

Add-on modules



- 10/2** Introduction
- 10/3 Redundancy module
- 10/6 Selectivity module
- 10/13 Buffer module
- 10/15 Inrush current limiter

Add-on modules

Introduction

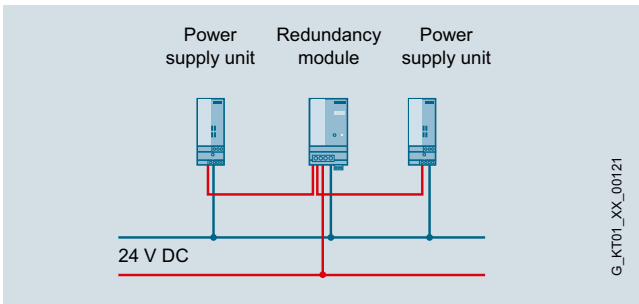
Overview



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

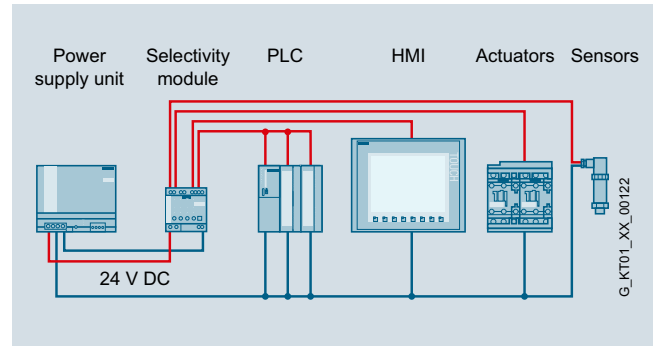


SITOP redundancy module

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

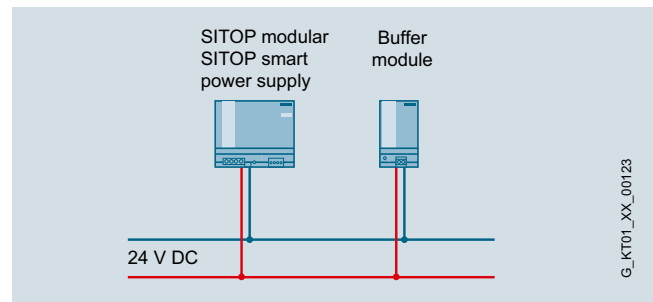


SITOP selectivity module

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>

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

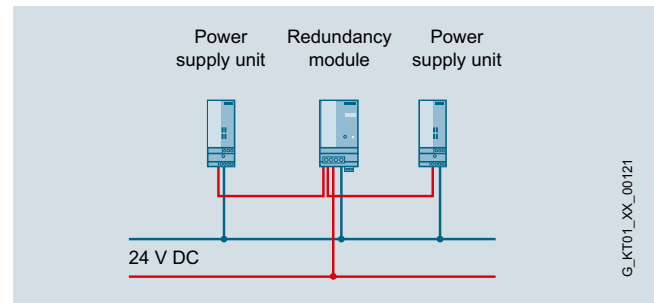
- High availability of the 24 V supply thanks to redundant configuration
- Power is reliably supplied even when a power supply fails
- Compact redundancy modules for power supply units up to 40 A
- Redundancy module 24 V/NEC Class 2 with limiting to 100 VA
- Diagnostic signal via LED and signaling contacts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

The signal evaluation of the PSE202U is also represented in our library for SIMATIC PCS 7. Download:

<https://support.industry.siemens.com/cs/ww/en/view/109476154>

Add-on modules

Redundancy module

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 \pm 0.5 V to 25 V \pm 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 \pm 0.5V to 25 V \pm 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 +60...+70°C: Derating 3%/K
Efficiency			
Efficiency at $V_{out rated}$, $I_{out rated}$, approx.	94.8 %	97.1 %	96,6 %
Power loss at $V_{out rated}$, $I_{out rated}$, approx.	5 W	3.6 W	34 W
Power loss [W] during no-load operation maximum	2 W	1 W	1,5 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	-	-	DNV 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 ... +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

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 terminals for 0.5 ... 2.5 mm ² single-core/finely stranded	Relay contact: 2 screw terminals for 0.5 ... 2.5 mm ² single-core/finely stranded	Relay contact: 3 screw terminals 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
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
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

Add-on modules

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.

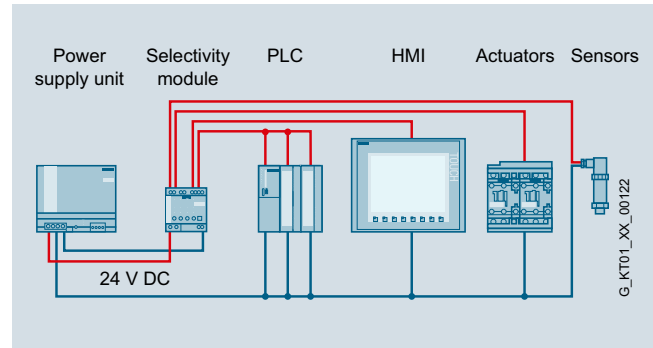
The electronics permit brief current peaks caused, for example, by high inrush currents, but disconnects feeders in the event of an extended overload. This is ensured even on high-resistance lines and in the case of "creeping" short-circuits. In such cases, miniature circuit breakers fail to trip, or 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 from 0.5 – 3 A or 3 – 10 A for each output
- Voltage measuring points for output currents (1 V = 1 A), disconnection of load circuit is not required
- Two versions for remote diagnostics: Group signaling contact or single-channel signaling
- Versions with power limitation of the outputs to 100 VA according to NEC Class 2
- Evaluation via free-of-charge SIMATIC S7 or SIMOTION function blocks (S7-1500/1200/300/400) or via LOGO! Software for modules with single-channel signaling (PSE200U)
- Simple configuration thanks to individual setting of maximum current for every output using potentiometers
- 3-color LEDs for fast 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)
- Library for visualization in SIMATIC PCS 7

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 response threshold 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. The integration into the LOGO! logic module is also an application example.

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>

LOGO!:
<http://www.siemens.de/logo-anwendungsbeispiele>

Easy visualization in the SIMATIC PCS 7 process control system is made possible by the SITOP library, which contains the function blocks and faceplates for individual channel and common signaling:
<http://support.industry.siemens.com/cs/ww/en/view/109476154>

Function (continued)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.

Technical specifications

Article number	6EP1961-2BA11	6EP1961-2BA31	6EP1961-2BA51	6EP1961-2BA61
Product brand name	SITOP PSE200U	SITOP PSE200U	SITOP PSE200U	SITOP PSE200U
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 3 A NEC Class 2, Common signal contact	Selectivity module, 4 x 3 A NEC Class 2, Single- channel signaling
Input				
Type of the power supply network	Controlled DC voltage	Controlled DC voltage	Controlled DC voltage	Controlled DC voltage
Supply voltage at DC Rated value	24 V	24 V	24 V	24 V
Input voltage at DC	22 ... 30 V	22 ... 30 V	22 ... 30 V	22 ... 30 V
Overvoltage overload capability	35 V	35 V	35 V	35 V
Input current at rated input voltage 24 V Rated value	12 A	12 A	12 A	12 A
Output				
Voltage curve at output	controlled DC voltage	controlled DC voltage	controlled DC voltage	controlled DC voltage
Formula for output voltage	$V_{in} - \text{approx. } 0.2 \text{ V}$	$V_{in} - \text{approx. } 0.2 \text{ V}$	$V_{in} - \text{approx. } 0.2 \text{ V}$	$V_{in} - \text{approx. } 0.2 \text{ V}$
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	In accordance with the supplying input voltage
Number of outputs	4	4	4	4
Output current up to 60 °C per output rated value	3 A	3 A	3 A	3 A
Adjustable pick-up value current of the current-dependent overload release	0.5 ... 3 A	0.5 ... 3 A	0.5 ... 3 A	0.5 ... 3 A
Type of response value setting	via potentiometer	via potentiometer	via potentiometer	via potentiometer
Product feature parallel switching of outputs	No	No	No	No
Product feature bridging of equipments	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
Efficiency				
Efficiency in percent	97 %	97 %	97 %	97 %
Power loss [W] at rated output current for rated value of the output current typical	9 W	9 W	9 W	9 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	$I_{out} = 1.0 \dots 1.1 \times \text{set value}$, switch-off after approx. 5 s	$I_{out} = 1.0 \dots 1.1 \times \text{set value}$, 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	$I_{out} = 1.1 \times \text{set value}$, switch-off after typ. 100 ms	$I_{out} = 1.1 \times \text{set value}$, switch-off after typ. 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	$I_{out} > \text{set value}$ and $V_{in} < 20 \text{ V}$, switch-off after approx. 0.5 ms
Design of the reset device/resetting mechanism	via sensor per output	via sensor per output	via sensor per output	via sensor per output
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)	Non-electrically isolated 24 V input (signal level "high" at > 15 V)	Non-electrically isolated 24 V input (signal level "high" at > 15 V)

Add-on modules

Selectivity module

Technical specifications (continued)

Article number	6EP1961-2BA11	6EP1961-2BA31	6EP1961-2BA51	6EP1961-2BA61
Product brand name	SITOP PSE200U	SITOP PSE200U	SITOP PSE200U	SITOP PSE200U
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 3 A NEC Class 2, Common signal contact	Selectivity module, 4 x 3 A NEC Class 2, Single- channel signaling
Protection and monitoring				
Device protection	Fuse: 5 A per output (not accessible)	Fuse: 5 A per output (not accessible)	Fuse: 5 A per output (not accessible)	Fuse: 5 A per output (not accessible)
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"	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"
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 (changeover contact, rating 0.1 A/24 V DC)	Status signal output (pulse/pause signal, can be evaluated via Simatic function block)
Safety				
Galvanic isolation between input and output at switch-off	No	No	No	No
Operating resource protection class	Class III	Class III	Class III	Class III
Certificate of suitability	Yes	Yes	Yes	Yes
• CE marking	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; NEC Class2 (UL1310)	UL-Recognized (UL 2367) File E328600; cULus-Listed (UL 508, CSA C22.2 No. 107.1) File E197259; NEC Class2 (UL1310)
• as approval for USA				
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
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	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
Shipbuilding approval	DNV GL, ABS	DNV GL, ABS	in process: DNV GL, ABS	in process: DNV GL, ABS
Protection class IP	IP20	IP20	IP20	IP20
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	0 ... 60 °C	0 ... 60 °C	0 ... 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
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

Technical specifications (continued)

Article number	6EP1961-2BA11	6EP1961-2BA31	6EP1961-2BA51	6EP1961-2BA61
Product brand name	SITOP PSE200U	SITOP PSE200U	SITOP PSE200U	SITOP PSE200U
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 3 A NEC Class 2, Common signal contact	Selectivity module, 4 x 3 A NEC Class 2, Single- channel signaling
Mechanics				
Type of electrical connection	screw-type terminals	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	+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 0.5 ... 4 mm ²	Output 1 ... 4: 1 screw terminal each for 0.5 ... 4 mm ²
• for signaling contact	3 screw terminals for 0.5 ... 4 mm ²	1 screw terminal for 0.5 ... 4 mm ²	3 screw terminals for 0.5 ... 4 mm ²	1 screw terminal for 0.5 ... 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
Height of the enclosure	80 mm	80 mm	80 mm	80 mm
Depth of the enclosure	72 mm	72 mm	72 mm	72 mm
Installation width	72 mm	72 mm	72 mm	72 mm
Mounting height	180 mm	180 mm	180 mm	180 mm
Net weight	0.2 kg	0.2 kg	0.2 kg	0.2 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
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	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	755 915 h	755 915 h	755 915 h	755 915 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)

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
Oversvoltage 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	Yes	Yes	Yes
<ul style="list-style-type: none"> • CE marking • 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			
<ul style="list-style-type: none"> • for emitted interference • for interference immunity 	EN 55022 Class B EN 61000-6-2	EN 55022 Class B EN 61000-6-2	EN 55022 Class B EN 61000-6-2
Operating data			
Ambient temperature			
<ul style="list-style-type: none"> • during operation - Note • during transport • during storage 	0 ... 60 °C with natural convection -40 ... +85 °C -40 ... +85 °C	0 ... 60 °C with natural convection -40 ... +85 °C -40 ... +85 °C	0 ... 60 °C with natural convection -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



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

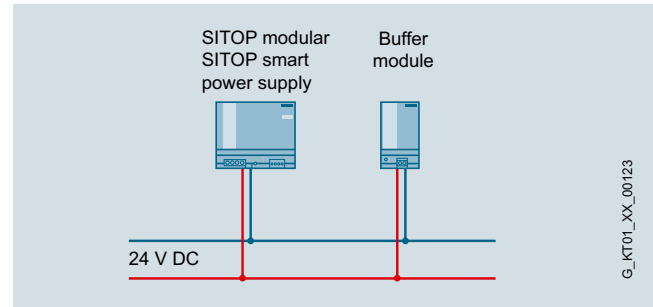
Application

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.

Add-on modules

Buffer module

Technical specifications

Article No.	6EP1961-3BA01 SITOP PSE201U buffer module
Input/Output	Stabilized, isolated DC voltage
Rated voltage $U_{in \text{ rated}}$	24 V DC
Voltage range	24 ... 28.8 V
Control input	-
Rated output voltage $U_{out \text{ rated}}$	U_{in} – approx. 1 V
Rated current $I_{out \text{ rated}}$	40 A
Mains buffering	Backup time: <ul style="list-style-type: none"> • 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

SITOP PSE201U buffer module

For SITOP smart and SITOP modular
buffer time 100 ms to 10 s
dependent on load current

Article No.

6EP1961-3BA01

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 $U_{in \text{ rated}}$	100 ... 480 V AC
Voltage range	85 ... 575 V AC
Output	
Rated voltage $U_{out \text{ rated}}$	In accordance with the supply voltage
Rated current $I_{out \text{ rated}}$	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

6EP1967-2AA00

Ballast for SITOP power supplies
 Input:
 100 ... 480 V AC, 10 A max
 Output:
 100 ... 480 V AC, 10 A max

Add-on modules

Notes

10