	-
Status display	Green LED for 24 V OK
On/off behavior	No overshoot of V_{out} (soft start)
Startup delay, max.	6 s; 2 s at 230 V, 6 s at 120 V
Voltage rise, typ.	10 ms
Rated current value $I_{out\ rated}$	2.5 A
Current range	0 ... 2.5 A
Supplied active power typical	60 W
Short-term overload current	
• on short-circuiting during the start-up typical	6 A
• at short-circuit during operation typical	6 A
Duration of overloading capability for excess current	
• on short-circuiting during the start-up	100 ms
• at short-circuit during operation	100 ms
Parallel switching for enhanced performance	Yes
Numbers of parallel switchable units for enhanced performance	2

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Technical specifications (continued)

Article number	6EP1332-1SH71
Product	S7-1200 PM1207
Power supply, type	24 V/2.5 A
Efficiency	
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	83 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	12 W
Closed-loop control	
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.3 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	3 %
Load step setting time 50 to 100 %, typ.	5 ms
Load step setting time 100 to 50 %, typ.	5 ms
Setting time maximum	5 ms
Protection and monitoring	
Output overvoltage protection	< 33 V
Current limitation, typ.	2.65 A
Property of the output Short-circuit proof	Yes
Short-circuit protection	Constant current characteristic
Enduring short circuit current RMS value	
• typical	2.7 A
Overload/short-circuit indicator	-
Safety	
Primary/secondary isolation	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I
Leakage current	
• maximum	3.5 mA
CE mark	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus-Recognized (UL 60950-1, CSA C22.2 No. 60950-1) File E151273
Explosion protection	ATEX (EX) II 3G Ex nA II T4; cULus (ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T4, File E330455
FM approval	Class I, Div. 2, Group ABCD, T4
CB approval	Yes
Marine approval	GL, ABS, BV, DNV, LRS, NK
Degree of protection (EN 60529)	IP20

Article number	6EP1332-1SH71
Product	S7-1200 PM1207
Power supply, type	24 V/2.5 A
EMC	
Emitted interference	EN 55022 Class B
Supply harmonics limitation	not applicable
Noise immunity	EN 61000-6-2
Operating data	
Ambient temperature	
• during operation	0 ... 60 °C
- Note	with natural convection
• during transport	-40 ... +85 °C
• during storage	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation
Mechanics	
Connection technology	screw-type terminals
Connections	
• Supply input	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm²
• Output	L+, M: 2 screw terminals each for 0.5 ... 2.5 mm²
• Auxiliary	-
Width of the enclosure	70 mm
Height of the enclosure	100 mm
Depth of the enclosure	75 mm
Weight, approx.	0.3 kg
Product feature of the enclosure housing for side-by-side mounting	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15, wall mounting
MTBF at 40 °C	1 492 537 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SIMATIC S7-1200 PM 1207	**6EP1332-1SH71**
Input: 120/230 V AC Output: 24 V DC/2.5 A	

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Overview



The design and functionality of the SIMATIC PM 1507 single-phase load power supply (PM = power module) with automatic range selection of the input voltage makes it an optimal match to the SIMATIC S7-1500 PLC. It supplies the S7-1500 system components such as CPU, system power supply (PS), I/O circuits of the input and output modules and, if necessary, the sensors and actuators with 24 V DC.

Design

- The load current supplies are directly fastened to the S7-1500 mounting rail (without connection to the backplane bus) and can be mounted directly to the left of the CPU (no installation clearance required)
- Diagnostics LEDs to indicate status and faults: Operation, Fault, Stand-by
- ON/OFF switches (operation/stand-by) in case of swapping modules
- Mains connection plug with touch protection and strain relief for connection of input voltage (enables permanent wiring)
- Plug-in 24 V DC output terminal with reverse polarity protection for connection of 24 V loads (enables permanent wiring)

Function

- Connection to all 1-phase 50/60 Hz networks (120 / 230 V AC) through automatic range switching
- Short-term mains buffering
- Output voltage of 24 V DC that is limited to maximum 28 V DC (prevents any damages in 24 V loads if input voltage is too high)
- 50% "Extra Power" for 5 seconds per minute for short-term overloads, for example, when switching on 24V consumers

Technical specifications

Article number	**6EP1332-4BA00**	**6EP1333-4BA00**
Product	**S7-1500 PM1507**	**S7-1500 PM1507**
Power supply, type	**24 V/3 A**	**24 V/8 A**
Input		
Input	1-phase AC	1-phase AC
Supply voltage		
• 1 at AC Rated value	120 V	120 V
• 2 at AC Rated value	230 V	230 V
• Note	Automatic range selection	Automatic range selection
Input voltage		
• 1 at AC	85 ... 132 V	85 ... 132 V
• 2 at AC	170 ... 264 V	170 ... 264 V
Wide-range input	No	No
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	20 ms; at V_{in} = 93/187 V	20 ms; at V_{in} = 93/187 V
Rated line frequency 1	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz
Rated line range	45 ... 65 Hz	45 ... 65 Hz
Input current		
• at rated input voltage 120 V	1.4 A	3.7 A
• at rated input voltage 230 V	0.8 A	1.7 A
Switch-on current limiting (+25 °C), max.	23 A	62 A
Duration of inrush current limiting at 25 °C		
• maximum	3 ms	3 ms
I^2t, max.	1.3 $A^2 \cdot s$	12 $A^2 \cdot s$
Built-in incoming fuse	T 3,15 A/250 V (not accessible)	T 6.3 A/250 V (not accessible)
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: 10 A characteristic B or 6 A characteristic C	Recommended miniature circuit breaker: 16 A characteristic B or 10 A characteristic C

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Technical specifications (continued)

Article number	6EP1332-4BA00	6EP1333-4BA00
Product	**S7-1500 PM1507**	**S7-1500 PM1507**
Power supply, type	**24 V/3 A**	**24 V/8 A**
Output		
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V	24 V
Total tolerance, static ±	1 %	1 %
Static mains compensation, approx.	0.1 %	0.1 %
Static load balancing, approx.	0.1 %	0.1 %
Residual ripple peak-peak, max.	50 mV	50 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	150 mV	150 mV
Product function Output voltage adjustable	No	No
Status display	LED green for 24 V OK; LED red for error; LED yellow for stand-by	LED green for 24 V OK; LED red for error; LED yellow for stand-by
On/off behavior	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)
Startup delay, max.	1.5 s	1.5 s
Voltage rise, typ.	10 ms	10 ms
Rated current value $I_{out\ rated}$	3 A	8 A
Current range	0 ... 3 A	0 ... 8 A
Supplied active power typical	72 W	192 W
Short-term overload current		
• on short-circuiting during the start-up typical	12 A	35 A
• at short-circuit during operation typical	12 A	35 A
Duration of overloading capability for excess current		
• on short-circuiting during the start-up	70 ms	70 ms
• at short-circuit during operation	70 ms	70 ms
Parallel switching for enhanced performance	No	No
Efficiency		
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	87 %	90 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	11 W	21 W
Closed-loop control		
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.1 %	0.1 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	1 %	2 %
Dynamic load smoothing (I_{out}: 10/90/10 %), U_{out} ± typ.	3 %	3 %
Load step setting time 10 to 90%, typ.	5 ms	5 ms
Load step setting time 90 to 10%, typ.	5 ms	5 ms
Setting time maximum	5 ms	5 ms
Protection and monitoring		
Output overvoltage protection	Additional control loop, limitation (closed loop control) at < 28.8 V	Additional control loop, limitation (closed loop control) at < 28.8 V
Current limitation	3.15 ... 3.6 A	8.4 ... 9.6 A
Current limitation, typ.	3.4 A	9 A
Property of the output Short-circuit proof	Yes	Yes
Short-circuit protection	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart
Overload/short-circuit indicator	-	-

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Technical specifications (continued)

Article number	6EP1332-4BA00	6EP1333-4BA00
Product	**S7-1500 PM1507**	**S7-1500 PM1507**
Power supply, type	**24 V/3 A**	**24 V/8 A**
Safety		
Primary/secondary isolation	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178 and EN 61131-2	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178 and EN 61131-2
Protection class	Class I	Class I
Leakage current		
• maximum	3.5 mA	3.5 mA
• typical	0.4 mA	1.3 mA
CE mark	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289	cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289
Explosion protection	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cULus (ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T4, File E330455	IECEx Ex nA nC IIC T3 Gc; ATEX (EX) II 3G Ex nA nC IIC T3 Gc; cULus (ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T3, File E330455
FM approval	Class I, Div. 2, Group ABCD, T4	Class I, Div. 2, Group ABCD, T4
CB approval	Yes	Yes
Marine approval	GL, ABS, BV, DNV	GL, ABS, BV, DNV
Degree of protection (EN 60529)	IP20	IP20
EMC		
Emitted interference	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	EN 61000-3-2	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2
Operating data		
Ambient temperature		
• during operation	0 ... 60 °C	0 ... 60 °C
- Note	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation
Mechanics		
Connection technology	Screw-/spring clamp connection	Screw-/spring clamp connection
Connections		
• Supply input	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm²	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm²
• Output	L+, M: 2 spring-loaded terminals each for 0.5 to 2.5 mm²	L+, M: 2 spring-loaded terminals each for 0.5 to 2.5 mm²
Product function		
• removable terminal at input	Yes	Yes
• removable terminal at output	Yes	Yes
Width of the enclosure	50 mm	75 mm
Height of the enclosure	147 mm	147 mm
Depth of the enclosure	129 mm	129 mm
Weight, approx.	0.45 kg	0.74 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes
Installation	Can be mounted onto S7-1500 rail	Can be mounted onto S7-1500 rail
MTBF at 40 °C	1 611 993 h	1 362 918 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SIMATIC PM 1507 Stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC Output: 24 V DC/3 A	**6EP1332-4BA00**
SIMATIC PM 1507 Stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC Output: 24 V DC/8 A	**6EP1333-4BA00**

Accessories

	Article No.
Power connector With coding element for power supply module; spare part, 10 units per packaging unit	**6ES7590-8AA00-0AA0**

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3-phase, 24 V DC (for ET200pro)

Overview



The SIMATIC ET200pro PS power supply unit with degree of protection IP67 is used as the electronics/encoder supply and load voltage supply of the new SIMATIC ET 200pro distributed I/O system for use close to the machine without a cabinet. With a signaling contact for "24 V OK" and "Overtemperature", as well as a second plug-in connector for input voltage loop-through.

Technical specifications

Article number	**6ES7148-4PC00-0HA0**
Product	**SIMATIC ET200pro PS**
Power supply, type	**24 V/8 A**
Input	
Input	3-phase AC
Rated voltage value $V_{in\ rated}$	400 ... 480 V
Voltage range AC	340 ... 550 V
• Note	320 ... 340 V for max. 1 min
Wide-range input	Yes
Overvoltage resistance	Implemented internally with varistors
Mains buffering at $I_{out\ rated}$, min.	15 ms; at V_{in} = 400 V
Rated line frequency 1	50 Hz
Rated line frequency 2	60 Hz
Rated line range	45 ... 66 Hz
Input current	
• at rated input voltage 400 V	0.5 A
Switch-on current limiting (+25 °C), max.	40 A
I^2t, max.	3.5 $A^2 \cdot s$
Built-in incoming fuse	T 4 A
Protection in the mains power input (IEC 898)	Required: Circuit breaker 3RV2011-1DA10 or 3RV2711-1DD10 (UL 489)
Output	
Output	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V
Total tolerance, static ±	3 %
Static mains compensation, approx.	0.5 %
Static load balancing, approx.	0.5 %
Residual ripple peak-peak, max.	200 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	250 mV
Product function Output voltage adjustable	No
Output voltage setting	-
Status display	Green LED for 24 V OK
Signaling	max. 30 V, 10 mA; Power-Good (High-Pegel 1L+ for V_{out} in range 21.3 ... 29 V); Overtemperature warning at least 30 s before switch-off (high level 1L+ when the max. internal temperature is exceeded)
On/off behavior	Overshoot of V_{out} < 2 %
Startup delay, max.	1.5 s
Voltage rise, typ.	40 ms
Rated current value $I_{out\ rated}$	8 A
Current range	0 ... 8 A
Supplied active power typical	192 W
Short-term overload current	
• on short-circuiting during the start-up typical	50 A
• at short-circuit during operation typical	50 A
Duration of overloading capability for excess current	
• on short-circuiting during the start-up	100 ms
• at short-circuit during operation	100 ms
Parallel switching for enhanced performance	No

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Technical specifications (continued)

Article number	6ES7148-4PC00-0HA0
Product	SIMATIC ET200pro PS
Power supply, type	24 V/8 A
Efficiency	
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	88 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	25 W
Closed-loop control	
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.5 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	1 %
Setting time maximum	2 ms
Protection and monitoring	
Output overvoltage protection	< 33 V
Current limitation, typ.	9.4 A
Property of the output Short-circuit proof	Yes
Short-circuit protection	Electronic shutdown, automatic restart
Enduring short circuit current RMS value	
• maximum	10 A
Overload/short-circuit indicator	-
Safety	
Primary/secondary isolation	Yes
Galvanic isolation	Protective extra low output voltage V_{out} according to EN 60950-1 and EN 50178
Protection class	Class I
Leakage current	
• maximum	3.5 mA
• typical	0.4 mA
CE mark	Yes
UL/cUL (CSA) approval	UL-Listed (UL 508) according to NFPA compatibility (National Fire Protection Association), see operating instructions
Explosion protection	No
FM approval	-
CB approval	Yes
Marine approval	No
Degree of protection (EN 60529)	IP67, enclosure type 4 indoor

Article number	6ES7148-4PC00-0HA0
Product	SIMATIC ET200pro PS
Power supply, type	24 V/8 A
EMC	
Emitted interference	EN 55022 Class A
Supply harmonics limitation	-
Noise immunity	EN 61000-6-2
Operating data	
Ambient temperature	
• during operation	-25 ... +55 °C
- Note	with natural convection
• during transport	-40 ... +70 °C
• during storage	-40 ... +70 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation
Mechanics	
Connection technology	screw-type terminals
Connections	
• Supply input	L1, L2, L3, PE: Plug connector HAN Q4/2 (counterpart see "Electrical accessories")
• Output	L+, M: 2 x 1.5 mm² each (4-pole cable for +/- with open, labeled ends, 4 x 1.5 mm²)
• Auxiliary	Alarm signals: M12 plug-in connector 5-pin
Width of the enclosure	310 mm
Height of the enclosure	135 mm
Depth of the enclosure	90 mm
Weight, approx.	2.8 kg
Product feature of the enclosure housing for side-by-side mounting	No
Installation	Can be mounted onto ET200pro mounting rail
Electrical accessories	Power connector (Input: 3RK1911-2BE30 (6 mm²)) (Output: 3RK1911-2BF10 (4 mm²))
MTBF at 40 °C	196 354 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

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3-phase, 24 V DC (for ET200pro)

Ordering data	Article No.
SIMATIC ET 200pro PS Stabilized power supply in distributed I/O system design, permitting the loop-through of energy to further modules; with degree of protection IP67; Input: 400-480 V 3 AC Output: 24 V DC/8 A	**6ES7148-4PC00-0HA0**

Accessories	Article No.
Power connector	
For connecting to the distributed I/O system	
• For X1 (6 mm^2)	**3RK1911-2BE30**
• For X2 (4 mm^2)	**3RK1911-2BF10**
National Fire Protection Association compatible	
These devices are only approved for installation in industrial machinery according to the NFPA79 Electrical Standard for Industrial Machinery.	
• for X1 SIMATIC ET200pro PS 61 88 201 1003.xx (AWG10)*	* http://www.harting.com/en/home
• for X1 SITOP PSU300P 61 88 201 1000.xx / 61 88 201 1002.xx (AWG14)*	
• for X2 SIMATIC ET200pro PS 61 88 202 1010.xx (AWG10)* supplied blanking cap for X2	**3RK1902-0CK00**
• for X3 Phoenix-Contact SAC-5P-M12-M12FS supplied blanking cap for X3	
Sealing cap	
For 9-pole power sockets	
• X2 (1 unit)	**3RK1902-0CJ0**
• X2 (10 units)	**3RK1902-0CK00**

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9/23	1-phase, 3-52 V DC (SITOP flexi 120 W)
9/25	DC/DC converters
9/25	48-220V DC / 24 V DC/0,375 A
9/27	48-110V DC / 24 V DC/2 A
9/29	24 V DC / 12 V DC/2,5 A
9/31	200-900 V DC / 24 V DC/20 A
9/33	Special applications
9/33	1-phase, 24 V DC
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Introduction

Overview



Well prepared for special tasks and conditions

Whether restricted installation conditions, harsh ambient conditions, or special input or output voltages are concerned: These standard power supply units ensure a reliable and efficient supply of power, even when subject to extraordinary demands. Thanks to their compact design they can be integrated perfectly into existing installations.

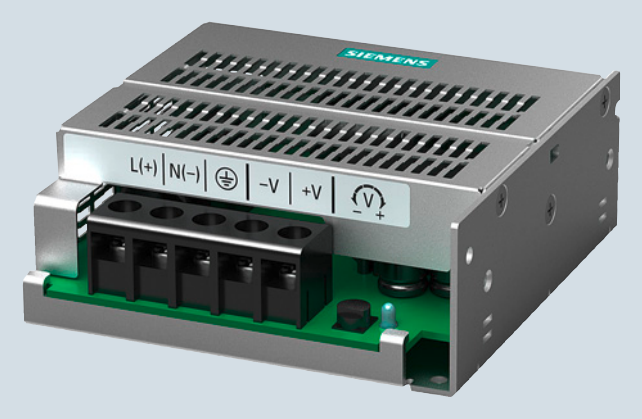
More information

Select the appropriate power supply quickly and easily with the SITOP Selection Tool:

http://www.siemens.com/sitop-selection-tool

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Overview



Low-cost power supply for wall mounting

The PSU100D switch mode power supplies extend the Siemens power supply portfolio to include single-phase devices for direct wall mounting using screws. The flat and rugged aluminum enclosure with IP20 degree of protection can be installed in various orientations and is therefore ideal for installation locations with limited space or for mounting in control cabinets and enclosures without a DIN rail. The low-cost devices meet all the basic requirements for a power supply, typical applications being apparatus, automated equipment and automation solutions.

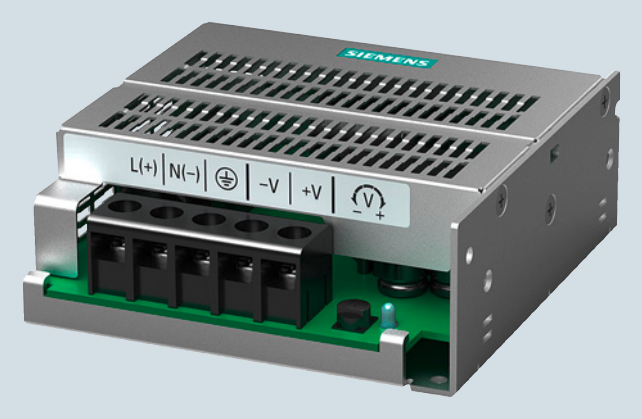
Main product highlights

- For 12-V standard applications from 3 A to 8.3 A
- For 24 V standard applications from 2.1 A to 12.5 A
- Compact metal enclosure
- Wide-range input
- Green LED for "24 V OK"
- Certification in accordance with CE and UL
- Adjustable output voltage from 22 to 28 V or from 11 to 14 V for compensating voltage drops
- Temperature range from -10 °C to +70 °C

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1-phase, 12 V DC (PSU100D)

Overview



The single-phase PSU100Ds are switch mode power supplies for direct wall mounting using screws. The flat and rugged aluminum enclosure with IP20 degree of protection can be installed in various orientations and is therefore ideal for installation locations with limited space or for mounting in control cabinets and enclosures without a DIN rail. The low-cost devices meet all the basic requirements for a power supply, typical applications being apparatus, automated equipment and automation solutions.

Main product highlights

- 12 V DC, 3 A and 8.3 A
- Compact metal enclosure
- Wide-range input
- Green LED for "24 V OK"
- Certification in accordance with CE and UL
- Adjustable output voltage from 22 to 28 V or from 11 to 14 V for compensating voltage drops
- Temperature range from -10 °C to +70 °C

Technical specifications

Article number	**6EP1321-1LD00**	**6EP1322-1LD00**
Product	**PSU100D**	**PSU100D**
Power supply, type	**12 V/3 A**	**12 V/8.3 A**
Input		
Input	1-phase AC	1-phase AC
Rated voltage value $V_{in\ rated}$	100 ... 240 V	100 ... 240 V
Voltage range AC	85 ... 264 V	85 ... 264 V
Wide-range input	Yes	Yes
Mains buffering at $I_{out\ rated}$, min.	15 ms; at V_{in} = 115/230 V	15 ms; at V_{in} = 115/230 V
Rated line frequency 1	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz
Input current		
• at rated input voltage 100 V	0.75 A	2 A
• at rated input voltage 240 V	0.5 A	1.1 A
Switch-on current limiting (+25 °C), max.	60 A	75 A
I^2t, max.	1.2 $A^2 \cdot s$	5.5 $A^2 \cdot s$
Built-in incoming fuse	internal	internal
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 10 A characteristic C or from 16 A characteristic B	Recommended miniature circuit breaker: from 10 A characteristic C or from 16 A characteristic B

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Technical specifications (continued)

Article number	6EP1321-1LD00	6EP1322-1LD00
Product	**PSU100D**	**PSU100D**
Power supply, type	**12 V/3 A**	**12 V/8.3 A**
Output		
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	12 V	12 V
Total tolerance, static ±	2 %	2 %
Static mains compensation, approx.	0.5 %	0.5 %
Static load balancing, approx.	1 %	1 %
Residual ripple peak-peak, max.	100 mV	100 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	100 mV	100 mV
Adjustment range	11 ... 14 V	11 ... 14 V
Product function Output voltage adjustable	Yes	Yes
Output voltage setting	via potentiometer	via potentiometer
Status display	Green LED for 12 V OK	Green LED for 12 V OK
On/off behavior	Overshoot of V_{out} < 2 %	Overshoot of V_{out} < 2 %
Startup delay, max.	2.5 s	1 s
Voltage increase time of the output voltage maximum	30 ms	30 ms
Rated current value $I_{out\ rated}$	3 A	8.3 A
Current range	0 ... 3 A	0 ... 8.3 A
• Note	+50 ... +70 °C: Derating 2.5%/K	+50 ... +70 °C: Derating 2.5%/K
Supplied active power typical	36 W	100 W
Parallel switching for enhanced performance	Yes	Yes
Numbers of parallel switchable units for enhanced performance	2	2
Efficiency		
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	84 %	84 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	6.5 W	19 W
Closed-loop control		
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.5 %	0.5 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	5 %	5 %
Protection and monitoring		
Output overvoltage protection	< 17.6 V	< 17.6 V
Current limitation, typ.	3.6 A	9.9 A
Property of the output Short-circuit proof	Yes	Yes
Short-circuit protection	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart
Enduring short circuit current RMS value		
• typical	6 A	10 A
Overload/short-circuit indicator	-	-
Safety		
Primary/secondary isolation	Yes	Yes
Galvanic isolation	Safety extra low output voltage V_{out} according to EN 60950-1	Safety extra low output voltage V_{out} according to EN 60950-1
Protection class	Class I	Class I
Leakage current		
• maximum	3.5 mA	3.5 mA
• typical	1 mA	1 mA
CE mark	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus (UL 60950-1, CSA C22.2 No. 60950-1), File E151273	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus (UL 60950-1, CSA C22.2 No. 60950-1), File E151273
Explosion protection	-	-
FM approval	-	-
CB approval	Yes	Yes
Marine approval	-	-
Degree of protection (EN 60529)	IP20	IP20

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1-phase, 12 V DC (PSU100D)

Technical specifications (continued)

Article number	6EP1321-1LD00	6EP1322-1LD00
Product	**PSU100D**	**PSU100D**
Power supply, type	**12 V/3 A**	**12 V/8.3 A**
EMC		
Emitted interference	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	not applicable	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2
Operating data		
Ambient temperature		
• during operation	-10 ... +70 °C	-10 ... +70 °C
- Note	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
Mechanics		
Connection technology	screw-type terminals	screw-type terminals
Connections		
• Supply input	L, N, PE: 1 screw terminal each for 0.3 ... 1.3 mm^2 single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.3 ... 1.3 mm^2 single-core/finely stranded
• Output	+, -: 1 screw terminal each for 0.3 ... 1.3 mm^2	+, -: 2 screw terminals each for 0.3 ... 1.3 mm^2
• Auxiliary	-	-
Width of the enclosure	97 mm	97 mm
Height of the enclosure	98 mm	158 mm
Depth of the enclosure	38 mm	38 mm
Weight, approx.	0.37 kg	0.57 kg
Installation	Wall mounting	Wall mounting
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
PSU100D 1-phase, 12 V DC/3 A Stabilized power supply 35 W, for wall mounting Input: 100 ... 240 V AC Output: 12 V DC/3 A	**6EP1321-1LD00**
PSU100D 1-phase, 12 V DC/8.3 A Stabilized power supply 100 W, for wall mounting Input: 100 ... 240 V AC Output: 12 V DC/8.3 A	**6EP1322-1LD00**

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Overview



The single-phase PSU100Ds are switch mode power supplies for direct wall mounting using screws. The flat and rugged aluminum enclosure with IP20 degree of protection can be installed in various orientations and is therefore ideal for installation locations with limited space or for mounting in control cabinets and enclosures without a DIN rail. The low-cost devices meet all the basic requirements for a power supply, typical applications being apparatus, automated equipment and automation solutions.

Main product highlights

- 24 V DC/ 2.1 A and 3.1 A, 4.1 A, 6.2 A and 12.5 A
- Compact metal enclosure
- Wide-range input
- Green LED for "24 V OK"
- Certification in accordance with CE and UL
- Adjustable output voltage from 22 to 28 V or from 11 to 14 V for compensating voltage drops
- Temperature range from -10 °C to +70 °C

Technical specifications

Article number	**6EP1331-1LD00**	**6EP1332-1LD00**	**6EP1332-1LD10**	**6EP1333-1LD00**	**6EP1334-1LD00**
Product	**PSU100D**	**PSU100D**	**PSU100D**	**PSU100D**	**PSU100D**
Power supply, type	**24 V/2.1 A**	**24 V/3.1 A**	**24 V/4.1 A**	**24 V/6.2 A**	**24 V/12.5 A**
Input					
Input	1-phase AC	1-phase AC	1-phase AC	1-phase AC	1-phase AC
Rated voltage value $V_{in\ rated}$	100 ... 240 V	100 ... 240 V	100 ... 240 V	100 ... 240 V	100 ... 240 V
Voltage range AC	85 ... 264 V	85 ... 264 V	85 ... 264 V	85 ... 264 V	85 ... 264 V
Wide-range input	Yes	Yes	Yes	Yes	Yes
Mains buffering at $I_{out\ rated}$, min.	15 ms; at V_{in} = 115/230 V	15 ms; at V_{in} = 115/230 V	15 ms; at V_{in} = 115/230 V	15 ms; at V_{in} = 115/230 V	15 ms; at V_{in} = 115/230 V
Rated line frequency 1	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz	60 Hz	60 Hz	60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz	47 ... 63 Hz	47 ... 63 Hz	47 ... 63 Hz
Input current					
• at rated input voltage 100 V	1.1 A	1.5 A	2 A	3.1 A	4 A
• at rated input voltage 240 V	0.7 A	1 A	1.1 A	2 A	2 A
Switch-on current limiting (+25 °C), max.	60 A	60 A	75 A	75 A	60 A
I^2t, max.	1.2 $A^2 \cdot s$	1.2 $A^2 \cdot s$	4 $A^2 \cdot s$	6.5 $A^2 \cdot s$	1.1 $A^2 \cdot s$
Built-in incoming fuse	internal	internal	internal	internal	internal
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 10 A characteristic C or from 16 A characteristic B	Recommended miniature circuit breaker: from 10 A characteristic C or from 16 A characteristic B	Recommended miniature circuit breaker: from 10 A characteristic C or from 16 A characteristic B	Recommended miniature circuit breaker: from 10 A characteristic C or from 16 A characteristic B	Recommended miniature circuit breaker: from 10 A characteristic C or from 16 A characteristic B

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1-phase, 24 V DC (PSU100D)

Technical specifications (continued)

Article number	6EP1331-1LD00	6EP1332-1LD00	6EP1332-1LD10	6EP1333-1LD00	6EP1334-1LD00
Product	**PSU100D**	**PSU100D**	**PSU100D**	**PSU100D**	**PSU100D**
Power supply, type	**24 V/2.1 A**	**24 V/3.1 A**	**24 V/4.1 A**	**24 V/6.2 A**	**24 V/12.5 A**
Output					
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V	24 V	24 V	24 V	24 V
Total tolerance, static ±	2 %	2 %	2 %	2 %	2 %
Static mains compensation, approx.	0.5 %	0.5 %	0.5 %	0.5 %	0.5 %
Static load balancing, approx.	1 %	1 %	1 %	1 %	0.5 %
Residual ripple peak-peak, max.	100 mV	100 mV	100 mV	100 mV	100 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	100 mV	100 mV	100 mV	100 mV	100 mV
Adjustment range	22 ... 28 V	22 ... 28 V	22 ... 28 V	22 ... 28 V	22 ... 28 V
Product function Output voltage adjustable	Yes	Yes	Yes	Yes	Yes
Output voltage setting	via potentiometer	via potentiometer	via potentiometer	via potentiometer	via potentiometer
Status display	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK
Signaling					-
On/off behavior	Overshoot of V_{out} < 2 %	Overshoot of V_{out} < 2 %	Overshoot of V_{out} < 2 %	Overshoot of V_{out} < 2 %	Overshoot of V_{out} < 2 %
Startup delay, max.	1 s	2.5 s	1 s	1 s	1 s
Voltage increase time of the output voltage maximum	30 ms	30 ms	30 ms	30 ms	30 ms
Rated current value $I_{out\ rated}$	2.1 A	3.1 A	4.1 A	6.2 A	12.5 A
Current range	0 ... 2.1 A	0 ... 3.1 A	0 ... 4.1 A	0 ... 6.2 A	0 ... 12.5 A
• Note	+50 ... +70 °C: Derating 2.5%/K	+50 ... +70 °C: Derating 2.5%/K	+50 ... +70 °C: Derating 2.5%/K	+50 ... +70 °C: Derating 2.5%/K	+50 ... +70 °C: Derating 2.5%/K
Supplied active power typical	50 W	75 W	100 W	150 W	300 W
Parallel switching for enhanced performance	Yes	Yes	Yes	Yes	Yes
Numbers of parallel switchable units for enhanced performance	2	2	2	2	2
Efficiency					
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	86 %	86 %	86 %	86 %	86 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	8 W	12 W	16 W	24 W	48 W
Closed-loop control					
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.5 %	0.5 %	0.5 %	0.5 %	0.5 %
Dynamic load smoothing (I_{out} 50/100/50 %), U_{out} ± typ.	5 %	5 %	5 %	5 %	5 %
Protection and monitoring					
Output overvoltage protection	< 35 V	< 35 V	< 35 V	< 35 V	< 35 V
Current limitation, typ.	2.5 A	3.7 A	4.9 A	7.4 A	15 A
Property of the output Short-circuit proof	Yes	Yes	Yes	Yes	Yes
Short-circuit protection	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart
Enduring short circuit current RMS value					
• typical	6 A	6 A	10 A	16 A	15 A
Overload/short-circuit indicator	-	-	-	-	-

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Technical specifications (continued)

Article number	6EP1331-1LD00	6EP1332-1LD00	6EP1332-1LD10	6EP1333-1LD00	6EP1334-1LD00
Product	**PSU100D**	**PSU100D**	**PSU100D**	**PSU100D**	**PSU100D**
Power supply, type	**24 V/2.1 A**	**24 V/3.1 A**	**24 V/4.1 A**	**24 V/6.2 A**	**24 V/12.5 A**
Safety					
Primary/secondary isolation	Yes	Yes	Yes	Yes	Yes
Galvanic isolation	Safety extra low output voltage V_{out} according to EN 60950-1	Safety extra low output voltage V_{out} according to EN 60950-1	Safety extra low output voltage V_{out} according to EN 60950-1	Safety extra low output voltage V_{out} according to EN 60950-1	Safety extra low output voltage V_{out} according to EN 60950-1
Protection class	Class I	Class I	Class I	Class I	Class I
Leakage current					
• maximum	3.5 mA	3.5 mA	3.5 mA	3.5 mA	3.5 mA
• typical	1 mA	1 mA	1 mA	1 mA	1 mA
CE mark	Yes	Yes	Yes	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus (UL 60950-1, CSA C22.2 No. 60950-1), File E151273	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus (UL 60950-1, CSA C22.2 No. 60950-1), File E151273	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus (UL 60950-1, CSA C22.2 No. 60950-1), File E151273	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus (UL 60950-1, CSA C22.2 No. 60950-1), File E151273	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; cURus (UL 60950-1, CSA C22.2 No. 60950-1), File E151273
Explosion protection	-	-	-	-	-
FM approval	-	-	-	-	-
CB approval	Yes	Yes	Yes	Yes	Yes
Marine approval	-	-	-	-	-
Degree of protection (EN 60529)	IP20	IP20	IP20	IP20	IP20
EMC					
Emitted interference	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	not applicable	EN 61000-3-2	EN 61000-3-2	-	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Operating data					
Ambient temperature					
• during operation	-10 ... +70 °C	-10 ... +70 °C	-10 ... +70 °C	-10 ... +70 °C	-10 ... +70 °C
- Note	with natural convection	with natural convection	with natural convection	with natural convection	with forced convection (ventilator)
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Mechanics					
Connection technology	screw-type terminals	screw-type terminals	screw-type terminals	screw-type terminals	screw-type terminals
Connections					
• Supply input	L, N, PE: 1 screw terminal each for 0.3 ... 1.3 mm^2 single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.3 ... 1.3 mm^2 single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.3 ... 1.3 mm^2 single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.3 ... 1.3 mm^2 single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.5 ... 1.3 mm^2 single-core/finely stranded
• Output	+, -: 1 screw terminal each for 0.3 ... 1.3 mm^2	+, -: 1 screw terminal each for 0.3 ... 1.3 mm^2	+, -: 2 screw terminals each for 0.3 ... 1.3 mm^2	+, -: 2 screw terminals each for 0.3 ... 1.3 mm^2	+, -: 2 screw terminals each for 0.5 ... 1.3 mm^2
• Auxiliary	-	-	-	-	-
Width of the enclosure	97 mm	97 mm	97 mm	97 mm	105 mm
Height of the enclosure	128 mm	128 mm	158 mm	178 mm	199 mm
Depth of the enclosure	38 mm	38 mm	38 mm	38 mm	41 mm
Weight, approx.	0.35 kg	0.37 kg	0.5 kg	0.55 kg	0.81 kg
Installation	Wall mounting	Wall mounting	Wall mounting	Wall mounting	Wall mounting
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

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1-phase, 24 V DC (PSU100D)

Ordering data	Article No.
PSU100D 1-phase, 24 V DC/2.1 A Stabilized power supply 50 W, for wall mounting Input: 100 ... 240 V AC Output: 24 V DC/2.1 A	**6EP1331-1LD00**
PSU100D 1-phase, 24 V DC/3.1 A Stabilized power supply 75 W, for wall mounting Input: 100 ... 240 V AC Output: 24 V DC/3.1 A	**6EP1332-1LD00**
PSU100D 1-phase, 24 V DC/4.1 A Stabilized power supply 100 W, for wall mounting Input: 100 ... 240 V AC Output: 24 V DC/4.1 A	**6EP1332-1LD10**
PSU100D 1-phase, 24 V DC/6.2 A Stabilized power supply 150 W, for wall mounting Input: 100 ... 240 V AC Output: 24 V DC/6.2 A	**6EP1333-1LD00**
PSU100D 1-phase, 24 V DC/12.5 A Stabilized power supply 300 W, for wall mounting Input: 100 ... 240 V AC Output: 24 V DC/12.5 A	**6EP1334-1LD00**

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Overview



The SITOP PSU100P 1-phase power supplies for wall mounting, with their rugged design and IP 67 degree of protection are ideal for distributed applications outside the control cabinet.

Main product highlights

- 24 V DC/ 5 A and 8 A
- Automatic switchover of the input voltage
- Temperature range from -25 °C to +60 °C without derating
- High efficiency of 93 % for low internal power consumption
- Isolated relay contact "24 V OK"
- Operation display on the device by means of LED (green = "24 V OK", flashing red = overload)

Technical specifications

Article number	**6EP1333-7CA00**	**6EP1334-7CA00**
Product	**SITOP PSU100P**	**SITOP PSU100P**
Power supply, type	**24 V/5 A**	**24 V/8 A**
Input		
Input	1-phase AC	1-phase AC
Supply voltage		
• 1 at AC Rated value	120 V	120 V
• 2 at AC Rated value	230 V	230 V
• Note	Automatic range selection	Automatic range selection
Input voltage		
• 1 at AC	85 ... 132 V	85 ... 132 V
• 2 at AC	170 ... 264 V	170 ... 264 V
Wide-range input	No	No
Overvoltage resistance	Implemented internally with varistor	Implemented internally with varistor
Mains buffering at $I_{out\ rated}$, min.	40 ms; at V_{in} = 120/230 V	40 ms; at V_{in} = 120/230 V
Rated line frequency 1	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz
Input current		
• at rated input voltage 120 V	2.25 A	3.5 A
• at rated input voltage 230 V	1.24 A	1.52 A
Switch-on current limiting (+25 °C), max.	15 A	15 A
I^2t, max.	0.6 $A^2 \cdot s$	0.6 $A^2 \cdot s$
Built-in incoming fuse	T 3.15 A	T 6.3 A
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 6 A characteristic C/B	Recommended miniature circuit breaker: from 6 A characteristic C/B
Output		
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V	24 V
Total tolerance, static ±	3 %	3 %
Static mains compensation, approx.	0.1 %	0.1 %
Static load balancing, approx.	0.2 %	0.2 %
Residual ripple peak-peak, max.	50 mV	50 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	100 mV	100 mV
Product function Output voltage adjustable	No	No
Status display	Green LED: 24 V OK; red LED flashing: "overload/short-circuit"	Green LED: 24 V OK; red LED flashing: "overload/short-circuit"
Signaling	Relay contact (NO contact, rating 30 V AC/ 0.5 A; 30 V DC/1 A) for 24 V OK	Relay contact (NO contact, rating 30 V AC/ 0.5 A; 30 V DC/1 A) for 24 V OK

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Technical specifications (continued)

Article number	6EP1333-7CA00	6EP1334-7CA00
Product	**SITOP PSU100P**	**SITOP PSU100P**
Power supply, type	**24 V/5 A**	**24 V/8 A**
On/off behavior	Overshoot of V_{out} < 3 %	Overshoot of V_{out} < 3 %
Startup delay, max.	1.5 s	1.5 s
Voltage rise, typ.	22 ms	23 ms
Voltage increase time of the output voltage maximum	100 ms	100 ms
Rated current value $I_{out\ rated}$	5 A	8 A
Current range	0 ... 5 A	0 ... 8 A
Supplied active power typical	133 W	206 W
Short-term overload current		
• on short-circuiting during the start-up typical	20 A	30 A
• at short-circuit during operation typical	20 A	30 A
Duration of overloading capability for excess current		
• on short-circuiting during the start-up	50 ms	50 ms
• at short-circuit during operation	50 ms	50 ms
Parallel switching for enhanced performance	Yes; Symmetric wiring required	Yes; Symmetric wiring required
Numbers of parallel switchable units for enhanced performance	2	2
Efficiency		
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	90 %	93.6 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	12.9 W	13.1 W
Closed-loop control		
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.2 %	0.2 %
Dynamic load smoothing (I_{out} 50/100/50 %), U_{out} ± typ.	1 %	1 %
Setting time maximum	2 ms	2 ms
Protection and monitoring		
Output overvoltage protection	< 29 V	< 29 V
Current limitation, typ.	5.5 A	9 A
Property of the output Short-circuit proof	Yes	Yes
Short-circuit protection	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart
Enduring short circuit current RMS value		
• maximum	6 A	9 A
• typical	5 A	8 A
Overload/short-circuit indicator	Red LED flashing for "overload/short-circuit"	Red LED flashing for "overload/short-circuit"
Safety		
Primary/secondary isolation	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I	Class I
Leakage current		
• maximum	3.5 mA	3.5 mA
• typical	1 mA	1 mA
CE mark	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1)	cULus-Listed (UL 508, CSA C22.2 No. 107.1)
Explosion protection	No	No
FM approval	-	-
CB approval	No	No
Marine approval	No	No
Degree of protection (EN 60529)	IP67, enclosure type 4 indoor	IP67, enclosure type 4 indoor
EMC		
Emitted interference	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	EN 61000-3-2	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2

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Technical specifications (continued)

Article number	6EP1333-7CA00	6EP1334-7CA00
Product	**SITOP PSU100P**	**SITOP PSU100P**
Power supply, type	**24 V/5 A**	**24 V/8 A**
Operating data		
Ambient temperature		
• during operation	-25 ... +60 °C	-25 ... +60 °C
- Note	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	3K6 without direct sunlight	3K6 without direct sunlight
Mechanics		
Connection technology	screw-type terminals	screw-type terminals
Connections		
• Supply input	L1, N, PE: Plug connector 7/8" (counterpart see "Operating Instructions (compact)")	L1, N, PE: Plug connector 7/8" (counterpart see "Operating Instructions (compact)")
• Output	+, -: Plug connector 7/8" (counterpart see "Operating Instructions (compact)")	+, -: Plug connector 7/8" (counterpart see "Operating Instructions (compact)")
• Auxiliary	Alarm signals: M12 plug-in connector 4-pin	Alarm signals: M12 plug-in connector 4-pin
Product function		
• removable terminal at input	Yes	Yes
• removable terminal at output	Yes	Yes
Width of the enclosure	120 mm	120 mm
Height of the enclosure	181 mm	181 mm
Depth of the enclosure	60.5 mm	60.5 mm
Weight, approx.	1.1 kg	1.3 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes
Installation	Wall mounting	Wall mounting
MTBF at 40 °C	1 500 000 h	800 000 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SITOP PSU100P 1-phase, 24 V DC/5 A Stabilized power supply with IP67 degree of protection Input: 120/230 V AC Output: 24 V DC/5 A	**6EP1333-7CA00**
SITOP PSU100P 1-phase, 24 V DC/8 A Stabilized power supply with IP67 degree of protection Input: 120/230 V AC Output: 24 V DC/8 A	**6EP1334-7CA00**

More information

Select the appropriate power supply quickly and easily with the SITOP Selection Tool:

http://www.siemens.com/sitop-selection-tool

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3-phase, 24 V DC (ET200pro PS, IP67)

Overview



The SIMATIC ET200pro PS power supply unit with degree of protection IP67 is used as the electronics/encoder supply and load voltage supply of the new SIMATIC ET 200pro distributed I/O system for use close to the machine without a cabinet. With a signaling contact for "24 V OK" and "Overtemperature", as well as a second plug-in connector for input voltage loop-through.

Technical specifications

Article number	**6ES7148-4PC00-0HA0**
Product	**SIMATIC ET200pro PS**
Power supply, type	**24 V/8 A**
Input	
Input	3-phase AC
Rated voltage value $V_{in\ rated}$	400 ... 480 V
Voltage range AC	340 ... 550 V
• Note	320 ... 340 V for max. 1 min
Wide-range input	Yes
Overvoltage resistance	Implemented internally with varistors
Mains buffering at $I_{out\ rated}$, min.	15 ms; at V_{in} = 400 V
Rated line frequency 1	50 Hz
Rated line frequency 2	60 Hz
Rated line range	45 ... 66 Hz
Input current	
• at rated input voltage 400 V	0.5 A
Switch-on current limiting (+25 °C), max.	40 A
I^2t, max.	3.5 $A^2 \cdot s$
Built-in incoming fuse	T 4 A
Protection in the mains power input (IEC 898)	Required: Circuit breaker 3RV2011-1DA10 or 3RV2711-1DD10 (UL 489)
Output	
Output	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V
Total tolerance, static ±	3 %
Static mains compensation, approx.	0.5 %
Static load balancing, approx.	0.5 %
Residual ripple peak-peak, max.	200 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	250 mV
Product function Output voltage adjustable	No
Output voltage setting	-
Status display	Green LED for 24 V OK
Signaling	max. 30 V, 10 mA; Power-Good (High-Pegel 1L+ for V_{out} in range 21.3 ... 29 V); Overtemperature warning at least 30 s before switch-off (high level 1L+ when the max. internal temperature is exceeded)
On/off behavior	Overshoot of V_{out} < 2 %
Startup delay, max.	1.5 s
Voltage rise, typ.	40 ms
Rated current value $I_{out\ rated}$	8 A
Current range	0 ... 8 A
Supplied active power typical	192 W
Short-term overload current	
• on short-circuiting during the start-up typical	50 A
• at short-circuit during operation typical	50 A
Duration of overloading capability for excess current	
• on short-circuiting during the start-up	100 ms
• at short-circuit during operation	100 ms
Parallel switching for enhanced performance	No

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Technical specifications (continued)

Article number	6ES7148-4PC00-0HA0
Product	SIMATIC ET200pro PS
Power supply, type	24 V/8 A
Efficiency	
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	88 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	25 W
Closed-loop control	
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.5 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	1 %
Setting time maximum	2 ms
Protection and monitoring	
Output overvoltage protection	< 33 V
Current limitation, typ.	9.4 A
Property of the output Short-circuit proof	Yes
Short-circuit protection	Electronic shutdown, automatic restart
Enduring short circuit current RMS value	
• maximum	10 A
Overload/short-circuit indicator	-
Safety	
Primary/secondary isolation	Yes
Galvanic isolation	Protective extra low output voltage V_{out} according to EN 60950-1 and EN 50178
Protection class	Class I
Leakage current	
• maximum	3.5 mA
• typical	0.4 mA
CE mark	Yes
UL/cUL (CSA) approval	UL-Listed UL 508 (only with cable acc NFPA79)
Explosion protection	No
FM approval	-
CB approval	Yes
Marine approval	No
Degree of protection (EN 60529)	IP67, enclosure type 5 indoor
EMC	
Emitted interference	EN 55022 Class A
Supply harmonics limitation	-
Noise immunity	EN 61000-6-2
Operating data	
Ambient temperature	
• during operation	-25 ... +55 °C
- Note	with natural convection
• during transport	-40 ... +70 °C
• during storage	-40 ... +70 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation
Mechanics	
Connection technology	screw-type terminals
Connections	
• Supply input	L1, L2, L3, PE: Plug connector HAN Q4/2 (counterpart see "Electrical accessories")
• Output	L+, M: 2 x 1.5 mm² each (4-pole cable for +/- with open, labeled ends, 4 x 1.5 mm²)
• Auxiliary	Alarm signals: M12 plug-in connector 5-pin

Article number	6ES7148-4PC00-0HA0
Product	SIMATIC ET200pro PS
Power supply, type	24 V/8 A
Width of the enclosure	310 mm
Height of the enclosure	135 mm
Depth of the enclosure	90 mm
Weight, approx.	2.8 kg
Product feature of the enclosure housing for side-by-side mounting	No
Installation	Can be mounted onto ET200pro mounting rail
Electrical accessories	Power connector (Input: 3RK1911-2BE30 (6 mm²)) (Output: 3RK1911-2BF10 (4 mm²))
MTBF at 40 °C	196 354 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SIMATIC ET 200pro PS	**6ES7148-4PC00-0HA0**
Stabilized power supply in distributed I/O system design, permitting the loop-through of energy to further modules; with degree of protection IP67; Input: 400-480 V 3 AC Output: 24 V DC/8 A	

Accessories

	Article No.
Power connector	
For connecting to the distributed I/O system	
• For X1 (6 mm²)	**3RK1911-2BE30**
• For X2 (4 mm²)	**3RK1911-2BF10**
National Fire Protection Association compatible	
These devices are only approved for installation in industrial machinery according to the NFPA79 Electrical Standard for Industrial Machinery.	
• for X1 SIMATIC ET200pro PS 61 88 201 1003.xx (AWG10)*	* http://www.harting.com/en/home
• for X1 SITOP PSU300P 61 88 201 1000.xx / 61 88 201 1002.xx (AWG14)*	
• for X2 SIMATIC ET200pro PS 61 88 202 1010.xx (AWG10)*	
supplied blanking cap for X2	**3RK1902-0CK00**
• for X3 Phoenix-Contact SAC-5P-M12-M12FS	
supplied blanking cap for X3	
Sealing cap	
For 9-pole power sockets	
• X2 (1 unit)	**3RK1902-0CJ0**
• X2 (10 units)	**3RK1902-0CK00**

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3-phase, 12 V DC

Overview



The SITOP PSU3800 3-phase power supplies are suitable for battery charging, thanks to their constant-current characteristic. For other applications, the output characteristic can also be switched to latching shutdown. The three-phase, wide-range input enables them to be used worldwide. The slim design requires little space on the DIN rail. Installation gaps are not required.

Technical specifications

Article number	**6EP3424-8UB00-0AY0**
Product	**SITOP PSU3800**
Power supply, type	**12 V/20 A**
Input	
Input	3-phase AC
Rated voltage value $V_{in\ rated}$	400 ... 500 V
Voltage range AC	320 ... 575 V
Wide-range input	Yes
Mains buffering at $I_{out\ rated}$, min.	15 ms; at V_{in} = 400 V
Rated line frequency 1	50 Hz
Rated line frequency 2	60 Hz
Rated line range	47 ... 63 Hz
Input current	
• at rated input voltage 400 V	0.7 A
• at rated input voltage 500 V	0.6 A
Switch-on current limiting (+25 °C), max.	16 A
I^2t, max.	0.8 $A^2 \cdot s$
Built-in incoming fuse	none
Protection in the mains power input (IEC 898)	Required: 3-pole connected miniature circuit breaker 6 ... 16 A characteristic C or circuit breaker 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489)
Output	
Output	Controlled, isolated DC voltage
Rated voltage V_{out} DC	12 V
Total tolerance, static ±	3 %
Static mains compensation, approx.	0.1 %
Static load balancing, approx.	0.2 %
Residual ripple peak-peak, max.	100 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	200 mV
Adjustment range	12 ... 14 V
Product function Output voltage adjustable	Yes
Output voltage setting	via potentiometer; max. 240 W
Status display	Green LED for 12 V OK

Article number	**6EP3424-8UB00-0AY0**
Product	**SITOP PSU3800**
Power supply, type	**12 V/20 A**
Signaling	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for 12 V OK
On/off behavior	No overshoot of V_{out} (soft start)
Startup delay, max.	2.5 s
Voltage increase time of the output voltage maximum	500 ms
Rated current value $I_{out\ rated}$	20 A
Current range	0 ... 20 A
• Note	+60 ... +70 °C: Derating 2%/K
Supplied active power typical	240 W
Constant overload current	
• on short-circuiting during the start-up typical	22 A
Parallel switching for enhanced performance	Yes; switchable characteristic
Numbers of parallel switchable units for enhanced performance	2
Efficiency	
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	91 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	24 W
Closed-loop control	
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.1 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	1 %
Load step setting time 50 to 100%, typ.	0.2 ms
Load step setting time 100 to 50%, typ.	0.2 ms
Dynamic load smoothing (I_{out}: 10/90/10 %), U_{out} ± typ.	2 %
Load step setting time 10 to 90%, typ.	0.2 ms
Load step setting time 90 to 10%, typ.	0.2 ms
Setting time maximum	10 ms

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Technical specifications (continued)

Article number	6EP3424-8UB00-0AY0
Product	**SITOP PSU3800**
Power supply, type	**12 V/20 A**
Protection and monitoring	
Output overvoltage protection	< 18 V
Current limitation, typ.	22 A
Property of the output Short-circuit proof	Yes
Short-circuit protection	Alternatively, constant current characteristic approx. 22 A or latching shutdown
Enduring short circuit current RMS value	
• typical	22 A
Overload/short-circuit indicator	LED yellow for "overload", LED red for "latching shutdown"
Safety	
Primary/secondary isolation	Yes
Galvanic isolation	Safety extra low output voltage V_{out} according to EN 60950-1
Protection class	Class I
Leakage current	
• maximum	3.5 mA
• typical	0.9 mA
CE mark	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259
Explosion protection	ATEX (EX) II 3G Ex nA nC IIC T4; cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T4
FM approval	-
CB approval	Yes
Marine approval	GL, ABS
Degree of protection (EN 60529)	IP20
EMC	
Emitted interference	EN 55022 Class B
Supply harmonics limitation	EN 61000-3-2
Noise immunity	EN 61000-6-2
Operating data	
Ambient temperature	
• during operation	-25 ... +70 °C
- Note	with natural convection
• during transport	-40 ... +85 °C
• during storage	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation

Article number	6EP3424-8UB00-0AY0
Product	**SITOP PSU3800**
Power supply, type	**12 V/20 A**
Mechanics	
Connection technology	screw-type terminals
Connections	
• Supply input	L1, L2, L3, PE: 1 screw terminal each for 0.2 ... 4 mm^2 single-core/finely stranded
• Output	+, -: 2 screw terminals each for 0.2 ... 4 mm^2
• Auxiliary	13, 14 (alarm signal): 1 screw terminal each for 0.14 ... 1.5 mm^2; 15, 16 (Remote): 1 screw terminal each for 0.14 ... 1.5 mm^2
Width of the enclosure	70 mm
Height of the enclosure	125 mm
Depth of the enclosure	125 mm
Required spacing	
• top	50 mm
• bottom	50 mm
• left	0 mm
• right	0 mm
Weight, approx.	1.2 kg
Product feature of the enclosure housing for side-by-side mounting	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15
Electrical accessories	Buffer module
Mechanical accessories	Device identification label 20 mm × 7 mm, pale turquoise 3RT1900-1SB20
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SITOP PSU3800, 3-phase, 12 V DC/20 A Stabilized power supply Input: 400 … 500 V 3 AC Output: 12 V DC/20 A	**6EP3424-8UB00-0AY0**

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3-phase, 24 V DC

Overview



SITOP PSU3800 3-phase power supplies (24 V DC/17 A and 30 A) are suitable for battery charging, thanks to their constant-current characteristic. For other applications the output characteristic can also be switched to latching shutdown. The three-phase, wide-range input enables them to be used worldwide. The slim design requires little space on the DIN rail. Installation gaps are not required.

Technical specifications

Article number	**6EP3436-8UB00-0AY0**	**6EP1437-3BA20**
Product	**SITOP PSU3800**	**SITOP PSU300B**
Power supply, type	**24 V/17 A**	**24 V/30 A**
Input		
Input	3-phase AC	3-phase AC
Rated voltage value $V_{in\ rated}$	400 ... 500 V	400 ... 500 V
Voltage range AC	320 ... 575 V	320 ... 575 V
Wide-range input	Yes	Yes
Mains buffering at $I_{out\ rated}$, min.	15 ms; at V_{in} = 400 V	20 ms; at V_{in} = 400 V
Rated line frequency 1	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz
Input current		
• at rated input voltage 400 V	1.1 A	1.6 A
• at rated input voltage 500 V	0.9 A	1.3 A
Switch-on current limiting (+25 °C), max.	16 A	56 A
I^2t, max.	0.8 $A^2 \cdot s$	2.24 $A^2 \cdot s$
Built-in incoming fuse	none	none
Protection in the mains power input (IEC 898)	Required: 3-pole connected miniature circuit breaker 6 ... 16 A characteristic C or circuit breaker 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489)	Required: 3-pole connected miniature circuit breaker 10 ... 16 A characteristic C or circuit breaker 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489)
Output		
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V	24 V
Total tolerance, static ±	3 %	3 %
Static mains compensation, approx.	0.1 %	0.1 %
Static load balancing, approx.	0.2 %	0.1 %
Residual ripple peak-peak, max.	100 mV	100 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	200 mV	200 mV
Adjustment range	24 ... 28 V	24 ... 28.8 V
Product function Output voltage adjustable	Yes	Yes
Output voltage setting	via potentiometer; max. 480 W	via potentiometer
Status display	Green LED for 24 V OK	Green LED for 24 V OK
Signaling	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for "24 V OK"	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for "24 V OK"

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Technical specifications (continued)

Article number	6EP3436-8UB00-0AY0	6EP1437-3BA20
Product	**SITOP PSU3800**	**SITOP PSU300B**
Power supply, type	**24 V/17 A**	**24 V/30 A**
On/off behavior	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)
Startup delay, max.	2.5 s	2.5 s
Voltage increase time of the output voltage maximum	500 ms	500 ms
Rated current value $I_{out\ rated}$	17 A	30 A
Current range	0 ... 17 A	0 ... 30 A
• Note	+60 ... +70 °C: Derating 2%/K	+60 ... +70 °C: Derating 1.7%/K
Supplied active power typical	408 W	960 W
Constant overload current		
• on short-circuiting during the start-up typical	19 A	32 A
• at short-circuit during operation typical	-	32 A
Parallel switching for enhanced performance	Yes; switchable characteristic	Yes; switchable characteristic
Numbers of parallel switchable units for enhanced performance	2	2
Efficiency		
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	94 %	93 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	26 W	50 W
Closed-loop control		
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.1 %	1 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	1 %	3 %
Load step setting time 50 to 100%, typ.	0.2 ms	-
Load step setting time 100 to 50%, typ.	0.2 ms	-
Dynamic load smoothing (I_{out}: 10/90/10 %), U_{out} ± typ.	2 %	-
Load step setting time 10 to 90%, typ.	0.2 ms	-
Load step setting time 90 to 10%, typ.	0.2 ms	-
Setting time maximum	10 ms	10 ms
Protection and monitoring		
Output overvoltage protection	< 32 V	< 35 V
Current limitation, typ.	19 A	32 A
Property of the output Short-circuit proof	Yes	Yes
Short-circuit protection	Alternatively, constant current characteristic approx. 19 A or latching shutdown	Alternatively, constant current characteristic approx. 32 A or latching shutdown
Enduring short circuit current RMS value		
• typical	19 A	32 A
Overload/short-circuit indicator	LED yellow for "overload", LED red for "latching shutdown"	LED yellow for "overload", LED red for "latching shutdown"
Safety		
Primary/secondary isolation	Yes	Yes
Galvanic isolation	Safety extra low output voltage V_{out} according to EN 60950-1	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I	Class I
Leakage current		
• maximum	3.5 mA	3.5 mA
• typical	0.9 mA	-
CE mark	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259
Explosion protection	ATEX (EX) II 3G Ex nA nC IIC T4; cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T4	-
FM approval	-	-
CB approval	Yes	No
Marine approval	GL, ABS	-
Degree of protection (EN 60529)	IP20	IP20

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Technical specifications (continued)

Article number	6EP3436-8UB00-0AY0	6EP1437-3BA20
Product	**SITOP PSU3800**	**SITOP PSU300B**
Power supply, type	**24 V/17 A**	**24 V/30 A**
EMC		
Emitted interference	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	EN 61000-3-2	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2
Operating data		
Ambient temperature		
• during operation	-25 ... +70 °C	-25 ... +70 °C
- Note	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation
Mechanics		
Connection technology	screw-type terminals	screw-type terminals
Connections		
• Supply input	L1, L2, L3, PE: 1 screw terminal each for 0.2 ... 4 mm^2 single-core/finely stranded	L1, L2, L3, PE: 1 screw terminal each for 0.2 ... 4 mm^2 single-core/finely stranded
• Output	+, -: 2 screw terminals each for 0.2 ... 4 mm^2	+, -: 2 screw terminals each for 0.33 ... 10 mm^2
• Auxiliary	13, 14 (alarm signal): 1 screw terminal each for 0.14 ... 1.5 mm^2; 15, 16 (Remote): 1 screw terminal each for 0.14 ... 1.5 mm^2	13, 14 (alarm signal): 1 screw terminal each for 0.14 ... 1.5 mm^2
Width of the enclosure	70 mm	150 mm
Height of the enclosure	125 mm	125 mm
Depth of the enclosure	125 mm	150 mm
Required spacing		
• top	50 mm	-
• bottom	50 mm	-
• left	0 mm	-
• right	0 mm	-
Weight, approx.	1.2 kg	3.4 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x15
Electrical accessories	Buffer module	Buffer module
Mechanical accessories	Device identification label 20 mm × 7 mm, pale turquoise 3RT1900-1SB20	Device identification label 20 mm × 7 mm, pale turquoise 3RT1900-1SB20
MTBF at 40 °C		885 739 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SITOP PSU3800 3-phase, 24 V DC/17 A Stabilized power supply Input: 400 ... 500 V 3 AC Output: 24 V DC/17 A	**6EP3436-8UB00-0AY0**
SITOP PSU300B 3-phase, 24 V DC/30 A Stabilized power supply Input: 400 ... 500 V 3 AC Output: 24 V AC/30 A	**6EP1437-3BA20**

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Overview



The industrial power supply with two 15 V outputs that can be switched in parallel and in series; can be used, for example, to supply electronic loads with ±15 V.

Technical specifications

Article number	**6EP1353-0AA00**
Product	**SITOP dual**
Power supply, type	**2 x 15 V/3.5 A**
Input	
Input	1-phase AC
Rated voltage value $V_{in\ rated}$	120 ... 230 V
Voltage range AC	93 ... 264 V
Wide-range input	Yes
Overvoltage resistance	Surge voltage in accordance with EN 61000-6-2 Table 4
Mains buffering at $I_{out\ rated}$, min.	10 ms; at V_{in} = 120 V, 40 ms at V_{in} = 187 V
Rated line frequency 1	50 Hz
Rated line frequency 2	60 Hz
Rated line range	47 ... 63 Hz
Input current	
• at rated input voltage 120 V	1.9 A
• at rated input voltage 230 V	1.15 A
Switch-on current limiting (+25 °C), max.	30 A
Duration of inrush current limiting at 25 °C	
• typical	3 ms
I^2t, max.	3 A^2·s
Built-in incoming fuse	T 4 A/250 V (not accessible)
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 10 A characteristic C or from 16 A characteristic B

Article number	**6EP1353-0AA00**
Product	**SITOP dual**
Power supply, type	**2 x 15 V/3.5 A**
Output	
Output	Controlled, isolated DC voltage
Rated voltage V_{out} DC	15 V
Output voltage	2 x 15 V DC
• at output 1 at DC Rated value	15 V
• at output 2 at DC Rated value	15 V
Total tolerance, static ±	2 %
Static mains compensation, approx.	0.2 %
Static load balancing, approx.	0.2 %
Residual ripple peak-peak, max.	50 mV
Residual ripple peak-peak, typ.	20 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	150 mV
Adjustment range	14.5 ... 17 V
Product function Output voltage adjustable	Yes
Output voltage setting	via potentiometer
Status display	Green LED grün for V_{out} >10 V (summation display)
Signaling	-
On/off behavior	Overshoot of V_{out} < 3 %
Startup delay, max.	1 s
Rated current value $I_{out\ rated}$	3.5 A
Output current	
• at output 1 Rated value	3.5 A
• at output 2 Rated value	3.5 A
Current range	0 ... 3.5 A
• Note	+45 ... +60 °C: Derating 2%/K
Supplied active power typical	105 W
Parallel switching for enhanced performance	Yes
Numbers of parallel switchable units for enhanced performance	2
Efficiency	
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	80 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	27 W
Protection and monitoring	
Output overvoltage protection	Yes, according to EN 60950-1
Current limitation	4.9 A
Current limitation	Limit point < 4.9 A; switch-off point < 6 A
Property of the output Short-circuit proof	Yes
Short-circuit protection	Electronic shutdown, automatic restart
Overload/short-circuit indicator	-
Safety	
Primary/secondary isolation	Yes
Galvanic isolation	Safety extra low output voltage V_{out} according to EN 60950-1
Protection class	Class I
Leakage current	
• maximum	3.5 mA
CE mark	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 142), File E179336
Explosion protection	-
FM approval	-
CB approval	No
Marine approval	-
Degree of protection (EN 60529)	IP20

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1-phase, 2 x 15 V DC (SITOP dual)

Technical specifications (continued)

Article number	6EP1353-0AA00
Product	**SITOP dual**
Power supply, type	**2 x 15 V/3.5 A**
EMC	
Emitted interference	EN 55011 Class A
Supply harmonics limitation	-
Noise immunity	EN 61000-6-2
Operating data	
Ambient temperature	
• during operation	0 ... 60 °C
- Note	with natural convection
• during transport	-40 ... +70 °C
• during storage	-40 ... +70 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation
Mechanics	
Connection technology	screw-type terminals
Connections	
• Supply input	L1, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded
• Output	P15_1, GND_1, GND_2: 1 screw terminal each for 0.5 ... 2.5 mm^2; P15_2: 2 screw terminals for 0.5 ... 2.5 mm^2
• Auxiliary	-
Width of the enclosure	75 mm
Height of the enclosure	125 mm
Depth of the enclosure	125 mm
Weight, approx.	0.75 kg
Product feature of the enclosure housing for side-by-side mounting	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SITOP power 15 V	**6EP1353-0AA00**
Dual output Stabilized power supply Input: 120 ... 230 V AC Output: 2 x 15 V DC/3.5 A	

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Overview



The power supply with flexible output voltage from 3 to 52 V; suitable for all application areas requiring a special voltage other than 24 V.

Technical specifications

Article number	**6EP1353-2BA00**
Product	**SITOP flexi**
Power supply, type	**3-52 V/2-10 A**
Input	
Input	1-phase AC
Supply voltage	
• 1 at AC Rated value	120 V
• 2 at AC Rated value	230 V
Rated voltage value $V_{in\ rated}$	120 ... 230 V
• Note	Set via wire jumper
Input voltage	
• 1 at AC	85 ... 132 V
• 2 at AC	170 ... 264 V
Wide-range input	No
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	10 ms; at Pout = 120 W and V_{in} = 93/187 V
Rated line frequency 1	50 Hz
Rated line frequency 2	60 Hz
Rated line range	47 ... 63 Hz
Input current	
• at rated input voltage 120 V	2.2 A
• at rated input voltage 230 V	0.9 A
Switch-on current limiting (+25 °C), max.	32 A
I^2t, max.	0.8 A^2·s
Built-in incoming fuse	T 3,15 A/250 V (not accessible)
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 6 A characteristic C

Article number	**6EP1353-2BA00**
Product	**SITOP flexi**
Power supply, type	**3-52 V/2-10 A**
Output	
Output	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V
Output voltage	3-52 V DC
Total tolerance, static ±	1 %
Static mains compensation, approx.	0.1 %
Static load balancing, approx.	0.2 %
Sense line connection max. voltage control per line	0.5 V
Residual ripple peak-peak, max.	50 mV
Residual ripple peak-peak, typ.	20 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	100 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	80 mV
Adjustment range	3 ... 52 V
Product function Output voltage adjustable	Yes
Output voltage setting	via potentiometer or analog control voltage signal 0 ... 2.5 V
Status display	Green LED for 24 V OK
Signaling	Power-Good via relay contact, current monitor signal 0 … 2.5 V
On/off behavior	No overshoot of V_{out} (soft start)
Startup delay, max.	3 s
Voltage rise, typ.	80 ms
Rated current value $I_{out\ rated}$	10 A
• min.	2 A
• max.	10 A
Current range	0 ... 10 A
• Note	max. 120 W
Supplied active power typical	120 W
Constant overload current	
• on short-circuiting during the start-up typical	10 A
• at short-circuit during operation typical	10 A
Parallel switching for enhanced performance	Yes
Numbers of parallel switchable units for enhanced performance	2
Efficiency	
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	84 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	23 W
Protection and monitoring	
Output overvoltage protection	Yes, according to EN 60950-1
Current limitation	2 ... 10 A
Current limitation	2 ... 10 A, adjustable using potentiometer or analog control voltage signal 0 ... 2.5 V
Property of the output Short-circuit proof	Yes
Short-circuit protection	Electronic current limiting (2 ... 10 A) in the range 3 ... 12 V or power limiting (120 W) in the range 12 ... 52 V
Overcurrent overload capability in normal operation	According to the adjusted current regulation 2 ... 10 A
Overload/short-circuit indicator	Red LED for current or power limiting

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1-phase, 3-52 V DC (SITOP flexi 120 W)

Technical specifications (continued)

Article number	6EP1353-2BA00
Product	**SITOP flexi**
Power supply, type	**3-52 V/2-10 A**
Safety	
Primary/secondary isolation	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I
Leakage current	
• maximum	3.5 mA
CE mark	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289
Explosion protection	-
FM approval	-
CB approval	No
Marine approval	-
Degree of protection (EN 60529)	IP20
EMC	
Emitted interference	EN 55022 Class B
Supply harmonics limitation	EN 61000-3-2
Noise immunity	EN 61000-6-2
Operating data	
Ambient temperature	
• during operation	0 ... 60 °C
- Note	with natural convection
• during transport	-40 ... +85 °C
• during storage	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation
Mechanics	
Connection technology	screw-type terminals
Connections	
• Supply input	L1, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm² single-core/finely stranded
• Output	L+: 1 screw terminal for 0.5 ... 2.5 mm²; M: 2 screw terminals for 0.5 ... 2.5 mm²
• Auxiliary	Alarm signals, control inputs: 1 screw terminal each for 0.14 ... 1.5 mm²
Width of the enclosure	75 mm
Height of the enclosure	125 mm
Depth of the enclosure	125 mm
Weight, approx.	0.9 kg
Product feature of the enclosure housing for side-by-side mounting	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15
MTBF at 40 °C	1 196 172 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SITOP power flexi	**6EP1353-2BA00**
Stabilized power supply Input: 120 ... 230 V AC Output: 3-52 V DC / 2-10 A, 120 W	

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Overview



The optimum power supply for automation solutions in the lower performance range; with wide-range input for **48-220 V DC**; thanks to their compact and slim design, they are particularly suitable for solutions where space is limited and in conjunction with low-voltage switchgear.

Technical specifications

Article number	**6EP1731-2BA00**
Product	**SITOP power**
Power supply, type	**24 V/0.375 A**
Input	
Input	DC voltage
Supply voltage	
• at DC	48 ... 220 V
Voltage range AC	30 ... 187 V
Input voltage	
• at DC	30 ... 264 V
Wide-range input	Yes
Overvoltage resistance	-
Mains buffering at $I_{out\ rated}$, min.	10 ms; at V_{in} = 220 V
Input current	
• at rated input voltage 48 V	0.3 A
• at rated input voltage 220 V	0.06 A
Switch-on current limiting (+25 °C), max.	35 A
Duration of inrush current limiting at 25 °C	
• typical	3 ms
I^2t, max.	1.2 $A^2 \cdot s$
Built-in incoming fuse	F 4 A/250 V (not accessible)
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 6 A characteristic C, suitable for DC

Article number	**6EP1731-2BA00**
Product	**SITOP power**
Power supply, type	**24 V/0.375 A**
Output	
Output	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V
Total tolerance, static ±	3 %
Static mains compensation, approx.	0.1 %
Static load balancing, approx.	0.1 %
Residual ripple peak-peak, max.	150 mV
Residual ripple peak-peak, typ.	50 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	240 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	50 mV
Product function Output voltage adjustable	No
Output voltage setting	-
Status display	Green LED for 24 V OK
On/off behavior	No overshoot of V_{out} (soft start)
Startup delay, max.	2.5 s
Voltage rise, typ.	90 ms
Rated current value $I_{out\ rated}$	0.375 A
Current range	0 ... 0.375 A
• Note	+60 ... +70 °C: Derating 3%/K
Supplied active power typical	9 W
Short-term overload current	
• at short-circuit during operation typical	2.7 A
Duration of overloading capability for excess current	
• at short-circuit during operation	200 ms
Parallel switching for enhanced performance	No
Efficiency	
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	66 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	4.6 W
Closed-loop control	
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.3 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	0.4 %
Load step setting time 50 to 100%, typ.	2 ms
Load step setting time 100 to 50%, typ.	2 ms
Protection and monitoring	
Output overvoltage protection	Yes, according to EN 60950-1
Current limitation	0.41 ... 0.49 A
Property of the output Short-circuit proof	Yes
Short-circuit protection	Electronic shutdown, automatic restart
Enduring short circuit current RMS value	
• maximum	0.9 A
Overload/short-circuit indicator	-

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48-220V DC / 24 V DC/0.375 A

Technical specifications (continued)

Article number	**6EP1731-2BA00**
Product	**SITOP power**
Power supply, type	**24 V/0.375 A**
Safety	
Primary/secondary isolation	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I
Leakage current	
• maximum	3.5 mA
CE mark	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289, cURus-Recognized (UL 60950, CSA C22.2 No. 60950), File E151273
Explosion protection	-
FM approval	-
CB approval	No
Marine approval	-
Degree of protection (EN 60529)	IP20
EMC	
Emitted interference	EN 55022 Class B
Supply harmonics limitation	not applicable
Noise immunity	EN 61000-6-2
Operating data	
Ambient temperature	
• during operation	-25 ... +70 °C
- Note	with natural convection
• during transport	-40 ... +70 °C
• during storage	-40 ... +70 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation
Mechanics	
Connection technology	screw-type terminals
Connections	
• Supply input	L+1, M1, PE: 1 screw terminal each for 0.5 ... 2.5 mm² single-core/finely stranded
• Output	+: 1 screw terminal for 0.5 ... 2.5 mm²; -: 2 screw terminals for 0.5 ... 2.5 mm²
• Auxiliary	-
Width of the enclosure	22.5 mm
Height of the enclosure	80 mm
Depth of the enclosure	91 mm
Weight, approx.	0.14 kg
Product feature of the enclosure housing for side-by-side mounting	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15
MTBF at 40 °C	1 466 123 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

SITOP power 0.375 A	**6EP1731-2BA00**
DC/DC stabilized power supply Input: DC 48 … 220 V Output: 24 V DC/0.375 A	

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Overview



The DC/DC converter for supply from battery and DC systems; with a wide input voltage range from 38 V to 121 V DC.

Technical specifications

Article number	**6EP1732-0AA00**
Product	**SITOP power**
Power supply, type	**24 V/2 A**
Input	
Input	DC voltage
Supply voltage	
• at DC	48 ... 110 V
Input voltage	
• at DC	38 ... 121 V
Wide-range input	Yes
Overvoltage resistance	-
Mains buffering at $I_{out\ rated}$, min.	5 ms; at V_{in} = 48 V
Input current	
• at rated input voltage 48 V	1.2 A
• at rated input voltage 110 V	0.5 A
Switch-on current limiting (+25 °C), max.	33 A
Built-in incoming fuse	T 2.5 A (not accessible)
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: 10 to 25 A characteristic B or 6 to 25 A characteristic C, suitable for DC
Output	
Output	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V
Total tolerance, static ±	1 %
Static mains compensation, approx.	0.1 %
Static load balancing, approx.	0.4 %
Residual ripple peak-peak, max.	100 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	300 mV
Adjustment range	23.5 ... 26.5 V
Product function Output voltage adjustable	Yes
Output voltage setting	via potentiometer
Status display	Green LED for 24 V OK
On/off behavior	Overshoot of V_{out} on startup max. 25 V
Startup delay, max.	3 s
Voltage rise, typ.	30 ms
Rated current value $I_{out\ rated}$	2 A
Current range	0 ... 2 A
Supplied active power typical	48 W
Parallel switching for enhanced performance	Yes
Numbers of parallel switchable units for enhanced performance	2
Efficiency	
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	84 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	9 W
Closed-loop control	
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.3 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	0.8 %
Load step setting time 50 to 100%, typ.	2.5 ms
Load step setting time 100 to 50%, typ.	2.5 ms
Protection and monitoring	
Output overvoltage protection	Yes, suppressor diode at output
Current limitation	2.1 ... 3 A
Property of the output Short-circuit proof	Yes
Short-circuit protection	Electronic shutdown, automatic restart
Enduring short circuit current RMS value	
• maximum	2 A
Overload/short-circuit indicator	-

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48-110V DC / 24 V DC/2 A

Technical specifications (continued)

Article number	6EP1732-0AA00
Product	**SITOP power**
Power supply, type	**24 V/2 A**
Safety	
Primary/secondary isolation	Yes
Galvanic isolation	Safety extra low output voltage V_{out} according to EN 60950-1
Protection class	Class I
Leakage current	
• maximum	3.5 mA
• typical	0.7 mA
CE mark	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 142), File E179336
Explosion protection	-
FM approval	-
CB approval	No
Marine approval	-
Degree of protection (EN 60529)	IP20
EMC	
Emitted interference	EN 55022 Class B
Supply harmonics limitation	not applicable
Noise immunity	EN 61000-6-2
Operating data	
Ambient temperature	
• during operation	0 ... 70 °C
- Note	with natural convection
• during transport	-40 ... +70 °C
• during storage	-40 ... +70 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation
Mechanics	
Connection technology	screw-type terminals
Connections	
• Supply input	L+, M1, PE: 1 screw terminal each for 2 x 0.5 ... 2.5/1.5 mm² single-core/ finely stranded
• Output	L+, M: 1 screw terminal each for 2 x 0.5 ... 2.5 mm²
• Auxiliary	-
Width of the enclosure	80 mm
Height of the enclosure	135 mm
Depth of the enclosure	120 mm
Weight, approx.	0.5 kg
Product feature of the enclosure housing for side-by-side mounting	Yes
Installation	Snaps onto DIN rail EN 60715 35x15
MTBF at 40 °C	1 580 078 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SITOP power 2 A	**6EP1732-0AA00**
DC/DC stabilized power supply Input: DC 48/60/110 V Output: 24 V DC/2 A	

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Overview



DC/DC converter for connection to 24 V DC networks. Output voltage 12 V DC; floating, short circuit-proof, open circuit-proof.

Technical specifications

Article number	**6EP1621-2BA00**
Product	**SITOP DC/DC**
Power supply, type	**12 V/2.5 A**
Input	
Input	DC voltage PELV/SELV
Supply voltage	
• at DC	24 ... 24 V
Input voltage	
• at DC	18.5 ... 30.2 V
Wide-range input	No
Input current	
• at rated input voltage 24 V	2.5 A
Switch-on current limiting (+25 °C), max.	20 A
Duration of inrush current limiting at 25 °C	
• typical	5 ms
Built-in incoming fuse	not accessible
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: 10 A characteristic B
Output	
Output	Controlled, isolated DC voltage
Rated voltage V_{out} DC	12 V
Total tolerance, static ±	3 %
Static mains compensation, approx.	0.1 %
Static load balancing, approx.	0.4 %
Residual ripple peak-peak, max.	100 mV
Residual ripple peak-peak, typ.	50 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	200 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	50 mV
Adjustment range	12 ... 14 V
Product function Output voltage adjustable	Yes
Output voltage setting	via potentiometer; max. 120 W
Status display	Green LED for 12 V OK
Startup delay, max.	0.5 s
Voltage rise, typ.	300 ms
Rated current value $I_{out\ rated}$	2.5 A
Current range	0 ... 2.5 A
Short-term overload current	
• on short-circuiting during the start-up typical	3.3 A
• at short-circuit during operation typical	3.3 A
Constant overload current	
• on short-circuiting during the start-up typical	3.3 A
• at short-circuit during operation typical	3.3 A
Parallel switching for enhanced performance	Yes
Numbers of parallel switchable units for enhanced performance	2

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24 V DC / 12 V DC/2.5 A

Technical specifications (continued)

Article number	6EP1621-2BA00
Product	**SITOP DC/DC**
Power supply, type	**12 V/2.5 A**
Efficiency	
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	83 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	6.1 W
Closed-loop control	
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.5 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	3 %
Load step setting time 50 to 100%, typ.	5 ms
Load step setting time 100 to 50%, typ.	2 ms
Setting time maximum	5 ms
Protection and monitoring	
Output overvoltage protection	< 24 V
Current limitation	3 ... 3.6 A
Current limitation, typ.	3.3 A
Property of the output Short-circuit proof	Yes
Short-circuit protection	Constant current characteristic approx. 3.2 A
Enduring short circuit current RMS value	
• typical	3.2 A
Overload/short-circuit indicator	LED red for "overload"
Safety	
Primary/secondary isolation	Yes
Galvanic isolation	Safety extra low output voltage V_{out} according to EN 60950-1
Protection class	Class II
CE mark	Yes
UL/cUL (CSA) approval	cCSAus (UL 508, CSA22.2-107, UL60950-1, CSA22.2-60950-1)
Explosion protection	-
FM approval	-
CB approval	No
Marine approval	-
Degree of protection (EN 60529)	IP20
EMC	
Emitted interference	EN 55022 Class B
Supply harmonics limitation	-
Noise immunity	EN 61000-6-2
Operating data	
Ambient temperature	
• during operation	0 ... 60 °C
- Note	with natural convection
• during transport	-40 ... +85 °C
• during storage	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation
Mechanics	
Connection technology	screw-type terminals
Connections	
• Supply input	+, -: 1 screw terminal each for 0.5 ... 2.5 mm²
• Output	+, -: 2 screw terminals each for 0.5 ... 2.5 mm²
• Auxiliary	-
Width of the enclosure	32.5 mm
Height of the enclosure	125 mm
Depth of the enclosure	125 mm
Weight, approx.	0.32 kg
Product feature of the enclosure housing for side-by-side mounting	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15
MTBF at 40 °C	563 793 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SITOP 2.5 A, DC/DC converter	**6EP1621-2BA00**
Stabilized power supply Input: 24 V DC Output: 12 V DC/2.5 A	

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Application



The SITOP PSU400M power supply with a 600 V DC input is suitable as an efficient DC/DC converter for drive and battery systems; large input range and temperature range, high efficiency; slim design; with 50% extra power for 5 s/min.

Technical specifications

Article number	**6EP1536-3AA00**
Product	**SITOP PSU400M**
Power supply, type	**24 V/20 A**
Input	
Input	DC voltage
Supply voltage	
• at DC	600 ... 600 V
• Note	startup from 340 V DC; derating necessary at 300 ... 400 V DC and 824 ... 900 V DC
Input voltage	
• at DC	300 ... 900 V
Overvoltage resistance	Shutdown at V_{in} > 900 V DC
Input current	
• at DC at rated input voltage 600 V	0.85 A
Switch-on current limiting (+25 °C), max.	8 A
I^2t, max.	0.02 $A^2 \cdot s$
Built-in incoming fuse	yes, cut-off capacity 20 kA; L/R < 2 ms ("+" and "-" input)
Output	
Output	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V
Total tolerance, static ±	3 %
Static mains compensation, approx.	0.3 %
Static load balancing, approx.	0.3 %
Residual ripple peak-peak, max.	150 mV
Residual ripple peak-peak, typ.	30 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	200 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	100 mV

Article number	**6EP1536-3AA00**
Product	**SITOP PSU400M**
Power supply, type	**24 V/20 A**
Adjustment range	24 ... 28.8 V
Product function Output voltage adjustable	Yes
Output voltage setting	via potentiometer; max. 480 W
Status display	Green LED for 24 V OK, green flashing LED for start delay
Signaling	Relay contact (NO contact, rating 60 V DC/ 0.3 A; 30 V DC/1 A) for 24 V OK
On/off behavior	No overshoot of V_{out} (soft start)
Startup delay, max.	0.1 s; 10 s adjustable using switch
Voltage increase time of the output voltage maximum	150 ms
Rated current value $I_{out\ rated}$	20 A
Current range	0 ... 20 A
• Note	+60 ... +70 °C: Derating 5.5%/K
Supplied active power typical	480 W
Short-term overload current	
• on short-circuiting during the start-up typical	40 A
• at short-circuit during operation typical	60 A
Duration of overloading capability for excess current	
• on short-circuiting during the start-up	150 ms
• at short-circuit during operation	25 ms
Constant overload current	
• on short-circuiting during the start-up typical	23 A
Parallel switching for enhanced performance	Yes; switchable characteristic
Numbers of parallel switchable units for enhanced performance	2
Efficiency	
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	95 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	25 W
Closed-loop control	
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	1.5 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	1.5 %
Load step setting time 50 to 100%, typ.	1 ms
Load step setting time 100 to 50%, typ.	1 ms
Setting time maximum	5 ms
Protection and monitoring	
Output overvoltage protection	< 33 V
Current limitation, typ.	22 A
Property of the output Short-circuit proof	Yes
Short-circuit protection	Alternatively, constant current characteristic approx. 22 A or latching shutdown
Enduring short circuit current RMS value	
• typical	22 A
Overcurrent overload capability in normal operation	overload capability 150 % $I_{out\ rated}$ up to 5 s/min
Overload/short-circuit indicator	LED yellow for "overload", LED red for "latching shutdown", red LED flashing for "Overtemperature"

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200-900 V DC / 24 V DC/20 A

Technical specifications (continued)

Article number	6EP1536-3AA00
Product	**SITOP PSU400M**
Power supply, type	**24 V/20 A**
Safety	
Primary/secondary isolation	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I
CE mark	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259
Explosion protection	-
FM approval	-
CB approval	Yes
Marine approval	GL
Degree of protection (EN 60529)	IP20
EMC	
Emitted interference	EN 55022 Class A (emission)
Supply harmonics limitation	-
Noise immunity	EN 61000-6-2
Operating data	
Ambient temperature	
• during operation	-25 ... +70 °C
- Note	with natural convection
• during transport	-40 ... +85 °C
• during storage	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation
Mechanics	
Connection technology	screw-type terminals
Connections	
• Supply input	DC input, +, -, PE: 1 screw terminal each for 0.2 ... 6/4 mm² single-core/finely stranded
• Output	+, -: 2 screw terminals each for 0.2 ... 6/4 mm² single-core/finely stranded
• Auxiliary	Alarm signals: 2 screw terminals for 0.14 ... 1.5 mm² single-core/finely stranded
Width of the enclosure	90 mm
Height of the enclosure	125 mm
Depth of the enclosure	125 mm
Weight, approx.	1.2 kg
Product feature of the enclosure housing for side-by-side mounting	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15
Mechanical accessories	Device identification label 20 mm x 7 mm, pale turquoise 3RT1900-1SB20
MTBF at 40 °C	622 277 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SITOP PSU 400M 1-phase, 24 V DC/20 A	**6EP1536-3AA00**
Stabilized power supply Input: 600 V AC Output: 24 V DC/20 A	
Accessories	
Device labels	**3RT1900-1SB20**

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Overview



The 24 V/5 A and 10 A power supplies in a compact metal enclosure can be accommodated where only limited installation depth is available. For example, in covered machine supports or hinged frames.

Technical specifications

Article number	**6EP1333-1AL12**	**6EP1334-1AL12**
Product	**SITOP power**	**SITOP power**
Power supply, type	**24 V/5 A**	**24 V/10 A**
Input		
Input	1-phase AC	1-phase AC
Supply voltage		
• 1 at AC Rated value	120 V	120 V
• 2 at AC Rated value	230 V	230 V
• Note	Set by means of selector switch on the device	Set by means of selector switch on the device
Input voltage		
• 1 at AC	85 ... 132 V	85 ... 132 V
• 2 at AC	170 ... 264 V	170 ... 264 V
Wide-range input	No	No
Overvoltage resistance	2.3 × $V_{in\ rated}$, 1.3 ms	2.3 × $V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	20 ms; at V_{in} = 93/187 V	20 ms; at V_{in} = 93/187 V
Rated line frequency 1	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz
Rated line range	47 ... 63 Hz	47 ... 63 Hz
Input current		
• at rated input voltage 120 V	2.2 A	4 A
• at rated input voltage 230 V	1.2 A	2.5 A
Switch-on current limiting (+25 °C), max.	32 A	65 A
Duration of inrush current limiting at 25 °C		
• maximum	3 ms	3 ms
I^2t, max.	0.8 $A^2 \cdot s$	3.3 $A^2 \cdot s$
Built-in incoming fuse	T 3,15 A/250 V (not accessible)	T 6.3 A/250 V (not accessible)
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: from 6 A characteristic C	Recommended miniature circuit breaker: from 10 A characteristic C

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Technical specifications (continued)

Article number	6EP1333-1AL12	6EP1334-1AL12
Product	**SITOP power**	**SITOP power**
Power supply, type	**24 V/5 A**	**24 V/10 A**
Output		
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V	24 V
Total tolerance, static ±	1 %	1 %
Static mains compensation, approx.	0.1 %	0.1 %
Static load balancing, approx.	0.5 %	0.5 %
Residual ripple peak-peak, max.	150 mV	150 mV
Residual ripple peak-peak, typ.	40 mV	50 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	240 mV	240 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	100 mV	200 mV
Adjustment range	22 ... 29 V	22 ... 29 V
Product function Output voltage adjustable	Yes	Yes
Output voltage setting	via potentiometer	via potentiometer
Status display	Green LED for 24 V OK	Green LED for 24 V OK
On/off behavior	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)
Startup delay, max.	2 s	2 s
Voltage rise, typ.	40 ms	40 ms
Rated current value $I_{out\ rated}$	5 A	10 A
Current range	0 ... 5 A	0 ... 10 A
Supplied active power typical	120 W	240 W
Short-term overload current		
• on short-circuiting during the start-up typical	20 A	35 A
• at short-circuit during operation typical	20 A	35 A
Duration of overloading capability for excess current		
• on short-circuiting during the start-up	500 ms	700 ms
• at short-circuit during operation	500 ms	700 ms
Parallel switching for enhanced performance	Yes	Yes
Numbers of parallel switchable units for enhanced performance	2	2
Efficiency		
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	88 %	89 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	17 W	30 W
Closed-loop control		
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	0.3 %	0.3 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	0.5 %	0.6 %
Load step setting time 50 to 100%, typ.	0.1 ms	0.1 ms
Load step setting time 100 to 50%, typ.	0.1 ms	0.2 ms
Protection and monitoring		
Output overvoltage protection	Additional control loop, shutdown at approx. 33 V, automatic restart	Additional control loop, shutdown at approx. 33 V, automatic restart
Current limitation	5.5 ... 6.5 A	11 ... 13 A
Property of the output Short-circuit proof	Yes	Yes
Short-circuit protection	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart
Enduring short circuit current RMS value		
• maximum	5 A	10 A
Overload/short-circuit indicator	-	-
Safety		
Primary/secondary isolation	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I	Class I
Leakage current		
• maximum	3.5 mA	3.5 mA
• typical	0.26 mA	0.27 mA
CE mark	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259

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Technical specifications (continued)

Article number	6EP1333-1AL12	6EP1334-1AL12
Product	**SITOP power**	**SITOP power**
Power supply, type	**24 V/5 A**	**24 V/10 A**
Explosion protection	-	-
FM approval	-	-
CB approval	No	No
Marine approval	-	-
Degree of protection (EN 60529)	IP20	IP20
EMC		
Emitted interference	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	-	-
Noise immunity	EN 61000-6-2	EN 61000-6-2
Operating data		
Ambient temperature		
• during operation	0 ... 60 °C	0 ... 60 °C
- Note	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation
Mechanics		
Connection technology	screw-type terminals	screw-type terminals
Connections		
• Supply input	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm^2 single-core/finely stranded
• Output	L+, M: 3 screw terminals each for 0.5 ... 2.5 mm^2	L+, M: 3 screw terminals each for 0.5 ... 2.5 mm^2
• Auxiliary	-	-
Width of the enclosure	160 mm	160 mm
Height of the enclosure	130 mm	130 mm
Depth of the enclosure	60 mm	60 mm
Weight, approx.	0.6 kg	0.72 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15
MTBF at 40 °C	1 250 000 h	1 176 471 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SITOP power 1-phase, 24 V DC/5 A Special Line stabilized power supply Input: 120 ... 230 V AC Output: 24 V DC/5 A	**6EP1333-1AL12**
SITOP power 1-phase, 24 V DC/10 A Special Line Stabilized power supply Input: 120 ... 230 V AC Output: 24 V DC/10 A	**6EP1334-1AL12**

Accessories

	Article No.
SITOP power mounting bracket 90 degree 35 mm DIN rail, M5 fixing screws, for Special Line flat	**6EP1971-1AA01**

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3-phase, 24 V DC (SITOP PSU300E)

Overview



Slimline 3-phase power supply for low power ratings

The SITOP PSU300E 3-phase power supply is designed with a 5 A output current for 24 V applications with low power requirements. The metal enclosure is only 42 mm wide and does not require any lateral gap to other devices on the DIN rail. This is made possible by the low heat dissipation (90% efficiency). The wide-range input from 320 V to 550 V AC permits mains buffering times of 50 ms and thus allows the supply to be used in unstable three-phase networks, thanks to UL certification also in North America. The removable plug-in terminals simplify the AC and DC connection.

Technical specifications

Article number	**6EP1433-0AA00**
Product	**SITOP PSU300E**
Power supply, type	**24 V/5 A**
Input	
Input	3-phase AC
Rated voltage value $V_{in\ rated}$	400 ... 500 V
Voltage range AC	320 ... 550 V
Wide-range input	Yes
Mains buffering at $I_{out\ rated}$, min.	50 ms; at V_{in} = 400 V
Rated line frequency 1	50 Hz
Rated line frequency 2	60 Hz
Rated line range	47 ... 63 Hz
Input current	
• at rated input voltage 400 V	0.36 A
• at rated input voltage 500 V	0.29 A
Switch-on current limiting (+25 °C), max.	15 A
I^2t, max.	0.9 $A^2 \cdot s$
Built-in incoming fuse	none
Protection in the mains power input (IEC 898)	Required: 3-pole connected miniature circuit breaker 6 A characteristic B or C or circuit breaker 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489)

Article number	**6EP1433-0AA00**
Product	**SITOP PSU300E**
Power supply, type	**24 V/5 A**
Output	
Output	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V
Total tolerance, static ±	3 %
Static mains compensation, approx.	3 %
Static load balancing, approx.	3 %
Residual ripple peak-peak, max.	150 mV
Residual ripple peak-peak, typ.	35 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	240 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	70 mV
Adjustment range	24 ... 29 V
Product function Output voltage adjustable	Yes
Output voltage setting	via potentiometer; max. 120 W
Status display	Green LED for 24 V OK
Signaling	Relay contact (NO contact, rating 60 V DC/ 0.3 A) for "24 V OK"
On/off behavior	Overshoot of V_{out} approx. 3 %
Startup delay, max.	0.5 s
Voltage rise, typ.	10 ms
Voltage increase time of the output voltage maximum	100 ms
Rated current value $I_{out\ rated}$	5 A
Current range	0 ... 5 A
Supplied active power typical	120 W
Short-term overload current	
• on short-circuiting during the start-up typical	33 A
• at short-circuit during operation typical	28 A
Duration of overloading capability for excess current	
• on short-circuiting during the start-up	140 ms
• at short-circuit during operation	135 ms
Parallel switching for enhanced performance	No
Efficiency	
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	90 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	13 W
Closed-loop control	
Dynamic mains compensation ($V_{in\ rated}$ ±15 %), max.	3 %
Dynamic load smoothing (I_{out}: 50/100/50 %), U_{out} ± typ.	5 %
Load step setting time 50 to 100%, typ.	1 ms
Load step setting time 100 to 50%, typ.	1 ms
Dynamic load smoothing (I_{out}: 10/90/10 %), U_{out} ± typ.	1 %
Load step setting time 10 to 90%, typ.	1 ms
Load step setting time 90 to 10%, typ.	1 ms
Setting time maximum	30 ms

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Technical specifications (continued)

Article number	**6EP1433-0AA00**
Product	**SITOP PSU300E**
Power supply, type	**24 V/5 A**
Protection and monitoring	
Output overvoltage protection	Yes, according to EN 60950-1
Current limitation, typ.	11 A
Property of the output Short-circuit proof	Yes
Short-circuit protection	Electronic shutdown, automatic restart
Enduring short circuit current RMS value	
• maximum	7.5 A
Safety	
Primary/secondary isolation	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I
CE mark	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259
Explosion protection	-
FM approval	-
CB approval	Yes
Marine approval	-
Degree of protection (EN 60529)	IP20
EMC	
Emitted interference	EN 55022 Class A
Supply harmonics limitation	EN 61000-3-2
Noise immunity	EN 61000-6-2
Operating data	
Ambient temperature	
• during operation	0 ... 60 °C
- Note	with natural convection
• during transport	-40 ... +85 °C
• during storage	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation
Mechanics	
Connection technology	screw-type terminals
Connections	
• Supply input	L1, L2, L3, PE: Removable screw terminal for 0.5 ... 2.5 mm² single-core/finely stranded
• Output	+, -: 2 screw terminals each for 0.5 ... 2.5 mm²
• Auxiliary	13, 14 (alarm signal): 1 screw terminal each for 0.5 ... 2.5 mm²
Product function	
• removable terminal at input	Yes
• removable terminal at output	Yes
Width of the enclosure	42 mm
Height of the enclosure	125 mm
Depth of the enclosure	125 mm
Weight, approx.	0.6 kg
Product feature of the enclosure housing for side-by-side mounting	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15
MTBF at 40 °C	2 389 441 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SITOP PSU300E 3-phase, 24 V/5 A DC Stabilized power supply Input: 400 ... 500 V 3 AC Output: 24 V DC/5 A	**6EP1433-0AA00**

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Notes

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Add-on modules



10/2 **Introduction**
10/3 Redundancy module
10/6 Selectivity module
10/10 Buffer module
10/12 Inrush current limiter

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Introduction

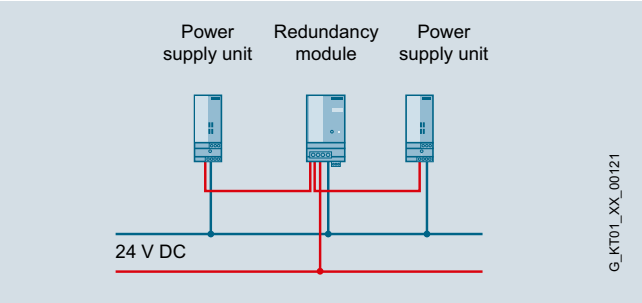
Overview



Expansion modules for increasing system availability

A power supply unit on its own cannot guarantee fault-free 24 V supply. Power failures, extreme variations in the mains voltage, or a faulty load can bring plant operation to a standstill and cause high costs. The add-on modules offer everything from extensive protection against interference on the primary and secondary side right up to complete all-round protection.

Redundancy modules – for doubling system availability

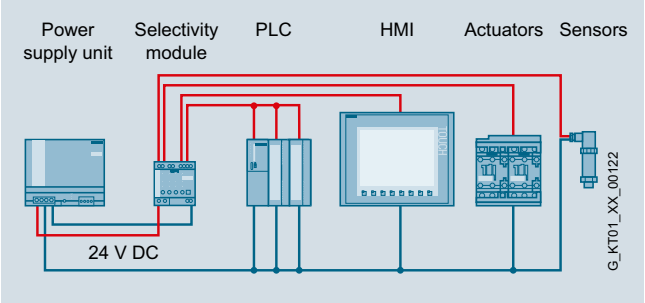


SITOP redundancy module

Advantages of the redundancy modules

- High availability of the 24 V supply thanks to redundant configuration
- Power is reliably supplied even when a power supply fails
- Compact redundancy modules for power supplies up to 40 A
- Redundancy module 24 V/NEC Class 2 with limiting to 100 VA
- Diagnostic signal via LED and signaling contacts
- Adjustable switching threshold for LED and signaling contacts

Selectivity modules – for protection of 24 V feeds

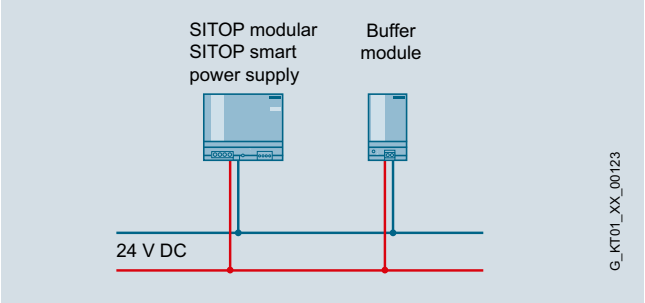


SITOP selectivity module

Advantages of selectivity modules

- Reliable detection of overload or short-circuit in the 24 V circuit
- Reliable shutdown in case of overload regardless of cable lengths or cross-sections
- Four load feeders per module
- Versions with adjustable threshold from 0.5 to 3 A or 3 to 10 A
- Sequential connection of feeds is possible to reduce inrush current
- Diagnostics via group signaling contact or single-channel signaling
- Evaluation via free-of-charge SIMATIC S7 function blocks for modules with single-channel signaling

Buffer module – bridging power failures for as long as seconds



SITOP buffer module

Advantages of the buffer module

Power failures normally only last for fractions of a second, but they can still cause costly and time-consuming damage in sensitive production areas. In combination with SITOP smart and SITOP modular power supply units, the buffer module bridges short voltage dips of this type with its electrolytic capacitors and ensures uninterrupted operation.

More information

Select the appropriate power supply quickly and easily with the SITOP Selection Tool:

http://www.siemens.com/sitop-selection-tool

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Overview



The SITOP PSE202U redundancy modules are the optimal extension for all 24 V power supplies to ensure additional protection from failure of the 24 V supply. The redundancy module continuously monitors the power supply units and, in the event that one unit fails, the other unit automatically takes over the 24 V power supply. Additionally, a signal is sent via a signaling contact that can be evaluated by a controller, PC, or control system.

Benefits

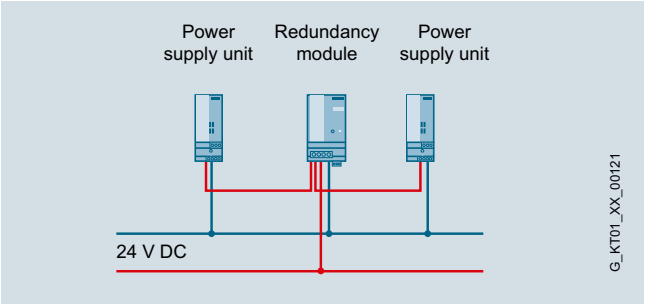
- High availability of the 24 V supply thanks to redundant configuration
- Power is reliably supplied even when a power supply fails
- Compact redundancy modules for power supply units up to 40 A
- Redundancy module 24 V/NEC Class 2 with limiting to 100 VA
- Diagnostic signal via LED and signaling contacts
- Adjustable switching threshold for LED and signaling contacts

Application

The redundancy module decouples two 24 V power supplies of the same type so that the loads are still supplied by the second power supply (1 + 1 redundancy) in case one of the two power supplies fails.

Redundancy modules support parallel switching of power supplies of the same type to increase performance while offering redundancy at the same time (N + 1 redundancy).

You can use the NEC Class 2 redundancy module to implement a redundant 24 V supply limited to an output power of 100 VA.



Design

For redundant configuration of a 24 V supply, the redundancy module decouples two SITOP 24 V power supplies of the same type by means of diodes in parallel operation. Depending on the output current of the power supplies, 1 to 2 redundancy modules may be required.

Function

Monitoring

The redundancy module continuously monitors the output voltage of the connected power supplies. The switching threshold of 20 to 25 V can be set on the device. A signal indicates if the output voltage of one of the two power supplies sinks to the set value or below.

Signaling

The LED on the device and a changeover contact signal a faulty power supply.

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Technical specifications

Article number	6EP1962-2BA00	6EP1964-2BA00	6EP1961-3BA21
Product	**SITOP PSE202U**	**SITOP PSE202U**	**SITOP PSE202U**
Input			
Input	DC voltage	DC voltage	DC voltage
Supply voltage			
• at DC	24 ... 24 V	24 ... 24 V	24 ... 24 V
Input voltage			
• at DC	19 ... 29 V	19 ... 29 V	24 ... 28.8 V
Output			
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V	24 V	24 V
Output voltage	V_{in} - approx. 0.5 V	V_{in} - approx. 0.5 V	V_{in} - approx. 0.5 V
Product function Output voltage adjustable	No	No	No
Status display	Green LED for "both input voltages > switching threshold"; red LED for "at least one input voltage < switching threshold" or "output switched off"	Green LED for "both Input voltages > switching threshold"; red LED: for "at least one input voltage < switching threshold"	Green LED for "both Input voltages > switching threshold"; red LED: for "at least one input voltage < switching threshold"
Signaling	Isolated relay contact (contact rating 6 A/42 V AC, 30 V DC, but max. 100 VA): Contact closed if one or both input voltages < switching threshold or output is switched off. Setting range of switching threshold 20 V ±0.5 V to 25 V ±0.5 V	Isolated relay contact (contact rating 6 A/42 V AC, 30 V DC): Contact closed if both input voltages > switching threshold, setting range of switching threshold 20 V ± 0.5V to 25 V ± 0.5V	Isolated relay contact (changeover contacts, rating 8 A/240 V AC, 24 V DC): Signals OK if both input voltages > switching threshold, setting range of threshold 20 ... 25 V
Rated current value $I_{out\ rated}$	3.8 A	10 A	40 A
Current range	4.6 A	10 A	40 A
• Note	Maximum aggregate current in the event of an error according to NEC class 2 limit 8 A	max. aggregate current 10 A	max. aggregate current 40 A
Efficiency			
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	94.8 %	97.1 %	-
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	5 W	3.6 W	-
Power loss [W] during no-load operation maximum	2 W	1 W	-
Safety			
Galvanic isolation	yes, SELV acc. to EN 60950-1 (relay contact)	yes, SELV acc. to EN 60950-1 (relay contact)	yes, SELV acc. to EN 60950-1 (relay contact)
Protection class	Class III	Class III	Class I
CE mark	Yes	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259; UL-Recognized (UL 60950-1, NEC class 2), File E151273	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259
Explosion protection	-	-	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nAC IIC T4; cCSAus (CSA C22.2 No. 213, ANSI/ISA-12.12.01) Class I, Div. 2, Group ABCD, T4
FM approval	-	-	-
CB approval	No	No	No
Marine approval	-	-	GL, ABS
Degree of protection (EN 60529)	IP20	IP20	IP20
EMC			
Emitted interference	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B
Noise immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Operating data			
Ambient temperature			
• during operation	-20 ... +70 °C	-20 ... +70 °C	-25 ... +60 °C
- Note	with natural convection	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation

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Technical specifications (continued)

Article number	6EP1962-2BA00	6EP1964-2BA00	6EP1961-3BA21
Product	**SITOP PSE202U**	**SITOP PSE202U**	**SITOP PSE202U**
Mechanics			
Connection technology	screw-type terminals	screw-type terminals	screw-type terminals
Connections			
• Supply input	Input, output and ground: removable screw terminal, each 1 x 0.5 ... 2.5 mm^2 single-core/ finely stranded	Input, output and ground: removable screw terminal, each 1 x 0.5 ... 2.5 mm^2 single-core/ finely stranded	Input, output and ground: 1 screw terminal each for 0.33 ... 10 mm^2 single-core/finely stranded
• Auxiliary	Relay contact: 2 screw terminal for 0.5 ... 2.5 mm^2 single-core/ finely stranded	Relay contact: 2 screw terminal for 0.5 ... 2.5 mm^2 single-core/ finely stranded	Relay contact: 3 screw terminal for 0.5 ... 2.5 mm^2 single-core/ finely stranded
Width of the enclosure	30 mm	30 mm	70 mm
Height of the enclosure	80 mm	80 mm	125 mm
Depth of the enclosure	100 mm	100 mm	125 mm
Weight, approx.	0.125 kg	0.125 kg	0.5 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes	Yes
Installation	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15
Electrical accessories	Removable spring-type terminal 6EP1971-5BA00	Removable spring-type terminal 6EP1971-5BA00	-
MTBF at 40 °C	678 210 h	3 273 000 h	6 471 654 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SITOP PSE202U redundancy module Input/output: 24 V DC/40 A suitable for decoupling two SITOP power supplies with a maximum of 20 A output current	**6EP1961-3BA21**
SITOP PSE202U redundancy module Input/output: 24 V DC/NEC Class 2 suitable for decoupling two SITOP power supplies output power limited < 100 VA	**6EP1962-2BA00**
SITOP PSE202U redundancy module Input/output: 24 V DC/10 A suitable for decoupling two SITOP power supplies with a maximum of 5 A output current	**6EP1964-2BA00**

Accessories

	Article No.
Device labeling plates	**3RT1900-1SB20**

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Selectivity module

Overview



Selectivity and rapid fault localization in 24 V feeders

The SITOP PSE200U and SITOP select selectivity modules are the optimal expansion for all 24 V power supplies to distribute the load current to several feeders and to monitor it. Overload and short-circuit in one or more feeders is reliably detected and signaled.

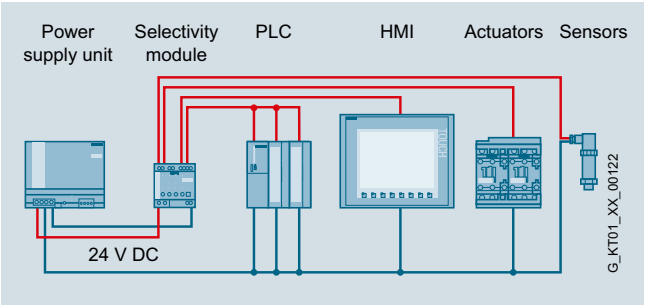
The electronics permit brief current peaks caused, for example, by high inrush currents, but disconnects feeders in the event of an extended overload. This is ensured even on high-resistance lines and in the case of "creeping" short-circuits. In such cases, miniature circuit breakers fail to trip, or trip too late, even if the power supply unit could deliver the required tripping current. The SITOP expansion module continues to supply the intact feeders with 24 V absolutely free of interruptions and feedback – a feature which avoids a possible total system failure.

Benefits

- Reliable shutdown in case of overload regardless of cable lengths or cable cross-sections
- 4 load feeders per module with individually adjustable response threshold for each output
- Two versions for remote diagnostics: Group signaling contact or single-channel signaling
- Evaluation via free-of-charge SIMATIC S7 function blocks (S7-1500/1200/300/400) for modules with single-channel signaling (PSE200U)
- LEDs for rapid on-site fault localization
- Remote reset possible from a central location (PSE200U)
- Simple commissioning thanks to manual switch on/off of outputs (PSE200U)
- Sequential connection of feeders to reduce total inrush current
- Sealable transparent cover over adjusters for currents and times protects against maladjustment (PSE200U)

Application

The selectivity module is used in conjunction with 24 V power supplies to distribute the load current over several feeders and to monitor the individual currents. Faults in individual circuits caused by overload or short-circuit are detected and selectively switched off so that further load current paths remain unaffected by the fault. This achieves fast fault diagnostics and minimizes downtimes.



Design

The selectivity module is specially designed for the response of switched-mode power supply units and the 24 V DC feeders to be supplied. Individual setting of the current allows optimum adaptation to the respective feeder.

Function

Monitoring

The current per output is monitored by the selectivity modules; if the set threshold of the output is exceeded, the output is switched off according to a predefined time-current characteristic curve. In addition, the supplying 24 V input voltage is constantly being monitored. As soon as this voltage threatens to fail, the path with a higher current than the set threshold is disconnected immediately. All other feeders continue to be supplied without interruption.

Signaling

Signaling of the faulty feeder takes place by the LEDs on the device as well as via group signaling contact or single-channel signaling. The selectivity module with single-channel signaling outputs the status of the 4 outputs cyclically by means of a serial code which can be read in by a digital PLC input.

Free function blocks for SIMATIC S7-300/400/1200/1500 for STEP 7 and TIA Portal as well as SIMOTION CPUs with SIMOTION SCOUT are available for evaluation. This enables simple integration into the S7 diagnostics and host control or HMI systems.

More information, as well as the function blocks for download, can be found at:

SIMATIC S7:
http://support.automation.siemens.com/WW/view/en/61450284

SIMOTION:
http://support.automation.siemens.com/WW/view/en/82555461

Connection and disconnection of the outputs

During device startup you can select between simultaneous connection of all outputs as well as sequential connection or load-dependent connection of the outputs (to reduce the peak inrush currents).

Each output can be manually connected and disconnected on the device (for example, for commissioning or service). Disconnected outputs can be connected by means of remote reset (24 V input). Prerequisite is that the outputs were not disconnected manually on the device.

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Technical specifications

Article number	6EP1961-2BA11	6EP1961-2BA31	6EP1961-2BA21	6EP1961-2BA41	6EP1961-2BA00
Product brand name	SITOP PSE200U	SITOP PSE200U	SITOP PSE200U	SITOP PSE200U	SITOP select
Type of current supply	Selectivity module, 4 x 3 A Common signal contact	Selectivity module, 4 x 3 A Single-channel signaling	Selectivity module, 4 x 10 A Common signal contact	Selectivity module, 4 x 10 A Single-channel signaling	Diagnosis module, 4 x 10 A
Input					
Input	Controlled DC voltage	Controlled DC voltage	Controlled DC voltage	Controlled DC voltage	Controlled DC voltage (SITOP select is not designed for operation with DC UPS module 40 A (6EP1 931-2FC21/ -2FC42)
Supply voltage at DC Rated value	24 V	24 V	24 V	24 V	24 V
Input voltage at DC	22 ... 30 V	22 ... 30 V	22 ... 30 V	22 ... 30 V	22 ... 30 V
Overvoltage resistance	35 V	35 V	35 V	35 V	35 V; 100 ms
Input current	12 A	12 A	40 A	40 A	40 A
Output					
Output	controlled DC voltage	controlled DC voltage	controlled DC voltage	controlled DC voltage	controlled DC voltage
Output voltage	V_{in} - approx. 0.2 V	V_{in} - approx. 0.2 V	V_{in} - approx. 0.2 V	V_{in} - approx. 0.2 V	V_{in} - approx. 0.3 V
Overall tolerance	In accordance with the supplying input voltage	In accordance with the supplying input voltage	In accordance with the supplying input voltage	In accordance with the supplying input voltage	In accordance with the supplying input voltage
Number of outputs	4	4	4	4	4
Output current up to 60 °C per output	3 A	3 A	10 A	10 A	10 A
Adjustable pick-up value current of the current-dependent overload release	0.5 ... 3 A	0.5 ... 3 A	3 ... 10 A	3 ... 10 A	2 ... 10 A
Type of response value setting	via potentiometer	via potentiometer	via potentiometer	via potentiometer	via potentiometer
Product feature parallel switching of outputs	No	No	No	No	No
Product feature bridging of equipments	Yes	Yes	Yes	Yes	Yes
Type of outputs connection	Simultaneous connection of all outputs after power up of the supply voltage > 20 V, delay time of 25 ms, 100 ms or adjustable "load optimised" via DIP switch for sequential connection	Simultaneous connection of all outputs after power up of the supply voltage > 20 V, delay time of 25 ms, 100 ms or adjustable "load optimised" via DIP switch for sequential connection	Simultaneous connection of all outputs after power up of the supply voltage > 20 V, delay time of 25 ms, 100 ms or adjustable "load optimised" via DIP switch for sequential connection	Simultaneous connection of all outputs after power up of the supply voltage > 20 V, delay time of 25 ms, 100 ms or adjustable "load optimised" via DIP switch for sequential connection	Simultaneous connection of all outputs after power up of the supply voltage, delay time of 24 ms or 100 ms program-mable for sequential connection
Efficiency					
Efficiency in percent	97 %	97 %	99 %	99 %	97 %
Power loss at rated output current typical	9 W	9 W	10 W	10 W	30 W
Switch-off characteristic per output					
Switching characteristic					
• of the excess current	I_{out} = 1.0 ...1.5 x set value, switch-off after approx. 5 s	I_{out} = 1.0 ...1.5 x set value, switch-off after approx. 5 s	I_{out} = 1.0 ...1.5 x set value, switch-off after approx. 5 s	I_{out} = 1.0 ...1.5 x set value, switch-off after approx. 5 s	I_{out} = 1.0 ...1.3 x set value, switch-off after approx. 5 s
• of the current limitation	I_{out} = 1.5 x set value, switch-off not before typ. 100 ms	I_{out} = 1.5 x set value, switch-off not before typ. 100 ms	I_{out} = 1.5 x set value, switch-off not before typ. 100 ms	I_{out} = 1.5 x set value, switch-off not before typ. 100 ms	I_{out} = 1.3 x set value, switch-off after approx. 50 ... 100 ms
• of the immediate switch-off	I_{out} > set value and V_{in} < 20 V, switch-off after approx. 0.5 ms	I_{out}> set value and V_{in} < 20 V, switch-off after approx. 0.5 ms	I_{out} > set value and V_{in} < 20 V, switch-off after approx. 0.5 ms	I_{out} > set value and V_{in} < 20 V, switch-off after approx. 0.5 ms	I_{out} > set value and V_{in} < 20 V, switch-off after approx. 0.5 ms
Residual current at switch-off typical					20 mA
Design of the reset device/resetting mechanism	via sensor per output	via sensor per output	via sensor per output	via sensor per output	Using keys on the module
Remote reset	Non-electrically isolated 24 V input (signal level "high" at > 15 V)	Non-electrically isolated 24 V input (signal level "high" at > 15 V)	Non-electrically isolated 24 V input (signal level "high" at > 15 V)	Non-electrically isolated 24 V input (signal level "high" at > 15 V)	-

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Technical specifications (continued)

Article number	6EP1961-2BA11	6EP1961-2BA31	6EP1961-2BA21	6EP1961-2BA41	6EP1961-2BA00
Product brand name	SITOP PSE200U	SITOP PSE200U	SITOP PSE200U	SITOP PSE200U	SITOP select
Type of current supply	Selectivity module, 4 x 3 A Common signal contact	Selectivity module, 4 x 3 A Single-channel signaling	Selectivity module, 4 x 10 A Common signal contact	Selectivity module, 4 x 10 A Single-channel signaling	Diagnosis module, 4 x 10 A
Protection and monitoring					
Built-in fuse	5 A per output (not accessible)	5 A per output (not accessible)	15 A per output (not accessible)	15 A per output (not accessible)	Blade-type fuse per output (equipped when delivered with 15 A fuse)
Status display	Three-color LED per output: green LED for "Output switched through"; yellow LED for "Output switched off manually"; red LED for "Output switched off due to overcurrent"	Three-color LED per output: green LED for "Output switched through"; yellow LED for "Output switched off manually"; red LED for "Output switched off due to overcurrent"	Three-color LED per output: green LED for "Output switched through"; yellow LED for "Output switched off manually"; red LED for "Output switched off due to overcurrent"	Three-color LED per output: green LED for "Output switched through"; yellow LED for "Output switched off manually"; red LED for "Output switched off due to overcurrent"	Two-color LED per output: green LED for "Output switched through"; red LED for "Output switched off due to overcurrent"
Signaling contact	Common signal contact (changeover contact, rating 0.1 A/ 24 V DC)	Status signal output (pulse/pause signal, can be evaluated via SIMATIC function block)	Common signal contact (changeover contact, rating 0.1 A/ 24 V DC)	Status signal output (pulse/pause signal, can be evaluated via SIMATIC function block)	Common signal contact (NO contact, rating 0.5 A/24 V DC)
Safety					
Galvanic isolation between input and output at switch-off	No	No	No	No	No
Protection class	Class III	Class III	Class III	Class III	Class III
CE marking	Yes	Yes	Yes	Yes	Yes
UL/cUL (CSA) approval	UL-Recognized (UL 2367) File E328600; cULus-Listed (UL 508, CSA C22.2 No. 107.1) File E197259	UL-Recognized (UL 2367) File E328600; cULus-Listed (UL 508, CSA C22.2 No. 107.1) File E197259	UL-Recognized (UL 2367) File E328600; cULus-Listed (UL 508, CSA C22.2 No. 107.1) File E197259	UL-Recognized (UL 2367) File E328600; cULus-Listed (UL 508, CSA C22.2 No. 107.1) File E197259	UL-Recognized (UL 2367) File E328600; cULus-Listed (UL 508, CSA C22.2 No. 107.1) File E197259; cURus (UL 60950, CSA C22.2 No. 60950) File E151273
Standard for safety	according to EN 60950-1 and EN 50178	according to EN 60950-1 and EN 50178	according to EN 60950-1 and EN 50178	according to EN 60950-1 and EN 50178	according to EN 60950-1 and EN 50178
Explosion protection	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cCSAus Class I, Div. 2, Group ABCD, T4	IECEx Ex nA IIC T4 Gc; ATEX (EX) II 3G Ex nA IIC T4 Gc; cCSAus Class I, Div. 2, Group ABCD, T4	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cCSAus Class I, Div. 2, Group ABCD, T4	IECEx Ex nA IIC T4 Gc; ATEX (EX) II 3G Ex nA IIC T4 Gc; cCSAus Class I, Div. 2, Group ABCD, T4	ATEX (EX) II 3G Ex nAC IIC T4 U; cCSAus Class I, Div. 2, Group ABCD, T4
Shipbuilding approval	GL, ABS	GL, ABS	GL, ABS	GL, ABS	-
Protection class (EN 60529)	IP20	IP20	IP20	IP20	IP20
EMC					
Emitted interference	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B
Noise immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Operating data					
Ambient temperature					
• during operation	0 ... 60 °C	0 ... 60 °C	0 ... 60 °C	0 ... 60 °C	0 ... 60 °C
- Note	with natural convection	with natural convection	with natural convection	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Environmental category acc. to IEC 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation

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Technical specifications (continued)

Article number	6EP1961-2BA11	6EP1961-2BA31	6EP1961-2BA21	6EP1961-2BA41	6EP1961-2BA00
Product brand name	**SITOP PSE200U**	**SITOP PSE200U**	**SITOP PSE200U**	**SITOP PSE200U**	**SITOP select**
Type of current supply	**Selectivity module, 4 x 3 A Common signal contact**	**Selectivity module, 4 x 3 A Single-channel signaling**	**Selectivity module, 4 x 10 A Common signal contact**	**Selectivity module, 4 x 10 A Single-channel signaling**	**Diagnosis module, 4 x 10 A**
Mechanics					
Type of electrical connection	screw-type terminals	screw-type terminals	screw-type terminals	screw-type terminals	screw-type terminals
• at input	+24 V: 2 screw terminals for 0.5 ... 10 mm^2; 0 V: 2 screw terminals for 0.5 ... 4 mm^2	+24 V: 2 screw terminals for 0.5 ... 10 mm^2; 0 V: 2 screw terminals for 0.5 ... 4 mm^2	+24 V: 2 screw terminals for 0.5 ... 10 mm^2; 0 V: 2 screw terminals for 0.5 ... 4 mm^2	+24 V: 2 screw terminals for 0.5 ... 10 mm^2; 0 V: 2 screw terminals for 0.5 ... 4 mm^2	+24 V: 2 screw terminals for 0.33 ... 10 mm^2; 0 V: 2 screw terminals for 0.22 ... 4 mm^2
• at output	Output 1 ... 4: 1 screw terminal each for 0.5 ... 4 mm^2	Output 1 ... 4: 1 screw terminal each for 0.5 ... 4 mm^2	Output 1 ... 4: 1 screw terminal each for 0.5 ... 4 mm^2	Output 1 ... 4: 1 screw terminal each for 0.5 ... 4 mm^2	Output 1 ... 4: 1 screw terminal each for 0.22 ... 4 mm^2
• for signaling contact	3 screw terminals for 0.5 ... 4 mm^2	1 screw terminals for 0.5 ... 4 mm^2	3 screw terminals for 0.5 ... 4 mm^2	1 screw terminals for 0.5 ... 4 mm^2	2 screw terminals for 0.22 ... 4 mm^2
• for auxiliary contacts	Remote reset: 1 screw terminal for 0.5 ... 4 mm^2	Remote reset: 1 screw terminal for 0.5 ... 4 mm^2	Remote reset: 1 screw terminal for 0.5 ... 4 mm^2	Remote reset: 1 screw terminal for 0.5 ... 4 mm^2	-
Width of the enclosure	72 mm	72 mm	72 mm	72 mm	72 mm
Height of the enclosure	80 mm	80 mm	80 mm	80 mm	90 mm
Depth of the enclosure	72 mm	72 mm	72 mm	72 mm	90 mm
Installation width	72 mm	72 mm	72 mm	72 mm	72 mm
Mounting height	180 mm	180 mm	180 mm	180 mm	190 mm
Net weight	0.2 kg	0.2 kg	0.2 kg	0.2 kg	0.4 kg
Mounting type	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15
Product component belonging to	-	-	-	-	4x blade-type fuse 15 A
Mechanical accessories	Device identification label 20 mm × 7 mm, pale turquoise 3RT1900-1SB20	Device identification label 20 mm × 7 mm, pale turquoise 3RT1900-1SB20	Device identification label 20 mm × 7 mm, pale turquoise 3RT1900-1SB20	Device identification label 20 mm × 7 mm, pale turquoise 3RT1900-1SB20	-
MTBF at 40 °C	755 915 h	755 915 h	540 979 h	540 979 h	378 928 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SITOP PSE200U 3 A	
4-channel selectivity module Input: 24 V AC Output: 24 V DC/3A per channel output current adjustable 0.5 ... 3 A	
• With common alarm signal	**6EP1961-2BA11**
• With single-channel signaling	**6EP1961-2BA31**
SITOP PSE200U 10 A	
4-channel selectivity module Input: 24 V AC Output: 24 V DC/10 A per channel output current adjustable 3 ... 10 A	
• With common alarm signal	**6EP1961-2BA21**
• With single-channel signaling	**6EP1961-2BA41**
SITOP select	**6EP1961-2BA00**
4-channel Input: 24 V DC Output: 24 V DC/10 A per channel Adjustable output current 2 ... 10 A	

Accessories

	Article No.
Device labels	**3RT1900-1SB20**

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Buffer module

Overview



The SITOP PSE201U buffer module bypasses short-term power failures lasting a few seconds and can be used with all 24 V power supplies of the SITOP smart or SITOP modular product lines. The buffer module is equipped with maintenance-free capacitors and automatically takes over the 24 V power supply in case of a power supply failure.

The SITOP DC UPS modules offer protection in the event of extended power failures. The maintenance-free **DC UPS with capacitors** are able to reliably supply 24 V for several minutes, and the **DC UPS with battery modules** for several hours.

Benefits

- Bridging of short-term power failures in the time range of seconds
- Totally maintenance-free capacitors as energy storage
- Short charging times
- Parallel switching of several buffer modules possible
- Fast mounting onto standard rail and simple wiring

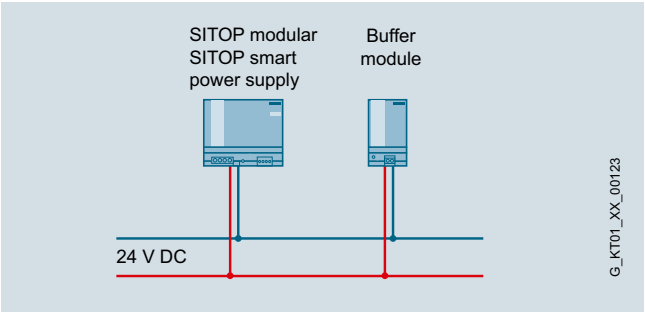
Application

With short-term power failures, the load current is backed up without interruption via the buffer module in combination with a SITOP smart or SITOP modular 24 V stabilized power supply.

Buffer times:

- 200 ms at 40 A
- 400 ms at 20 A
- 800 ms at 10 A

You can connect up to 8 buffer modules in parallel to extend the buffer time (max. 10 s).



Design

The buffer module is connected in parallel to the output of the SITOP smart or SITOP modular power supply. The connection to the power supply takes place via only 2 cables.

Function

Buffering

In case of a power failure, the buffer module supplies the load current for the 24 V power supply by means of its energy storage units. Maintenance-free capacitors are used as energy storage units.

Signaling

The LED on the device signals a supply voltage > 20.5 V.

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Technical specifications

Article No.	6EP1961-3BA01 SITOP PSE201U buffer module
Input/Output	Stabilized, isolated DC voltage
Rated voltage $U_{in\ rated}$	24 V DC
Voltage range	24 ... 28.8 V
Control input	-
Rated output voltage $U_{out\ rated}$	U_{in} – approx. 1 V
Rated current $I_{out\ rated}$	40 A
Mains buffering	Backup time: • With 40 A load current: 200 ms • With 20 A load current: 400 ms • With 10 A load current: 800 ms • With 5 A load current: 1.6 s Reduces the backup time by 100 ms in combination with 6EP1 437-3BA10.
Buffering time, max.	10 s
Protection and monitoring	
Current limiting, static	Typ. 40 A
Short-circuit protection	Electronically
Signaling/alarm signals	
Status display	Green LED for "Supply voltage > 20.5 V"
Signaling	-
Safety	
Galvanic isolation	Yes, SELV acc. to EN 60950-1
Safety class	Class I
Safety test	Yes
CE marking	Yes
UL/cUL (CSA) approval	UL-Listed (UL 508) File E197259, CSA (CSA C22.2 No. 14, CSA C22.2 No. 107.1)
Explosion protection	-
Degree of protection (EN 60529)	IP20
EMC	
Emitted interference	EN 55022 Class B
Noise immunity	EN 61000-6-2
Operating data	
Ambient temperature range	0 ... +60 °C with natural convection
Transport and storage temperature range	-40 ... +85°C
Humidity class	Climate class 3K3 according to EN 60721, no condensation
Mechanics	
Connections	One screw-type terminal each for + and - for 0.5 ... 10 mm^2 solid/finely stranded
Dimensions (W x H x D) in mm	70 x 125 x 125
Weight, approx.	1.2 kg
Mounting	Can be snapped onto standard mounting rail EN 60715 35x7.5/15

Ordering data

	Article No.
SITOP PSE201U buffer module For SITOP smart and SITOP modular buffer time 100 ms to 10 s dependent on load current	**6EP1961-3BA01**
Accessories	
Device labeling plates	**3RT1900-1SB20**

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Inrush current limiter

Overview



The SITOP inrush current limiter is used to reliably reduce the starting currents that are caused, for example, by transformers or with pulse-controlled power supplies by the rectifier circuit on the input side with capacitor charging.

In 1-phase AC networks, it is supplied with rated voltages of 100 V, 120 V or 230 V and in 2-phase and 3-phase AC networks with rated voltages of 208 V to 480 V on the line side upstream of transformers or power supplies and it limits the inrush current independent of temperature, for example, up to 10 A at 230 V by means of an installed fixed resistor. In static operation, the limit resistance is bypassed after approx. 120 ms to reduce the power losses generated.

Technical specifications

Article number	6EP1967-2AA00
Input	AC voltage 1-phase, 2-phase, 50/60 Hz
Rated voltage $U_{in\ rated}$	100 ... 480 V AC
Voltage range	85 ... 575 V AC
Output	
Rated voltage $U_{out\ rated}$	In accordance with the supply voltage
Rated current $I_{out\ rated}$	Max. 10 A
Parallel switching for enhanced performance	No
Protection and monitoring	
Current limiting, static	-
Short-circuit protection	Must be ensured with an upstream protective device
Signaling/alarm signals	
Status display	Green LED
Alarm signals	-
Safety	In accordance with EN 60950-1 and EN 50178
Galvanic isolation	No
Safety class	Class II
CE marking	Yes
UL/cUL (CSA) approval	Yes, cULus-listed (UL 508, CSA C22.2 No. 107.1), File E197259
Degree of protection (EN 60529)	IP20
EMC	
Emitted interference	EN 61000-6-3
Noise immunity	EN 61000-6-2
Operating data	
Ambient temperature range	0 ... +60 °C with natural convection
Transport and storage temperature range	-40 ... +85 °C
Humidity class	Climate class 3K3 according to EN 60721, no condensation
Mechanics	
Connections	Input and output (L1, N): One screw terminal each for 0.2 ... 2.5 mm^2, solid/finely stranded
Dimensions (W x H x D) in mm	22.5 x 80 x 91
Weight, approx.	0.12 kg
Mounting	Can be snapped onto standard mounting rail EN 60715 35x7.5/15

Ordering data

	Article No.
SITOP making current limiter Ballast for SITOP power supplies Input: 100 … 480 V AC, 10 A max Output: 100 … 480 V AC, 10 A max	**6EP1967-2AA00**

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SITOP DC UPS
uninterruptible power supplies



11/2 **Introduction**

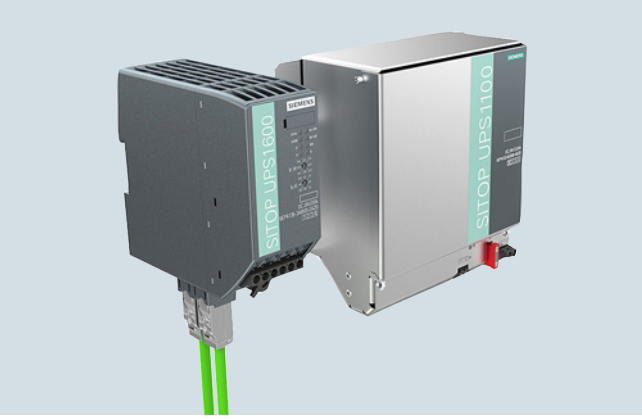
11/3 **DC UPS with capacitors**

11/10 **DC UPS with battery modules**
11/10 SITOP UPS1600 DC UPS modules
11/18 SITOP UPS1100 battery modules
11/22 SITOP DC UPS
11/28 DC UPS battery modules

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Introduction

Overview



SITOP offers a comprehensive portfolio to protect against power failures with durations from a few seconds to several hours, ranging from buffer modules to system-integrated DC UPS units. Selection is based on the energy storage unit used, the associated ambient conditions, performance and functionality.

The selection matrix should help you to find the right 24 V buffering for your application:

SITOP modules for 24 V buffering	Buffer module [1]	UPS500	UPS1600	DC UPS
Energy storage units				
24 V buffering up to	10 s	Minutes	Hours	Hours
Storage medium	Electrolytic capacitors	Double-layer capacitors	Lead-gel batteries, rechargeable lithium iron phosphate batteries	Lead-gel batteries
Lifetime dependent on temperature. The specified time refers to a fall to 50 % of the original capacity in the case of lead batteries and 80 % in the case of capacitors.	0 … +50 °C: > 8 years	… +50 °C: > 8 years	+20 … +40 °C: 4 ... 1 years (high-temperature rechargeable battery: +20 …+60 °C: > 10 ... 1 years)	+20 … +40 °C: 4 ... 1 years (high-temperature rechargeable battery: +20 … +60 °C: > 10 ... 1 years)
Temperature range	0 … +60 °C	0 … +60 °C	0 … +40 °C (high-temperature rechargeable battery: -40°…+60°C)	0 … +40 °C (high-temperature rechargeable battery: -40°…+60°C)
Ventilation required	-	-	•	•
Degree of protection	IP20	IP20/ IP65 (UPS500P)	IP00	IP00
UPS module/electronics				
Degree of protection	IP20	IP20/ IP65 (UPS500P)	IP20	IP20
Max. rated output current	40 A	15 A	40 A	40 A
Max. dynamic overload current	40 A (200 ms)	25 A (200 ms)	120 A (30 ms) / 60 A (5 s/min)	56 A (80 ms)
Interfaces	-	I/O, USB	I/O, USB, Ethernet/ PROFINET	I/O, serial, USB
Information about operation and diagnostics via				
• Signaling contact	-	•	•	•
• OPC servers	-	•	•	•
• Web server	-	-	•	-
• S7 function blocks	-	-	•	-
• WinCC faceplate	-	-	•	-
Shutdown of multiple PCs/ PLCs	-	-	•	-
Starting from the battery, without supply voltage (stand-alone mode)	-	-	•	-
Engineering via				
• Software tool (PC)	-	•	•	•
• TIA Portal	-	-	•	-

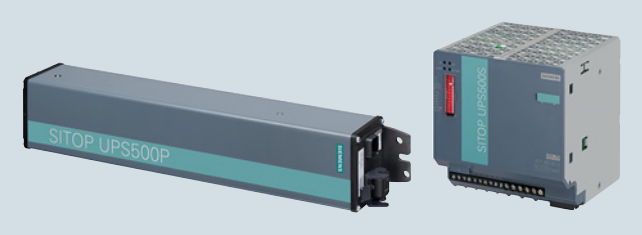
[1] for SITOP smart and SITOP modular power supply units

More information

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

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Overview



SITOP 24V power supplies can be expanded with a SITOP UPS500 uninterruptible DC power supply (DC UPS) for bridging short-term power failures in the order of minutes. For PC-based automation solutions, the high-capacity double-layer capacitors of the SITOP UPS500 supply enough energy to back up the operation and application data and to shut down software applications in a defined manner. You can increase the buffer times using SITOP PSU501S expansion modules (up to 3).

The IP65 version SITOP UPS500P in long metal housing is ideally suited to distributed use.

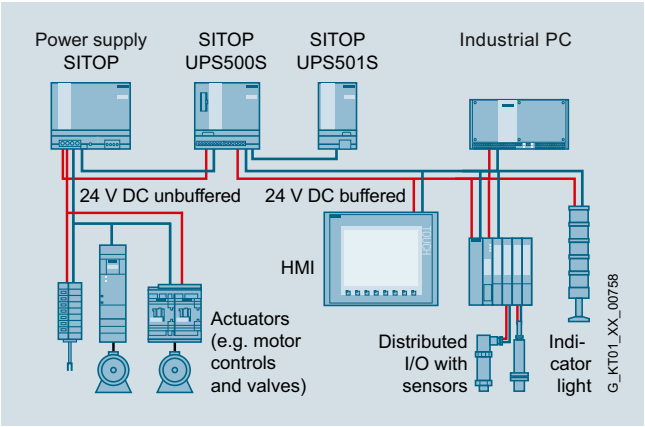
Benefits

- 24 V buffering for a few minutes to allow data to be backed up and applications to be closed.
- Absolutely maintenance-free
- Long lifetime, even at high temperatures
- High ambient temperatures up to +60 °C
- Short charging times
- No ventilation is required since no gas is emitted
- Distributed applications possible without control cabinet
- Software tool, free of charge, for easy configuring and integrating in PC-based systems

Application

The high-capacitance double-layer capacitors bridge power failures for a few minutes. The time is normally sufficient, for example, for the safe shutdown of PC-based automation systems. The USB interface and a free software tool enable easy communication with the PC.

The capacitors have an extremely long life even at high temperature, and can be used at ambient temperatures of up to 60 °C. SITOP UPS500P in IP65 degree of protection can also be installed outside the control cabinet in a distributed configuration.

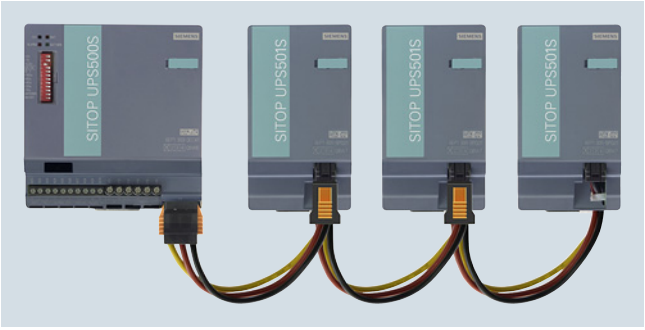


Configuration with SITOP UPS500S:
24 V buffering for backing up process data and performing a controlled shutdown of a PC. To relieve the load on the UPS, the actuators are supplied directly from the power supply unit.

Design

SITOP UPS500S

- Compact 24 V/ 15 A basic units with integrated energy storage units of 2.5 or 5 kW
- Digital inputs/outputs and USB interface
- For combination with up to three UPS501S expansion modules (5 kW each) to extend the buffering time
- Metal housing in IP20 degree of protection for mounting on standard rails

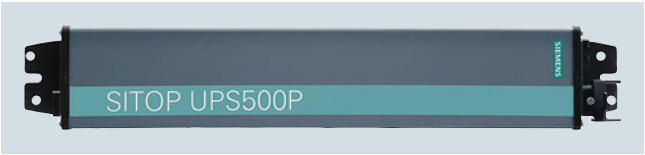


SITOP UPS501S expansion module

- Additional energy storage (5 kW)
- Up to 3 expansion modules can be connected to a SITOP UPS500S to extend the buffer times
- Can be easily connected to SITOP UPS500S via a user-friendly plug-in system
- Complete with balancing and safety circuits

SITOP UPS500P

- 24 V/ 7 A basic units with integrated energy storage units of 5 or 10 kW
- USB interface
- Rugged aluminum housing in IP65 degree of protection for distributed applications
- Screw mounting in all mounting positions



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Function

SITOP DC UPS software tool

Via the USB interface, all relevant messages about the status of the uninterruptible DC power supply can be transmitted to a PC (e.g. SIMATIC IPC). The DC UPS can also be configured via the USB interface.

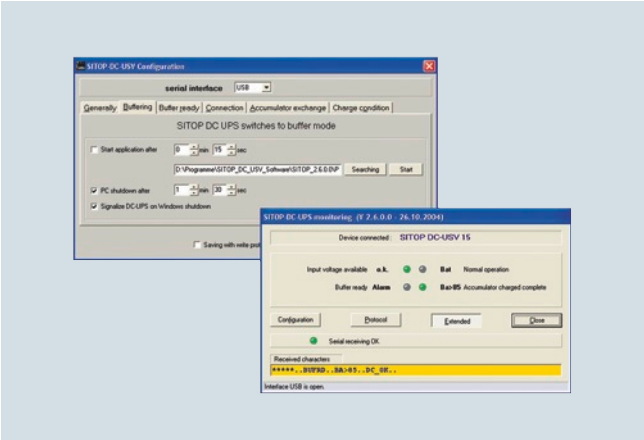
The SITOP DC UPS software provides the user with a free tool that is extremely easy to use for the purpose of monitoring and configuring the DC UPS. Signals sent from the uninterruptible DC power supply can be processed on the PC. In monitoring mode, the statuses of the uninterruptible DC power supply are visualized on the PC.

Safe shutdown in the event of a power failure and automatic PC restart are supported. It is also possible to freely define responses to the different operating states of the uninterruptible DC power supply, so that extremely flexible integration into a wide variety of applications is possible.

Overview of configuration possibilities:

- Times for shutting down the PC
- UPS switch-off
- Further processing of all signals, e.g. linking to proprietary software or WinCC flexible
- Monitoring and display of UPS operating status
- OPC server for linking signals to proprietary applications
- Automatic restarting of IPCs when power is restored during shutdown

The software runs under the operating systems Windows 2000, Windows XP, Windows Vista and Windows 7. Free download from:
http://support.automation.siemens.com/WW/view/en/48946053



Monitoring and configuration window of software V3 for SITOP DC UPS

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Technical specifications

The UPS500S can be extended to 20 kW using UPS501S expansion modules to extend the buffering time.

The table shows the maximum buffering time for the possible configurations and the two UPS500P units for different load currents.

The charging current can be set to 1 A or 2 A with the UPS500S.

Selection table SITOP UPS500 (optional with SITOP UPS501S expansion module) and mains buffering times

Buffering and charging times										
SITOP UPS500S/501S configurations									**UPS500P**	
Basic unit	2.5 kW	5 kW	2.5 kW	5 kW	2.5 kW	5 kW	2.5 kW	5 kW	5 kW	10 kW
Expansion modules	-	-	1 × 5 KWs	1 × 5 KWs	2 × 5 KWs	2 × 5 KWs	3 × 5 KWs	3 × 5 KWs	-	-
Total energy	2.5 kW	5 kW	7.5 kW	10 kW	12.5 kW	15 kW	17.5 kW	20 kW	5 kW	10 kW
Load current	**Buffer times**									
0.5 A	134 s	236 s	390 s	478 s	632 s	748 s	851 s	1007 s	284 s	647 s
0.8 A	90 s	167 s	266 s	346 s	440 s	527 s	580 s	706 s	190 s	435 s
1 A	75 s	138 s	219 s	296 s	365 s	414 s	490 s	572 s	153 s	351 s
2 A	38 s	76 s	122 s	156 s	203 s	230 s	265 s	306 s	80 s	152 s
3 A	26 s	52 s	82 s	106 s	136 s	159 s	186 s	213 s	53 s	108 s
4 A	19 s	39 s	61 s	81 s	101 s	120 s	139 s	160 s	40 s	84 s
5 A	15 s	31 s	49 s	65 s	81 s	95 s	111 s	130 s	30 s	68 s
6 A	12 s	26 s	40 s	55 s	67 s	80 s	94 s	106 s	25 s	57 s
7 A	10 s	21 s	34 s	47 s	58 s	69 s	81 s	82 s	21 s	49 s
8 A	8 s	18 s	29 s	40 s	50 s	59 s	69 s	79 s	-	-
10 A	6 s	15 s	23 s	32 s	39 s	47 s	54 s	62 s	-	-
12 A	4 s	12 s	19 s	26 s	32 s	38 s	44 s	52 s	-	-
15 A	3 s	9 s	14 s	20 s	25 s	30 s	35 s	40 s	-	-
Charing current	**Charging times**									
2 A	54 s	120 s	158 s	223 s	263 s	318 s	355 s	417 s	130 s	360 s
1 A	110 s	205 s	311 s	425 s	503 s	625 s	695 s	816 s	-	-

Important information for selecting the energy storage units:

When the mains buffering times were determined, the discharge period of new or non-aged, completely charged capacitors was used as a basis.

At a continuous ambient temperature of +50 °C, a loss of capacity of approx. 20% must be considered after a service life of 8 years.

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Technical specifications (continued)

Article number	6EP1933-2EC41	6EP1933-2EC51	6EP1933-2NC01	6EP1933-2NC11
Product brand name	SITOP UPS500S	SITOP UPS500S	SITOP UPS500P	SITOP UPS500P
Type of current supply	Basic unit 2.5 kWs	Basic unit 5 kWs	Basic unit 5 kWs	Basic unit 10 kWs
Input				
Supply voltage at DC Rated value	24 V	24 V	24 V	24 V
Voltage curve at input	DC	DC	DC	DC
input voltage range	22 ... 29 V DC	22 ... 29 V DC	22.5 ... 29 V DC	22.5 ... 29 V DC
Adjustable response value voltage for buffer connection preset	22.5 V	22.5 V	22.5 V	22.5 V
Adjustable response value voltage for buffer connection	22 ... 25.5 V; Adjustable in 0.5 V increments	22 ... 25.5 V; Adjustable in 0.5 V increments	-	-
Input current at rated input voltage 24 V Rated value	15.2 A; + approx. 2.3 A with empty energy storage (capacitor)	15.2 A; + approx. 2.3 A with empty energy storage (capacitor)	7 A; + approx. 2 A with empty energy storage (capacitor)	7 A; + approx. 2 A with empty energy storage (capacitor)
Mains buffering				
Type of energy storage	with capacitors	with capacitors	with capacitors	with capacitors
Design of the mains power cut bridging-connection	15 A for 3 s or 10 A for 6 s or 5 A for 15 s or 2 A for 38 s; longer buffering times with expansion modules	15 A for 9 s or 10 A for 15 s or 5 A for 31 s or 2 A for 76 s; longer buffering times with expansion modules	7 A for 49 s or 5 A for 68 s or 3 A for 108 s or 1 A for 351 s	7 A for 49 s or 5 A for 68 s or 3 A for 108 s or 1 A for 351 s
Energy content of energy storage	2.5 kW.s	5 kW.s	5 kW.s	10 kW.s
Charging current				
• 1	1 A	1 A	2 A	2 A
• 2	2 A	2 A	-	-
adjustable charging current maximum Note	factory setting approx. 1 A	factory setting approx. 1 A	permanently set	permanently set
Output				
Output voltage				
• in normal operation at DC Rated value	24 V	24 V	24 V	24 V
• in buffering mode at DC Rated value	24 V	24 V	24 V	24 V
Formula for output voltage	24 V ± 3 %	24 V ± 3 %	24 V ± 3 %	24 V ± 3 %
ON-delay time typical	0.6 s	0.6 s	0.6 s	0.6 s
Voltage increase time of the output voltage typical	25 ms	25 ms	25 ms	25 ms
Output voltage in buffering mode at DC	24 ... 24.7 V	24 ... 24.7 V	24 ... 24.7 V	24 ... 24.7 V
Output current				
• Rated value	15 A	15 A	7 A	7 A
• in normal operation	0 ... 15 A	0 ... 15 A	0 ... 7 A	0 ... 7 A
• in buffering mode	0 ... 15 A	0 ... 15 A	0 ... 7 A	0 ... 7 A
Peak current	25 A	25 A	22.5 A	22.5 A
Supplied active power typical	360 W	360 W	168 W	168 W
Efficiency				
Efficiency in percent				
• at rated output current at rated output current typical	97.5 %	97.5 %	96.5 %	96.5 %
Power loss [W]				
• at rated output current at rated output current typical	9 W	9 W	5.2 W	5.2 W
Protection and monitoring				
Product function				
• reverse polarity protection against energy storage unit polarity reversal	Yes	Yes	Yes	Yes
• reverse polarity protection against input voltage polarity reversal	Yes	Yes	Yes	Yes

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Technical specifications (continued)

Article number	6EP1933-2EC41	6EP1933-2EC51	6EP1933-2NC01	6EP1933-2NC11
Product brand name	**SITOP UPS500S**	**SITOP UPS500S**	**SITOP UPS500P**	**SITOP UPS500P**
Type of current supply	**Basic unit 2.5 kWs**	**Basic unit 5 kWs**	**Basic unit 5 kWs**	**Basic unit 10 kWs**
Signaling				
Display version				
• for normal operation	Normal operation: LED green (OK), floating changeover contact "OK/Bat" to setting "OK" ("OK" means: Voltage of the supplying power supply unit is greater than cut-in threshold set at the DC UPS module); lack of buffer standby: LED red (ALARM), floating changeover contact "ALARM/BAT" to setting "ALARM"; energy storage > 85%: LED green (BAT > 85%), floating NO contact "BAT > 85" closed; permissible contact current capacity: DC 60 V/1 A or AC 30 V /1 A	Normal operation: LED green (OK), floating changeover contact "OK/Bat" to setting "OK" ("OK" means: Voltage of the supplying power supply unit is greater than cut-in threshold set at the DC UPS module); lack of buffer standby: LED red (ALARM), floating changeover contact "ALARM/BAT" to setting "ALARM"; energy storage > 85%: LED green (BAT > 85%), floating NO contact "BAT > 85" closed; permissible contact current capacity: DC 60 V/1 A or AC 30 V /1 A	Normal operation: LED green (OK); Lack of buffer standby: LED red (ALARM); Energy storage > 85%: LED green (CAP. > 85%)	Normal operation: LED green (OK); Lack of buffer standby: LED red (ALARM); Energy storage > 85%: LED green (CAP. > 85%)
• in buffering mode	Buffered mode: LED yellow (BAT), floating changeover contact "OK/BAT" to setting "BAT"; Prewarning buffer end after expiry of 80% of the available buffer time: LED red (ALARM), floating changeover contact "ALARM/BAT" to setting "ALARM"; Energy storage > 85%: LED green (BAT > 85%), floating NO contact "BAT > 85" closed	Buffered mode: LED yellow (BAT), floating changeover contact "OK/BAT" to setting "BAT"; Prewarning buffer end after expiry of 80% of the available buffer time: LED red (ALARM), floating changeover contact "ALARM/BAT" to setting "ALARM"; Energy storage > 85%: LED green (BAT > 85%), floating NO contact "BAT > 85" closed	Buffered mode: LED yellow (BAT); Prewarning buffer end after expiry of 80% of the available buffer time: LED red (ALARM); Energy storage > 85%: LED green (CAP. > 85%)	Buffered mode: LED yellow (BAT); Prewarning buffer end after expiry of 80% of the available buffer time: LED red (ALARM); Energy storage > 85%: LED green (CAP. > 85%)
Interface				
Product component PC interface	Yes	Yes	Yes	Yes
Design of the interface	USB	USB	USB	USB
Safety				
Galvanic isolation between entrance and outlet	No	No	No	No
Operating resource protection class	Class III	Class III	Class III	Class III
Certificate of suitability				
• CE marking	Yes	Yes	Yes	Yes
• as approval for USA	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259	-	-
• relating to ATEX	-	-	-	-
• C-Tick	Yes	Yes	No	No
Shipbuilding approval	GL, ABS	GL, ABS	-	-
Protection class IP	IP20	IP20	IP65	IP65
EMC				
Standard				
• for emitted interference	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B
• for interference immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Operating data				
Ambient temperature				
• during operation	0 ... 60 °C; with natural convection	0 ... 60 °C; with natural convection	0 ... 55 °C; with natural convection	0 ... 55 °C; with natural convection
• during transport	-40 ... +70 °C	-40 ... +70 °C	-40 ... +70 °C	-40 ... +70 °C
• during storage	-40 ... +70 °C	-40 ... +70 °C	-40 ... +70 °C	-40 ... +70 °C
Environmental category acc. to IEC 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation
Mechanics				
Type of electrical connection	screw-type terminals	screw-type terminals	Plug-in connection	Plug-in connection
• at input	24 V DC: 2 screw terminals for 1 ... 4 mm^2/17 ... 11 AWG	24 V DC: 2 screw terminals for 1 ... 4 mm^2/17 ... 11 AWG	via connector set	via connector set
• at output	24 V DC: 4 screw terminals for 1 ... 4 mm^2/17 ... 11 AWG	24 V DC: 4 screw terminals for 1 ... 4 mm^2/17 ... 11 AWG	via connector set	via connector set

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Technical specifications (continued)

Article number	6EP1933-2EC41	6EP1933-2EC51	6EP1933-2NC01	6EP1933-2NC11
Product brand name	SITOP UPS500S	SITOP UPS500S	SITOP UPS500P	SITOP UPS500P
Type of current supply	Basic unit 2.5 kWs	Basic unit 5 kWs	Basic unit 5 kWs	Basic unit 10 kWs
Mechanics (continued)				
• for battery module	-	-	-	-
• for control circuit and status message	10 screw terminals for 0.5 ... 2.5 mm²/20 ... 13 AWG	10 screw terminals for 0.5 ... 2.5 mm²/20 ... 13 AWG	-	-
Width of the enclosure	120 mm	120 mm	400 mm	470 mm
Height of the enclosure	125 mm	125 mm	80 mm	80 mm
Depth of the enclosure	125 mm	125 mm	80 mm	80 mm
Required spacing				
• top	50 mm	50 mm	-	-
• bottom	50 mm	50 mm	-	-
• left	0 mm	0 mm	0 mm	0 mm
• right	0 mm	0 mm	0 mm	0 mm
Net weight	1 kg	1 kg	1.9 kg	2.2 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes	No	No
Mounting type	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15	Screw mounting	Screw mounting
Electrical accessories	Extension module SITOP UPS501S	Extension module SITOP UPS501S	Connector set	Connector set
MTBF at 40 °C	638 570 h	459 137 h	8 760 h	8 760 h
Equipment marking acc. to DIN EN 81346-2	T	T	T	T
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Article number	6EP1935-5PG01
Product brand name	SITOP UPS501
Type of current supply	Extension module
Input	
Voltage curve at input	DC
Mains buffering	
Type of energy storage	with capacitors
Energy content of energy storage	5 kW.s
Signaling	
Display version	
• for normal operation	-
Interface	
Product component PC interface	No
Design of the interface	without
Safety	
Operating resource protection class	Class III
Certificate of suitability	
• CE marking	Yes
• as approval for USA	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259
• relating to ATEX	-
• C-Tick	Yes
Shipbuilding approval	GL, ABS
Protection class IP	IP20
Operating data	
Ambient temperature	
• during operation	0 ... 60 °C; with natural convection
• during transport	-40 ... +70 °C
• during storage	-40 ... +70 °C
Environmental category acc. to IEC 60721	Climate class 3K3, no condensation

Article number	6EP1935-5PG01
Product brand name	SITOP UPS501
Type of current supply	Extension module
Mechanics	
Type of electrical connection	screw-type terminals
• at output	can be connected to SITOP UPS500S via a plug-in system
• for control circuit and status message	-
Width of the enclosure	70 mm
Height of the enclosure	125 mm
Depth of the enclosure	125 mm
Required spacing	
• top	50 mm
• bottom	50 mm
• left	0 mm
• right	0 mm
Net weight	0.7 kg
Product feature of the enclosure housing for side-by-side mounting	Yes
Mounting type	Snaps onto DIN rail EN 60715 35x7.5/15
MTBF at 40 °C	7 142 857 h
Equipment marking acc. to DIN EN 81346-2	T
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

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Ordering data

	Article No.
SITOP UPS500S	
DC UPS basic device 15 A	
• with USB interface and 2.5 kW	**6EP1933-2EC41**
• with USB interface and 5 kW	**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	**6EP1933-2NC01**
• with USB interface and 10 kW	**6EP1933-2NC11**

Accessories

	Article No.
Connector set for UPS500P	**6EP1975-2ES00**
consisting of connector for input and output with pre-assembled USB cable (2 m long)	

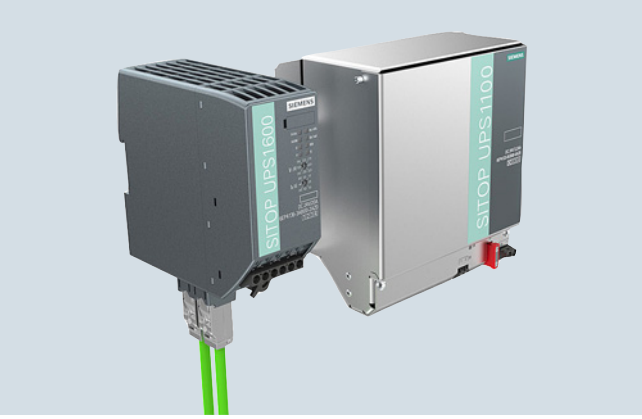
More information

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

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SITOP UPS1600 DC UPS modules

Overview



By combining one DC UPS module SITOP UPS1600 with at least one UPS1100 battery module and a SITOP power supply unit, longer power failures can be bridged without any interruption. The intelligent battery management automatically detects the UPS1100 energy storage unit, ensures optimized temperature-specific charging and continuous monitoring. The compact DC UPS modules have overload capability, for example, to supply the inrush current of industrial PCs. In stand-alone mode, they support starting from the battery.

The DC UPS communicates openly over a USB or Ethernet/PROFINET port. It is easily integrated into the PC or PLC environment over the two Ethernet/PROFINET ports. Total integration in TIA provides user-friendly engineering in the TIA Portal and is supported with ready-to-use function blocks for S7 user programs and WinCC faceplates for fast visualization.

SITOP UPS Manager supports easy monitoring and configuration in PC systems, e.g. shutdown of several PCs in accordance with the master-slave principle. The integrated web server supports remote monitoring of the DC UPS.

Benefits

- 24 V buffering for a few hours for the purpose of continuing processes
- Open communication over USB or two Ethernet/PROFINET ports
- High-performance DC UPS modules in space-saving, slim design
- High overload capability for mains and buffering operation
- Starting from the battery module supports stand-alone mode, e.g. for starting generators
- Easy configuration thanks to automatic detection of battery modules
- High reliability and availability due to monitoring of the operational readiness, battery feeder, aging and charging status
- Battery protecting charging due to temperature-specific charging characteristic
- Defined shutdown of several PCs or controllers on one UPS (versions with Ethernet/PROFINET)
- Remote monitoring via integrated web server (versions with Ethernet/PROFINET)
- Time-saving engineering in PC-based systems via SITOP UPS Manager (versions with USB or Ethernet/PROFINET)
- SITOP UPS Manager with OPC UA server facilitates flexible, multi-vendor communication with other systems
- Full integration in TIA saves time and costs during the planning stage and in operation (versions with Ethernet/PROFINET)
- User-friendly engineering in the TIA Portal
- SIMATIC S7 function blocks for easy integration in STEP 7 user programs
- Fast integration in operator control and monitoring with WinCC faceplates
- Direct integration in SIMATIC PCS 7 via SITOP library

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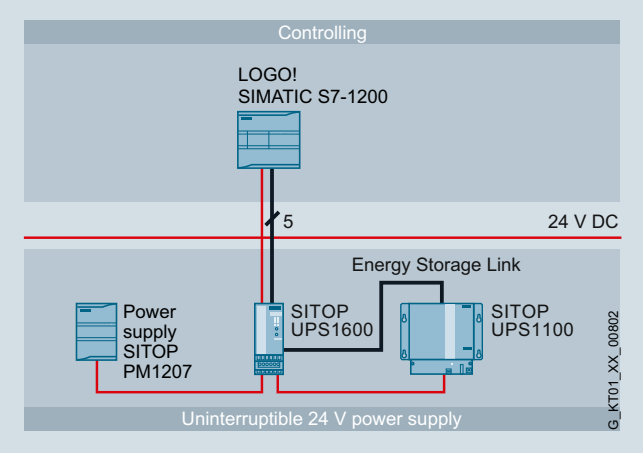
Application

The battery modules that can be connected in parallel bridge power failures for a few hours. This supports the continued operation of processes or parts of them. The function "Starting from the battery" means that the UPS1600 can also be used in stand-alone mode without connection to the supply.

Depending on the communication requirements between the DC UPS and the automation components to be protected against power failure, the version of UPS1600 can be selected accordingly.

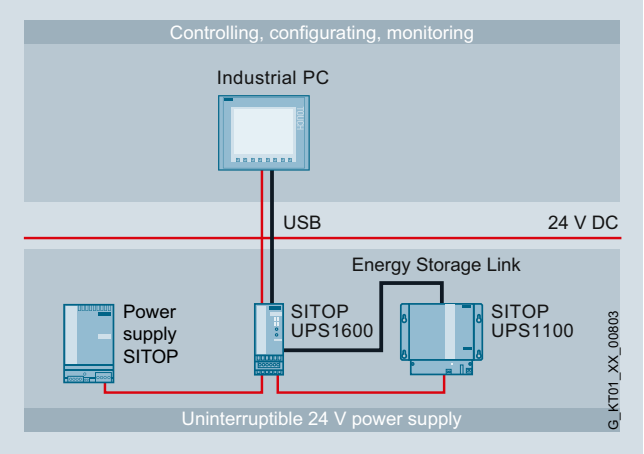
Buffering of simple automation applications

In simple applications with mini PLCs (e.g. obstruction lights, stand-alone hydro-electric plants), 24 V buffering is performed by the UPS1600 without a communications interface. The status messages are transferred to the PLC via the digital outputs (isolated).



Buffering of applications with automation computer

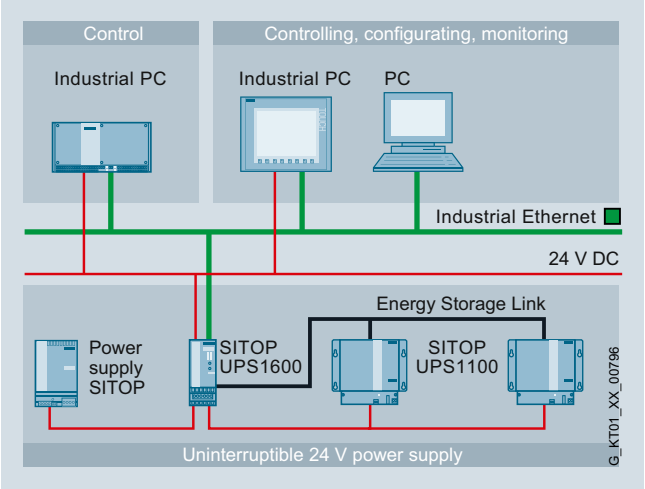
The UPS1600 with a USB interface is used to buffer automation solutions that are controlled by an industrial PC. All operating and configuring data is communicated over the PC interface.



Communication over Ethernet/PROFINET offers the most comprehensive possibilities for diagnostics and system integration. The UPS1600 can be directly integrated into the LAN infrastructure over its two ports.

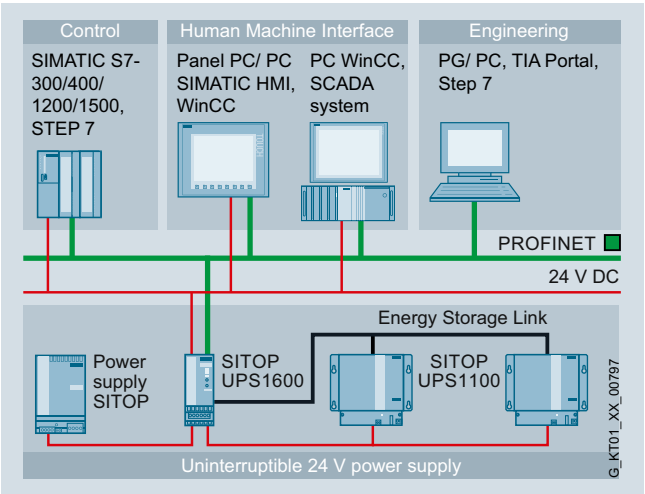
Buffering of applications with networked (Industrial Ethernet) automation computers

The UPS1600 with Industrial Ethernet interface protects complex PC-based applications from power failure. Configuration and monitoring is performed using the PC software SITOP UPS Manager. It also supports defined shutdown of several PCs in accordance with the master-slave principle.



Buffering of applications with networked (PROFINET) automation components

For buffering sensitive plant components (e.g. a pumping station with telecontrol) or complete controller solutions (e.g. machine tools) that are integrated into a networked automation solution, the UPS1600 with PROFINET is the perfect choice. Total integration in TIA offers unique advantages for engineering and operation (e.g. diagnostics or visualization). For example, in buffer mode, several controllers can be brought to a defined independently of each other.



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SITOP UPS1600 DC UPS modules

Design



- Compact DC UPS modules UPS1600 24 V/10 A, 20A and 40 A with digital inputs and outputs, optionally with USB interface or two Ethernet/PROFINET ports
- UPS1100 battery modules 1.2 Ah, 3.2 Ah, 7 Ah and 12 Ah with lead rechargeable batteries, UPS1100 2.5 Ah battery module with pure-lead rechargeable batteries and UPS1100 5 Ah battery module with lithium-ion technology.

Function

SITOP UPS1600 web server

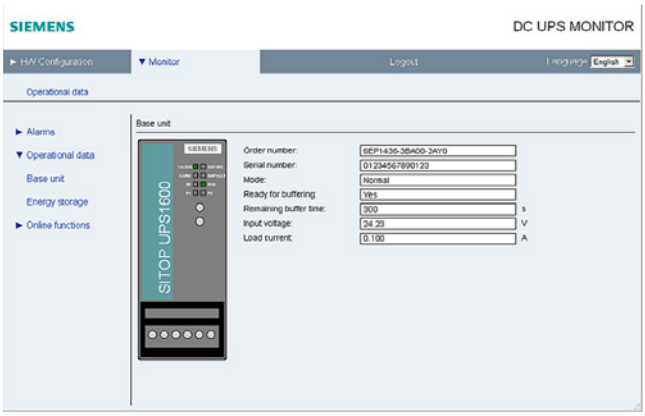
The SITOP UPS1600 with Ethernet/PROFINET has an integrated web server that supports remote monitoring and control of the uninterruptible power supply. Using HTTPS ensures encrypted and safe data transmission.

Remote monitoring and control of:

- Hardware configuration data
- Remote monitoring
- Operating data of the UPS1600 basic unit and the connected UPS1100 battery module
- Alarm messages

Remote access via:

- Firefox 34 or higher, or Internet Explorer 10, 11 (IE 8 with charging of SVG player)
- IP address
- Password



The password-protected web server supports viewing of the configuring and operating data.

SITOP UPS1600 software

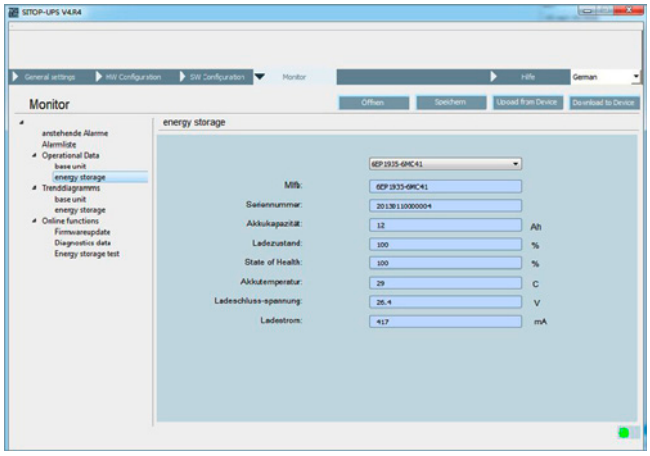
Software tools support convenient integration of the SITOP UPS1600 in both PC-based and PLC-based systems. They make configuring and visualizing the DC UPS easier and the user benefits from the high performance of the SITOP UPS1600.

Software for open, PC-based automation systems

SITOP UPS Manager

Configuration and monitoring is performed easily using the free PC software SITOP UPS Manager. It enables the reactions of the PC to the operating states of the DC UPS to be freely selected and offers comprehensive diagnostic options:

- Configuration
  - Connection via USB or Ethernet
  - All the relevant parameters can be configured in UPS Manager and transferred to the UPS1600
  - Configuration of "non-coded" rechargeable batteries is possible
  - The reactions of the PC to the operating states of the UPS can be freely selected, e.g. termination of software applications
  - Support for reliable downloading of several PCs according to the master-slave principle
  - The configurations can be saved locally
  - Integrated OPC UA server
  - Updating of the UPS1600 firmware is possible
  - Assignment of IP addresses and device names of the UPS1600
  - Can run under Windows XP, Windows 7 (32-bit and 64-bit) operating systems
- Monitoring
  - Readout and display of alarms, statuses and operating variables of the UPS1600 and the connected energy storage unit
  - Tracing of history in trend diagrams



Monitor window for battery status in SITOP UPS Manager



Trend diagram for load current in SITOP UPS Manager

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Function (continued)

Software for TIA-based automation systems

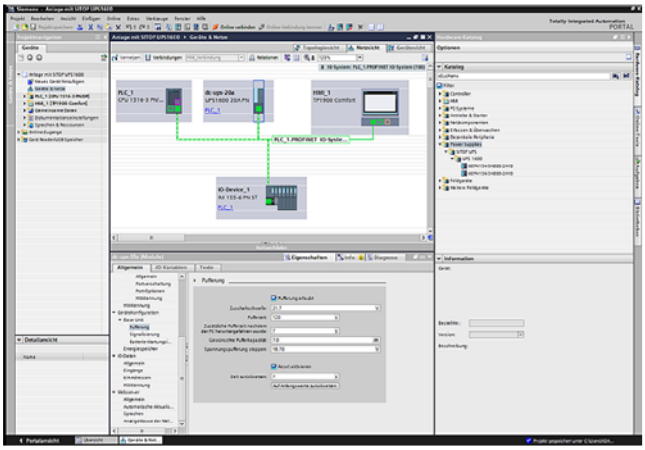
For convenient integration of the DC UPS in the TIA environment, different software modules are available.

Engineering is simple via the TIA Portal. The data for UPS1600 is stored in the hardware catalog version V14 and higher. Special function blocks for SIMATIC S7-300, S7-400, S7-1200 and S7-1500 also support integration in the STEP 7 user program.

The comprehensive diagnostics data of the UPS1600 power supply can be visualized using prepared UPS faceplates for WinCC.

TIA Portal

- Convenient and fail-safe integration of SITOP UPS1600 in the PROFINET network by means of drag-and-drop
- Convenient configuration of SITOP UPS1600 basic units with Ethernet/PROFINET and the UPS1100 battery module simply by selecting from the TIA Portal hardware catalog
- Free download of HSP (Hardware Support Package) for TIA Portal version V12 SP1 or higher available at http://support.automation.siemens.com/WW/view/en/75854606
- Free GSD file (Generic Station Description) for STEP 7 V 5.5 http://support.automation.siemens.com/WW/view/en/75854605



Establishing the PROFINET connection between the SITOP UPS1600 and the controller is easy and fail-safe in the TIA Portal

STEP 7 function blocks

Function blocks are available for STEP 7 user programs on SIMATIC S7-300/400/1200/1500. They allow further processing of the DC UPS operating data.

- Function blocks for STEP 7 V5.5
- Function blocks from STEP 7 V12 and higher

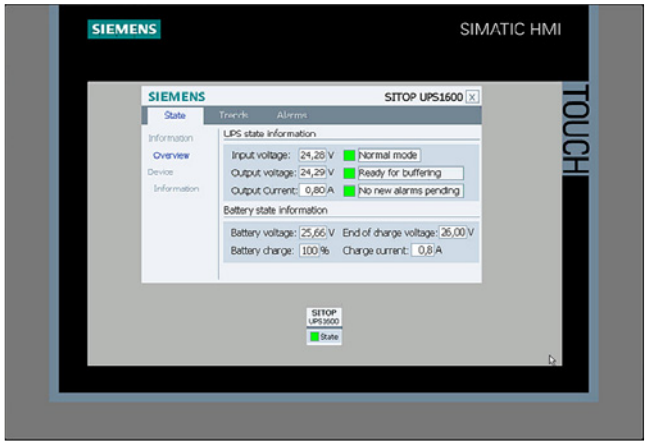
Free download:
http://support.automation.siemens.com/WW/view/en/75854608

Faceplates for WinCC

Ready-to-use faceplates save programming time for visualization of the uninterruptible power supply. The faceplates show all relevant statuses and values of the DC UPS. They are available for the following systems:

- Faceplates for WinCC V7.2
- Faceplates for WinCC flexible 2008 SP3
- Faceplates for WinCC Comfort/Advanced/Professional V12

Free download:
http://support.automation.siemens.com/WW/view/en/75854608



The pre-compiled WinCC faceplates show all the relevant UPS data in a clearly comprehensible display. An icon with color coding for the operating state is also available

Software for SIMATIC PCS 7 process control system

The SITOP library is available with blocks and faceplates for direct integration into SIMATIC PCS 7. The SW blocks in the SIMATIC S7 supply the faceplate on the user interface of the process control system with operating and diagnostics data, generate messages and ensure connection to the maintenance system of PCS 7. This means that PCS 7 users automatically receive information about operating state conditions, maintenance requirements (e.g. battery replacement) and disturbances (e.g. power failures). This ensures constant transparency of the 24V supply in the control system. The SITOP library supports the following SIMATIC PCS 7 versions:

- SIMATIC PCS 7 V8.0 with SP2
- SIMATIC PCS 7 V8.1
- SIMATIC PCS7 V8.1 with SP1
- SIMATIC PCS7 V8.2 available soon

Free download at:
https://support.industry.siemens.com/cs/ww/en/view/109476154

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Technical specifications

The table shows the maximum buffering times for the SITOP UPS1100 battery modules for different load currents:

The SITOP Selection Tool offers detailed selection guidance according to criteria such as the required backup time, load current, peak current and battery connection threshold:
http://www.siemens.com/sitop-selection-tool

Product brand name	SITOP UPS1100	SITOP UPS1100	SITOP UPS1100	SITOP UPS1100	SITOP UPS1100	SITOP UPS1100
Type of power supply	24 V/1.2 Ah	24 V/2.5 Ah high temperature	24 V/3.2 Ah	24 V/5 Ah LiFePo	24 V/7 Ah	24 V/12 Ah
Article No.	6EP4131-0GB00-0AY0	6EP4132-GB00-0AY0	6EP4133-0GB00-0AY0	6EP4133-0JB00-0AY0	6EP4134-0GB00-0AY0	6EP4135-0GB00-0AY0
Load current	Buffer times					
1 A	34 min	1.7 h	2.5 h	5.2 h	5.4 h	10.3 h
2 A	15 min	54.6 min	1 h	2.5 h	2.6 h	4.8 h
3 A	9 min	32.9 min	39 min	1.7 h	1.6 h	3 h
4 A	6 min	20.6 min	27 min	1.25 h	1.2 h	2.3 h
6 A	3.5 min	14.3 min	17.5 min	50.6 min	41 min	1.4 h
8 A	2 min	10.5 min	12 min	37.8 min	28 min	1 h
10 A	1 min	7.2 min	9 min	30.2 min	22 min	48.6 min
12 A	-	6 min	7 min	25.1 min	17 min	40.3 min
14 A	-	4.5 min	5 min	21.6 min	15 min	33.6 min
16 A	-	4.1 min	4 min	18.8 min	12.5 min	26 min
20 A	-	2.9 min	1 min	12.9 min	9.1 min	19.6 min
30 A	-	-	-	-	4.6 min	12.1 min
40 A	-	-	-	-	2.8 min	8.5 min

Important information for selecting the battery capacity:

Determination of the mains buffering times is based on the discharge period of new or non-aged, completely charged battery modules at a battery temperature not below +25 °C to the shutdown of the DC UPS.

Battery aging reduces the still available battery capacity up until the end of the service life to typically around 50% of the original capacity value when new (1.2 Ah/3.2 Ah/7 Ah, etc.) and the internal resistance increases. When the message "Battery charge > 85%" appears, only around 50% x 85% = approx. 43% of the originally available capacity can be assumed at the end of the battery service life.

At battery temperatures below +25 °C, the available capacity drops approximately by another 30% at +5 °C battery temperature, to approximately 70% of the approximately remaining 43%. There is then only around 30% of the original capacity available.

A significantly larger battery capacity must therefore be selected when configuring the plant: A drop to approx. 50% is compensated for by selecting 1 / approx. 0.5 = approx. double the battery capacity (required as per the table for the relevant load current and the relevant buffering time). Available capacity of approx. 43% is compensated for by selecting 1 / approx. 0.43 = approx. 2.33 times the battery capacity. Available capacity of approx. 30% is compensated for by selecting 1 / approx. 0.3 = approx. 3.33 times the battery capacity.

Recommendation:

Instead of installing double the battery capacity, regular battery replacement halfway through the expected service life (reduction of capacity to approx. 50%) can be more advisable for the following reasons: Capacity does not drop below 100% until the halfway point of the expected battery life (or slightly beyond). With regular replacement after this point, only the single battery capacity (instead of double capacity) must be installed due to aging (-> neutral in price with regard to battery module costs, but only requires half the space).

Replacing the battery after half its service life dispenses above all with the large scatter range of the residual capacity at the end of the service life, which is not accurately defined by battery manufacturers (after the full time, many batteries are above, but many are also below the average 50% residual capacity, that is to say, even if double the capacity is installed, the influence of aging at the end of service life is not reliably compensated for, rather only typically) -> When replacing after half the expected service life, the configured buffering time is maintained with considerably greater reliability.

In the case of batteries stored in cool conditions (not above +25 °C) and for not longer than approximately 4 months, the following service life can be assumed, strongly dependent on battery temperature:

Battery temperature	Drop to approx. 50% of residual capacity	Recommendation: Replace (at 100% of residual capacity) all	Alternative recommendation
+20 °C	4 years	2 years	
+30 °C	2 years	1 year	
+40 °C	1 year	0.5 years	Install double capacity and replace (1 x per year)

In normal cases (installation in the coolest location in the control cabinet at approx. +30 °C), the battery should be replaced with single installed battery capacity in accordance with the selection table after 1 year of operation!

After a power failure, the battery module is disconnected from the loads at the end of the selected buffering time either automatically or electronically by opening the On/Off control circuit, and as soon as the 24 V input voltage is available again, it is quickly re-charged with the charge current of the relevant DC UPS module (with I-U charge characteristic: First constant current I for fast charging, and changeover to constant voltage U to maintain the charge when the battery is almost full).

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Technical specifications (continued)

Article number	6EP4134-3AB00-0AY0 6EP4134-3AB00-1AY0 6EP4134-3AB00-2AY0	6EP4136-3AB00-0AY0 6EP4136-3AB00-1AY0 6EP4136-3AB00-2AY0	6EP4137-3AB00-0AY0 6EP4137-3AB00-1AY0 6EP4137-3AB00-2AY0
Product brand name	**SITOP UPS1600**	**SITOP UPS1600**	**SITOP UPS1600**
Type of current supply	**DC UPS 24 V/10 A**	**DC UPS 24 V/20 A**	**DC UPS 24 V/40 A**
Input			
Supply voltage at DC Rated value	24 V	24 V	24 V
Voltage curve at input	DC	DC	DC
input voltage range	22 ... 29 V DC	22 ... 29 V DC	22 ... 29 V DC
Adjustable response value voltage for buffer connection preset	22.5 V	22.5 V	22.5 V
Adjustable response value voltage for buffer connection	21 ... 25 V; Adjustable: 21 V, 21.5 V, 22 V, 22.5 V, 23 V, 24 V, 25 V DC or via software	21 ... 25 V; Adjustable: 21 V, 21.5 V, 22 V, 22.5 V, 23 V, 24 V, 25 V DC or via software	21 ... 25 V; Adjustable: 21 V, 21.5 V, 22 V, 22.5 V, 23 V, 24 V, 25 V DC or via software
Input current at rated input voltage 24 V Rated value	14 A; for max. charging current (3 A)	25 A; for max. charging current (4 A)	46 A; for max. charging current (5 A)
Mains buffering			
Type of energy storage	with batteries	with batteries	with batteries
Design of the mains power cut bridging-connection	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	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	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
Charging current			
• 1	0.1 A	0.1 A	0.1 A
• 2	3 A	4 A	5 A
adjustable charging current maximum Note	Automatically depending on battery module	Automatically depending on battery module	Automatically depending on battery module
Output			
Output voltage			
• in normal operation at DC Rated value	24 V	24 V	24 V
• in buffering mode at DC Rated value	24 V	24 V	24 V
Formula for output voltage	V_{in} - approx. 0.01 x I	V_{in} - approx. 0.01 x I	V_{in} - approx. 0.01 x I
ON-delay time typical	60 s	60 s	60 s
Voltage increase time of the output voltage typical	60 ms	60 ms	60 ms
Output voltage in buffering mode at DC	19 ... 28.5 V	19 ... 28.5 V	19 ... 28.5 V
Output current			
• Rated value	10 A	20 A	40 A
• in normal operation	0 ... 30 A	0 ... 60 A	0 ... 120 A
• in buffering mode	0 ... 30 A	0 ... 60 A	0 ... 120 A
Peak current	30 A	60 A	120 A
Property of the output Short-circuit proof	Yes	Yes	Yes
Design of short-circuit protection	Limitation to 3 x I_{rated} for 30 ms/min; through-conductivity for 1.5 x I_{rated} for 5 sec/min	Limitation to 3 x I_{rated} for 30 ms/min; through-conductivity for 1.5 x I_{rated} for 5 sec/min	Limitation to 3 x I_{rated} for 30 ms/min; through-conductivity for 1.5 x I_{rated} for 5 sec/min
Supplied active power typical	240 W	480 W	960 W
Efficiency			
Efficiency in percent			
• at rated output current at rated output current typical	97.7 %	98.2 %	98.8 %
• in case of accumulator operation typical	97.7 %	98.2 %	98.8 %
Power loss [W]			
• at rated output current at rated output current typical	5.6 W	8.6 W	12 W
• in case of accumulator operation typical	5.6 W	8.6 W	12 W

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Technical specifications (continued)

Article number	6EP4134-3AB00-0AY0 6EP4134-3AB00-1AY0 6EP4134-3AB00-2AY0	6EP4136-3AB00-0AY0 6EP4136-3AB00-1AY0 6EP4136-3AB00-2AY0	6EP4137-3AB00-0AY0 6EP4137-3AB00-1AY0 6EP4137-3AB00-2AY0
Product brand name	**SITOP UPS1600**	**SITOP UPS1600**	**SITOP UPS1600**
Type of current supply	**DC UPS 24 V/10 A**	**DC UPS 24 V/20 A**	**DC UPS 24 V/40 A**
Protection and monitoring			
Product function			
• reverse polarity protection against energy storage unit polarity reversal	Yes	Yes	Yes
• reverse polarity protection against input voltage polarity reversal	Yes	Yes	Yes
Signaling			
Display version			
• for normal operation	Normal operation: LED green (OK), floating changeover contact "Bat/OK" to setting "OK" ("OK" means: Voltage of the supplying power supply unit is greater than cut-in threshold set at the DC UPS module); Lack of buffer standby: LED red (alarm), floating changeover contact "Alarm/Bat" to setting "Alarm"; Battery replacement required: LED red (alarm) flashing with approx. 0.25 Hz, floating changeover contact "Alarm/Bat" switching with approx. 0.25 Hz; Energy storage > 85%: LED green (Bat > 85%), floating NO contact "Bat > 85" closed; Permissible contact current capacity: DC 60 V/1 A or AC 30 V /1 A	Normal operation: LED green (OK), floating changeover contact "Bat/OK" to setting "OK" ("OK" means: Voltage of the supplying power supply unit is greater than cut-in threshold set at the DC UPS module); Lack of buffer standby: LED red (alarm), floating changeover contact "Alarm/Bat" to setting "Alarm"; Battery replacement required: LED red (alarm) flashing with approx. 0.25 Hz, floating changeover contact "Alarm/Bat" switching with approx. 0.25 Hz; Energy storage > 85%: LED green (Bat > 85%), floating NO contact "Bat > 85" closed; Permissible contact current capacity: DC 60 V/1 A or AC 30 V /1 A	Normal operation: LED green (OK), floating changeover contact "Bat/OK" to setting "OK" ("OK" means: Voltage of the supplying power supply unit is greater than cut-in threshold set at the DC UPS module); Lack of buffer standby: LED red (alarm), floating changeover contact "Alarm/Bat" to setting "Alarm"; Battery replacement required: LED red (alarm) flashing with approx. 0.25 Hz, floating changeover contact "Alarm/Bat" switching with approx. 0.25 Hz; Energy storage > 85%: LED green (Bat > 85%), floating NO contact "Bat > 85" closed; Permissible contact current capacity: DC 60 V/1 A or AC 30 V /1 A
• in buffering mode	Buffered mode: LED yellow (Bat), floating changeover contact "OK/Bat" to setting "Bat"; Prewarning battery voltage < 20.4 VDC: LED red (alarm), floating changeover contact "Alarm/Bat" to setting "Alarm"; Energy storage > 85%: LED green (Bat > 85%), floating NO contact "Bat > 85" closed	Buffered mode: LED yellow (Bat), floating changeover contact "OK/Bat" to setting "Bat"; Prewarning battery voltage < 20.4 VDC: LED red (alarm), floating changeover contact "Alarm/Bat" to setting "Alarm"; Energy storage > 85%: LED green (Bat > 85%), floating NO contact "Bat > 85" closed	Buffered mode: LED yellow (Bat), floating changeover contact "OK/Bat" to setting "Bat"; Prewarning battery voltage < 20.4 VDC: LED red (alarm), floating changeover contact "Alarm/Bat" to setting "Alarm"; Energy storage > 85%: LED green (Bat > 85%), floating NO contact "Bat > 85" closed
Interface			
Product component PC interface	No	No	Yes
Design of the interface	without	without	without
Safety			
Galvanic isolation between entrance and outlet	No	No	No
Operating resource protection class	Class III	Class III	Class III
Certificate of suitability			
• CE marking	Yes	Yes	Yes
• as approval for USA	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259
• relating to ATEX	IECEx Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2013) Class I, Div. 2, Group ABCD, T4	IECEx Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2013) Class I, Div. 2, Group ABCD, T4	IECEx Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2013) Class I, Div. 2, Group ABCD, T4
• C-Tick	Yes	Yes	Yes
Type of certification CB-certificate	Yes	Yes	Yes
Shipbuilding approval	GL, ABS	GL, ABS	GL, ABS
Protection class IP	IP20	IP20	IP20
EMC			
Standard			
• for emitted interference	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B
• for interference immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Operating data			
Ambient temperature			
• during operation	-25 ... +70 °C; with natural convection	-25 ... +70 °C; with natural convection	-25 ... +70 °C; with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Environmental category acc. to IEC 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation

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Ordering data Article No. (continued)

Article number	6EP4134-3AB00-0AY0 6EP4134-3AB00-1AY0 6EP4134-3AB00-2AY0	6EP4136-3AB00-0AY0 6EP4136-3AB00-1AY0 6EP4136-3AB00-2AY0	6EP4137-3AB00-0AY0 6EP4137-3AB00-1AY0 6EP4137-3AB00-2AY0
Product brand name	**SITOP UPS1600**	**SITOP UPS1600**	**SITOP UPS1600**
Type of current supply	**DC UPS 24 V/10 A**	**DC UPS 24 V/20 A**	**DC UPS 24 V/40 A**
Mechanics			
Type of electrical connection	screw-type terminals	screw-type terminals	screw-type terminals
• at input	24 V DC: 2 screw terminals for 0.2 ... 6 mm^2/24 ... 13 AWG	24 V DC: 2 screw terminals for 0.2 ... 6 mm^2/24 ... 13 AWG	24 V DC: 2 screw terminals for 0.5 ... 16 mm^2/20 ... 6 AWG
• at output	24 V DC: 2 screw terminals for 0.2 ... 6 mm^2/24 ... 13 AWG	24 V DC: 2 screw terminals for 0.2 ... 6 mm^2/24 ... 13 AWG	24 V DC: 2 screw terminals for 0.5 ... 16 mm^2/20 ... 6 AWG
• for battery module	24 V DC: 2 screw terminals for 0.2 ... 6 mm^2/24 ... 13 AWG	24 V DC: 2 screw terminals for 0.2 ... 6 mm^2/24 ... 13 AWG	24 V DC: 2 screw terminals for 0.5 ... 16 mm^2/20 ... 6 AWG
• for control circuit and status message	14 screw terminals for 0.2 ... 1.5 mm^2/24 ... 16 AWG	14 screw terminals for 0.2 ... 1.5 mm^2/24 ... 16 AWG	14 screw terminals for 0.2 ... 1.5 mm^2/24 ... 16 AWG
Width of the enclosure	50 mm	50 mm	70 mm
Height of the enclosure	125 mm	125 mm	125 mm
Depth of the enclosure	125 mm	125 mm	150 mm
Required spacing			
• top	50 mm	50 mm	50 mm
• bottom	50 mm	50 mm	50 mm
• left	0 mm	0 mm	0 mm
• right	0 mm	0 mm	0 mm
Net weight	0.38 kg	0.39 kg	0.65 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes	Yes
Mounting type	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15
Electrical accessories	Battery module	Battery module	Battery module
MTBF at 40 °C	415 574 h	408 654 h	372 738 h
Equipment marking acc. to DIN EN 81346-2	T	T	T
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
SITOP UPS1600 24 V/ 10 A	**6EP4134-3AB00-0AY0**
• With USB interface	**6EP4134-3AB00-1AY0**
• With 2 Ethernet/ PROFINET interfaces	**6EP4134-3AB00-2AY0**
SITOP UPS1600, 24 V/ 20 A	**6EP4136-3AB00-0AY0**
• With USB interface	**6EP4136-3AB00-1AY0**
• With 2 Ethernet/ PROFINET interfaces	**6EP4136-3AB00-2AY0**
SITOP UPS1600 24 V/ 40 A	**6EP4137-3AB00-0AY0**
• With USB interface	**6EP4137-3AB00-1AY0**
• With 2 Ethernet/ PROFINET interfaces	**6EP4137-3AB00-2AY0**

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SITOP UPS1100 battery modules

Overview



SITOP UPS1100 maintenance-free battery module with 1.2 Ah to 12 Ah and choice of different capacitors (lead, pure lead, lithium iron phosphate = LiFePo) for SITOP UPS1600 DC UPS module. The intelligent UPS1600 battery management charges the UPS1100 with the optimal, temperature-controlled charging characteristics and monitors the status (operating data and diagnostics information) via the energy storage link of the connected battery modules. For longer buffer times, up to six battery modules can be connected in parallel. Mounting onto standard mounting rail or directly to the wall.

Technical specifications

Article number	**6EP4131-0GB00-0AY0**	**6EP4132-0GB00-0AY0**	**6EP4133-0GB00-0AY0**	**6EP4133-0JB00-0AY0**	**6EP4134-0GB00-0AY0**	**6EP4135-0GB00-0AY0**
Product	**SITOP UPS1100**	**SITOP UPS1100**	**SITOP UPS1100**	**SITOP UPS1100**	**SITOP UPS1100**	**SITOP UPS1100**
Product type	**Lead battery**	**Pure-lead battery**	**Lead battery**	**LiFePo battery**	**Lead battery**	**Lead battery**
Battery capacity	**1.2 Ah**	**2.5 Ah**	**3.2 Ah**	**5 Ah**	**7 Ah**	**12 Ah**
Charging current charging voltage						
End-of-charge voltage at DC						
• at -10 °C recommended	28.02 V	28.02 V	28.02 V	28.8 V	28.02 V	28.02 V
• at 0 °C recommended	28.02 V	28.02 V	28.02 V	28.8 V	28.02 V	28.02 V
• at 10 °C recommended	27.8 V	27.8 V	27.8 V	28.8 V	27.8 V	27.8 V
• at 20 °C recommended	27.3 V	27.3 V	27.3 V	28.8 V	27.3 V	27.3 V
• at 30 °C recommended	26.8 V	26.8 V	26.8 V	28.8 V	26.8 V	26.8 V
• at 40 °C recommended	26.6 V	26.6 V	26.6 V	28.8 V	26.6 V	26.6 V
• at 50 °C recommended	26.3 V	26.3 V	26.3 V	28.8 V	26.3 V	26.3 V
• at 60 °C recommended	-	26 V	-	-	-	-
Permissible charging current, max.	0.3 A	5 A	0.8 A	2.1 A	1.75 A	3 A
Rated voltage V_{out} DC	24 V	24 V	24 V	24 V	24 V	24 V
Rated current value $I_{out\ rated}$	10 A	20 A	20 A	20 A	40 A	40 A
Safety						
Short-circuit protection	Battery fuse 15 A/32 V (solid-state circuitry blade-type fuse + support)	Battery fuse 25 A/32 V (solid-state circuitry blade-type fuse + support)	Battery fuse 25 A/32 V (solid-state circuitry blade-type fuse + support)	Battery fuse 25 A/32 V (FKS blade-type fuse + holder); overcurrent switch-off at 60 A > 30 ms/min and 24 A > 5 s/min	Battery fuse 2x 25 A/32 V (solid-state circuitry blade-type fuse + support)	Battery fuse 2x 25 A/32 V (solid-state circuitry blade-type fuse + support)
Design of the overload protection	Valve control	Valve control	Valve control	Valve control	Valve control	Valve control
Status display	LED green: Battery OK; LED flashing green: Error or warning; OFF: No communication	LED green: Battery OK; LED flashing green: Error or warning; OFF: No communication	LED green: Battery OK; LED flashing green: Error or warning; OFF: No communication	LED green: Battery OK; LED flashing green: Error or warning; OFF: No communication	LED green: Battery OK; LED flashing green: Error or warning; OFF: No communication	LED green: Battery OK; LED flashing green: Error or warning; OFF: No communication

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Technical specifications (continued)

Article number	6EP4131-0GB00-0AY0	6EP4132-0GB00-0AY0	6EP4133-0GB00-0AY0	6EP4133-0JB00-0AY0	6EP4134-0GB00-0AY0	6EP4135-0GB00-0AY0
Product	**SITOP UPS1100**	**SITOP UPS1100**	**SITOP UPS1100**	**SITOP UPS1100**	**SITOP UPS1100**	**SITOP UPS1100**
Product type	**Lead battery**	**Pure-lead battery**	**Lead battery**	**LiFePo battery**	**Lead battery**	**Lead battery**
Battery capacity	**1.2 Ah**	**2.5 Ah**	**3.2 Ah**	**5 Ah**	**7 Ah**	**12 Ah**
Safety						
Protection class	Class III	Class III	Class III	Class III	Class III	Class III
CE mark	Yes	Yes	Yes	Yes	Yes	Yes
UL/cUL (CSA) approval	cURus-Recognized (UL 1778, CSA C22.2 No. 107.1), File E219627	cURus-Recognized (UL 1778, CSA C22.2 No. 107.1), File E219627	cURus-Recognized (UL 1778, CSA C22.2 No. 107.1), File E219627	cURus-Recognized (UL 1778, CSA C22.2 No. 107.1), File E219627	cURus-Recognized (UL 1778, CSA C22.2 No. 107.1), File E219627	cURus-Recognized (UL 1778, CSA C22.2 No. 107.1), File E219627
Explosion protection	IECEx Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2013) Class I, Div. 2, Group ABCD, T4	IECEx Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2013) Class I, Div. 2, Group ABCD, T4	IECEx Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2013) Class I, Div. 2, Group ABCD, T4	No	IECEx Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2013) Class I, Div. 2, Group ABCD, T4	IECEx Ex nA nC IIC T4 Gc; cCSAus (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2013) Class I, Div. 2, Group ABCD, T4
Marine approval	GL, ABS	GL, ABS	GL, ABS	GL, ABS	GL, ABS	GL, ABS
Degree of protection (EN 60529)	IP20	IP20	IP20	IP20	IP20	IP20
Operating data note						
Operating data note	For storage, mounting and operation of lead-acid batteries, the relevant DIN/VDE regulations or country-specific regulations (e.g. VDE 0510 Part 2/ EN 50272-2) must be observed. You must ensure that the battery site is sufficiently ventilated. Possible sources of ignition must be at least 50 cm away.	For storage, mounting and operation of lead-acid batteries, the relevant DIN/VDE regulations or country-specific regulations (e.g. VDE 0510 Part 2/ EN 50272-2) must be observed. You must ensure that the battery site is sufficiently ventilated. Possible sources of ignition must be at least 50 cm away.	For storage, mounting and operation of lead-acid batteries, the relevant DIN/VDE regulations or country-specific regulations (e.g. VDE 0510 Part 2/ EN 50272-2) must be observed. You must ensure that the battery site is sufficiently ventilated. Possible sources of ignition must be at least 50 cm away.	For storage, mounting and operation of batteries, the relevant DIN/VDE regulations or country-specific regulations (e.g. VDE 0510 Part 2/ EN 50272-2) must be observed.	For storage, mounting and operation of lead-acid batteries, the relevant DIN/VDE regulations or country-specific regulations (e.g. VDE 0510 Part 2/ EN 50272-2) must be observed. You must ensure that the battery site is sufficiently ventilated. Possible sources of ignition must be at least 50 cm away.	For storage, mounting and operation of lead-acid batteries, the relevant DIN/VDE regulations or country-specific regulations (e.g. VDE 0510 Part 2/ EN 50272-2) must be observed. You must ensure that the battery site is sufficiently ventilated. Possible sources of ignition must be at least 50 cm away.
Ambient temperature						
• during operation	-15 ... 50 °C	-40 ... +60 °C	-15 ... 50 °C	-20 ... +50 °C	-15 ... 50 °C	-15 ... 50 °C
• during transport	-20 ... +50 °C	-40 ... +60 °C	-20 ... +50 °C	-40 ... +80 °C	-20 ... +50 °C	-20 ... +50 °C
• during storage	-20 ... +50 °C	-40 ... +60 °C	-20 ... +50 °C	-40 ... +35 °C	-20 ... +50 °C	-20 ... +50 °C
Relative temporary capacity loss at 20 °C in a month typical	3 %	3 %	3 %	3 %	3 %	3 %
Service life						
Service life of energy storage						
• typical remark	capacity falls to 50 % of original capacity	capacity falls to 50 % of original capacity	capacity falls to 50 % of original capacity	capacity falls to 50 % of original capacity	capacity falls to 50 % of original capacity	capacity falls to 50 % of original capacity
• at 20 °C typical	4 years	10 years	4 years	15 years	4 years	4 years
• at 30 °C typical	2 years	7 years	2 years	10 years	2 years	2 years
• at 40 °C typical	1 year	3 years	1 year	9 years	1 year	1 years
• at 50 °C typical	0.5 years	1.5 years	0.5 years	2 years	0.5 years	0.5 years
• at 60 °C typical	-	1 year	-	-	-	-

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Technical specifications (continued)

Article number	6EP4131-0GB00-0AY0	6EP4132-0GB00-0AY0	6EP4133-0GB00-0AY0	6EP4133-0JB00-0AY0	6EP4134-0GB00-0AY0	6EP4135-0GB00-0AY0
Product	**SITOP UPS1100**	**SITOP UPS1100**	**SITOP UPS1100**	**SITOP UPS1100**	**SITOP UPS1100**	**SITOP UPS1100**
Product type	**Lead battery**	**Pure-lead battery**	**Lead battery**	**LiFePo battery**	**Lead battery**	**Lead battery**
Battery capacity	**1.2 Ah**	**2.5 Ah**	**3.2 Ah**	**5 Ah**	**7 Ah**	**12 Ah**
Ambient temperature during storage Note	Along with the storage and operating temperature, other factors such as the duration of the storage period and the charge status during storage have a decisive influence on the possible useful life. Batteries should therefore be stored as briefly as possible, always fully charged, and within the temperature range 0 to +20 °C.	Along with the storage and operating temperature, other factors such as the duration of the storage period and the charge status during storage have a decisive influence on the possible useful life. Batteries should therefore be stored as briefly as possible, always fully charged, and within the temperature range 0 to +20 °C.	Along with the storage and operating temperature, other factors such as the duration of the storage period and the charge status during storage have a decisive influence on the possible useful life. Batteries should therefore be stored as briefly as possible, always fully charged, and within the temperature range 0 to +20 °C.	Along with the storage and operating temperature, other factors such as the duration of the storage period and the charge status during storage have a decisive influence on the possible useful life. Batteries should therefore be stored as briefly as possible, always fully charged, and within the temperature range 0 to +20 °C.	Along with the storage and operating temperature, other factors such as the duration of the storage period and the charge status during storage have a decisive influence on the possible useful life. Batteries should therefore be stored as briefly as possible, always fully charged, and within the temperature range 0 to +20 °C.	Along with the storage and operating temperature, other factors such as the duration of the storage period and the charge status during storage have a decisive influence on the possible useful life. Batteries should therefore be stored as briefly as possible, always fully charged, and within the temperature range 0 to +20 °C.
Mechanics						
Connection technology	screw-type terminals	screw-type terminals	screw-type terminals	screw-type terminals	screw-type terminals	screw-type terminals
Connection for power supply unit	1 screw terminal each for 0.2 ... 6 mm^2 for + BATT and - BATT	1 screw terminal each for 0.2 ... 6 mm^2 for + BATT and - BATT	1 screw terminal each for 0.2 ... 6 mm^2 for + BATT and - BATT	1 screw terminal each for 0.5 ... 16 mm^2 for + BATT and - BATT	1 screw terminal each for 0.5 ... 16 mm^2 for + BATT and - BATT	1 screw terminal each for 0.5 ... 16 mm^2 for + BATT and - BATT
Type of electrical connection for control circuit and status message	1 screw terminal each for 0.14 ... 4 mm^2	1 screw terminal each for 0.14 ... 4 mm^2	1 screw terminal each for 0.14 ... 4 mm^2	1 screw terminal each for 0.14 ... 4 mm^2	1 screw terminal each for 0.14 ... 4 mm^2	1 screw terminal each for 0.14 ... 4 mm^2
Product component belonging to	Accessories pack with solid-state circuitry fuse 15 A	Accessories pack with solid-state circuitry fuse 25 A	Accessories pack with solid-state circuitry fuse 25 A	Accessories pack with solid-state circuitry fuse 15 A	Accessories pack with solid-state circuitry fuse 25 A	Accessories pack with solid-state circuitry fuse 25 A
Width of the enclosure	89 mm	265 mm	190 mm	189 mm	186 mm	253 mm
Height of the enclosure	130.3 mm	115 mm	169.3 mm	186 mm	186 mm	186 mm
Depth of the enclosure	106.7 mm	76 mm	78.7 mm	112.7 mm	110.3 mm	110.3 mm
Installation width	89 mm	265 mm	190 mm	189 mm	186 mm	253 mm
Installation height	145.3 mm	130 mm	184.3 mm	201 mm	201 mm	201 mm
Weight, approx.	1.9 kg	3.7 kg	3.8 kg	3.4 kg	6.1 kg	9.8 kg
Installation	snaps onto DIN rail EN 60715 35x7.5/15 or keyhole mounting for hooking in to M4 screws	snaps onto DIN rail EN 60715 35x7.5/15 or keyhole mounting for hooking in to M4 screws	snaps onto DIN rail EN 60715 35x15 or keyhole mounting for hooking in to M4 screws	snaps onto DIN rail EN 60715 35x7.5/15 or keyhole mounting for hooking in to M4 screws	can be screwed onto flat surface (keyhole mounting for hooking in to M4 screws)	can be screwed onto flat surface (keyhole mounting for hooking in to M4 screws)
Number of cells	12	12	12	16	12	12
Equipment marking acc. to DIN EN 81346-2	G	G	G	G	G	G
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

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Ordering data	Article No.
SITOP UPS 1100 battery module 1.2 Ah With maintenance-free, sealed lead-acid rechargeable batteries for DC UPS module SITOP UPS1600, 10 A	**6EP4131-0GB00-0AY0**
SITOP UPS 1100 battery module 3.2 Ah With maintenance-free, sealed lead-acid rechargeable batteries for DC UPS module SITOP UPS1600, 10 A and 20 A	**6EP4133-0GB00-0AY0**
SITOP UPS 1100 battery module 5 Ah, LiFePo With maintenance-free, sealed rechargeable lithium iron phosphate batteries for DC UPS module SITOP UPS1600, 10 A and 20 A	**6EP4133-0JB00-0AY0**
SITOP UPS 1100 battery module 7 Ah With maintenance-free, sealed rechargeable lead-acid batteries for DC UPS module SITOP UPS1600, 10 A, 20 A and 40 A	**6EP4134-0GB00-0AY0**
SITOP UPS 1100 battery module 12 Ah with maintenance-free, sealed rechargeable lead-acid batteries for DC UPS module SITOP UPS1600, 20 A and 40 A	**6EP4135-0GB00-0AY0**
SITOP UPS 1100 battery module 2.5 Ah, high temperature With maintenance-free, sealed rechargeable pure lead batteries for DC UPS module SITOP UPS1600, 10 A and 20 A	**6EP4132-0GB00-0AY0**

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Overview



By combining a DC UPS module with at least one 24 V battery module and a SITOP power supply unit, longer power failures can be bridged without any interruption. Even if a greater buffering current is required, the DC UPS with maintenance-free lead battery provides optimum safety. It spans power failures up to several hours long and delivers up to 40 A.

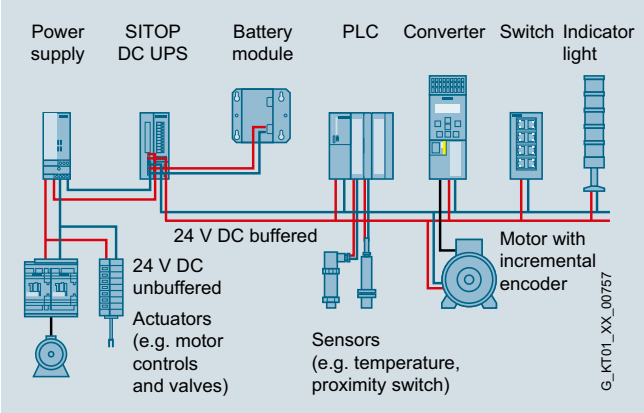
Benefits

- 24 V buffering for a few hours for the purpose of continuing processes
- Maintenance-free battery modules from 1.2 to 12 Ah
- High reliability and availability due to monitoring of the operational readiness, battery feeder, aging and charging status
- Long operating life of loads and batteries due to integrated battery management
- Settings by means of DIP switches: Battery connection threshold, end-of-charge voltage, charging current, bridging time
- SW tool, free of charge, for easy configuring and integrating in PC-based systems

Application

These battery modules that can be connected in parallel bridge power failures for a few hours. This enables processes or parts of them to be continued, measured values to be recorded without interruption and communication to be maintained. High-performance industrial PCs that have to be shut down also have somewhat higher energy demands. Especially if a large panel continues to be operated during the shutdown. The DC UPS is used, for example, in machine tool production, in the textile industry, in all types of production lines, bottling plants or also for the obstacle lights of wind power plants.

The serial or USB interface and a free software tool enable easy communication with a PC.



Configuration with SITOP DC UPS and battery module: 24 V buffering to maintain communication, signaling and sensor measured values. To relieve the load on the UPS, the actuators are supplied directly from the power supply unit.

Design

- DC UPS modules 24 V/6 A, 15 A, 40 A
- Digital inputs/outputs, optionally with serial or USB interface



- Battery modules 1.2 Ah, 3.2 Ah, 7 Ah, 12 Ah with lead rechargeable batteries of corrosion-resistant lead-calcium high-performance grid plates and glass fiber
- Battery module 2.5 Ah with "high-temperature battery" of pure lead



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Function

SITOP DC UPS software tool

Via the USB interface, all relevant messages about the status of the uninterruptible DC power supply can be transmitted to a PC (e.g. SIMATIC IPC). The DC UPS can also be configured via the USB interface.

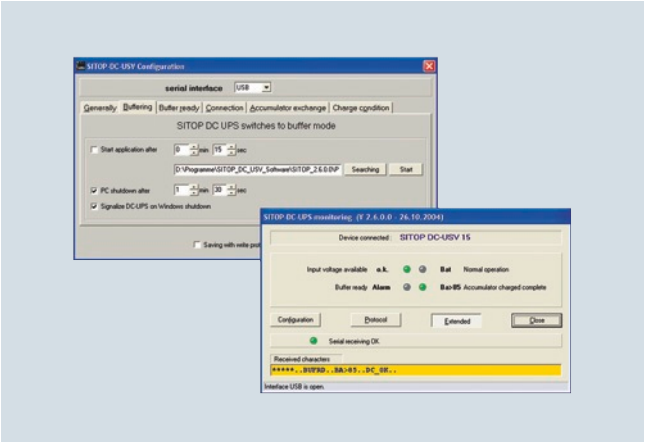
The SITOP DC UPS software provides the user with a free tool that is extremely easy to use for the purpose of monitoring and configuring the DC UPS. Signals sent from the uninterruptible DC power supply can be processed on the PC. In monitoring mode, the statuses of the uninterruptible DC power supply are visualized on the PC.

Safe shutdown in the event of a power failure and automatic PC restart are supported. It is also possible to freely define responses to the different operating states of the uninterruptible DC power supply, so that extremely flexible integration into a wide variety of applications is possible.

Overview of configuration possibilities:

- Times for shutting down the PC
- UPS switch-off
- Further processing of all signals, e.g. linking to proprietary software or WinCC flexible
- Monitoring and display of UPS operating status
- OPC server for linking signals to proprietary applications
- Automatic restarting of IPCs when power is restored during shutdown

The software runs under the operating systems Windows 2000, Windows XP, Windows Vista and Windows 7. Free download from:
http://support.automation.siemens.com/WW/view/en/48946053



Monitoring and configuration window of software V3 for SITOP DC UPS

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Technical specifications

The table shows the maximum buffering times for the battery modules for different load currents.

The SITOP Selection Tool offers detailed selection guidance according to criteria such as the required backup time, load current, peak current and battery connection threshold:
http://www.siemens.com/sitop-selection-tool

Load current	Battery module 1.2 Ah (6EP1935-6MC01)	Battery module 3.2 Ah (6EP1935-6MD11)	Battery module 7 Ah (6EP1935-6ME21)	Battery module 12 Ah (6EP1935-6MF01)	Battery module 2.5 Ah (6EP1935-6MD31)
1 A	34.5 min	2.6 h	5.4 h	9 h	2 h
2 A	15 min	1 h	2.6 h	4.6 h	1 h
3 A	9 min	39.3 min	1.6 h	2.9 h	37.5 min
4 A	6.5 min	27.1 min	1.2 h	2.2 h	27 min
6 A	3.5 min	17.5 min	41 min	1.2 h	17.6 min
8 A	2 min	12.1 min	28.6 min	53.3 min	12.5 min
10 A	1 min	9 min	21.8 min	43.5 min	8.8 min
12 A	-	7 min	17.3 min	33.3 min	6.8 min
14 A	-	5 min	15.1 min	27.5 min	5.1 min
16 A	-	4 min	12.5 min	23.8 min	4.3 min
20 A	-	1 min	9.1 min	20.1 min	-
25 A	-	-	-	12.6 min	-
30 A	-	-	-	9.1 min	-
35 A	-	-	-	17.1 min. (2 x 12 Ah)	-
40 A	-	-	-	13.5 min. (2 x 12 Ah)	-

Important information for selecting the battery capacity:

Determination of the mains buffering times is based on the discharge period of new or non-aged, completely charged battery modules at a battery temperature not below +25 °C to the shutdown of the DC UPS.

Battery aging reduces the still available battery capacity up until the end of the service life to typically around 50% of the original capacity value when new (1.2 Ah/3.2 Ah/7 Ah, etc.) and the internal resistance increases. When the message "Battery charge > 85%" appears, only around 50% x 85% = approx. 43% of the originally available capacity can be assumed at the end of the battery service life.

At battery temperatures below +25 °C, the available capacity drops approximately by another 30% at +5 °C battery temperature, to approximately 70% of the approximately remaining 43%. There is then only around 30% of the original capacity available.

A significantly larger battery capacity must therefore be selected when configuring the plant: A drop to approx. 50% is compensated for by selecting 1 / approx. 0.5 = approx. double the battery capacity (required as per the table for the relevant load current and the relevant buffering time). Available capacity of approx. 43% is compensated for by selecting 1 / approx. 0.43 = approx. 2.33 times the battery capacity. Available capacity of approx. 30% is compensated for by selecting 1 / approx. 0.3 = approx. 3.33 times the battery capacity.

Recommendation:

Instead of installing double the battery capacity, regular battery replacement halfway through the expected service life (reduction of capacity to approx. 50%) can be more advisable for the following reasons: Capacity does not drop below 100% until the halfway point of the expected battery life (or slightly beyond). With regular replacement after this point, only the single battery capacity (instead of double capacity) must be installed due to aging (-> neutral in price with regard to battery module costs, but only requires half the space).

Replacing the battery after half its service life dispenses above all with the large scatter range of the residual capacity at the end of the service life, which is not accurately defined by battery manufacturers (after the full time, many batteries are above, but many are also below the average 50% residual capacity, that is to say, even if double the capacity is installed, the influence of aging at the end of service life is not reliably compensated for, rather only typically) -> When replacing after half the expected service life, the configured buffering time is maintained with considerably greater reliability.

In the case of batteries stored in cool conditions (not above +25 °C) and for not longer than approximately 4 months, the following service life can be assumed, strongly dependent on battery temperature:

Battery temperature	Drop to approx. 50% of residual capacity	Recommendation: Replace (at 100% of residual capacity) all	Alternative recommendation
+20 °C	4 years	2 years	
+30 °C	2 years	1 year	
+40 °C	1 year	0.5 years	Install double capacity and replace 1 x per year

In normal cases (installation in the coolest location in the control cabinet at approx. +30 °C), the battery should be replaced with single installed battery capacity in accordance with the selection table after 1 year of operation!

- On the DC UPS module 40 A, at least 2 battery modules of 7 Ah or higher must be connected in parallel for output currents > 30 A. When connecting battery modules in parallel, you must ensure identical capacity and aging.
- After a power failure, the battery module is disconnected from the loads at the end of the selected buffering time either automatically or electronically by opening the On/Off control circuit, and as soon as the 24 V input voltage is available again, it is quickly re-charged with the charging current of the relevant DC UPS module (with I-U charge characteristic: First constant current I for fast charging, and changeover to constant voltage U to maintain the charge when the battery is almost full).

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Technical specifications (continued)

Article number	6EP1931-2DC21 6EP1931-2DC31 6EP1931-2DC42	6EP1931-2EC21 6EP1931-2EC31 6EP1931-2EC42	6EP1931-2FC21 6EP1931-2FC42
Product brand name	**SITOP DC UPS module**	**SITOP DC UPS module**	**SITOP DC UPS module**
Type of current supply	**DC UPS 24 V/6 A**	**DC UPS 24 V/15 A**	**DC UPS 24 V/40 A**
Input			
Supply voltage at DC Rated value	24 V	24 V	24 V
Voltage curve at input	DC	DC	DC
input voltage range	22 ... 29 V DC	22 ... 29 V DC	22 ... 29 V DC
Adjustable response value voltage for buffer connection preset	22.5 V	22.5 V	22.5 V
Adjustable response value voltage for buffer connection	22 ... 25.5 V; Adjustable in 0.5 V increments	22 ... 25.5 V; Adjustable in 0.5 V increments	22 ... 25.5 V; Adjustable in 0.5 V increments
Input current at rated input voltage 24 V Rated value	6 A; + approx. 0.6 A with empty battery	15 A; + approx. 1 A with empty battery	40 A; + approx. 2.6 A with empty battery
Mains buffering			
Type of energy storage	with batteries	with batteries	with batteries
Design of the mains power cut bridging-connection	Dependent on connected battery and load current, see selection table battery module and mains buffering times as well as the relevant important information notes!	Dependent on connected battery and load current, see selection table battery module and mains buffering times as well as the relevant important information notes!	Dependent on connected battery and load current, see selection table battery module and mains buffering times as well as the relevant important information notes!
Charging current			
• 1	0.2 A	0.35 A	1 A
• 2	0.4 A	0.7 A	2 A
adjustable charging current maximum Note	factory setting approx. 0.4 A	factory setting approx. 0.7 A	factory setting approx. 2 A
Output			
Output voltage			
• in normal operation at DC Rated value	24 V	24 V	24 V
• in buffering mode at DC Rated value	24 V	24 V	24 V
Formula for output voltage	V_{in} - approx. 0.5 V	V_{in} - approx. 0.5 V	V_{in} - approx. 0.5 V
ON-delay time typical	1 s	1 s	1 s
Voltage increase time of the output voltage typical	60 ms	60 ms	360 ms
Output voltage in buffering mode at DC	19 ... 28.5 V	19 ... 28.5 V	19 ... 28.5 V
Output current			
• Rated value	6 A	15 A	40 A
• in normal operation	0 ... 6 A	0 ... 15 A	0 ... 40 A
• in buffering mode	0 ... 6 A	0 ... 15 A	0 ... 40 A
Peak current	6.3 A	15.7 A	42 A
Property of the output Short-circuit proof	Yes	Yes	
Supplied active power typical	144 W	360 W	960 W
Efficiency			
Efficiency in percent			
• at rated output current at rated output current typical	95 %	96.2 %	97.2 %
• in case of accumulator operation typical	94.5 %	96 %	96.9 %
Power loss [W]			
• at rated output current at rated output current typical	7 W	14 W	28.6 W
• in case of accumulator operation typical	8 W	15 W	33.6 W
Protection and monitoring			
Product function			
• reverse polarity protection against energy storage unit polarity reversal	Yes	Yes	Yes
• reverse polarity protection against input voltage polarity reversal	Yes	Yes	Yes

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Technical specifications (continued)

Article number	6EP1931-2DC21 6EP1931-2DC31 6EP1931-2DC42	6EP1931-2EC21 6EP1931-2EC31 6EP1931-2EC42	6EP1931-2FC21 6EP1931-2FC42
Product brand name	**SITOP DC UPS module**	**SITOP DC UPS module**	**SITOP DC UPS module**
Type of current supply	**DC UPS 24 V/6 A**	**DC UPS 24 V/15 A**	**DC UPS 24 V/40 A**
Signaling			
Display version			
• for normal operation	Normal operation: LED green (OK), floating changeover contact "Bat/OK" to setting "OK" ("OK" means: Voltage of the supplying power supply unit is greater than cut-in threshold set at the DC UPS module); Lack of buffer standby: LED red (alarm), floating changeover contact "Alarm/Bat" to setting "Alarm"; Battery replacement required: LED red (alarm) flashing with approx. 0.25 Hz, floating changeover contact "Alarm/Bat" switching with approx. 0.25 Hz; Energy storage > 85%: LED green (Bat > 85%), floating NO contact "Bat > 85" closed; Permissible contact current capacity: DC 60 V/1 A or AC 30 V /1 A	Normal operation: LED green (OK), floating changeover contact "Bat/OK" to setting "OK" ("OK" means: Voltage of the supplying power supply unit is greater than cut-in threshold set at the DC UPS module); Lack of buffer standby: LED red (alarm), floating changeover contact "Alarm/Bat" to setting "Alarm"; Battery replacement required: LED red (alarm) flashing with approx. 0.25 Hz, floating changeover contact "Alarm/Bat" switching with approx. 0.25 Hz; Energy storage > 85%: LED green (Bat > 85%), floating NO contact "Bat > 85" closed; Permissible contact current capacity: DC 60 V/1 A or AC 30 V /1 A	Normal operation: LED green (OK), floating changeover contact "Bat/OK" to setting "OK" ("OK" means: Voltage of the supplying power supply unit is greater than cut-in threshold set at the DC UPS module); Lack of buffer standby: LED red (alarm), floating changeover contact "Alarm/Bat" to setting "Alarm"; Battery replacement required: LED red (alarm) flashing with approx. 0.25 Hz, floating changeover contact "Alarm/Bat" switching with approx. 0.25 Hz; Energy storage > 85%: LED green (Bat > 85%), floating NO contact "Bat > 85" closed; Permissible contact current capacity: DC 60 V/1 A or AC 30 V /1 A
• in buffering mode	Buffered mode: LED yellow (Bat), floating changeover contact "OK/Bat" to setting "Bat"; Prewarning battery voltage < 20.4 VDC: LED red (alarm), floating changeover contact "Alarm/Bat" to setting "Alarm"; Energy storage > 85%: LED green (Bat > 85%), floating NO contact "Bat > 85" closed	Buffered mode: LED yellow (Bat), floating changeover contact "OK/Bat" to setting "Bat"; Prewarning battery voltage < 20.4 VDC: LED red (alarm), floating changeover contact "Alarm/Bat" to setting "Alarm"; Energy storage > 85%: LED green (Bat > 85%), floating NO contact "Bat > 85" closed	Buffered mode: LED yellow (Bat), floating changeover contact "OK/Bat" to setting "Bat"; Prewarning battery voltage < 20.4 VDC: LED red (alarm), floating changeover contact "Alarm/Bat" to setting "Alarm"; Energy storage > 85%: LED green (Bat > 85%), floating NO contact "Bat > 85" closed
Interface			
Product component PC interface	No	No	No
Design of the interface	without	without	without
Safety			
Galvanic isolation between entrance and outlet	No	No	No
Operating resource protection class	Class III	Class III	Class III
Certificate of suitability			
• CE marking	Yes	Yes	Yes
• as approval for USA	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259	cULus-Listed (UL 508, CSA C22.2 No. 107.1), File E197259
• relating to ATEX	-	-	-
• C-Tick	No	No	No
Shipbuilding approval	GL, ABS	GL, ABS	GL, ABS
Protection class IP	IP20	IP20	IP20
EMC			
Standard			
• for emitted interference	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B
• for interference immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Operating data			
Ambient temperature			
• during operation	-25 ... +60 °C; with natural convection	-25 ... +60 °C; with natural convection	-25 ... +60 °C; with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Environmental category acc. to IEC 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation

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Technical specifications (continued)

Article number	6EP1931-2DC21 6EP1931-2DC31 6EP1931-2DC42	6EP1931-2EC21 6EP1931-2EC31 6EP1931-2EC42	6EP1931-2FC21 6EP1931-2FC42
Product brand name	**SITOP DC UPS module**	**SITOP DC UPS module**	**SITOP DC UPS module**
Type of current supply	**DC UPS 24 V/6 A**	**DC UPS 24 V/15 A**	**DC UPS 24 V/40 A**
Mechanics			
Type of electrical connection	screw-type terminals	screw-type terminals	screw-type terminals
• at input	24 V DC: 2 screw terminals for 1 ... 4 mm^2/17 ... 11 AWG	24 V DC: 2 screw terminals for 1 ... 4 mm^2/17 ... 11 AWG	24 V DC: 2 screw terminals for 0.33 ... 10 mm^2/22 ... 7 AWG
• at output	24 V DC: 4 screw terminals for 1 ... 4 mm^2/17 ... 11 AWG	24 V DC: 4 screw terminals for 1 ... 4 mm^2/17 ... 11 AWG	24 V DC: 2 screw terminals for 0.33 ... 10 mm^2/22 ... 7 AWG
• for battery module	24 V DC: 2 screw terminals for 1 ... 4 mm^2/17 ... 11 AWG	24 V DC: 2 screw terminals for 1 ... 4 mm^2/17 ... 11 AWG	24 V DC: 2 screw terminals for 0.33 ... 10 mm^2/22 ... 7 AWG
• for control circuit and status message	10 screw terminals for 0.5 ... 2.5 mm^2/20 ... 13 AWG	10 screw terminals for 0.5 ... 2.5 mm^2/20 ... 13 AWG	10 screw terminals for 0.5 ... 2.5 mm^2/20 ... 13 AWG
Width of the enclosure	50 mm	50 mm	102 mm
Height of the enclosure	125 mm	125 mm	125 mm
Depth of the enclosure	125 mm	125 mm	125 mm
Required spacing			
• top	50 mm	50 mm	50 mm
• bottom	50 mm	50 mm	50 mm
• left	0 mm	0 mm	0 mm
• right	0 mm	0 mm	0 mm
Net weight	0.4 kg	0.4 kg	1.1 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes	Yes
Mounting type	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15
Electrical accessories	Battery module	Battery module	Battery module
MTBF at 40 °C	1 085 776 h	791 139 h	522 739 h
Equipment marking acc. to DIN EN 81346-2	T	T	T
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

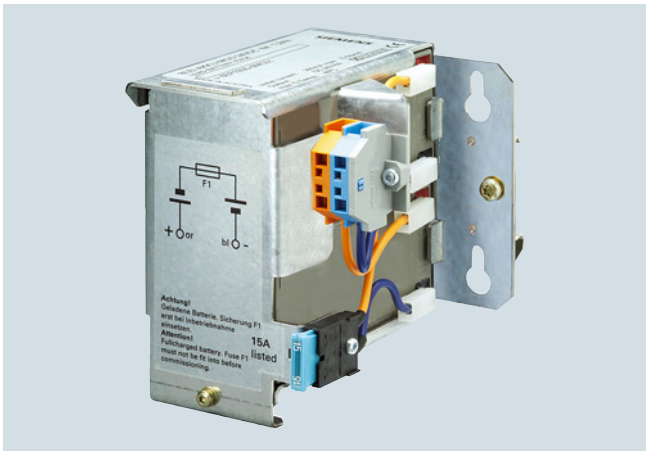
Ordering data

	Article No.
DC UPS module 6 A	**6EP1931-2DC21**
• with serial interface	**6EP1931-2DC31**
• with USB interface	**6EP1931-2DC42**
DC UPS module 15 A	**6EP1931-2EC21**
• with serial interface	**6EP1931-2EC31**
• with USB interface	**6EP1931-2EC42**
DC UPS module 40 A	**6EP1931-2FC21**
• with USB interface	**6EP1931-2FC42**

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DC UPS battery modules

Overview



Maintenance-free battery modules with 1.2 Ah up to 12 Ah (lead-gel accumulator) for ambient temperatures from 0 to +40 °C as well as high-temperature battery module with 2.5 Ah (pure-lead accumulator) for ambient temperatures of –40 °C to +60 °C. The battery modules are completely prewired with battery retainer and terminals. For longer buffer times, the battery modules can be connected in parallel. Mounting onto standard mounting rail or directly to the wall.

Technical specifications

Article number	**6EP1935-6MC01**	**6EP1935-6MD31**	**6EP1935-6MD11**	**6EP1935-6ME21**	**6EP1935-6MF01**
Product	**SITOP Battery module**	**SITOP Battery module**	**SITOP Battery module**	**SITOP Battery module**	**SITOP Battery module**
Product type	**Battery module 1.2 Ah**	**Battery module 2.5 Ah**	**Battery module 3.2 Ah**	**Battery module 7 Ah**	**Battery module 12 Ah**
Charging current charging voltage					
End-of-charge voltage at DC					
• at -10 °C recommended	-	29 V	-	-	-
• at 0 °C recommended	-	28.6 V	-	-	-
• at 10 °C recommended	27.8 V	28.3 V	27.8 V	27.8 V	27.8 V
• at 20 °C recommended	27.3 V	27.9 V	27.3 V	27.3 V	27.3 V
• at 30 °C recommended	26.8 V	27.5 V	26.8 V	26.8 V	26.8 V
• at 40 °C recommended	26.6 V	27.2 V	26.6 V	26.6 V	26.6 V
• at 50 °C recommended	26.3 V	26.8 V	26.3 V	26.3 V	26.3 V
• at 60 °C recommended	-	26.4 V	-	-	-
Permissible charging current, max.	0.3 A	5 A	0.8 A	1.75 A	3 A
Rated voltage V_{out} DC	24 V	24 V	24 V	24 V	24 V
Safety					
Short-circuit protection	Battery fuse 7.5 A/32 V (solid-state circuitry blade-type fuse + support)	Battery fuse 15 A/32 V (solid-state circuitry blade-type fuse + support)	Battery fuse 15 A/32 V (solid-state circuitry blade-type fuse + support)	Battery fuse 20 A/32 V (solid-state circuitry blade-type fuse + support)	Battery fuse 20 A/32 V (solid-state circuitry blade-type fuse + support)
Design of the overload protection	Valve control	Valve control	Valve control	Valve control	Valve control
Safety					
Protection class	Class III	Class III	Class III	Class III	Class III
CE mark	Yes	Yes	Yes	Yes	Yes
UL/cUL (CSA) approval	cURus-Recognized (UL 1778, CSA C22.2 No. 107.1), File E219627	cURus-Recognized (UL 1778, CSA C22.2 No. 107.1), File E219627	cURus-Recognized (UL 1778, CSA C22.2 No. 107.1), File E219627	cURus-Recognized (UL 1778, CSA C22.2 No. 107.1), File E219627	cURus-Recognized (UL 1778, CSA C22.2 No. 107.1), File E219627
Marine approval	GL, ABS	GL, ABS	GL, ABS	GL, ABS	GL, ABS
Degree of protection (EN 60529)	IP00	IP00	IP00	IP00	IP00

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Technical specifications (continued)

Article number	6EP1935-6MC01	6EP1935-6MD31	6EP1935-6MD11	6EP1935-6ME21	6EP1935-6MF01
Product	**SITOP Battery module**	**SITOP Battery module**	**SITOP Battery module**	**SITOP Battery module**	**SITOP Battery module**
Product type	**Battery module 1.2 Ah**	**Battery module 2.5 Ah**	**Battery module 3.2 Ah**	**Battery module 7 Ah**	**Battery module 12 Ah**
Operating data note					
Operating data note	For storage, mounting and operation of lead-acid batteries, the relevant DIN/VDE regulations or country-specific regulations (e.g. VDE 0510 Part 2/EN 50272-2) must be observed. You must ensure that the battery site is sufficiently ventilated. Possible sources of ignition must be at least 50 cm away.	For storage, mounting and operation of lead-acid batteries, the relevant DIN/VDE regulations or country-specific regulations (e.g. VDE 0510 Part 2/EN 50272-2) must be observed. You must ensure that the battery site is sufficiently ventilated. Possible sources of ignition must be at least 50 cm away.	For storage, mounting and operation of lead-acid batteries, the relevant DIN/VDE regulations or country-specific regulations (e.g. VDE 0510 Part 2/EN 50272-2) must be observed. You must ensure that the battery site is sufficiently ventilated. Possible sources of ignition must be at least 50 cm away.	For storage, mounting and operation of lead-acid batteries, the relevant DIN/VDE regulations or country-specific regulations (e.g. VDE 0510 Part 2/EN 50272-2) must be observed. You must ensure that the battery site is sufficiently ventilated. Possible sources of ignition must be at least 50 cm away.	For storage, mounting and operation of lead-acid batteries, the relevant DIN/VDE regulations or country-specific regulations (e.g. VDE 0510 Part 2/EN 50272-2) must be observed. You must ensure that the battery site is sufficiently ventilated. Possible sources of ignition must be at least 50 cm away.
Ambient temperature					
• during operation	-15 ... +50 °C	-40 ... +60 °C	-15 ... +50 °C	-15 ... +50 °C	-15 ... +50 °C
• during transport	-20 ... +50 °C	-40 ... +60 °C	-20 ... +50 °C	-20 ... +50 °C	-20 ... +50 °C
• during storage	-20 ... +50 °C	-40 ... +60 °C	-20 ... +50 °C	-20 ... +50 °C	-20 ... +50 °C
Relative temporary capacity loss at 20 °C in a month typical	3 %	3 %	3 %	3 %	3 %
Service life					
Service life of energy storage					
• typical remark	capacity falls to 50 % of original capacity	capacity falls to 50 % of original capacity	capacity falls to 50 % of original capacity	capacity falls to 50 % of original capacity	capacity falls to 50 % of original capacity
• at 20 °C typical	4 years	10 years	4 years	4 years	4 years
• at 30 °C typical	2 years	7 years	2 years	2 years	2 years
• at 40 °C typical	1 year	3 years	1 year	1 year	1 year
• at 50 °C typical	0.5 years	1.5 years	0.5 years	0.5 years	0.5 years
• at 60 °C typical	-	1 year	-	-	-
Ambient temperature during storage Note	Along with the storage and operating temperature, other factors such as the duration of the storage period and the charge status during storage have a decisive influence on the possible useful life. Batteries should therefore be stored as briefly as possible, always fully charged, and within the temperature range 0 to +20 °C.	Along with the storage and operating temperature, other factors such as the duration of the storage period and the charge status during storage have a decisive influence on the possible useful life. Batteries should therefore be stored as briefly as possible, always fully charged, and within the temperature range 0 to +20 °C.	Along with the storage and operating temperature, other factors such as the duration of the storage period and the charge status during storage have a decisive influence on the possible useful life. Batteries should therefore be stored as briefly as possible, always fully charged, and within the temperature range 0 to +20 °C.	Along with the storage and operating temperature, other factors such as the duration of the storage period and the charge status during storage have a decisive influence on the possible useful life. Batteries should therefore be stored as briefly as possible, always fully charged, and within the temperature range 0 to +20 °C.	Along with the storage and operating temperature, other factors such as the duration of the storage period and the charge status during storage have a decisive influence on the possible useful life. Batteries should therefore be stored as briefly as possible, always fully charged, and within the temperature range 0 to +20 °C.

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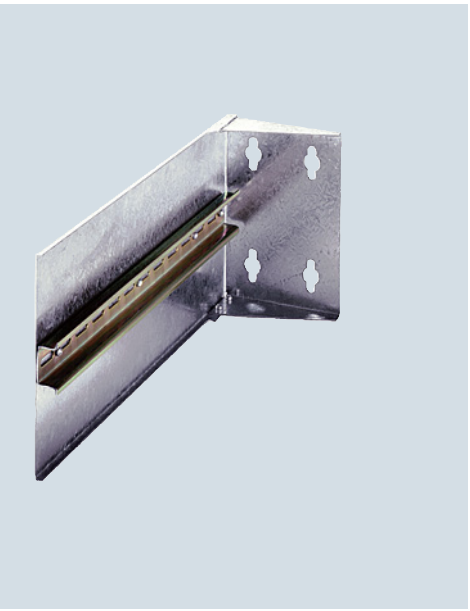
Technical specifications (continued)

Article number	6EP1935-6MC01	6EP1935-6MD31	6EP1935-6MD11	6EP1935-6ME21	6EP1935-6MF01
Product	**SITOP Battery module**	**SITOP Battery module**	**SITOP Battery module**	**SITOP Battery module**	**SITOP Battery module**
Product type	**Battery module 1.2 Ah**	**Battery module 2.5 Ah**	**Battery module 3.2 Ah**	**Battery module 7 Ah**	**Battery module 12 Ah**
Mechanics					
Connection technology	spring-loaded terminals	spring-loaded terminals	spring-loaded terminals	spring-loaded terminals	spring-loaded terminals
Connection for power supply unit	1 screw terminal each for 0.08 ... 2.5 mm^2 for + BATT and - BATT	1 screw terminal each for 0.08 ... 2.5 mm^2 for + BATT and - BATT	1 screw terminal each for 0.08 ... 2.5 mm^2 for + BATT and - BATT	1 screw terminal each for 0.08 ... 4 mm^2 for + BATT and - BATT	1 screw terminal each for 0.08 ... 4 mm^2 for + BATT and - BATT
Product component belonging to	Accessories pack with solid-state circuitry fuse 7.5 A	Accessories pack with solid-state circuitry fuse 15 A	Accessories pack with solid-state circuitry fuse 15 A	Accessories pack with solid-state circuitry fuse 20 A and 30 A	Accessories pack with solid-state circuitry fuse 20 A and 30 A
Width of the enclosure	96 mm	265 mm	190 mm	186 mm	253 mm
Height of the enclosure	106 mm	151 mm	151 mm	168 mm	168 mm
Depth of the enclosure	108 mm	91 mm	82 mm	121 mm	121 mm
Installation width	116 mm	285 mm	210 mm	206 mm	273 mm
Installation height	126 mm	171 mm	171 mm	188 mm	188 mm
Weight, approx.	1.8 kg	3.8 kg	3.2 kg	6 kg	9 kg
Installation	snaps onto DIN rail EN 60715 35x7.5/15 or keyhole mounting for hooking in to M4 screws	snaps onto DIN rail EN 60715 35x15 or keyhole mounting for hooking in to M4 screws	snaps onto DIN rail EN 60715 35x7.5/15 or keyhole mounting for hooking in to M4 screws	can be screwed onto flat surface (keyhole mounting for hooking in to M4 screws)	can be screwed onto flat surface (keyhole mounting for hooking in to M4 screws)
Number of cells	12	12	12	12	12
Equipment marking acc. to DIN EN 81346-2	G	G	G	G	G
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

	Article No.
Battery module 1.2 Ah for DC UPS module 6 A	**6EP1935-6MC01**
Battery module 2.5 Ah for DC UPS module 6 A and 15 A	**6EP1935-6MD31**
Battery module 3.2 Ah for DC UPS module 6 A and 15 A	**6EP1935-6MD11**
Battery module 7 Ah for DC UPS modules 6 A, 15 A and 40 A	**6EP1935-6ME21**
Battery module 12 Ah for DC UPS modules 6 A, 15 A and 40 A	**6EP1935-6MF01**

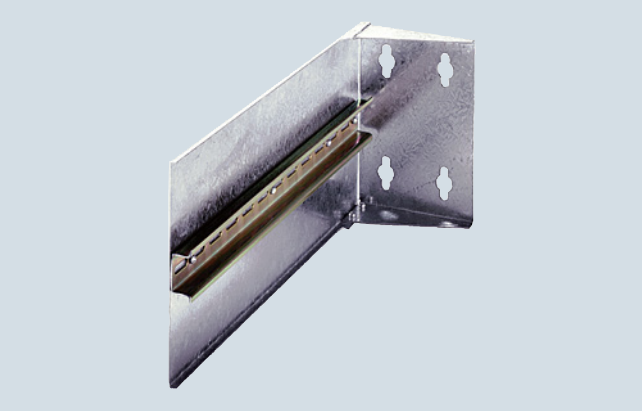
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12/2 Accessories

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Overview



Mounting bracket

The combination of a SITOP power supply and a 90° mounting bracket results in a minimum surface area requirement on the rear panel of the control cabinet (the width of the power supply becomes the depth, and the depth becomes the width). The mounting bracket is suitable for control cabinets with a depth of 320 mm or more.

Mounting adapter for standard mounting rail

The 1-phase 24 V/2 A (6ES7305-1BA80-0AA0) and 24 V/5 A (6ES7307-1EA80-0AA0) power supplies are special mechanical versions for SIMATIC S7-300 and can be mounted on S7 rails.

A mounting adapter (6ES7390-6BA00-0AA0) for mounting on the standard mounting rail EN 60715 35x15 is separately available as an accessory.

The 24 V/ 2 A (6ES7307-1BA01-0AA0), 24 V/ 5 A (6ES7307-1EA01-0AA0) and 10 A (6ES7307-1KA02-0AA0) power supplies are variants for SIMATIC S7-300 and can be mounted on S7 rails.

A mounting adapter (6EP1971-1BA00) for installation on DIN rail EN 60715 35×15/7.5 is separately available as an accessory.

Connection plug for devices with degrees of protection IP65 and IP67

For the maintenance-free SITOP UPS500P DC UPS modules (6EP1933-2NC01, 6EP1933-2NC11) in IP65 degree of protection, a connector set (6EP1975-2ES00) for input and output and with a pre-assembled USB cable (2 m long) is available as an accessory.

Device labels

Blank device labeling plates (20 mm x 7 mm, pastel turquoise) with Art. No.'s 3RT1 900-1SB20 can be used for identification of the power supplies. The package unit comprises 340 labels on frames, 20 labels per frame. For usability, refer to "Accessories" in the technical data of the respective power supplies.

Technical specifications

Mounting bracket 90° for SITOP power Standard 24 V

Mounting bracket	For a depth of 320 mm
Article number	**6EP1971-2BA00**
Dimensions (W x H x D) in mm	100 x 150 x 320
Sheet thickness	1.5 mm
Mounting rail, attached	Standard mounting rail EN 60715 35x15
Weight, approx.	0.9 kg
Mounting	Can be screwed onto a flat surface (keyhole mounting for hooking onto M6 screws, drill hole distance 90 mm height, 50 mm side)
Accessories, included	4 M6 combi screws
Suitable, for example, for	SITOP 24 V/20 A (6EP1336-3BA00, 6EP1436-3BA00) SITOP 24 V/40 A (6EP1437-3BA00,6EP1437-3BA00) SITOP 48 V/20 A (6EP1457-3BA00)

Ordering data

	Article No.
SITOP modular signaling module For 6EP1XXX-3BA00 signaling contacts: Output voltage ok, operational availability ok, remote ON/OFF	**6EP1961-3BA10**
SITOP power mounting bracket 90 degrees, for Article No.'s. 6EP1336-3BA00, 6EP1436-3BA00, 6EP1337-3BA00, 6EP1437-3BA00, 6EP1457-3BA00	**6EP1971-2BA00**
SIMATIC S7-300 mounting adapter For snapping the PS 307 onto standard mounting rail 35x15/7.5 mm suitable for 6ES7307-1BA01*, -1EA01*, -1KA02* and higher	**6EP1971-1BA00**
Connector set For UPS500P 6EP1933-2NC01 and 6EP1933-2NC11 degree of protection IP65 Contents: input plug, output plug, USB cable connection, length 2 m	**6EP1975-2ES00**
SIMATIC S7-300 mounting adapter for snapping the PS307 onto 35 mm standard rails	**6ES7390-6BA00-0AA0**
Device labels	**3RT1900-1SB20**

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13/2 Introduction

13/3 Ordering data

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Introduction

Overview



Particularly harsh industrial environments demand products with special characteristics - products that are more rugged than standard products.

Siemens offers the perfect answer to these requirements with SIPLUS extreme.
SIPLUS product variants are based on the SITOP, LOGO!Power standard power supplies and the power supplies for SIMATIC S7 and expansion modules, and feature the following characteristics:

- Extended ambient temperature range (e.g. -40 … +70 °C) and conformal coating as protection against extreme and difficult conditions and contact with substances
- DIN EN 50155:
  Conforms with standard for electronic equipment used on rolling stock (EN 50155, temperature T1, category)

Ambient conditions	
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical specifications	The technical data of the standard product applies except for the ambient conditions.
Relative humidity	100%, condensation/frost permitted. No commissioning in bedewed state.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. conductive sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!
Air pressure (depending on the highest positive temperature range specified)	1080 ... .795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 … 540 hPa (+3500 … +5000 m) derating 20 K

For further technical specifications, see the standard products, or visit www.siemens.com/siplus-extreme

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Ordering data	Article No.
SIPLUS LOGO!Power	
SIPLUS LOGO!Power 24 V 1.3 A Input: 100 ... 240 V AC Output: 24 V DC, 1.3 A Extended temperature range and exposure to media	**6AG1331-1SH03-7AA0**
SIPLUS LOGO!Power 24 V 2.5 A Input: 100 ... 240 V AC Output: 24 V DC, 2.5 A Extended temperature range and exposure to media	**6AG1332-1SH43-7AA0**
SIPLUS LOGO!Power 24 V 4 A Input: 100 ... 240 V AC Output: 24 V DC, 4 A Extended temperature range and exposure to media	**6AG1332-1SH52-7AA0**
SIPLUS smart	
SIPLUS PSU100S 24 V/10 A Stabilized power supply Input: 120/230 V AC Output: 24 V DC/10 A Extended temperature range and Exposure to media	**6AG1334-2BA20-4AA0**
SIPLUS PSU300S 3-phase, 24 V DC/10 A Stabilized power supply Input: 400 … 500 V 3 AC Output: 24 V DC/20 A Exposure to media	**6AG1434-2BA10-7AA0**
SIPLUS PSU300S 3-phase, 24 V DC/20 A Stabilized power supply Input: 400 … 500 V 3 AC Output: 24 V DC/20 A Extended Temperature range and exposure To media	**6AG1436-2BA10-7AA0**
SIPLUS modular	
SIPLUS Modular 40 A Stabilized power supply Input: 120/230 V AC Output: 24 V DC/40 A	
• Exposure to media	**6AG1337-3BA00-4AA0**
• Extended temperature range and exposure to media	**6AG1337-3BA00-7AA0**
SIPLUS PS PSU200M 1-phase and 2-phase, 24 V DC/5 A Stabilized power supply Input: 120 ... 230 V/230 … 500 V AC	
• Output: 24 V DC/5 A	**6AG1333-3BA10-7AA0**
• Output: 24 V DC / 10 A	**6AG1334-3BA10-7AA0**
Exposure to media	
SIPLUS PS PSU8200 3-phase, 24 V DC/40 A Stabilized power supply Input: 400 … 500 V 3 AC Output: 24 V DC/20 A Exposure to media	**6AG1437-3BA10-7AA0**

Ordering data	Article No.
SIPLUS S7 design	
For industrial applications with particularly demanding ambient conditions	
SIPLUS S7-300 PS 305 Input: 24 … 110 V DC Output: 24 V DC/2 A Extended temperature range and exposure to media	**6AG1305-1BA80-2AA0**
SIPLUS S7-300 PS 305 5 A Incl. connection bracket Input: 120/230 V AC Output: 24 V DC/5 A Extended temperature range and exposure to media	**6AG1307-1EA01-7AA0**
SIPLUS S7-300 PS 305 10 A Incl. connection bracket Input: 120/230 V AC Output: 24 V DC/10 A (dimensions 80 x 125 x 120) Extended temperature range and exposure to media	**6AG1307-1KA02-7AA0**
For rolling stock railway applications	
SIPLUS S7-300 PS 305 Input: 24 … 110 V DC Output: 24 V DC/2 A Conforms to EN 50155 Extended temperature range and exposure to media	**6AG1305-1BA80-2AA0**
SIPLUS S7-1200 PM 1207 power supply Input: 120/230 V AC Output: 24 V DC, 2.5 A; Derating from + 55 °C to + 70 °C 1.2 A output current	
• Ambient temperature -25 ... +70 °C	**6AG1332-1SH71-7AA0**
• Ambient temperature 0... +60 °C	**6AG1332-1SH71-4AA0**
Extended temperature range and exposure to media	
SIPLUS S7-1500 PM 1507 Input: 120/230 V AC	
• Output: 24 V DC, 3 A	**6AG1332-4BA00-7AA0**
• Output: 24 V DC, 8 A	**6AG1333-4BA00-7AA0**
Extended temperature range and exposure to media	
SIPLUS S7-1500 system power supply For supplying the backplane bus of the S7-1500	
• 24 V DC input voltage, power 25 W	**6AG1505-0KA00-7AB0**
• 24/48/60 V DC input voltage, power 60 W	**6AG1505-0RA00-7AB0**
• 120/230 V AC input voltage, power 60 W	**6AG1507-0RA00-7AB0**
Extended temperature range and exposure to media	

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Ordering data

Ordering data	Article No.
SIPLUS DC/DC converter	
SIPLUS PS 24V/0.375A DC/DC stabilized power supply Input: 48 … 220 V DC Output: 24 V DC/0.375 A condensation permissible Exposure to media	**6AG1931-2BA00-3AA0**
SIPLUS add-on modules	
SIPLUS PS E202U redundancy module Input/output: 24 V DC/40 A suitable for decoupling two SITOP power supplies with a maximum of 20 A output current	
• Extended temperature range and exposure to media	**6AG1961-3BA21-7AX0**
• Exposure to media	**6AG1961-3BA21-4AX0**
SIPLUS PSE200U 3 A 4-channel selectivity module Input: 24 V DC Output: 24 V DC/3A per channel output current adjustable 0.5 ... 3 A Exposure to media	**6AG1961-2BA31-7AA0**
SIPLUS PSE200U 10 A 4-channel selectivity module Input: 24 V DC Output: 24 V DC/10 A per channel output current adjustable 3 ... 10 A Exposure to media	**6AG1961-2BA41-7AA0**

	Article No.
SIPLUS modular buffer module For 6AG1961-3BA01-7AA0; buffer time 100 ms to 10 s, dependent on load current	**6AG1961-3BA01-7AA0**
SIPLUS PS signaling module modular For 6AG1XXX-3BA00 -XXXX signaling contacts: Output voltage ok, operational availability ok, remote ON/OFF Extended temperature range and exposure to media	**6AG1961-3BA10-7AA0**
SIPLUS SITOP signaling module Hard gold-plated contacts; for 6AG1XXX-3BA00 -XXXX signaling contacts: Output voltage ok, operational availability ok, remote ON/OFF	**6AG1961-3BA10-6AA0**
SIPLUS DC-UPS, uninterruptible power supply	
SIPLUS PS DC UPS module 15 A Uninterruptible power supply without interface Input: 24 V DC/16 A, Output: 24 V DC/15 A Extended temperature range and exposure to media	**6AG1931-2EC21-2AA0**
SIPLUS PS DC UPS module 40 A Uninterruptible power supply without interface; Input: 24 V DC/43 A, Output: 24 V DC/40 A Extended temperature range and exposure to media	**6AG1931-2FC21-7AA0**

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Power supplies for AS interface



14/2 1-phase / 1-2-phase / DC, AS-i 30 V (with data decoupling)
14/3 1-phase, 30 V DC (without data decoupling)

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1-phase / 1-2-phase / DC, AS-i 30 V (with data decoupling)

Overview



AS-Interface power supply unit for 3 A

AS-Interface power supply units feed 30 V DC into the AS-Interface cable and supply the AS-Interface components. They contain performance-optimized data decoupling for separating communication signals and supply voltage. As the result, AS-Interface is able to convey both data and power along a single line. The power packs are overload and short-circuit proof.

Dimensions

AS-Interface power supply units have compact dimensions in widths of 50 / 70 / 120 mm. No clearance to other devices is required when mounting.

Features

- Higher rating: The power supply units deliver currents of 2.6 to 8 A.
- Integrated data decoupling: As the result, AS-Interface is able to convey both data and power along a single line.
- Integrated ground-fault detection: The power supply units perform the reliable detection and signaling of ground faults according to IEC 60204-1. The AS-Interface voltage can be disconnected automatically in the event of a ground fault.
- Integrated overload detection: An output overload is identified and signalized over a diagnostics LED.
- Diagnostics memory: Any ground faults or overloads on the output side are stored in a diagnostics memory until the device is RESET.
- Remote RESET and remote signaling: A ground fault can be signalized and evaluated by relay contacts over a central control and/or indicator light.
- Diagnostics LEDs: Three different LEDs indicate the status of the AS-Interface power supply locally at the power supply unit.
- Ultra-wide input range / 2-phase connection: The ultra-wide input range of 120 to 500 V of the 8 A version means that the supply units can be used in virtually any network worldwide. In addition, this version dispenses with the need for an N conductor as the device can be connected directly between 2 phases of a network.
- Operation with 24 V DC: The 3 A power supply unit is also available as a version with a 24 V DC input. This power supply unit is suitable for use in battery-operated plants or plants with uninterrupted power supply (UPS).
- Removable terminal blocks in spring-type connection: The power supply units are equipped with three removable terminal blocks for simple device replacement: for the input side, for the output side and for Signal/RESET connections.

Benefits

- Complete solution for supplying AS-Interface networks while making full use of the maximum possible cable length per AS-i segment
- Only AS-i masters and AS-i slaves need to be connected to the AS-Interface cable to operate AS-Interface
- Compact, room-saving footprint
- Reliable power supply even for large numbers of AS-Interface modules with high power requirements
- Increased safety and savings on additional components owing to the integrated ground fault and overload detection
- Fast fault detection and reduced downtimes thanks to diagnostics memory, remote signaling and remote RESET
- Reduced downtimes as the result of removable terminal blocks which enable the fast exchanging of devices
- Ultra-wide input range of the 8 A version permits single-phase and two-phase operation and removes the need for an N conductor
- Can be used world-wide thanks to, for example, UL/CSA approval (UL 508)
- With the 2.6 A version, the output power is restricted to max. 100 W for use in Class 2 circuits in accordance with NEC (National Electrical Code)

Ordering data

	Article No.
AS-Interface power supply units, IP20 • AS-i single output 30 V DC • With integrated ground-fault detection • With spring-type terminals, removable terminals, • 2.6 A version with output power restricted to max. 100 W (for Class 2 circuits in accordance with NEC) Dimensions: Width: 50 mm (2.6 A / 3 A), 70 mm (5 A), 120 mm (8 A); Height: 125 mm; Depth: 125 mm	
• Output current: 2.6 A / max. 100 W Input voltage: 120 / 230 V AC (selectable)	**3RX9501-2BA00**
• Output current: 3 A Input voltage: 120 / 230 V AC (selectable)	**3RX9501-0BA00**
• Output current: 3 A Input voltage: 24 V DC	**3RX9501-1BA00**
• Output current: 5 A Input voltage: 120 / 230 V AC (selectable)	**3RX9502-0BA00**
• Output current: 8 A Input voltage: 120 / 230 ... 500 V AC (selectable)	**3RX9503-0BA00**

More information

More information on AS-Interface, see Catalog IC 10, Chapter 2 "Industrial Communication".

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Overview



PSN130S 30 V power supply units for 3 A, 4 A and 8 A

The PSN130S 30 V power supplies feed 30 V DC into the AS-Interface cable and supply the AS-Interface components, but do not include data decoupling. Additional data decoupling units are needed to separate communication signals and supply voltage, see "S22.5 Data Decoupling Modules" or "DCM 1271 Data Decoupling Module", see Accessories, page 14/4

The power supplies are overload and short-circuit proof.

Dimensions

The 30 V power supply units have compact dimensions in widths of 50 and 70 mm. No distances to other devices must be observed during the installation.

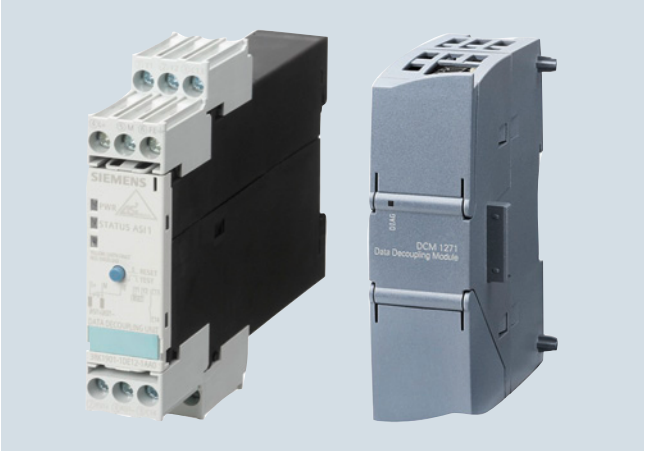
Features

- Primary-clocked power supplies for connecting to a single-phase AC power supply system
- Power for currents of 3 A, 4 A and 8 A
- The output voltage is floating, and resistant to short-circuits and no-load operation. In the event of an overload, the output voltage will be reduced or switched off. After a short-circuit or overload the devices will start up again automatically.
- In the event of a device fault, the output voltage will be limited to max. 37 V.
- Modular installation devices in degree of protection IP20 and safety class I
- Diagnostics: With an output voltage > 26.5 V DC, the green LED (30V O.K.) is lit and the signaling contact 13-14 is closed.

Benefits

- Low-cost alternative solution for supplying AS-Interface networks while making full use of the maximum possible cable length per AS-i segment
- Cost advantage particularly for multiple networks
- Compact, space-saving dimensions
- Reliable power supply even for large numbers of AS-Interface modules with high power requirements
- Can be used worldwide thanks to, for example, UL/CSA approval (UL 508)

Application



Data decoupling modules S22.5 and DCM 1271

A data decoupling module is also required in order to use a PSN130S 30 V power supply unit for AS-Interface.

With the aid of the data decoupling module, the AS-Interface network can be supplied with 30 V DC from a standard power supply unit and the transmission of data and power can be realized along one cable.

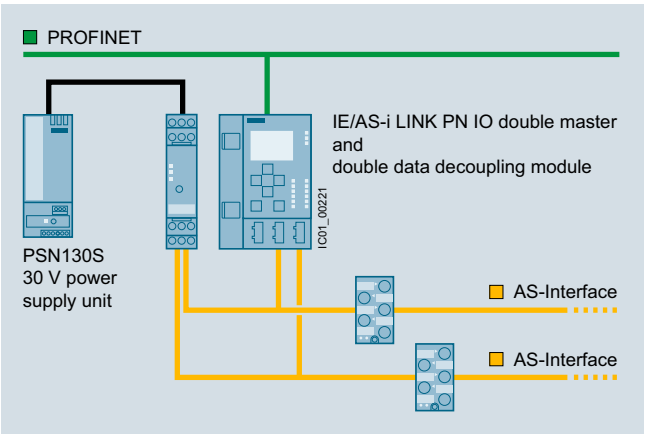
Alternatively, it is also possible to use a standard 24 V DC power supply unit (AS-i Power24V). However, in this case please note that all components involved must be designed for the reduced voltage and that the maximum length of an AS-i Power24V network is limited to 50 m.

The power supply units must comply with the PELV (Protective Extra Low Voltage) or SELV (Safety Extra Low Voltage) standards, have a residual ripple of < 250 mVpp and in the event of a fault, must limit the output voltage to a maximum of 40 V.

The combination of data decoupling modules and standard power supply units is therefore a cost-efficient alternative to the service-proven AS-Interface power supply units.

The quality of the data signals and the reliable operation of the AS-i network are not negatively affected as the result.

Configuration examples of AS-Interface networks with a 30 V power supply unit

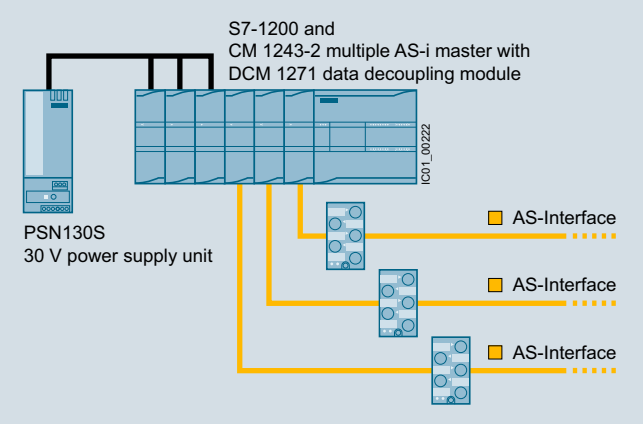


Configuration of AS-Interface multiple networks, each with one PSN130S 30 V power supply unit (examples with schematic representation): Double network based on S22.5 double data decoupling module and double master IE/AS-i LINK PN IO

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1-phase, 30 V DC (without data decoupling)

Application (continued)



Configuration of AS-Interface multiple networks, each with one PSN130S 30 V power supply unit (examples with schematic representation): Triple network based on SIMATIC S7-1200 with DCM 1271 data decoupling modules and CM 1243-2 communication processors

Technical specifications

Product		PSN130S 30 V DC power supply unit		
Version		**3 A**	**4 A**	**8 A**
Input data				
• Input voltage, rated value U_e	V AC	120 / 230 V, single-phase, automatic selection		
• Input voltage range	V AC	85 ... 132 / 174 ... 264		
• Mains frequency	Hz	50 / 60		
• Power consumption at full load, typ.	W	103	139	270
Output data				
• Output voltage, rated value U_a	V DC	30		
• Residual ripple	mV_{ss}	< 150		
• Output current, rated value at -20 ... +60 °C	A	3	4	8
• Max. output current at +60 ... +70 °C	A	3	3	4
Degree of efficiency in rated conditions				
• Degree of efficiency	%	87	88	90
• Power loss, typ.	W	12	17	25
Protection and monitoring				
• Output overvoltage protection	V	< 37		
• Current limit, typ.	A	4	5,5	11
Safety				
• Electrical separation primary / secondary		Output voltage PELV / SELV according to IEC 60950 and EN 50178		
• Protection class		I		
• Degree of protection		IP20		
Approvals				
• UL		UL 508 / CSA 22.2		
• Pollution degree		IEC 60950		
• Overvoltage category and electrical separation		EN 50178 and IEC 61558		
EMC				
• Emitted interference (class B)		IEC 61000-6-3		
• Line harmonics limit		IEC 61000-3-2		
• Interference immunity		IEC 61000-6-2		
Operating data				
Ambient temperature				
• Operation	°C	-20 ... +70		
• Transport / storage	°C	-40 ... +85		
Pollution degree		2		
Humidity class		Climate class according to DIN 50010, relative air humidity max. 100 %, without condensation		
Dimensions and weight				
• Width	mm	50	50	70
• Height x depth	mm	125 x 126.5		
• Weight	kg	0.4	0.4	0.7

Ordering data

	Article No.
PSN130S 30 V DC power supply units (without AS-i data decoupling)	
Output voltage 30 V DC, with screw terminals,	
Dimensions: Width: 50 mm (3 A / 4 A), 70 mm (8 A); Height: 125 mm; Depth: 126.5 mm	
• Output current: 3 A Input voltage:120 / 230 V AC (automatic selection)	**3RX9511-0AA00**
• Output current: 4 A Input voltage: 120 / 230 V AC (automatic selection)	**3RX9512-0AA00**
• Output current: 8 A Input voltage: 120 / 230 V AC (automatic selection)	**3RX9513-0AA00**

Accessories

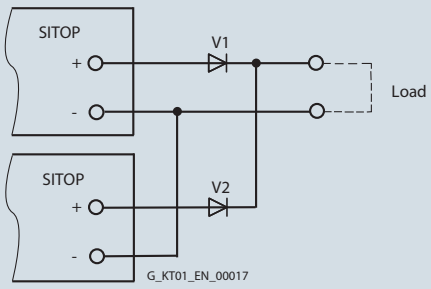
	Article No.
Data decoupling modules in enclosure, 22.5 mm	
S22.5 data decoupling modules	
With screw terminals, removable terminals, Dimensions: Width: 22.5 mm; Height: 101 mm; Depth: 115 mm	
• Single data decoupling module, 1 x 4 A	**3RK1901-1DE12-1AA0**
• Double data decoupling module, 2 x 4 A	**3RK1901-1DE22-1AA0**
With spring-type terminals, removable terminals, Dimensions: Width: 22.5 mm; Height: 105 mm; Depth: 115 mm	
• Single data decoupling module, 1 x 4 A	**3RK1901-1DG12-1AA0**
• Double data decoupling module, 2 x 4 A	**3RK1901-1DG22-1AA0**
Data decoupling modules in enclosure for S7-1200	
DCM 1271 data decoupling module	**3RK7271-1AA30-0AA0**
With screw terminals, removable terminals (included in the scope of supply), Dimensions: Width: 30 mm; Height: 100 mm; Depth: 75 mm	
Screw terminals (replacement) for AS-i DCM 1271 data decoupling module	
• 5-pole	**3RK1901-3MA00**
• 3-pole for connecting the power supply unit	**3RK1901-3MB00**

More information

For operating instructions and other technical information see http://support.automation.siemens.com/WW/view/en/64364000.

More information on AS-Interface, see Catalog IC 10, Chapter 2 "Industrial Communication".

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Overview

Power supplies

In plant building or mechanical equipment manufacture, or in any other situations in which electrical controls are used, a safe and reliable power supply is needed to supply the process with power.

The operational reliability of electronic controls and associated reliable operation of automated plants is extremely closely linked to the resistance of the load current supply to failure. Final control elements as well as input and output modules will only respond to command signals if the power supply is operating reliably.

In addition to requirements such as safety, particular demands are placed on the electromagnetic compatibility (EMC) of the power supply with reference to the tolerance range of the output voltage, as well as its ripple.

Important factors that determine problem-free implementation are, in particular:

- An input current with a low harmonic content
- Low emitted interference
- Adequate immunity (noise immunity) to interference

EMC	Interference phenomena
Emission (emitted interference)	Interference caused by television and radio reception
	Interference coupling on data lines or power supply cables
Noise immunity (immunity to interference)	Faults on the power cable due to switching non-resistive loads such as motors or contactors
	Static discharge due to lightning strikes
	Electrostatic discharge through the human body
	Conducted interference induced by radio frequencies

Selected interference phenomena

General notes on DC power supplies

The DC power supply is a static device with one or more inputs and one or more outputs that converts a system of AC voltage and AC current and/or DC voltage and DC current to a system with different DC voltage and DC current values by means of electromagnetic induction for the purpose of transmitting electrical energy.

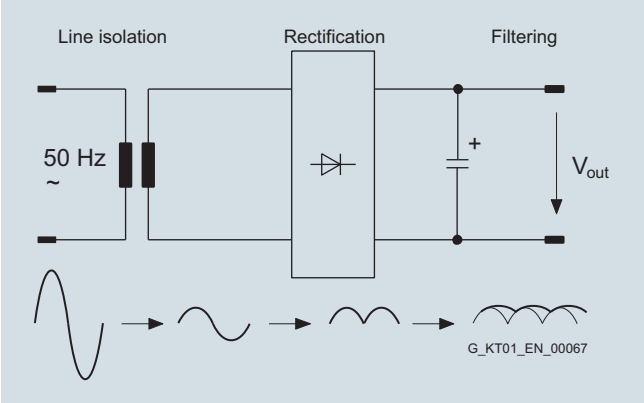
The type of construction of a DC power supply is primarily decided by its intended use.

Non-stabilized DC power supplies

The AC mains voltage is transformed using 50 Hz/60 Hz safety transformers to a protective extra-low voltage and smoothed with down-circuit rectification and capacitor filtering.

In the case of non-stabilized DC power supplies, the DC output voltage is not stabilized at a specific value, but the value is varied in accordance with the variation in (mains) input voltage and the loading.

The ripple is in the Volt range and is dependent on the loading. The value for the ripple is usually specified as a percentage of the DC output voltage level. Non-stabilized DC power supplies are characterized by their rugged, uncomplicated design that is limited to the important factors and focused on a long service life.



Block diagram of a non-stabilized power supply

Stabilized DC power supplies

Stabilized DC power supplies have electronic control circuits that maintain the DC voltage at the output at a specific value with as little variation as possible. Effects such as variation in input voltage or changes in load at the output are electrically compensated in the specified function area.

The ripple in the output voltage for stabilized DC power supplies lies in the millivolt range and is mainly dependent on the loading at the outputs.

Stabilized DC power supplies can be implemented on different functional principles. The most common types of circuit are:

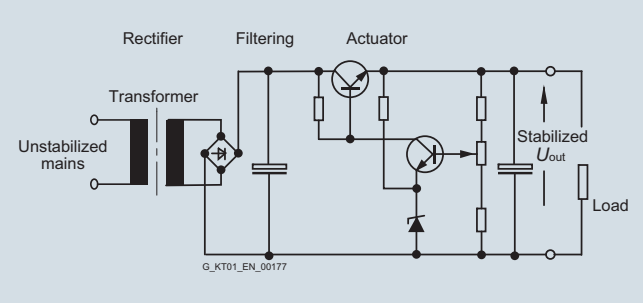
- Linear stabilized power supplies
- Magnetic voltage stabilizers
- Secondary pulsed switched-mode power supplies
- Primary pulsed switched-mode power supplies

The most suitable principle for a particular application case will depend mainly on the application. The objective is to generate a DC voltage to supply the specific load as inexpensively and as accurately as possible.

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Overview (continued)

Power supplies with in-phase regulation



Block diagram Transformer with in-phase regulation

The transformer with in-phase regulation operates according to a conventional principle. The supply is provided from an AC supply system (one, two or three conductor supply).

A transformer is used to adapt it to the required secondary voltage.

The rectified and filtered secondary voltage is converted to a stabilized voltage at the output in a regulation section. The regulation section comprises a final control element and a control amplifier. The difference between the stabilized output voltage and the non-stabilized voltage at the filter capacitor is converted into a thermal loss in the final control element. The final control element functions in this case like a rapidly changeable ohmic impedance. The thermal loss that arises in each case is the product of output current and voltage drop over the final control element.

This system is extremely adaptable. Even without further modifications, several output voltages are possible. In the case of multiple outputs, the individual secondary circuits are usually generated from separate secondary windings of the input transformer. Some applications can only be resolved in accordance with this circuit principle. Especially when highly accurate regulation, minimal residual ripple and fast compensation times are required.

The efficiency is, however, poor and the weight and volume are considerable. The transformer with in-phase regulation is therefore only an economical alternative at low power ratings.

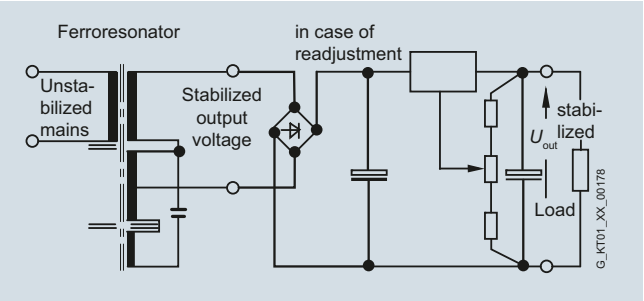
Advantages:

- Simple, well-proven circuit principle
- Good to excellent control characteristics
- Fast compensation time

Disadvantages:

- Relatively high weight and large construction volume due to the 50 Hz transformer
- Poor efficiency, heat dissipation problems
- Low storage time

Magnetic stabilizer



Block diagram: Magnetic stabilizer

The complete transformer comprises two components. The "ferro resonator" and a series-connected auxiliary regulator. The input winding and the resonance winding of the magnetic stabilizer are decoupled to a large extent by means of the air gap. The magnetic stabilizer supplies a well-stabilized AC voltage. This is rectified and filtered. The transformer itself is operated in the saturation range.

The ferro resonator frequently has a transformer with in-phase regulation connected downstream to improve the control accuracy. Secondary pulsed switched-mode regulators are frequently also connected downstream.

The magnetic stabilizer technique is reliable and rugged but is also large-volume, heavy and relatively expensive.

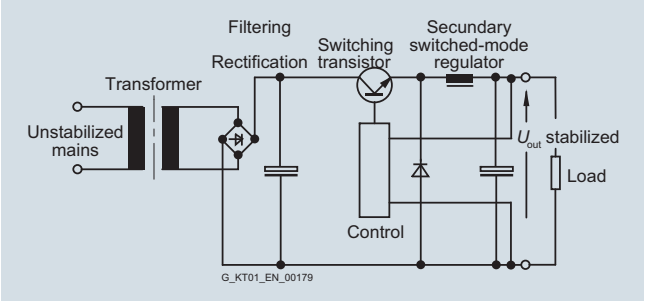
Advantages:

- Good to excellent control characteristics in combination with transformer with in-phase regulation connected downstream
- Significantly better efficiency than a transformer with in-phase regulation alone

Disadvantages:

- The ferro resonator is frequency dependent
- The power supplies are large and heavy due to the magnetic components

Secondary pulsed switched-mode power supplies:



Block diagram Secondary pulsed switched-mode power supplies

Isolation from the supply system is implemented in this case with a 50 Hz transformer. Following rectification and filtering, the energy is switched at the output by means of pulsing through a switching transistor in the filtering and storage circuit. Thanks to the transformer at the input that acts as an excellent filter, the mains pollution is low.
The efficiency of this circuit is extremely high.

This concept offers many advantages for power supplies with numerous different output voltages.

To protect the connected loads, however, care must be taken; in the event of the switching transistor breaking down, the full, non-stabilized DC voltage of the filter capacitor will be applied to the output. However, this danger also exists in the case of linear stabilized power supplies.

Advantages:

- Simple design and high efficiency
- Multiple outputs, also galvanically isolated from one another, are easily implemented by means of several secondary windings
- Fewer problems with interference than with primary pulsed switched-mode power supplies

Disadvantages:

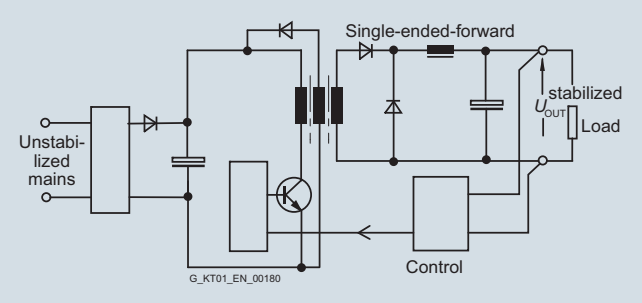
- The 50 Hz transformer makes the power supplies relatively large and heavy
- The output ripple (spikes) correspond to those of a primary pulsed switched-mode power supply

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Overview (continued)

Primary pulsed switched-mode power supplies:

The term SMPS (Switch Mode Power Supply) or primary switched-mode regulator is often used in the literature.



Block diagram: Single-ended forward converter

The primary switched-mode regulators are available in many different circuit versions. The most important basic circuits are single-ended forward converters, flyback converters, half-bridge converters, full-bridge converters, push-pull converters and resonance converters.

The general principle of operation of the primary switched-mode regulator is shown in the block diagram of the single-ended forward converter:

The non-stabilized supply voltage is first rectified and filtered. The capacitance of the capacitor in the DC link determines the storage time of the power supply on failure of the input voltage. The voltage at the DC link is approximately 320 V DC for a 230 V supply. A single-ended converter is then supplied with this DC voltage and transfers the primary energy through a transformer to the secondary side with the help of a pulse width regulator at a high switching frequency. The switching transistor has low power losses when functioning as a switch so that the power balance lies between > 70% and at least 90%, depending on the output voltage and current.

The volume of the transformer is small in comparison with a 50 Hz transformer due to the high switching frequency because the transformer size, taking into account the higher switching frequency, is smaller. Using modern semiconductors, clock frequencies of 100 kHz and above can be achieved. However, switching losses increase at excessively high clock frequencies so that in each case a compromise has to be made between high efficiency and the largest possible clock frequency. In most applications, the switching frequencies lie between approximately 20 kHz and 250 kHz depending on the output power.

The voltage from the secondary winding is rectified and filtered. The system deviation at the output is fed back to the primary circuit through an optocoupler. By controlling the pulse width (conducting phase of the switching transistor in the primary circuit), the necessary energy is transferred to the secondary circuit and the output voltage is regulated. During the non-conducting phase of the switching transistor, the transformer is demagnetized through an auxiliary winding. Exactly the same amount of energy is transferred as is removed at the output. The maximum pulse width for the pulse duty factor for these circuits is < 50%.

Advantages:

- Small magnetic components (transformer, storage reactor, filter) thanks to the high operating frequency
- High efficiency thanks to pulse width regulation
- Compact equipment units
- Forced-air cooling is not necessary up to the kW range
- High storage times are possible in case of power failure by increasing the capacitance in the DC link
- Large input voltage range possible

Disadvantages:

- High circuit costs, many active components
- High costs for interference suppression
- The mechanical design must be in accordance with HF criteria

Primary switched-mode power supplies have taken over from the other switching modes in recent years. This is due, in particular, to their compact size, minimal weight, high efficiency and excellent price/performance ratio.

Summary

The most important characteristics of the circuit types described above are summarized in the table.

Comparison criteria	Connection methods			
	Primary-switched mode	**Secondary-switched mode**	**Transformer with in-phase regulation**	**Magnetic stabilizer**
Input voltage range	Very large	Average	Very small	Large
Regulation speed	Average	Average	Very fast	Slow
Storage time after power failure	Very long	Long	Very short	Long
Residual ripple	Average	Average	Very low	Average
Power loss	Very small	Small	Large	Very small
Size	Very small	Average	Very large	Large
Weight	Very light	Average	Heavy	Very heavy
Interference suppression overhead	Very large	Average	Low	Average

Comparison criteria for basic circuit versions

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Overview

Supply systems data

When dimensioning and selecting plant components, the supply systems data, supply system conditions and operating modes must be taken into account for these components.

The most important data for a supply system include the rated voltage and rated frequency. These data for the supply system are designated as rated values in accordance with international agreements.

Usual rated voltages and rated frequencies

In Europe the EN 60038 standard "CENELEC standard voltages" applies.

The international standard IEC 60038, Edition 7, 2009, "IEC standard voltages" was substantially included in this standard.

The IEC 60038 standard is the result of an international agreement to reduce the diverse rated voltage values that are in use for electrical supply networks and traction power supplies, load installations and equipment.

In the low-voltage range, it is emphasized in IEC 60038 that the 220 V/380 V voltages (formerly in continental Europe) and 240 V/415 V voltages (formerly in the UK) for three-phase electricity supplies have been replaced by a single standardized value of 230 V/400 V. The network frequency in Europe is 50 Hz.

The tolerances for the rated voltages of the supply systems that were specified for the transition period up to 2003 were intended to ensure that equipment rated for the existing voltages could be operated safely until the end of its service life.

Year	Rated voltage	Tolerance range
Up to 1987	220 V/380 V	-10% to +10%
1988 to 2003	230 V/400 V	-10% to + 6%
Since 2003	230 V/400 V	-10% to +10%

Conversion of low-voltage systems

Supply voltages in excess of 400 V (e.g. 500 V, 690 V) are only used in Europe in large industrial concerns.

The IEC recommendation 230 V/400 V has been implemented as a national regulation in the most important countries, as far as the conditions in the country allow.

In North and Central America and some northern nations in South America the rated value of the AC mains supply is 120 V; the doubled mains voltage of 240 V is common among larger consumers. As a rule, the low-voltage networks in these countries are implemented as single-phase three-wire networks. A three-phase alternating current is often not available to smaller users, if at all, so the voltage is 208 V or 415 V, while three-phase networks at 480 V are usual for larger consumers. The network frequency is 60 Hz.

In Asia AC mains voltages of 100 V or 110 V (50 Hz or 60 Hz) are also the norm.

In addition, numerous country-specific and regional peculiarities exist around the world, details of which can be obtained from the local operators if necessary.

International supply voltages and frequencies in low-voltage systems

Country	Line voltage
Western Europe:	
Belgium	50 Hz 230/400 – 127-220 V
Denmark	50 Hz 230/400 V
Germany	50 Hz 230/400 V
Finland	50 Hz 230/400-500[1] – 660[1] V
France	50 Hz 127/220 – 230/400 – 500[1] – 380/660[1] – 525/910[1] V
Greece	50 Hz 230/400 – 127/220[2] V
Great Britain	50 Hz 230/400 V
Ireland	50 Hz 230/400 V
Iceland	50 Hz 127/220[2] – 230/400 V
Italy	50 Hz 127/220 – 230/400 V
Luxembourg	50 Hz 230/400 V
The Netherlands	50 Hz 230/400 – 660[1] V
Northern Ireland	50 Hz 230/400 – Belfast 220/380 V
Norway	50 Hz 230-230/400-500[1] – 690[1] V
Austria	50 Hz 230/400 – 500[1] – 690[1] V
Portugal	50 Hz 230/400 V
Sweden	50 Hz 230/400 V
Switzerland	50 Hz 230/400 – 500[2] V
Spain	50 Hz 230/400 V
Eastern Europe:	
Albania	50 Hz 230/400 V
Bulgaria	50 Hz 230/400 V
Russian Federation	50 Hz 230/400 – 690[1] V
Croatia	50 Hz 230/400 V
Poland	50 Hz 230/400 V
Romania	50 Hz 230/400 V
Serbia	50 Hz 230/400 V
Slovakia	50 Hz 230/400 – 500[1] – 690[1] V
Slovenia	50 Hz 230/400 V
Czech Republic	50 Hz 230/400 – 500[1] – 690[1] V
Hungary	50 Hz 230/400 V

[1] Industry only
[2] No further expansion

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Overview (continued)

Country	Line voltage
Middle East:	
Afghanistan	50 Hz 220/380 V
Bahrain	50 Hz 230/400 V
Cyprus	50 Hz 240/415 V
Iraq	50 Hz 220/380 V
Israel	50 Hz 230/400 V
Jordan	50 Hz 220/380 V
Kuwait	50 Hz 240/415 V
Lebanon	50 Hz 110/190 – 220/380 V
Oman	50 Hz 220/380 – 240/415 V
Qatar	50 Hz 240/415 V
Saudi Arabia	60 Hz 127/220 – 220/380 – 480[1] V (220/380 – 240/415 V 50 Hz: a few remaining areas only)
Syria	50 Hz 115/200 – 220-380 – 400[1] V
Turkey	50 Hz 220/380 V (parts of Istanbul: 110/190 V)
United Arab Emirates (Abu Dhabi; Ajman; Dubai; Fujairah; Ras al Khaymah; Sharjah; Um al Qaywayn)	50 Hz 220/380 – 240/415 V
Yemen (North)	50 Hz 220/380 V
Yemen (South)	50 Hz 230/400 V
Far East:	
Bangladesh	50 Hz 230/400 V
Burma	50 Hz 230/400 V
People's Republic of China	50 Hz 127/220 – 220/380 V (in mining: 1140 V)
Hong Kong	50 Hz 200/346 V
India	50 Hz 220/380 – 230/400 – 240/415 V
Indonesia	50 Hz 127/220 – 220/380 – 400[1] V
Japan	50 Hz 100/200 – 400[1] V
South Honshu, Shikoku, Kyushu, Hokkaido, North Honshu	60 Hz 110/220 – 440[1] V
Cambodia	50 Hz 120/208 V – Phnom Penh 220/238 V
Korea (North)	60 Hz 220/380 V
Korea (South)	60 Hz 100/200[2] – 220/380 – 440[1] V
Malaysia	50 Hz 240/415 V
People's Republic of Mongolia	50 Hz 220/380 V
Pakistan	50 Hz 230/400 V
Philippines	60 Hz 110/220 – 440 V
Singapore	50 Hz 240/415 V
Sri Lanka	50 Hz 230/400 V
Taiwan	60 Hz 110/220 – 220 – 440 V
Thailand	50 Hz 220/380 V
Vietnam	50 Hz 220/380 V

Country	Line voltage
North America:	
Canada	60 Hz 600 – 120/240 – 460 – 575 V
USA	60 Hz 120/208 – 120/240 – 277/480 – 600[1] V
Central America:	
Bahamas	60 Hz 115/200 – 120/208 V
Barbados	50 Hz 110/190 – 120/208 V
Belize	60 Hz 110/220 – 220/440 V
Costa Rica	60 Hz 120/208[2] – 120/240 – 127/220 – 254/440[2] – 227/480[1] V
Dominican Republic	60 Hz 120/208 – 120/240 – 480[1] V
Guatemala	60 Hz 120/208 – 120/240 – 127/220 – 277/480[1] – 480[1] – 550[1] V
Haiti	50 Hz 220/380 V (Jacmel), 60 Hz 110/220 V
Honduras	60 Hz 110/220 – 127/220 – 277/480 V
Jamaica	50 Hz 110/220 – 440[1] V
Cuba	60 Hz 120/240 – 220/380 – 277/480[1] – 440[1] V
Mexico	60 Hz 127/220 – 440[1] V
Nicaragua	60 Hz 110/220 – 120/240 – 127/220 – 220/440 – 254/40[1] V
Panama	60 Hz 120/208[1] – 120/240 – 254/4401 – 277/480[1] V
Puerto Rico	60 Hz 120/208 – 480 V
El Salvador	60 Hz 110/220 – 120/208 – 127/220 – 220/440 – 240/480[1] – 254/440[1] V
Trinidad	60 Hz 110/220 – 120/240 – 230/400 V
South America:	
Argentina	50 Hz 220/380 V
Bolivia	60 Hz 220/380 – 480 V, 50 Hz 110/220 – 220/380 V (exception)
Brazil	60 Hz 110/220 – 220/440 – 127/220 – 220/380 V
Chile	50 Hz 220/380 V
Ecuador	60 Hz 120/208 – 127/220 V
Guyana	50 Hz 110/220 V (Georgetown), 60 Hz 110/220 – 240/480 V
Columbia	60 Hz 110/220 – 150/260 – 440 V
Paraguay	60 Hz 220/380 – 220/440 V
Peru	60 Hz 220 – 220/380/440 V
Surinam	60 Hz 115/230 – 127/220 V
Uruguay	50 Hz 220 V
Venezuela	60 Hz 120/208 – 120/240 – 208/416 – 240/480 V

[1] Industry only
[2] No further expansion

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Overview (continued)

Country	Line voltage
Africa:	
Egypt	50 Hz 110/220 – 220/380 V
Ethiopia	50 Hz 220/380 V
Algeria	50 Hz 127/220 – 220/380 V
Angola	50 Hz 220/380 V
Benin	50 Hz 220/380 V
Ivory Coast	50 Hz 220/380 V
Gabon	50 Hz 220/380 V
Ghana	50 Hz 127/220 – 220/380 V
Guinea	50 Hz 220/380 V
Kenya	50 Hz 220/380 V
Cameroon	50 Hz 127/220 – 220/380 V
Congo	50 Hz 220/380 V
Liberia	60 Hz 120/208 – 120/240 V
Libya	50 Hz 127/220[2] – 220/380 V
Madagascar	50 Hz 127/220 – 220/380 V
Malawi	50 Hz 220/380 V
Mali	50 Hz 220/380 V
Morocco	50 Hz 115/200 – 127/220 – 220/380 – 500[1] V
Mauritius	50 Hz 240/415 V
Mozambique	50 Hz 220/380 V
Namibia	50 Hz 220/380 V
Niger	50 Hz 220/380 V
Nigeria	50 Hz 220/415 V
Rwanda	50 Hz 220/380 V
Zambia	50 Hz 220/380 V – 415 – 550[1] V
Senegal	50 Hz 127/220 – 220/380 V
Sierra Leone	50 Hz 220/380 V
Somalia	50 Hz 220-220/440 V
Sudan	50 Hz 240/415 V
South Africa	50 Hz 220/380 – 500[1] – 550/950[1] V
Swaziland	50 Hz 220/380 V
Tanzania	50 Hz 230/400 V
Togo	50 Hz 127/220 – 220/380 V
Tunisia	50 Hz 115/200 – 220/380 V
Uganda	50 Hz 240/415 V
Zaire	50 Hz 220/380 V
Zimbabwe	50 Hz 220/380 V

[1] Industry only
[2] No further expansion

Connection and fusing on the line side

All SITOP and LOGO!Power supplies are built-in devices. Compliance with the pertinent country-specific regulations is essential for installation and electrical connection of the devices. During installation, protective gear and isolating gear must be provided for activating the power supply.

Power supply units cause a current inrush immediately after connection of the input voltage due to charging of the load capacitor, however, it falls back to the rated input current level after a few milliseconds. Aside from the internal impedances of the power supply, the inrush current is dependent on the size of the input voltage applied as well as the source impedance of the supply network and the line impedance of the supply line. The maximum inrush current for the power supplies is specified in the applicable technical data. It is important for dimensioning upstream protective devices.

Single-phase SITOP and LOGO!Power supplies are equipped with internal device protection (fuses). For connection to the supply system, only one protective device (fuse or MCB) must be provided for line protection in accordance with the rated current of the installed cable. The circuit-breakers recommended in the data sheets and operating instructions have been selected such that even during the maximum current inrush that can occur under worst-case conditions on switching on the supply voltage, the circuit-breaker will not trip. A two-pole connected miniature circuit-breaker is required for the connection of certain device types.

3-phase SITOP power supplies do not have internal device protection. The up-circuit protective device (3-phase coupled miniature circuit breaker or motor protection switch) protects the cables and devices. The protective devices specified in the data sheets and operating instructions are optimized to the characteristics of the relevant power supplies.

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Possible mains disturbances and causes

Overview

The quality of the mains voltage has become a decisive factor in the functioning, reliability, maintenance costs and service life of highly sensitive electronic installations and devices (computers, industrial controls, instrumentation, etc.).

Mains disturbances cause system failures and affect the function of plants as well as electronic loads. They can also result in total failure of the installation or equipment.

The most frequent types of disturbance are:

- Long-term overvoltages
- Long-term undervoltages
- Interference pulses and transients
- Voltage dips and surges
- Electrical noise
- Momentary network failure
- Long-term network failure

Mains disturbances can be caused by a number of things, e.g.:

- Switching operations in the supply system
- Long cable paths in the supply system
- Environmental influences such as thunderstorms
- Mains overloads

Typical causes of mains disturbances generated in-house are:

- Thyristor-controlled drives
- Elevators, air-conditioning, photocopiers
- Motors, reactive-power compensation systems
- Electrical welding, large machines
- Switching of lighting equipment

Disturbances in mains voltages can occur individually or in combination. Possible reasons for these disturbances, their effects and countermeasures can include:

System disturbances	Percentage of total disturbance	Result	Measure
Overvoltage The supply voltage is exceeded by more than +6% for a prolonged period (acc. to IEC 60038)	Approx. 15% - 20%	Can result in overheating and even thermal destruction of individual components. Causes total failure.	SITOP power supplies with their wide operating voltage range offer sufficient protection against minor network overvoltages outside the permissible tolerance
Line undervoltage The supply voltage is undershot by more than –10% for a prolonged period (acc. to DIN IEC 60038)	Approx. 20% - 30%	Can result in undefined operating states of loads. Causes data errors.	Use of a SITOP DC-UPS (uninterruptible DC power supply) see Section 11
Interference pulses Energy-rich pulses (e.g. 700 V/1 ms) and energy-poor transients (e.g. 2500 V/20 µs) result from switching operations in the supply system	Approx. 30% - 35%	Can result in undefined operating states of the loads and can lead to the destruction of components.	Use of surge protectors, see Catalog LV 10.1 2013, Section 6
Voltage dips and surges The voltage level changes suddenly and in an uncontrolled manner, e.g. due to changes in loading and long cable routes	Approx. 15% - 30%	Can result in undefined operating states and destruction of components. Cause data errors.	Thanks to their internal buffer time, SITOP power supplies offer sufficient protection against short power failures
Electrical noise A mix of frequencies superimposed on the mains due to bad grounding and/or strong HF emitters such as radio transmitters or thunderstorms	Approx. 20% - 35%	Can result in undefined operating states of loads. Causes data errors.	Due to internal switching measures, SITOP power supplies offer sufficient immunity to electromagnetic interference
Voltage interruption Short-term interruption of the supply voltage (up to approx. 100 ms) due to short-circuiting in neighboring supply systems or starting of large electrical machines.	Approx. 8% - 10%	Can result in undefined operating states of loads, especially those with insufficient mains buffering. Causes data errors.	Use of a SITOP buffer module (in connection with SITOP smart or SITOP modular) see Section 10
Voltage interruption Long interruption of the supply voltage (longer than approx. 100 ms)	Approx. 2% - 5%	Can result in undefined operating states of loads, especially those with insufficient mains buffering. Causes data errors.	Use of a SITOP DC-UPS (uninterruptible DC power supply) see Section 11

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Overview

Installation guidelines

SITOP und LOGO!Power power supplies are mostly built-in devices. They must be mounted vertically so that the supply air can enter the ventilation slots at the bottom of the devices and leave through the upper part of the devices. The minimum clearances specified in the relevant product documentation (operating instructions, device manuals) for the top and bottom of the devices must be observed to ensure free air convection. Side clearance is not required.

The option of mounting on standard mounting rails, wall mounting or mounting in non-vertical positions with the appropriate derating is specified in the respective device manuals.

Everything for project planning

Comprehensive information is available for mechanical and electrical engineering, for example, 3D data, circuit diagram macros, device manuals, product data sheets and certificates. The information is available for download via the CAx Download Manager.

Further information is available on the Internet at

http://www.siemens.com/cax

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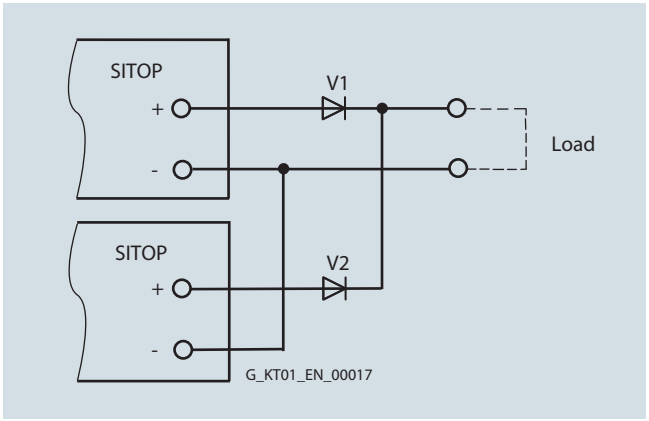
Overview

Parallel connection for redundant operation

Two SITOP power supplies of the same type can be connected in parallel through diodes for a redundant configuration. 100% redundancy only exists for two power supplies when the total load current is no higher than that which one power supply can supply alone and when the supply for the primary side is also implemented redundantly (i.e. a short-circuit on the primary side will not trigger a shared fuse which would disconnect both power supplies from the mains).

Parallel connection with decoupling diodes for redundant operation is permitted for all SITOP power supplies. The diodes V1 and V2 are used for decoupling. They must have a blocking voltage of at least 40 V (when decoupling from 24 V power supplies) and it must be possible to load them with a current equal to or greater than the maximum output current of the respective SITOP power supply. For diode dimensioning, see the following note "General information on selection of diodes".

The ready-to-use add-on "SITOP PSE202U modular redundancy modules" are available as a simple alternative to diode dimensioning (Article number: 6EP1962-2BA00, 6EP1964-2BA00, 6EP1961-3BA21) for redundant connection of two power supplies.



Parallel connection of two SITOP power supplies for redundant operation

General information on selection of diodes:

The diodes must be dimensioned for the maximum dynamic current. This can be the dynamic current during power-up in the short-circuit case, or the dynamic current during a short-circuit in operation (the larger of the two values should be taken from the relevant technical specifications).

To dissipate the significant power loss of the decoupling diodes (sustained short-circuit current x diode conductive-state voltage), the diodes must be equipped with suitably dimensioned heat sinks.

An additional safety margin is recommended, because the output capacitor integral to the power supply generates an additional peak current in the short-circuit case. This additional current flows only for a few milliseconds so it is within the period in which diodes are permitted to be loaded with a multiple of the rated current (8.3 ms, known as the permissible surge current for diodes).

Example

Two 1-phase SITOP modular power supplies with 10 A rated output current (Article number: 6EP1334-3BA10) are connected in parallel. The dynamic current in the event of a short-circuit during operation is approx. 30 A for 25 ms.

The diodes should therefore have a loading capability of 40 A to be safe, the common heat sink for both diodes must be dimensioned for the maximum possible current of approximately 24 A (sustained short-circuit current) x diode conductive-state voltage.

Parallel connection for performance enhancement

To enhance performance, identical types of most SITOP power supplies can be connected in parallel galvanically (the same principle as parallel connection for redundant operation, but without decoupling diodes):

The types permitted for direct galvanic parallel connection are listed in the relevant technical specifications under "Output, parallel connection for performance enhancement".

Requirement:

- The output cables connected to terminals "+" and "-" of every power supply should be installed with an identical length and cross-section (or the same impedance) to the common external linking point.
- The power supplies connected in parallel must be switched simultaneously using a common switch in the mains supply line (e.g. using the main switch available in control cabinets).
- The output voltages of the power supplies must be measured under no-load operation before they are connected in parallel and are permitted to differ by up to 50 mV. This usually corresponds to the factory default setting. If the output voltage is changed in case of variable power supplies, the "-" terminals should first be connected and then the voltage difference between the "+" output terminals measured under no-load conditions before they are connected. The voltage difference must not exceed 50 mV.

Note

With a direct galvanic connection in parallel of more than two SITOP power supplies, further circuit measures may be necessary for short-circuit and overload protection!

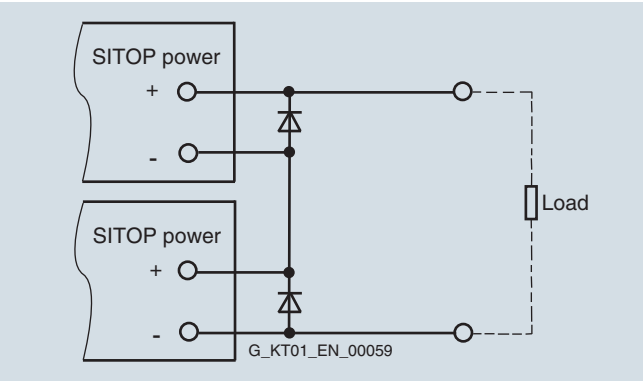
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Overview

Series connection to increase the voltage

To generate a load voltage of e.g. 48 V DC, two 24 V SITOP power supplies of the same type can be connected in series. The SITOP outputs "+" and "–" are isolated up to at least 60 V DC against PE (creepages and clearances as well as radio interference suppression capacitors on "+" and "–" against PE), so that with this type of series connection (see Figure), the following points can be grounded:

- "–" of the lower power supply (results in +48 V DC against PE)
- Midway "+"/ "–" between both power supplies (results in ±24 V DC against PE)
- "+" of the upper power supply (results in -48 V DC against PE)



Series connection of two SITOP power units to double the voltage

Note:

If two devices are connected in parallel, it cannot be guaranteed that the voltage will remain below the maximum permissible SELV voltage of 60 V DC in the event of a fault.

The purpose of diodes V1 and V2 is to protect the electrolytic output capacitor integrated in the power supply against reverse voltages > 1 V. As a result of the not absolutely simultaneous power-up (even when a common mains switch is used for switching on, differences of a few tens of milliseconds can occur between the various startup-up delays), the power supply which starts up more quickly supplies current from output "–" of the slower power supply whose output electrolytic capacitor is then theoretically impermissibly discharged.

The internal LC filter causes the internal rectifier diode on the secondary side of the slower-starting power supply to accept this current a few milliseconds later; this means that the external diode connected with its anode to "–" and cathode to "+" is essential on each power supply. These diodes are, however, only loaded dynamically so that the 8.3 ms surge current loading capability (specified in the data sheets for suitable diodes) can be used as a basis for dimensioning and it is not usually necessary to cool the diodes using heat sinks.

Example:

Two 1-phase SITOP power supplies with 10 A rated output current (Article number: 6EP1334-1AL12) should be connected in series to increase the voltage. They supply approximately 35 A dynamically for 700 ms on power-up in the short-circuit case or also, for example, with loads with a high-capacity input capacitor that momentarily act as a short-circuit at the start.

Suitable diodes for V1 and V2 are, for example, of Type SB 340[1)] (Schottky diode in axially wired enclosure DO-201AD with approximately 5.3 mm diameter and approximately 9.5 mm length of body).

40 V are permissible as the blocking voltage, and the stationary direct current load capacity $I_{F\,AV}$ is 3 A. The dynamic surge current loading capacity $I_{F\,SM}$ important in this case is sufficient for the selected SITOP power supply at more than 100 A for 8.3 ms. For SITOP power supplies with a lower rated output current, this diode can also be used, but it is over-dimensioned.

[1)] We do not accept any liability for this diode recommendation.

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Overview

Battery charging with SITOP power supplies

The SITOP PSU300B 12 V/20 A (article number 6EP1424-3BA00), 24 V/17 A (article number 6EP1436-3BA20) and 24 V/30 A (article number 6EP1437-3BA20) power supplies are suitable for charging lead-acid batteries. In the case of a V/I characteristic set for parallel operation, the battery will be charged with a constant current until approximately 95% of the set SITOP output voltage has been achieved. The charging current is then continuously reduced from 1.2 x rated current at 95% of the set voltage to approximately 0 A or the self-discharge _current of the battery at 100% of the set output voltage, that is, resistance characteristic in this range.

As reverse voltage protection and polarity reversal protection, we recommend that a diode suitable for at least 1.2 x rated current of the power supply with a blocking voltage of at least 40 V is connected in series with the "+" output (anode connected to "+" output of the SITOP PSU300B and cathode connected to positive pole of the battery).

The output voltage of the power supply must be set at no-load to the end-of-charge voltage plus the voltage drop at the diode. For an end-of-charge voltage of e.g. 27.0 V DC (usual at 20 °C to 30 °C battery temperature; specifications of the battery manufacturer must be observed!) and 0.8 V voltage drop at the diode, the power supply must be set to 27.8 V during no-load operation.

General note for using SITOP power supplies as a battery-charging unit

When using SITOP as a battery charging unit, VDE 0510 or relevant national regulations must be observed, and adequate ventilation of the battery location provided. SITOP power supplies are designed as rack-mounting units, and protection against electric shock should therefore be provided by installation in an appropriate housing.

The value recommended by the battery manufacturer must be set as the end-of-charge voltage (depending on the battery temperature). An ideal temperature for the lead-acid battery is between +20 °C to +30 °C and the recommended end-of-charge voltage in this case is usually about 27 V.

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Overview

Fusing of 24 V power supply circuits and selectivity

With non-stabilized rectifiers (power transformer equipped with rectifier) the output usually had to be protected with a suitable fuse so that its rectifier diodes would not fail in the event of an overload or a short-circuit (this would destroy the DC loads due to the resulting alternating voltage and lead to serious damage in most cases).

On the other hand, the stabilized SITOP power supplies are provided with integral electronic short-circuit protection that automatically protects both the power supply and the supplied 24 V DC circuits against an excess current in the event of an overload/short-circuit. A distinction must be made between the following three cases with respect to fusing on the secondary side:

Example 1: No fusing

Fusing the secondary side (24 V DC) for protecting the load circuits and lines is not required if the respective cross-sections are selected for the maximum possible output current RMS value. Depending on the event (short-circuit or overload) this may either be the short-circuit RMS value or the current limitation value.

Example SITOP modular 10 (article number: 6EP1334-3BA10)

- 10 A rated current
- Current limitation typ. 12 A
- Short-circuit current rms value approximately 12 A

The technical specifications usually specify typical values, maximum values are approximately 2 A above the typical value. In the example here, a maximum possible output current rms value of approximately 14 A must therefore be used for line dimensioning.

Example 2: Reduced conductor cross-sections

If smaller conductor cross-sections are used than are specified in the relevant standards (e.g. EN 60204-1), the affected 24 V load infeed cables must be protected with a suitable line protection.

It is then unimportant whether the power supply enters current limiting mode (overload) or delivers the maximum short-circuit current (low-resistance short-circuit). The load supply is in any case protected against an overload by the line protection matched to the conductor cross-section.

Example 3: Selectivity

In cases where a load which has failed (e.g. because of a short-circuit) has to be rapidly detected or where it is essential to selectively switch it off before the power supply enters current limiting mode (with current limiting mode, the voltage would also fall for all remaining 24 V DC loads), there are two possibilities for the secondary side connection:

- Use of a SITOP PSE200U selectivity module or the SITOP select diagnostics module for distributing the 24 V DC supply among up to 4 load feeders.
  Each output can be set between 0.5 A and 3 A (Article number: 6EP1961-2BA11, -2BA31) or 3 A and 10 A (Article number: 6EP1961-2BA21, -2BA41) or 2 A and 10 A (Article number: 6EP1961-2BA00).
- Series connection of appropriate 24 V DC fuses or miniature circuit breakers

The basis for selection of the 24 V DC fuse or miniature circuit breaker is the short-circuit current above the rated current which the SITOP power supplies deliver in the event of a short-circuit during operation (values are specified in the respective technical specifications under "Output, dynamic V/I on short-circuit during operation").

It is not easy to calculate the amount of the short-circuit current flowing into the usually not ideal "short-circuit" and the amount flowing into the remaining loads. This depends on the type of overload (high-resistance or low-resistance short-circuit) and the type of load connected (resistive, inductive and capacitive/electronic loads).

However, it can be assumed with a first approximation in the average case encountered in practice that the difference of dynamic overcurrent minus 50 % SITOP rated output current is available for the immediate tripping of a circuit breaker within a typical time of 12 ms (with 14 times the rated DC with a circuit breaker characteristic C acc. to IEC 60898, or with 7 times the rated DC with a circuit breaker characteristic B or with 5 times the rated DC with a circuit breaker characteristic A). Please refer to the following tables for circuit-breakers appropriate for selected fusing according to this assumption.

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Overview (continued)

List of ordering data and tripping characteristics of single-pole circuit-breakers 5SY4...

acc. to IEC 60898 / EN 60898, for use up to 60 V DC (250 V AC, switching capacity 10000 A)

Rated current	Tripping characteristic	Article number	Range for immediate tripping < 100 ms for operation with direct current (alternating current)	Required DC for immediate tripping in < 100 ms	Required DC for immediate tripping in approx. 12 ms
1 A	Type A	5SY4 101-5	DC: 2 ... 5 (AC: 2 ... 3) x I_{Rated}	2 ... 5 A DC	5 A DC
1 A	Type C	5SY4 101-7	DC: 5 ... 14 (AC: 5 ... 10) x I_{Rated}	5 ... 14 A DC	14 A DC
1.6 A	Type A	5SY4 115-5	DC: 2 ... 5 (AC: 2 ... 3) x I_{Rated}	3.2 ... 8 A DC	8 A DC
1.6 A	Type C	5SY4 115-7	DC: 5 ... 14 (AC: 5 ... 10) x I_{rated}	8 ... 22.4 A DC	22.4 A DC
2 A	Type A	5SY4 102-5	DC: 2 ... 5 (AC: 2 ... 3) x I_{Rated}	4 ... 10 A DC	10 A DC
2 A	Type C	5SY4 102-7	DC: 5 ... 14 (AC: 5 ... 10) x I_{Rated}	10 ... 28 A DC	28 A DC
3 A	Type A	5SY4 103-5	DC: 2 ... 5 (AC: 2 ... 3) x I_{Rated}	6 ... 15 A DC	15 A DC
3 A	Type C	5SY4 103-7	DC: 5 ... 14 (AC: 5 ... 10) x I_{Rated}	15 ... 42 A DC	42 A DC
4 A	Type A	5SY4 104-5	DC: 2 ... 5 (AC: 2 ... 3) x I_{Rated}	8 ... 20 A DC	20 A DC
4 A	Type C	5SY4 104-7	DC: 5 ... 14 (AC: 5 ... 10) x I_{Rated}	20 ... 56 A DC	56 A DC
6 A	Type A	5SY4 106-5	DC: 2 ... 5 (AC: 2 ... 3) x I_{Rated}	12 ... 30 A DC	30 A DC
6 A	Type B	5SY4 106-6	DC: 3 ... 7 (AC: 3 ... 5) x I_{Rated}	18 ... 42 A DC	42 A DC
6 A	Type C	5SY4 106-7	DC: 5 ... 14 (AC: 5 ... 10) x I_{Rated}	30 ... 84 A DC	84 A DC
8 A	Type A	5SY4 108-5	DC: 2 ... 5 (AC: 2 ... 3) x I_{Rated}	16 ... 40 A DC	40 A DC
8 A	Type C	5SY4 108-7	DC: 5 ... 14 (AC: 5 ... 10) x I_{Rated}	40 ... 112 A DC	112 A DC
10 A	Type A	5SY4 110-5	DC: 2 ... 5 (AC: 2 ... 3) x I_{Rated}	20 ... 50 A DC	50 A DC
10 A	Type B	5SY4 110-6	DC: 3 ... 7 (AC: 3 ... 5) x I_{Rated}	30 ... 70 A DC	70 A DC
10 A	Type C	5SY4 110-7	DC: 5 ... 14 (AC: 5 ... 10) x I_{Rated}	50 ... 140 A DC	140 A DC
13 A	Type A	5SY4 113-5	DC: 2 ... 5 (AC: 2 ... 3) x I_{Rated}	26 ... 65 A DC	65 A DC
13 A	Type B	5SY4 113-6	DC: 3 ... 7 (AC: 3 ... 5) x I_{Rated}	39 ... 91 A DC	91 A DC
13 A	Type C	5SY4 113-7	DC: 5 ... 14 (AC: 5 ... 10) x I_{Rated}	65 ... 182 A DC	182 A DC
16 A	Type A	5SY4 116-5	DC: 2 ... 5 (AC: 2 ... 3) x I_{Rated}	32 ... 80 A DC	80 A DC
16 A	Type B	5SY4 116-6	DC: 3 ... 7 (AC: 3 ... 5) x I_{Rated}	48 ... 112 A DC	112 A DC
16 A	Type C	5SY4 116-7	DC: 5 ... 14 (AC: 5 ... 10) x I_{Rated}	80 ... 224 A DC	224 A DC

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Overview (continued)

***Miniature circuit breakers acc. to EN 60898 (DIN VDE 0641-11) in 24 V DC circuits, which are powered by SITOP modular or SITOP smart power supplies*[1)]**

Article No.	$I_{out\ rated}$	$I_{out\ dyn.}$	Characteristic A									
			1 A	1.6 A	2 A	3 A	4 A	6 A	8 A	10 A	13 A	16 A
6EP1332-2BA20	2.5 A	9 A/ 800 ms	✓	✓	•	X	X	X	X	X	X	X
6EP1333-2BA20	5 A	18 A/ 800 ms	✓	✓	✓	✓	•	X	X	X	X	X
6EP1333-3BA10	5 A	15 A/ 25 ms	✓	✓	✓	•	•	X	X	X	X	X
6EP3333-8SB00-0AY0	5 A	15 A/ 25 ms	✓	✓	✓	•	•	X	X	X	X	X
6EP1334-2BA20	10 A	32 A/ 1000 ms	✓	✓	✓	✓	✓	✓	•	X	X	X
6EP1334-3BA10	10 A	30 A/ 25 ms	✓	✓	✓	✓	✓	✓	•	X	X	X
6EP3334-8SB00-0AY0	10 A	30 A/ 25 ms	✓	✓	✓	✓	✓	✓	•	X	X	X
6EP1434-2BA10	10 A	16 A/ 100 ms	✓	✓	✓	✓	•	X	X	X	X	x
6EP1336-2BA10	20 A	35 A/ 100 ms	✓	✓	✓	✓	✓	✓	•	•	X	X
6EP1336-3BA10	20 A	60 A/ 25 ms	✓	✓	✓	✓	✓	✓	✓	✓	•	•
6EP3436-8SB00-0AY0	20 A	60 A/ 25 ms	✓	✓	✓	✓	✓	✓	✓	✓	•	•
6EP1436-2BA10	20 A	35 A/ 100 ms	✓	✓	✓	✓	✓	✓	•	•	X	X
6EP3337-8SB00-0AY0	40 A	120 A/ 25 ms	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6EP1437-2BA20	40 A	65 A/ 120 ms	✓	✓	✓	✓	✓	✓	✓	✓	✓	•
6EP1437-3BA10	40 A	120 A/ 25 ms	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

$I_{out\ rated}$: Rated output current

$I_{out\ dyn}$: Dynamic overcurrent with short-circuit during operation

✓: instantaneous tripping, as dynamic overcurrent on short-circuit > limit current of electromagnetic tripping.

•: instantaneous tripping probable, as dynamic overcurrent on short-circuit at least 50% within tolerance range of the tripping characteristic.

X: no instantaneous tripping.

[1)] The selection of miniature circuit breakers that can be tripped is based on the consideration of the maximum possible short-circuit current of the power supply and the respective tripping characteristic at +20 °C. Further parameters that may be relevant in practice, such as self-heating, increased ambient temperature, line impedance and possibly currents flowing in parallel feeders, have not been taken into consideration.

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Overview (continued)

Article No.	$I_{out\ rated}$	$I_{out\ dyn.}$	Characteristic B			
			6 A	10 A	13 A	16 A
6EP1332-2BA20	2.5 A	9 A/ 800 ms	X	X	X	X
6EP1333-2BA20	5 A	18 A/ 800 ms	X	X	x	X
6EP1333-3BA10	5 A	15 A/ 25 ms	X	X	X	X
6EP3333-8SB00-0AY0	5 A	15 A/ 25 ms	X	X	X	X
6EP1334-2BA20	10 A	32 A/ 1000 ms	•	X	X	X
6EP1334-3BA10	10 A	30 A/ 25 ms	•	X	X	X
6EP3334-8SB00-0AY0	10 A	30 A/ 25 ms	•	X	X	X
6EP1434-2BA10	10 A	16 A/ 100 ms	X	X	X	X
6EP1336-2BA10	20 A	35 A/ 100 ms	•	X	X	X
6EP3436-8SB00-0AY0	20 A	60 A/ 25 ms	✓	•	X	X
6EP1336-3BA10	20 A	60 A/ 25 ms	✓	•	X	X
6EP1436-2BA10	20 A	35 A/ 100 ms	•	X	X	X
6EP3337-8SB00-0AY0	40 A	120 A/ 25 ms	✓	✓	✓	✓
6EP1437-2BA20	40 A	65 A/ 120 ms	✓	•	•	X
6EP1437-3BA10	40 A	120 A/ 25 ms	✓	✓	✓	✓

$I_{out\ rated}$: Rated output current

$I_{out\ dyn}$: Dynamic overcurrent with short-circuit during operation

✓: instantaneous tripping, as dynamic overcurrent on short-circuit > limit current of electromagnetic tripping.

•: instantaneous tripping probable, as dynamic overcurrent on short-circuit at least 50% within tolerance range of the tripping characteristic.

X: no instantaneous tripping.

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Overview (continued)

Article No.	$I_{out\ rated}$	$I_{out\ dyn.}$	Characteristic C									
			1 A	1.6 A	2 A	3 A	4 A	6 A	8 A	10 A	13 A	16 A
6EP1332-2BA20	2.5 A	9 A/ 800 ms	X	X	X	X	X	X	X	X	X	X
6EP1333-2BA20	5 A	18 A/ 800 ms	✓	•	X	X	X	X	X	X	X	X
6EP1333-3BA10	5 A	15 A/ 25 ms	✓	X	X	X	X	X	X	X	X	X
6EP3333-8SB00-0AY0	5 A	15 A/ 25 ms	✓	X	X	X	X	X	X	X	X	X
6EP1334-2BA20	10 A	32 A/ 1000 ms	✓	✓	✓	•	X	X	X	X	X	X
6EP1334-3BA10	10 A	30 A/ 25 ms	✓	✓	✓	•	X	X	X	X	X	X
6EP3334-8SB00-0AY0	10 A	30 A/ 25 ms	✓	✓	✓	•	X	X	X	X	X	X
6EP1434-2BA10	10 A	16 A/ 100 ms	✓	•	X	X	X	X	X	X	X	X
6EP1336-2BA10	20 A	35 A/ 100 ms	✓	✓	✓	•	X	X	X	X	X	X
6EP1336-3BA10	20 A	60 A/ 25 ms	✓	✓	✓	✓	✓	•	X	X	X	X
6EP3436-8SB00-0AY0	20 A	60 A/ 25 ms	✓	✓	✓	✓	✓	•	X	X	X	X
6EP1436-2BA10	20 A	35 A/ 100 ms	✓	✓	✓	•	X	X	X	X	X	X
6EP3337-8SB00-0AY0	40 A	120 A/ 25 ms	✓	✓	✓	✓	✓	✓	✓	•	X	X
6EP1437-2BA20	40 A	65 A/ 120 ms	✓	✓	✓	✓	✓	•	X	X	X	X
6EP1437-3BA10	40 A	120 A/ 25 ms	✓	✓	✓	✓	✓	✓	✓	•	X	X

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Overview

Overview of important standards and approvals

EN	**European standards**
EN 50178	Electronic equipment for use in power installations
EN 55022	Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement
EN 60079	Electrical apparatus for explosive gas atmospheres
EN 60529	Degrees of protection provided by enclosures (IP-Code)
EN 60721	Classification of environmental conditions
EN 60950-1	Information technology equipment – Safety
EN 61000-3-2	Electromagnetic compatibility (EMC) – Part 3-2: Limits for harmonic current emissions (equipment input current ≤16 A per phase)
EN 61000-6-2	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments
EN 61000-6-3	Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for residential, commercial and light industrial environments
UL	**Underwriters Laboratories**
UL 508	Industrial control equipment
UL 1604	Electrical equipment for use in class I and class II, division 2, and class III hazardous (classified) locations
UL 1778	Uninterruptible Power Supply Equipment
UL 2367	Solid State Overcurrent Protectors
UL 60079	Electrical apparatus for explosive gas atmospheres
UL 60950 -1	Information technology equipment – Safety
ANSI	**American National Standards Institute**
ANSI/ISA –12.12.01	Non-Incendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations
NEC	**Class 2 Secondary circuit supplied by a power source complying with Article 725, Part C of the National Electrical Code (NEC), ANSI/NFPA 70**
CSA	**Canadian Standards Association**
CSA C22.2 No. 14	Industrial control equipment
CSA C22.2 No. 142	Process control equipment
CSA C22.2 No. 107.1	General Use Power Supplies
CSA C22.2 No. 213	Non-Incendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations
CSA C22.2 No. 60079	Electrical apparatus for explosive gas atmospheres
CSA C22.2 No. 60950-1	Information technology equipment – Safety
ATEX	**Equipment and protective systems intended for use in Potentially Explosive Atmospheres**
IECEx	**Equipment for use in Explosive Atmospheres**
FM	**Factory Mutual Research**
SEMI	**F47 Specification for semiconductor processing equipment - Voltage sag immunity**
ABS	**American Bureau of Shipping**
BV	**Bureau Veritas**
DNV GL	**Det Norske Veritas, Germanischer Lloyd**
LR	**Lloyd's Register**
NK	**Nippon Kaiji Kyokai**

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Certificates

			UL, CSA						EX					Shipbuilding					
	CE (LVD, EMC)	CB-Scheme	cULus-Listed (UL 508, CSA C22.2 No 107.1)	cURus-Recognized (UL 60950-1, CSA 22.2 No. 60950-1)	UL-Recognized (UL 2367)	cURus-Recognized (UL 1778, CSA C22.2 No. 107.1)	cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)	NEC class 2 (acc. UL 1310)	ATEX	IECEx	cULus Class I, Div. 2 (ANSI/ISA-12.12.01-2007, CSA C22.2 No. 213-M1987)	cCSAus Class I, Div. 2 (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007)	FM (Class I, Div. 2)	DNV GL (Det Norske Veritas Germanischer Lloyd)	ABS (American Bureau of Shipping)	BV (Bureau Veritas)	LR (Lloyd's Register)	NK (Nippon Kaiji Kyokai)	SEMI F47
SITOP compact																			
6EP1321-5BA00	X	X	X				X		X			X		X	X				
6EP1322-5BA10	X	X	X				X		X			X		X	X				
6EP1331-5BA00	X	X	X	X				X	X			X		X	X				
6EP1331-5BA10	X	X	X	X				X	X			X		X	X				
6EP1332-5BA00	X	X	X	X				X	X			X		X	X				
6EP1332-5BA20	X	X	X	X				X	X			X		X	X				
6EP1332-5BA10	X	X	X				X		X			X		X	X				
LOGO!Power																			
6EP1311-1SH03	X	X	X	X					X				X	X	X				
6EP1311-1SH13	X	X	X	X					X				X	X	X				
6EP1321-1SH03	X	X	X	X					X				X	X	X				
6EP1322-1SH03	X	X	X	X					X				X	X	X				
6EP1351-1SH03	X	X	X	X					X				X	X	X				
6EP1352-1SH03	X	X	X	X					X				X	X	X				
6EP1331-1SH03	X	X	X	X				X	X				X	X	X	X	X		X
6EP1332-1SH43	X	X	X	X				X	X				X	X	X	X	X		X
6EP1332-1SH52	X	X	X	X					X				X	X	X	X	X		X
SITOP lite																			
6EP1332-1LB00	X	X	X																
6EP1333-1LB00	X	X	X																
6EP1334-1LB00	X	X	X																
SITOP smart																			
6EP1322-2BA00	X	X	X				X		X	X		X		X					
6EP1323-2BA00	X	X	X				X		X	X		X		X					
6EP1332-2BA20	X	X	X				X		X	X		X		X		X			
6EP1333-2BA20	X	X	X				X		X	X		X		X		X			
6EP1334-2BA20	X	X	X				X		X	X		X		X		X			
6EP1336-2BA10	X	X	X				X		X	X		X		X					
6EP1433-2BA20	X	X	X	X					X	X	X			i. p.	i. p.				
6EP1434-2BA10	X	X	X	X					X	X	X			i. p.	i. p.				
6EP1436-2BA10	X	X	X				X		X	X		X		X	X				
6EP1437-2BA20	X	X	X				X		X	X		X		X	X				

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Certificates (continued)

			UL, CSA						EX					Shipbuilding					
	CE (LVD, EMC)	CB-Scheme	cULus-Listed (UL 508, CSA C22.2 No 107.1)	cURus-Recognized (UL 60950-1, CSA 22.2 No. 60950-1)	UL-Recognized (UL 2367)	cURus-Recognized (UL 1778, CSA C22.2 No. 107.1)	cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)	NEC class 2 (acc. UL 1310)	ATEX	IECEx	cULus Class I, Div. 2 (ANSI/ISA-12.12.01-2007, CSA C22.2 No. 213-M1987)	cCSAus Class I, Div. 2 (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007)	FM (Class I, Div. 2)	DNV GL (Det Norske Veritas Germanischer Lloyd)	ABS (American Bureau of Shipping)	BV (Bureau Veritas)	LR (Lloyd's Register)	NK (Nippon Kaiji Kyokai)	SEMI F47
SITOP modular																			
6EP3333-8SB00-0AY0	X	X	X				X		X	X		X		X	X				X
6EP3334-8SB00-0AY0	X	X	X				X		X	X		X		X	X				X
6EP1336-3BA10	X		X						X	X		X		X	X				
6EP1337-3BA00	X		X						X	X		X							
6EP1333-3BA10	X	X	X						X	X		X		X	X				
6EP1333-3BA10-8AC0	X	X	X						X	X		X		X					
6EP1334-3BA10	X	X	X						X	X		X		X	X				
6EP1334-3BA10-8AB0	X	X	X						X	X		X		X					
6EP3436-8SB00-0AY0	X	X							X	X		X		X	X				X
6EP1437-3BA10	X	X	X						X	X		X		X	X				X
6EP3446-8SB10-0AY0	X	X	X											X	X				
6EP1456-3BA00	X	X	X						X	X		X		X	X				
6EP1457-3BA00	X		X				X							X	X				
SITOP modular, power supply system PSU8600																			
6EP3436-8SB00-2AY0	X	X	X				X		X	X		X		X	i. p.				i. p.
6EP3437-8SB00-2AY0	X	X	X				X		X	X		X		X	i. p.				i. p.
6EP3436-8MB00-2CY0	X	X	X				X		X	X		X		X	i. p.				i. p.
6EP3437-8MB00-2CY0	X	X	X				X		X	X		X		X	i. p.				X
6EP4436-8XB00-0CY0	X	X	X				X		X	X		X		X	i. p.				X
6EP4437-8XB00-0CY0	X	X	X				X		X	X		X		X	i. p.				X
6EP4297-8HB00-0XY0	X	X	X				X		X	X		X		X	i. p.				X
6EP4297-8HB10-0XY0	X	X	X				X		X	X		X		X	i. p.				X
6EP4293-8HB00-0XY0	X	X	X				X		X	X		X		X	i. p.				i. p.
6EP4295-8HB00-0XY0	X	X	X				X		X	X		X		X	i. p.				i. p.
SITOP in the SIMATIC Design																			
6ES7307-1BA01-0AA0	X		X						X		X		X	X	X	X	X	X	
6ES7305-1BA80-0AA0	X		X																
6ES7307-1EA01-0AA0	X		X						X		X		X	X	X	X	X	X	
6ES7307-1EA80-0AA0	X		X																
6ES7307-1KA02-0AA0	X		X						X		X		X	X	X	X	X	X	
6EP1332-1SH71	X	X	X	X					X		X		X	X	X	X	X	X	
6EP1332-4BA00	X	X	X						X		X		X	X	X	X	X	X	
6EP1333-4BA00	X	X	X	X					X		X		X	X	X	X	X	X	
6ES7148-4PC00-0HA0	X		X																

i.p. - in preparation

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Certificates (continued)

			UL, CSA						EX					Shipbuilding					
	CE (LVD, EMC)	CB-Scheme	cULus-Listed (UL 508, CSA C22.2 No 107.1)	cURus-Recognized (UL 60950-1, CSA 22.2 No. 60950-1)	UL-Recognized (UL 2367)	cURus-Recognized (UL 1778, CSA C22.2 No. 107.1)	cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)	NEC class 2 (acc. UL 1310)	ATEX	IECEx	cULus Class I, Div. 2 (ANSI/ISA-12.12.01-2007, CSA C22.2 No. 213-M1987)	cCSAus Class I, Div. 2 (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007)	FM (Class I, Div. 2)	DNV GL (Det Norske Veritas Germanischer Lloyd)	ABS (American Bureau of Shipping)	BV (Bureau Veritas)	LR (Lloyd's Register)	NK (Nippon Kaiji Kyokai)	SEMI F47
Special designs, special uses																			
Wall mounting																			
6EP1321-1LD00	X	X	X	X															
6EP1322-1LD00	X	X	X	X															
6EP1331-1LD00	X	X	X	X															
6EP1332-1LD00	X	X	X	X															
6EP1332-1LD10	X	X	X	X															
6EP1333-1LD00	X	X	X	X															
6EP1334-1LD00	X	X	X	X															
High degree of protection																			
6EP1333-7CA00	X		X																
6EP1334-7CA00	X		X																
6ES7148-4PC00-0HA0	X		X																
Battery charging																			
6EP3424-8UB00-0AY0	X	X	X				X		X			X		X	X				
6EP3436-9UB00-0AY0	X	X	X				X		X			X		X	X				
6EP1437-3BA20	X		X				X												
Alternative output voltages																			
6EP1353-0AA00	X	X																	
6EP1353-2BA00	X	X																	
DC/DC converters																			
6EP1731-2BA00	X		X	X															
6EP1732-0AA00	X		X																
6EP1621-2BA00	X		X				X												
6EP1536-3AA00	X	X	X											X					
Special applications																			
6EP1333-1AL12	X		X																
6EP1334-1AL12	X		X																
6EP1433-0AA00	X	X	X																
Add-on modules																			
6EP1961-3BA21	X		X						X	X		X		X	X				
6EP1962-2BA00	X		X	X															
6EP1964-2BA00	X		X																
6EP1961-2BA11	X	X	X		X				X	X		X		X	X				
6EP1961-2BA31	X	X	X		X				X	X		X		X	X				
6EP1961-2BA21	X	X	X		X				X	X		X		X	X				
6EP1961-2BA41	X	X	X		X				X	X		X		X	X				
6EP1961-2BA00	X		X	X	X				X			X							
6EP1961-3BA01	X		X						X	X		X		X	X				
6EP1967-2AA00	X		X																

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Certificates (continued)

			UL, CSA						EX					Shipbuilding					
	CE (LVD, EMC)	CB-Scheme	cULus-Listed (UL 508, CSA C22.2 No 107.1)	cURus-Recognized (UL 60950-1, CSA 22.2 No. 60950-1)	UL-Recognized (UL 2367)	cURus-Recognized (UL 1778, CSA C22.2 No. 107.1)	cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)	NEC class 2 (acc. UL 1310)	ATEX	IECEx	cULus Class I, Div. 2 (ANSI/ISA-12.12.01-2007, CSA C22.2 No. 213-M1987)	cCSAus Class I, Div. 2 (CSA C22.2 No. 213-M1987, ANSI/ISA-12.12.01-2007)	FM (Class I, Div. 2)	DNV GL (Det Norske Veritas Germanischer Lloyd)	ABS (American Bureau of Shipping)	BV (Bureau Veritas)	LR (Lloyd's Register)	NK (Nippon Kaiji Kyokai)	SEMI F47
SITOP DC-USV uninterruptible power supplies																			
6EP1933-2EC41	X	X	X						X			X		X	X				
6EP1933-2EC51	X	X	X						X			X		X	X				
6EP1935-5PG01	X	X	X						X			X		X	X				
6EP1933-2NC01	X																		
6EP1933-2NC11	X																		
6EP4134-3AB00-0AY0	X	X	X						X	X		X		X	X				
6EP4134-3AB00-1AY0	X	X	X						X	X		X		X	X				
6EP4134-3AB00-2AY0	X	X	X						X	X		X		X	X				
6EP4136-3AB00-0AY0	X	X	X						X	X		X		X	X				
6EP4136-3AB00-1AY0	X	X	X						X	X		X		X	X				
6EP4136-3AB00-2AY0	X	X	X						X	X		X		X	X				
6EP4137-3AB00-0AY0	X	X	X						X	X		X		X	X				
6EP4137-3AB00-1AY0	X	X	X						X	X		X		X	X				
6EP4137-3AB00-2AY0	X	X	X						X	X		X		X	X				
6EP4131-0GB00-0AY0	X					X			X	X		X		X	X				
6EP4133-0GB00-0AY0	X					X			X	X		X		X	X				
6EP4134-0GB00-0AY0	X					X			X	X		X		X	X				
6EP4135-0GB00-0AY0	X					X			X	X		X		X	X				
6EP4132-0GB00-0AY0	X					X			X	X		X		X	X				
6EP4133-0JB00-0AY0	X					X								X	X				
6EP1931-2DC21	X		X																
6EP1931-2DC31	X		X																
6EP1931-2DC42	X		X																
6EP1931-2EC21	X		X																
6EP1931-2EC31	X		X																
6EP1931-2EC42	X		X																
6EP1931-2FC21	X		X																
6EP1931-2FC42	X		X																
6EP1935-6MC01	X					X													
6EP1935-6MD31	X					X													
6EP1935-6MD11	X					X													
6EP1935-6ME21	X					X													
6EP1935-6MF01	X					X													

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Appendix



16/2 **Siemens Training**

16/3 **Partner at Siemens**
16/4 Partner at Industry
16/4 Siemens Partner Programm

16/5 **Siemens Automation Cooperates with Education**
16/5 Simplify your education in automation

16/7 **Online Services**
16/7 Information and Ordering Options on the Internet and DVD
16/8 Information and Download Center, Social Media, Mobile Media

16/9 **Industry Services**
16/10 Industry Services – Portfolio overview
16/12 Online Support

16/13 **Subject index**

16/15 **Article number index**

16/18 **Conditions of sale and delivery**

16/18 **Export regulations**

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Your benefit from practical training directly from the manufacturer

SITRAIN – Training for Industry – provides you with comprehensive support in solving your tasks.

Training directly from the manufacturer enables you to make correct decisions with confidence.

Increased profits and lower costs:

- Shorter times for commissioning, maintenance and servicing
- Optimized production operations
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- Compliance with quality standards in production
- Increased employee satisfaction and motivation
- Shorter familiarization times following changes in technology and staff

Contact

Visit our site on the Internet at:
www.siemens.com/sitrain

or let us advise you personally. You can request our latest training catalog from:

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Practice, practice, practice! We have designed the trainings with an emphasis on practical exercises. They take up to half of the course time in our trainings. You can therefore implement your new knowledge in practice even faster.

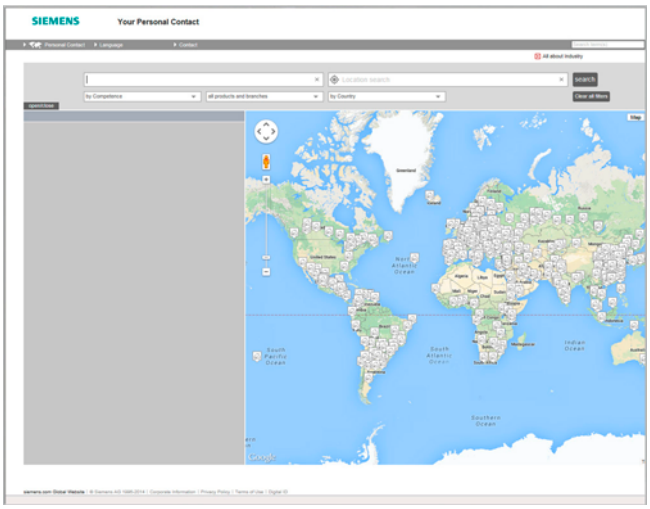
300 courses in more than 60 countries

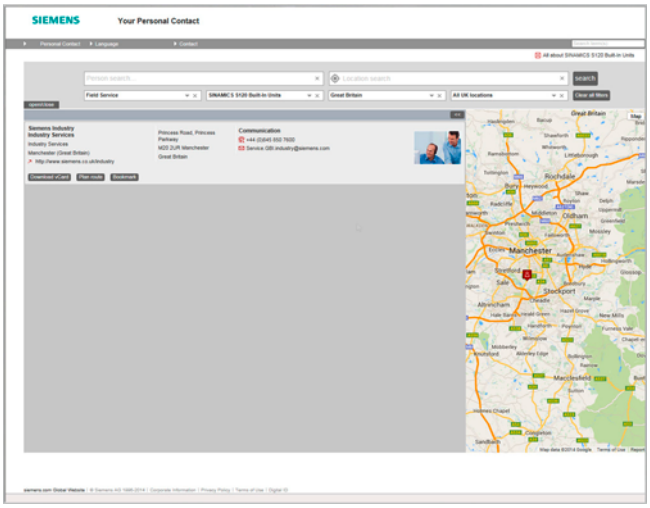
We offer a total of about 300 classroom-based courses. You can find us at more than 50 locations in Germany, and in 62 countries worldwide. You can find which course is offered at which location at:
www.siemens.com/sitrain

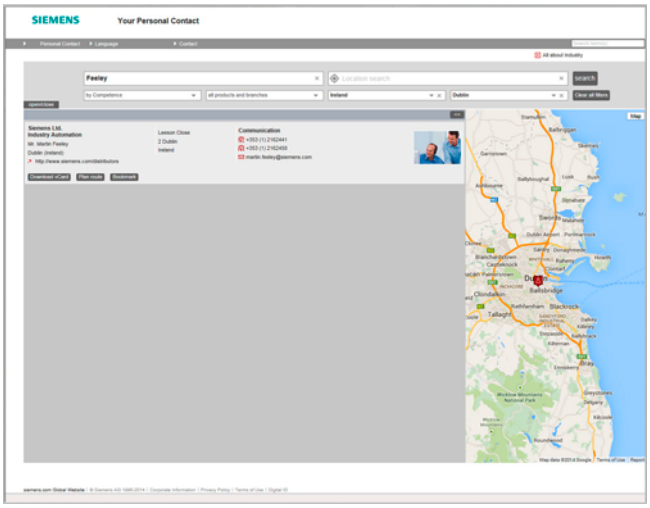
Skills development

Do you want to develop skills and fill in gaps in your knowledge? Our solution: We will provide a program tailored exactly to your personal requirements. After an individual requirements analysis, we will train you in our training centers near you or directly at your offices. You will practice on the most modern training equipment with special exercise units. The individual training courses are optimally matched to each other and help with the continuous development of knowledge and skills. After finishing a training module, the follow-up measures make success certain, as well as the refreshment and deepening of the knowledge gained.

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At Siemens we are resolutely pursuing the same goal: long-term improvement of your competitive ability.
We are committed to this goal. Thanks to our commitment, we continue to set new standards in automation and drive technology. In all industries – worldwide.

At your service locally, around the globe for consulting, sales, training, service, support, spare parts ... on the entire Industry Automation and Drive Technologies range.

Your personal contact can be found in our Contacts Database at:
www.siemens.com/automation/partner

You start by selecting

- the required competence,
- products and branches,
- a country,
- a city

or by a

- location search or
- person search.

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Siemens Partner Program

Overview

Siemens Solution und Approved Partners



Highest competence in automation and drive technology as well as power distribution

Siemens works closely together with selected partner companies around the world in order to ensure that customer requirements for all aspects of automation and drives, as well as power distribution, are fulfilled as best as possible – wherever you are, and whatever the time. It is for this reason that we systematically train and keep our partners well prepared, in addition to certifying them in specific technologies. It is our declared intention and goal to train and prepare our partners to the same standards as our own employees.

This approach is based on contractually agreed quality criteria as well as optimum support for our partners by providing clearly-defined processes. This ensures that they possess all the qualities to meet customer requirements optimally. The partner emblem is the guarantee and indicator of proven quality.

Solution Partners and Approved Partners

The Siemens Partner Program distinguishes between Solution Partners and Approved Partners.

At present we are working with more than 1,400 Solution Partners worldwide. They represent countless tailored and future-proof automation and drive solutions in the most diverse industries.

With their extensive technical product knowledge, Siemens Approved Partners offer a combination of goods and services that include specialist technologies, customized modifications and the provision of high-quality system and product packages. They also provide qualified technical support and assistance

Partner Finder



In the Siemens global Solution Partner program, customers are certain to find the optimum partner for their specific requirements - with no great effort. The Partner Finder is basically a comprehensive database that showcases the profiles of all our solution partners.

Easy selection:
Set filters in the search screen form according to the criteria that are relevant to you. You can also directly enter the name of an existing partner.

Skills at a glance:
Gain a quick insight into the specific competencies of any particular partner with the reference reports.

Direct contact option:
Use our electronic query form:

www.siemens.com/partnerfinder

Additional information on the Siemens Solution Partner Program is available online at:

www.siemens.com/partner-program

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Unique support for educators and students in educational institutions

Cooperates with Education

Automation

SIEMENS

Siemens Automation Cooperates with Education (SCE) offers a global system for sustained support of technical skills. SCE supports educational institutions in their teaching assignment in the industrial automation sector and offers added value in the form of partnerships, technical expertise, and know-how. As the technological leader, our comprehensive range of services can support you in the knowledge transfer for Industry 4.0.

Our services at a glance

- Training curriculums for your lessons
- Trainer packages for hands-on learning
- Courses convey up-to-date specialist knowledge
- Support for your projects / textbooks
- Complete didactic solutions from our partners
- Personal contact for individual support

Training curriculums for your lessons



Use our profound industrial know-how for practiceoriented and individual design of your course. We offer you more than 100 didactically prepared training curriculums on the topics of automation and drives technology free of charge. These materials are perfectly matched to your curricula and syllabuses, and optimally suited for use with our trainer packages. This takes into account all aspects of a modern industrial solution: installation, configuration, programming, and commissioning. All documents, including projects, can be individually matched to your specific requirements.

Particular highlights:

- The new SIMATIC PCS 7 curriculums and trainer packages. Using plant simulation, you can pass on basic, practice-oriented PCS 7 knowledge at universities within about 60 hours (= 1 semester).
- The new TIA Portal training materials for SIMATIC S7-1500 / S7-1200 / S7-300 are available in English, German, French, Italian, Spanish, Portuguese and Chinese for download.

www.siemens.com/sce/curriculums

Trainer packages for hands-on learning



Our SCE trainer packages offer a specific combination of original industrial components which are perfectly matched to your requirements and can be conveniently used in your course. These price-reduced bundles available exclusively to schools include innovative and flexible hardware and software packages.
SCE currently offers more than 80 SCE trainer packages including related equipment e.g. Micro Memory. These cover both the factory and process automation sectors. You can use them to impart the complete course contents on industrial automation at a very low cost.

Trainer packages are available for:

- Introduction to automation technology with LOGO! logic module
- PLC engineering with SIMATIC S7 hardware and STEP 7 software (S7-1500, S7-1200, S7-300 and TIA Portal)
- Operator control and monitoring with SIMATIC HMI
- Industrial networking over bus systems with SIMATIC NET (PROFINET, PROFIBUS, IO-Link)
- Sensor systems with VISION, RFID and SIWAREX
- Process automation with SIMATIC PCS 7
- Networked drive and motion technologies with SINAMICS/SIMOTION
- Power Monitoring Devices SENTRON PAC 4200
- Motor Management SIMOCODE
- CNC programming with SinuTrain

Important ordering notes:

Only the following institutions are authorized to obtain trainer packages: vocational schools, Colleges and Universities, in-house vocational training departments, non commercial research institutions and non commercial training departments.

To purchase a trainer package, you require a specific end-use certificate, which you can obtain from your regional sales office.

www.siemens.com/sce/tp

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Unique support for educators and students in educational institutions (continued)

Courses convey up-to-date specialist knowledge



Profit from our excellent know-how as the leader in industrial technologies. We offer you specific courses for automation and drive technology worldwide. These support you in the practice-oriented transferring of product and system know-how, are in conformance with curriculums, and derived from the training fields. Compact technical courses especially for use at universities are also available.

Our range of courses comprises a wide variety of training modules based on the principle of Totally Integrated Automation (TIA). The focus is on the same subject areas as with the SCE trainer packages.

Every PLC and drive course is oriented on state-of-the-art technology. Your graduates can thus be prepared optimally for their future professional life.

In some countries we are offering classes based on our training curriculums. Please inquire with your SCE contact partner.

www.siemens.com/sce/courses

Support for your projects/textbooks



Automation and drive technology is characterized by continuous and rapid developments. Service and Support therefore play an important role.

We can provide you with consulting for selected projects and support from your personal SCE contact as well as our web-based and regional Customer Support.

As a particular service, SCE supports technical authors with our know-how as well as with intensive technical consulting. Siemens library of special textbooks covering the industrial automation sector provides an additional resource for you and your students. These can be found at the SCE web site.

www.siemens.com/sce/contact
www.siemens.com/sce/books

Complete didactic solutions from our partners



Our partners for learning systems offer a wide range of training systems and solutions for use in your courses or laboratory.

These models have been designed based on our trainer packages and thus save you the time and cost of selfconstruction of individual components. The Partner systems provide you with simple and effective help in the fulfillment of your teaching assignment.

www.siemens.com/sce/partner

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SCE Support Finder for your Internet request

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Discover SCE

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The Future of Manufacturing on the Internet



Detailed knowledge of the range of products and services available is essential when planning and engineering automation systems. It goes without saying that this information must always be as up-to-date as possible.

Industry is on the threshold of the fourth industrial revolution as digitization now follows after the automation of production. The goals are to increase productivity and efficiency, speed, and quality. In this way, companies can remain competitive on the path to the future of industry.

You will find everything you need to know about products, systems and services on the internet at:

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All information is provided over a user interface that is both user-friendly and intuitive.

You can order the CA 01 product catalog from your Siemens sales contact or in the Information and Download Center:

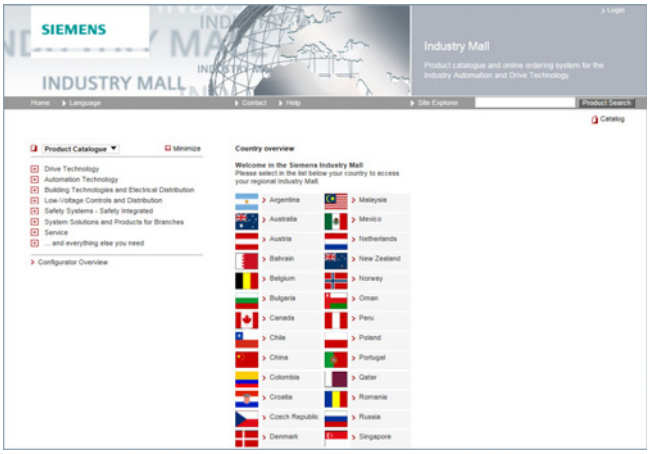
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Information about the CA 01 interactive catalog can be found on the Internet at:

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Easy Shopping with the Industry Mall



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Data transfer via EDIFACT allows the whole procedure, from selection through ordering to tracking and tracing, to be carried out online. Availability checks, customer-specific discounts and bid creation are also possible.

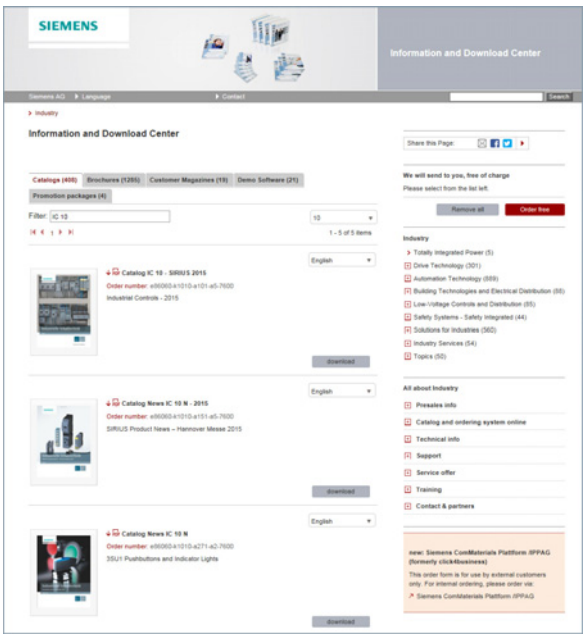
Numerous additional functions are provided for your support. For example, powerful search functions make it easy to select the required products. Configurators enable you to configure complex product and system components quickly and easily. CAx data types are also provided here.

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Downloading Catalogs



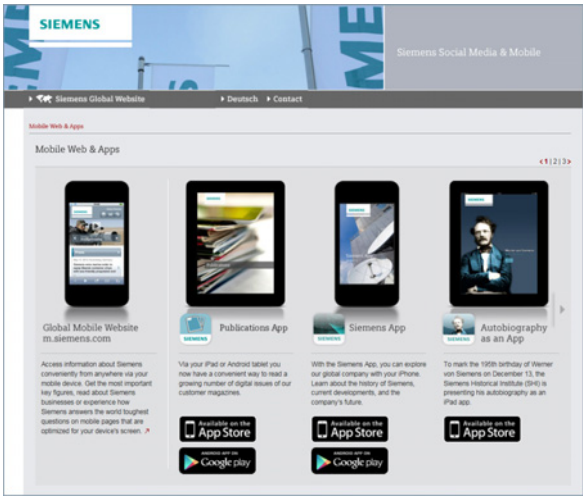
In addition to numerous other useful documents, you can also find the catalogs listed on the back inside cover of this catalog in the Information and Download Center. You can download these catalogs in PDF format without having to register.

The filter dialog above the first catalog displayed makes it possible to carry out targeted searches. If you enter "MD 3" for example, you will find both the MD 30.1 and MD 31.1 catalogs. If you enter "IC 10", both the IC 10 catalog and the associated news or add-ons are displayed.

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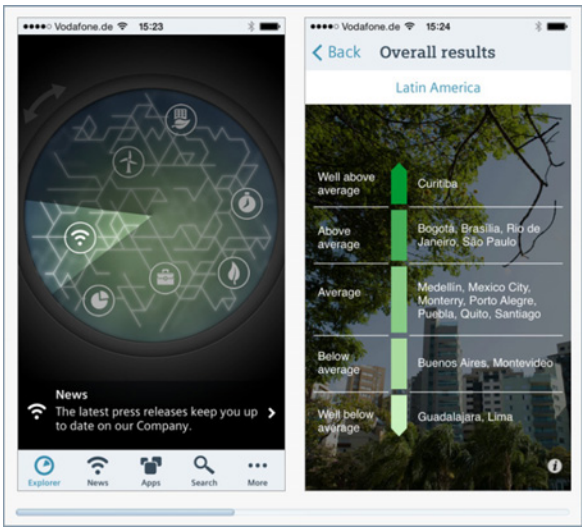
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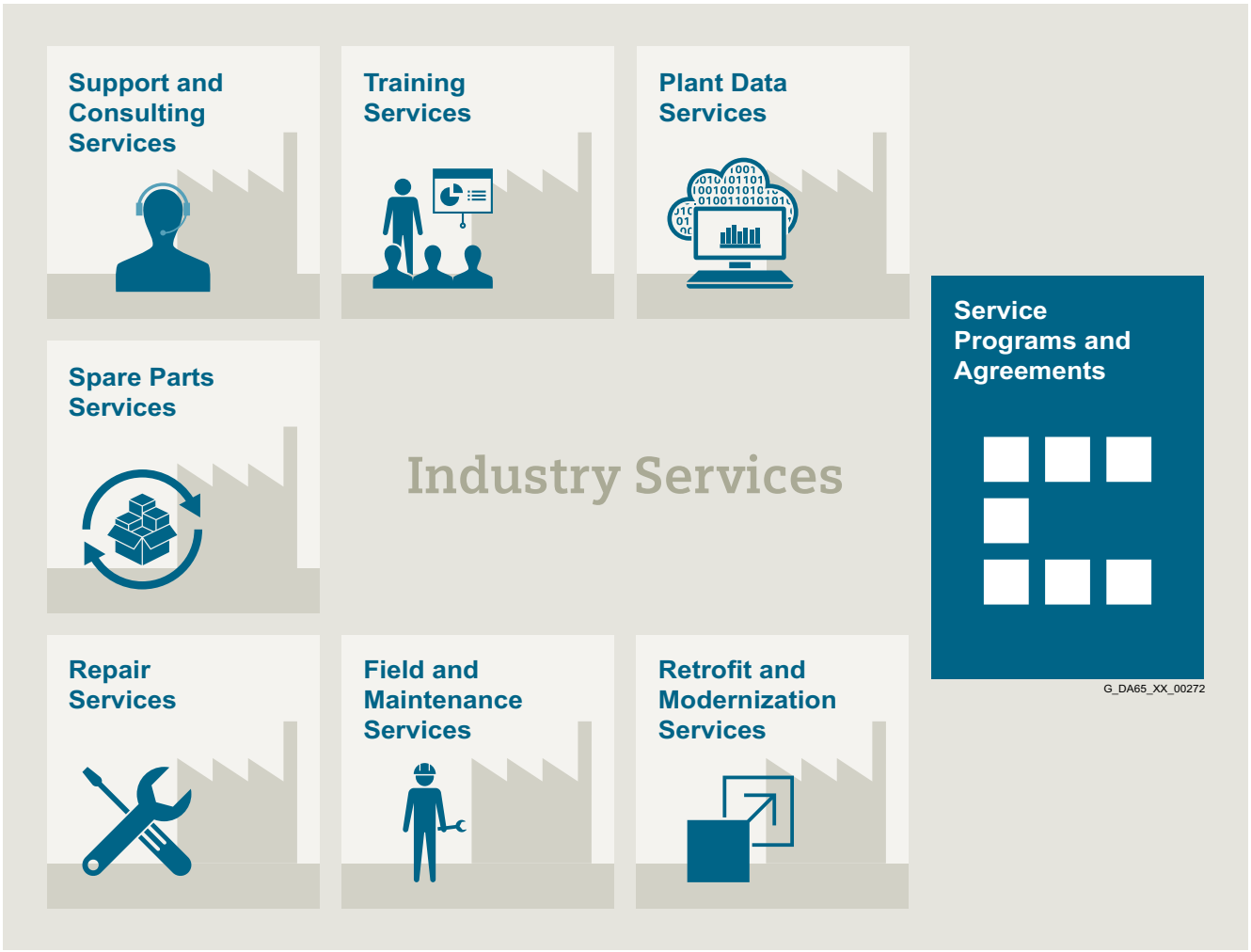
https://play.google.com/store/search?q=siemens

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Overview

Unleash potential – with services from Siemens



Increase your performance – with Industry Services

Optimizing the productivity of your equipment and operations can be a challenge, especially with constantly changing market conditions. Working with our service experts makes it easier. We understand your industry's unique processes and provide the services needed so that you can better achieve your business goals.

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You can rely on our highly dedicated team of engineers, technicians and specialists to deliver the services you need – safely, professionally and in compliance with all regulations. We are there for you, where you need us, when you need us.

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Industry Services – Portfolio overview

Overview



Make your industrial processes transparent to gain improvements in productivity, asset availability, and energy efficiency.

Production data is generated, filtered and translated with intelligent analytics to enhance decision-making.

This is done whilst taking data security into consideration and with continuous protection against cyber attack threats.

www.industry.siemens.com/services/global/en/portfolio/plant-data-services/Pages/index.aspx



Industry Online Support site for comprehensive information, application examples, FAQs and support requests.

Technical and Engineering Support for advice and answers for all inquiries about functionality, handling, and fault clearance.

Information & Consulting Services, e.g. SIMATIC System Audit; clarity about the state and service capability of your automation system or Lifecycle Information Services; transparency on the lifecycle of the products in your plants.

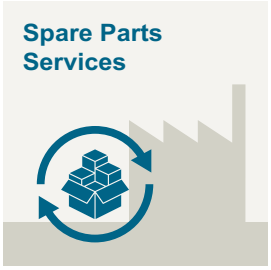
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www.industry.siemens.com/services/global/en/portfolio/training/Pages/index.aspx



Are available worldwide for smooth and fast supply of spare parts – and thus optimal plant availability. Genuine spare parts are available for up to ten years. Logistic experts take care of procurement, transport, custom clearance, storage and order management. Reliable logistics processes ensure that components reach their destination as needed.

Asset optimization services help you design a strategy for parts supply where your investment and carrying costs are reduced and the risk of obsolescence is avoided.

www.industry.siemens.com/services/global/en/portfolio/spare_parts/Pages/index.aspx

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Overview (continued)



Are offered on-site and in regional repair centers for fast restoration of faulty devices' functionality.

Also available are extended repair services, which include additional diagnostic and repair measures, as well as emergency services.

www.industry.siemens.com/services/global/en/portfolio/repair_services/Pages/index.aspx



Provide a cost-effective solution for the expansion of entire plants, optimization of systems or upgrading existing products to the latest technology and software, e.g. migration services for automation systems.

Service experts support projects from planning through commissioning and, if desired over the entire extended lifespan, e.g. Retrofit for Integrated Drive Systems for an extended lifetime of your machines and plants

www.industry.siemens.com/services/global/en/portfolio/retrofit-modernization/Pages/index.aspx



Siemens specialists are available globally to provide expert field and maintenance services, including commissioning, functional testing, preventive maintenance and fault clearance.
All services can be included in customized service agreements with defined reaction times or fixed maintenance intervals.

www.industry.siemens.com/services/global/en/portfolio/field_service/Pages/index.aspx



A technical Service Program or Agreement enables you to easily bundle a wide range of services into a single annual or multi-year agreement.

You pick the services you need to match your unique requirements or fill gaps in your organization's maintenance capabilities.
Programs and agreements can be customized as KPI-based and/or performance-based contracts.

www.industry.siemens.com/services/global/en/portfolio/service_programs/Pages/index.aspx

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Online Support

Overview



Online Support is a comprehensive information system for all questions relating to products, systems, and solutions that Siemens has developed for industry over time. With more than 300,000 documents, examples and tools, it offers users of automation and drive technology a way to quickly find up-to-date information. The 24-hour service enables direct, central access to detailed product information as well as numerous solution examples for programming, configuration and application.

The content, in six languages, is increasingly multimedia-based – and now also available as a mobile app. Online support's "Technical Forum" offers users the opportunity to share information with each other. The "Support Request" option can be used to contact Siemens' technical support experts.
The latest content, software updates, and news via newsletters and Twitter ensure that industry users are always up to date.

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Just scan the product code printed on the product directly using the camera of your mobile device to immediately see all technical information available on this product at a glance.
The graphical CAx information (3D model, circuit diagrams or EPLAN macros) is also displayed. You can forward this information to your workplace using the e-mail function.

The search function retrieves product information and articles and supports you with a personalized suggestion list. You can find your favorite pages – articles you need frequently – under "mySupport". You also receive selected news on new functions, important articles or events in the News section.

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https://support.industry.siemens.com/cs/ww/en/sc/2067

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Conditions of sale and delivery

1. General Provisions

By using this catalog you can acquire hardware and software products described therein from Siemens AG subject to the following Terms and Conditions of Sale and Delivery (hereinafter referred to as "T&C"). Please note that the scope, the quality and the conditions for supplies and services, including software products, by any Siemens entity having a registered office outside Germany, shall be subject exclusively to the General Terms and Conditions of the respective Siemens entity. The following T&C apply exclusively for orders placed with Siemens Aktiengesellschaft, Germany.

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For customers with a seat or registered office in Germany, the following applies subordinate to the T&C:

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- for software products, the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or Registered Office in Germany"[1)] and,
- for other supplies and services, the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry"[1)].

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The prices are in € (Euro) ex point of delivery, exclusive of packaging.

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An exact explanation of the metal factor can be downloaded at:

www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

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3. Additional Terms and Conditions

The dimensions are in mm. In Germany, according to the German law on units in measuring technology, data in inches apply only to devices for export.

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Insofar as there are no remarks on the individual pages of this catalog - especially with regard to data, dimensions and weights given - these are subject to change without prior notice.

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Errors excepted and subject to change without prior notice.

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