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 a power boost 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 DNV GL

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	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	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)

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

Technical specifications (continued)

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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; cULus Class I Div. 2 (ANSI/ISA-12.12.01-2007, CSA C22.2 No. 213-M1987) Group ABCD, T4	IECEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cULus Class I Div. 2 (ANSI/ISA-12.12.01-2007, CSA C22.2 No. 213-M1987) 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	DNV GL, ABS	DNV GL, ABS	DNV GL, ABS	DNV 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 0.05 ... 2.5 mm² single-core/ finely stranded	L1, L2, L3, PE: 1 screw terminal each for 0.05 ... 2.5 mm² single-core/ finely stranded	L1, L2, L3, PE: 1 screw terminal each for 0.2 ... 4 mm² single-core/ finely stranded	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 ... 2.5 mm²	+, -: 2 screw terminals each for 0.2 ... 2.5 mm²	+, -: 2 screw terminals each for 0.2 ... 4 mm²	+, -: 2 screw terminals each for 0.5 ... 10 mm²
• Auxiliary	13, 14 (alarm signal): 1 screw terminal each for 0.2 ... 2.5 mm²	13, 14 (alarm signal): 1 screw terminal each for 0.2 ... 2.5 mm²	13, 14 (alarm signal): 1 screw terminal each for 0.14 ... 1.5 mm²	13, 14 (alarm signal): 1 screw terminal each for 0.14 ... 1.5 mm²

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
Mechanics (continued)				
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**

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**

Accessories (continued)

	Article No.
SITOP PSE200U 3 A selectivity module 4-channel selectivity module Input: 24 V DC Output: 24 V DC/3 A per channel Adjustable response threshold 0.5 … 3 A	
• With common alarm signal	**6EP1961-2BA11**
• With single-channel signaling	**6EP1961-2BA31**
SITOP PSE200U 3 A NEC Class 2 selectivity module 4-channel selectivity module Input: 24 V DC Output: 24 V DC/3 A per channel Adjustable response threshold 0.5 … 3 A	
• With common alarm signal	**6EP1961-2BA51**
• With single-channel signaling	**6EP1961-2BA61**
SITOP PSE200U 10 A selectivity module 4-channel selectivity module Input: 24 V DC Output: 24 V DC/10 A per channel Adjustable response threshold 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