

Add-on modules

Selectivity module

Technical specifications (continued)

Article number	6EP1961-2BA21	6EP1961-2BA41	6EP1961-2BA00
Product brand name	SITOP PSE200U	SITOP PSE200U	SITOP select
Type of current supply	Selectivity module, 4 x 10 A Common signal contact	Selectivity module, 4 x 10 A Single-channel signaling	Selectivity module, 4 x 10 A
Input			
Type of the power supply network	Controlled DC voltage	Controlled DC voltage	Controlled DC voltage (SITOP select is not designed for operation with DC UPS module 40 A (6EP1931-2FC21/-2FC42))
Supply voltage at DC Rated value	24 V	24 V	24 V
Input voltage at DC	22 ... 30 V	22 ... 30 V	22 ... 30 V
Overvoltage overload capability	35 V	35 V	35 V; 100 ms
Input current at rated input voltage 24 V Rated value	40 A	40 A	40 A
Output			
Voltage curve at output	controlled DC voltage	controlled DC voltage	controlled DC voltage
Formula for output voltage	V_{in} - approx. 0.2 V	V_{in} - approx. 0.2 V	V_{in} - approx. 0.3 V
Relative overall tolerance of the voltage Note	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
Output current up to 60 °C per output rated value	10 A	10 A	10 A
Adjustable pick-up value current of the current-dependent overload release	3 ... 10 A	3 ... 10 A	2 ... 10 A
Type of response value setting	via potentiometer	via potentiometer	via potentiometer
Product feature parallel switching of outputs	No	No	No
Product feature bridging of equipments	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, delay time of 24 ms or 100 ms programmable for sequential connection
Efficiency			
Efficiency in percent	99 %	99 %	97 %
Power loss [W] at rated output current for rated value of the output current typical	10 W	10 W	30 W
Switch-off characteristic per output			
Switching characteristic			
• of the excess current	$I_{out} = 1.0 \dots 1.5 \times \text{set value}$, switch-off after approx. 5 s	$I_{out} = 1.0 \dots 1.5 \times \text{set value}$, switch-off after approx. 5 s	$I_{out} = 1.0 \dots 1.3 \times \text{set value}$, switch-off after approx. 5 s
• of the current limitation	$I_{out} = 1.5 \times \text{set value}$, switch-off after typ. 100 ms	$I_{out} = 1.5 \times \text{set value}$, switch-off after typ. 100 ms	$I_{out} = 1.3 \times \text{set value}$, switch-off after approx. 50 ... 100 ms
• of the immediate switch-off	$I_{out} > \text{set value}$ and $V_{in} < 20 \text{ V}$, switch-off after approx. 0.5 ms	$I_{out} > \text{set value}$ and $V_{in} < 20 \text{ V}$, switch-off after approx. 0.5 ms	$I_{out} > \text{set value}$ and $V_{in} < 20 \text{ V}$, 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	Using keys on the module
Remote reset function	Non-electrically isolated 24 V input (signal level "high" at > 15 V)	Non-electrically isolated 24 V input (signal level "high" at > 15 V)	-

Technical specifications (continued)

Article number	6EP1961-2BA21	6EP1961-2BA41	6EP1961-2BA00
Product brand name	SITOP PSE200U	SITOP PSE200U	SITOP select
Type of current supply	Selectivity module, 4 x 10 A Common signal contact	Selectivity module, 4 x 10 A Single-channel signaling	Selectivity module, 4 x 10 A
Protection and monitoring			
Device protection	Fuse: 15 A per output (not accessible)	Fuse: 15 A per output (not accessible)	Blade-type fuse per output (equipped when delivered with 15 A fuse)
Display version for normal operation	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"
Design of the switching contact for signaling function	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
Operating resource protection class	Class III	Class III	Class III
Certificate of suitability			
• CE marking	Yes	Yes	Yes
• as approval for USA	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
Certificate of suitability relating to ATEX	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	DNV GL, ABS	DNV 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	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
Environmental category acc. to IEC 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation

Add-on modules

Selectivity module

Technical specifications (continued)

Article number	6EP1961-2BA21	6EP1961-2BA41	6EP1961-2BA00
Product brand name	SITOP PSE200U	SITOP PSE200U	SITOP select
Type of current supply	Selectivity module, 4 x 10 A Common signal contact	Selectivity module, 4 x 10 A Single-channel signaling	Selectivity module, 4 x 10 A
Mechanics			
Type of electrical connection	screw-type terminals	screw-type terminals	screw-type terminals
• at input	+24 V: 2 screw terminals for 0.5 ... 16 mm ² ; 0 V: 2 screw terminals for 0.5 ... 4 mm ²	+24 V: 2 screw terminals for 0.5 ... 16 mm ² ; 0 V: 2 screw terminals for 0.5 ... 4 mm ²	+24 V: 2 screw terminals for 0.5 ... 16 mm ² ; 0 V: 2 screw terminals for 0.5 ... 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 0.22 ... 4 mm ²
• for signaling contact	3 screw terminals for 0.5 ... 4 mm ²	1 screw terminal 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	-
Width of the enclosure	72 mm	72 mm	72 mm
Height of the enclosure	80 mm	80 mm	90 mm
Depth of the enclosure	72 mm	72 mm	90 mm
Installation width	72 mm	72 mm	72 mm
Mounting height	180 mm	180 mm	190 mm
Net weight	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
Product component belonging to	-	-	4x blade-type fuse 15 A
Mechanical accessories	Device identification label 20 mm x 7 mm, pale turquoise 3RT1900-1SB20	Device identification label 20 mm x 7 mm, pale turquoise 3RT1900-1SB20	-
MTBF at 40 °C	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)

Ordering data

Article No.

SITOP PSE200U 3 A

4-channel selectivity module
Input: 24 V AC
Output: 24 V DC/3 A per channel
Adjustable response threshold
0.5 ... 3 A

- With common alarm signal
- With single-channel signaling

6EP1961-2BA11
6EP1961-2BA31

SITOP PSE200U 3 A NEC Class 2

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
- With single-channel signaling

6EP1961-2BA51
6EP1961-2BA61

SITOP PSE200U 10 A

4-channel selectivity module
Input: 24 V AC
Output: 24 V DC/10 A per channel
Adjustable response threshold
3 ... 10 A

- With common alarm signal
- With single-channel signaling

6EP1961-2BA21
6EP1961-2BA41

SITOP select

4-channel selectivity module
Input: 24 V DC
Output: 24 V DC/10 A per channel
Adjustable response threshold
2 ... 10 A

6EP1961-2BA00

Accessories

Article No.

Device labels

3RT1900-1SB20

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 for distributing the 24 V DC supply among up to 4 load feeders.
The response threshold can be set individually for each output between 0.5 A and 3 A (Article number: 6EP1961-2BA11, -2BA31, -2BA51, -2BA61) 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.