

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 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

- 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 -10 to +70 °C
- Comprehensive certifications, such as cULus, ATEX and GL

SITOP smart

1-phase, 24 V DC

Technical specifications

Article No.	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 with AC Rated value	120 V	120 V	120 V	120 V
• 2 with 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 with AC	85 ... 132 V	85 ... 132 V	85 ... 132 V	85 ... 132 V
• 2 with AC	170 ... 264 V	170 ... 264 V	170 ... 264 V	176 ... 264 V
Wide-range input	No	No	No	No
Overvoltage resistance	$2.3 \times V_{in \text{ rated}}, 1.3 \text{ ms}$	$2.3 \times V_{in \text{ rated}}, 1.3 \text{ ms}$	$2.3 \times V_{in \text{ rated}}, 1.3 \text{ ms}$	$2.3 \times V_{in \text{ rated}}, 1.3 \text{ ms}$
Mains buffering at $I_{out \text{ rated}}$, min.	20 ms; at $V_{in} = 93/187 \text{ V}$	20 ms; at $V_{in} = 93/187 \text{ V}$	20 ms; at $V_{in} = 93/187 \text{ V}$	20 ms; at $V_{in} = 120/230 \text{ V}$
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 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 ·s	1 A ² ·s	5.6 A ² ·s	10 A ² ·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 60898)	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)

Technical specifications (continued)

Article No.	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 \pm	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
Active power supplied 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 for 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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1-phase, 24 V DC

Technical specifications (continued)

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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 ($V_{in\ rated} \pm 15\%$), max.	0.3 %	0.3 %	0.3 %	1 %
Dynamic load smoothing (I_{out} : 50/100/50 %), $U_{out} \pm$ typ.	-	-	-	3 %
Dynamic load smoothing (I_{out} : 10/90/10 %), $U_{out} \pm$ 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 $V_{out} < 33\text{ V}$	protection against overvoltage in case of internal fault $V_{out} < 33\text{ V}$	protection against overvoltage in case of internal fault $V_{out} < 33\text{ V}$	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	-	-	-	7 A
• maximum	-	-	-	-
• 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/CSA approval	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; in preparation: cCSAus (CSA C22.2 No. 60950-1, UL 60950-1)
Explosion protection	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	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	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	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
Certificate of suitability IECEx	No	No	No	No
Certificate of suitability NEC Class 2	No	No	No	No
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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1-phase, 24 V DC

Ordering data	Article No.	Accessories	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 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 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 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 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 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 PSU100S 1-phase, 24 V DC/20 A Stabilized power supply Input: 120/230 V AC Output: 24 V DC/20 A	6EP1336-2BA10	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 <ul style="list-style-type: none"> • With common alarm signal • With single-channel signaling 	6EP1961-2BA11 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 <ul style="list-style-type: none"> • With common alarm signal • With single-channel signaling 	6EP1961-2BA21 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>