

SITOP modular

1- and 2-phase, 24 V DC

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 restart
- 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 No. Product	6EP1333-3BA10 SITOP PSU200M	6EP1333-3BA10-8AC0 SITOP PSU200M with protective coating	6EP1334-3BA10 SITOP PSU200M	6EP1334-3BA10-8AB0 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 with AC	120 ... 230 V	120 ... 230 V	120 ... 230 V	120 ... 230 V
• 2 with 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 with AC	85 ... 264 V	85 ... 264 V	85 ... 264 V	85 ... 264 V
• 2 with 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	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

Technical specifications (continued)

Article No. Product	6EP1333-3BA10 SITOP PSU200M	6EP1333-3BA10-8AC0 SITOP PSU200M with protective coating	6EP1334-3BA10 SITOP PSU200M	6EP1334-3BA10-8AB0 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 ·s	1.7 A ² ·s	4 A ² ·s	4 A ² ·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 60898)	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)
Active power supplied 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 No. Product	6EP1333-3BA10 SITOP PSU200M	6EP1333-3BA10-8AC0 SITOP PSU200M with protective coating	6EP1334-3BA10 SITOP PSU200M	6EP1334-3BA10-8AB0 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
Active power loss during no-load operation maximum	6 W	6 W	4 W	4 W
Closed-loop control				
Dynamic mains compensation ($V_{in\ rated} \pm 15\%$), max.	0.1 %	0.1 %	0.1 %	0.1 %
Dynamic load smoothing (I_{out} : 50/100/50 %), $U_{out} \pm$ 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/CSA approval	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	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	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	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	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
Certificate of suitability IECEx	No	No	No	No
Certificate of suitability NEC Class 2	No	No	No	No
CB approval	Yes	Yes	Yes	Yes
Marine approval	GL, ABS	GL	GL, ABS	GL
Degree of protection (EN 60529)	IP20	IP20	IP20	IP20

Technical specifications (continued)

Article No. Product	6EP1333-3BA10 SITOP PSU200M	6EP1333-3BA10-8AC0 SITOP PSU200M with protective coating	6EP1334-3BA10 SITOP PSU200M	6EP1334-3BA10-8AB0 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 property 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
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.	Accessories	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 PSE201U buffer module For SITOP smart and SITOP modular buffer time 100 ms to 10 s dependent on load current	6EP1961-3BA01
SITOP modular PLUS 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 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 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 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 modular PLUS 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	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 • With single-channel signaling	6EP1961-2BA11 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 • With single-channel signaling	6EP1961-2BA21 6EP1961-2BA41
		Device labeling plates	3RT1900-1SB20