

SITOP expansion modules 24 V DC



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SITOP PSE200U 4 x 3 A
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Expansion modules

24 V DC

Signaling module, redundancy module, buffer module

Overview

Product	SITOP modular signaling module	PSE202U redundancy module	SITOP modular buffer module
Type		20 A	40 A
Order No.	6EP1 961-3BA10 ¹⁾	6EP1 961-3BA21 ¹⁾	6EP1 961-3BA01 ¹⁾
The product families are highlighted in the same color. For an explanation of the product families, see chapter 1, pages 1/8 through 1/12.			
	The signaling module, in combination with a SITOP modular (6EP1 .3.-3BA00) regulated power supply, can furnish annunciation signals describing the operational status of the power supply. It can also switch the power supply on and off by remote operation. It hooks up to the power supply automatically.	The SITOP PSE202U redundancy module is used to decouple two SITOP regulated power supplies in parallel operation. The 24 V supply is reliably maintained when one power supply fails.	With short-term power failures, the load current can be backed up without interruption via the buffer module in combination with a SITOP modular regulated power supply. The buffer module is connected in parallel to the output of the power supply.

Technical specifications

Product	SITOP modular signaling module	PSE202U redundancy module	SITOP modular buffer module
Type		20 A	40 A
Order No.	6EP1 961-3BA10 ¹⁾	6EP1 961-3BA21	6EP1 961-3BA01
Input			
Rated voltage value $V_{in \text{ rated}}$	–	Controlled, isolated DC voltage 24 V DC	Controlled, isolated DC voltage 24 V DC
Voltage range	–	24 ... 28.8 V	24 ... 28.8 V
Control input	Non-isolated input for remote ON/OFF switching of the power supply	–	–
Power I_{in} / 1st connection	–	20 A	–
Power I_{in} / 2nd connection	–	20 A	–
Output			
Rated voltage $V_{out \text{ rated}}$	–	V_{in} – approx. 0.5 V	V_{in} – approx. 1 V
Rated current value $I_{out \text{ rated}}$	–	Max. 40 A	40 A
Mains buffering	–	–	Backup time: • At 40 A load current: 200 ms • At 20 A load current: 400 ms • At 10 A load current: 800 ms • At 5 A load current: 1.6 s In combination with 6EP1 437-3BA10 the buffer time is reduced by 100 ms.
Buffering time, max.	–	–	10 s
Protection and monitoring			
Current limiting, static	–	No	Typically 40 A
Short-circuit protection	–	No	Electronically
Signaling/alarm signals			
Status display	–	Green LED for „both input voltages > switching threshold“ Red LED for „at least one input voltage < switching threshold“	Green LED for „Supply voltage > 20.5 V“
Signaling	Isolated relay contacts (changeover contacts, contact rating 6 A/240 V AC) for "Output voltage OK" and "Power supply availability OK"	Isolated relay contacts (changeover contacts, contact rating 8 A/240 V AC, 24 V DC): signals OK if both input voltages > switching threshold (adjustable)	–

¹⁾ SIPLUS module see page 15/4.

Technical specifications (continued)

Product	SITOP modular signaling module	PSE202U redundancy module	SITOP modular buffer module
Type		20 A	40 A
Order No.	6EP1 961-3BA10 ¹⁾	6EP1 961-3BA21	6EP1 961-3BA01
Safety			
Galvanic isolation	Yes, safety extra low voltage acc. to EN 60950-1 (relay contacts)	Yes, safety extra low voltage acc. to EN 60950-1 (relay contact)	Yes, SELV acc. to EN 60950-1
Protection class	Class I	Class II	Class I
Safety test	Yes	Yes	Yes
CE mark	Yes	Yes	Yes
UL/cUL (CSA) approval	UL-listed (UL 508) File E197259, CSA (CSA C22.2 No. 14, CSA C22.2 No. 107.1)	cULus-listed (UL 508, CSA C22.2 No. 107.1), File E197259	UL-listed (UL 508) File E197259, CSA (CSA C22.2 No. 14, CSA C22.2 No. 107.1)
Explosion protection	–	ATEX (EX) II 3G Ex nAC IIC T4 cCSAus (CSA E60079, UL 60079), Class I, Div. 2. Groups ABCD	–
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 range	0 ... +60 °C with natural convection	0 ... +60 °C with natural convection	0 ... +60 °C with natural convection
Transport/storage temperature range	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Humidity class	Climate class 3K3 according to EN 60721, no condensation	Climate class 3K3 according to EN 60721, no condensation	Climate class 3K3 according to EN 60721, no condensation
Mechanics			
Connections	Screw terminals for 0.14 ... 2.5 mm ² single-core/finely stranded	Input, output, and ground: one screw terminal each, with 0.33 ... 10 mm ² solid/finely stranded; Relay contact: 1 screw terminal each for 0.5 ... 2.5 mm ² single-core/finely stranded	One screw terminal each for + and – for 0.5 ... 10 mm ² single-core/finely stranded
Dimensions (W × H × D) in mm	26 × 125 × 116	70 × 125 × 125	70 × 125 × 125
Weight, approx.	0.15 kg	0.5 kg	1.2 kg
Installation	Can be snapped directly on the side of the basic unit (6EP1 .3.-3BA00)	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15

Expansion modules

24 V DC

PSE200U selectivity module, SITOP select diagnostics module

Overview

Product	PSE200U selectivity module		SITOP select diagnostics module
Type	4 x 3 A	4 x 10 A	4 x 10 A
Order No.	6EP1 961-2BA11	6EP1 961-2BA21	6EP1 961-2BA00
			
	The selectivity module is used in conjunction with 24 V power supplies to distribute the load current over several current circuits 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 standstill times.	The selectivity module is used in conjunction with 24 V power supplies to distribute the load current over several current circuits 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 standstill times.	The diagnostics module is used in conjunction with 24 V power supplies to distribute the load current over several current circuits 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 standstill times.

Technical specifications

Product	PSE200U selectivity module		SITOP select diagnostics module
Type	4 x 3 A	4 x 10 A	4 x 10 A
Order No.	6EP1 961-2BA11	6EP1 961-2BA21	6EP1 961-2BA00
Input			
Rated voltage value $V_{in \text{ rated}}$	Controlled DC voltage 24 V DC	Controlled DC voltage 24 V DC	Controlled DC voltage ¹⁾ 24 V DC
Voltage range	22 ... 30 V	22 ... 30 V	22 ... 30 V
Overvoltage resistance	35 V	35 V	35 V; 100 ms
Rated current $I_{in \text{ rated}}$	12 A	40 A	40 A
Output			
Rated voltage $V_{out \text{ rated}}$	Controlled DC voltage $V_{in} - \text{approx. } 0.2 \text{ V}$	Controlled DC voltage $V_{in} - \text{approx. } 0.2 \text{ V}$	Controlled DC voltage $V_{in} - \text{approx. } 0.3 \text{ V}$
Total tolerance	In accordance with the supplying input voltage	In accordance with the supplying input voltage	In accordance with the supplying input voltage
Number of output channels	4	4	4
Rated current value $I_{out \text{ rated}}$	3 A per channel	10 A per channel	10 A per channel
Adjustment range	0.5 ... 3 A per channel via potentiometer	3 ... 10 A per channel via potentiometer	2 ... 10 A per channel via potentiometer
Parallel switching of several channels	Not permitted	Not permitted	Not permitted
Channel connection	Simultaneous connection of all channels after power up of the supply voltage > 20 V, delay time of 25 ms, 100 ms or adjustable "load optimized" via DIP switch for sequential connection	Simultaneous connection of all channels after power up of the supply voltage > 20 V, delay time of 25 ms, 100 ms or adjustable "load optimized" via DIP switch for sequential connection	Simultaneous connection of all channels after power up of the supply voltage, delay time of 24 ms or 100 ms programmable for sequential connection
Efficiency			
Efficiency at $V_{out \text{ rated}}, I_{out \text{ rated}}$	Approx. 97 %	Approx. 97 % (typ. 99 %)	Approx. 97 %
Power loss at $V_{out \text{ rated}}, I_{out \text{ rated}}$	Approx. 9 W	Approx. 30 W (typ. 10 W)	Approx. 30 W
Switch-off characteristic per channel			
Overcurrent switch-off	$I_{out} = 1.0 \dots 1.3 \times \text{set value}$, switch-off after approx. 5 s	$I_{out} = 1.0 \dots 1.3 \times \text{set value}$, switch-off after approx. 5 s	$I_{out} = 1.0 \dots 1.3 \times \text{set value}$, switch-off after approx. 5 s
Current limitation	$I_a = 1.3 \times \text{set value}$, switch-off not before typ. 100 ms	$I_a = 1.3 \times \text{set value}$, switch-off not before typ. 100 ms	$I_{out} = 1.35 \times \text{set value}$, switch-off after approx. 50 ... 100 ms
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	–	–	Typ. 20 mA
Reset	Using keys for each channel	Using keys for each channel	Using keys on the module
Remote reset	Non-isolated 24 V input (signal level "high" at >15 V)	Non-isolated 24 V input (signal level "high" at >15 V)	–

¹⁾ SITOP select is not designed for operation with DC UPS module 40 A (6EP1 931-2FC21/-2FC42).

Technical specifications (continued)

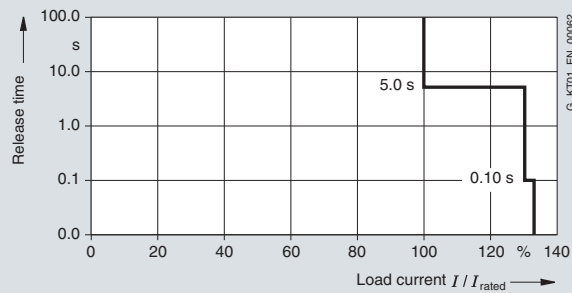
Product	PSE200U selectivity module		SITOP select diagnostics module
Type	4 x 3 A	4 x 10 A	4 x 10 A
Order No.	6EP1 961-2BA11	6EP1 961-2BA21	6EP1 961-2BA00
Protection and monitoring			
Device/line protection	Internal fuse 5 A per channel (not accessible)	Internal fuse 15 A per channel (not accessible)	FKS blade-type fuse per channel (equipped with 15 A fuse in as-delivered state)
Status displays	Three-color LED per channel: • Green LED for "Output switched through" • Yellow LED for "Output turned off manually" • Red LED for "Output turned off because of overcurrent"	Three-color LED per channel: • Green LED for "Output switched through" • Yellow LED for "Output turned off manually" • Red LED for "Output turned off because of overcurrent"	Two-color LED per channel: • Green LED for "Output switched through" • Red LED for "Output turned off because of overcurrent"
Signaling	Common signal contact (changeover contact, rating 0.1 A/24 V DC)	Common signal contact (changeover contact, rating 0.1 A/24 V DC)	Common signal contact (NO contact, rating 0.5 A/24 V DC)
Safety			
Protection class	In accordance with EN 60950-1 and EN 50178 Class III	In accordance with EN 60950-1 and EN 50178 Class III	In accordance with EN 60950-1 and EN 50178 Class III
Degree of protection (EN 60529)	IP20	IP20	IP20
CE mark	Yes	Yes	Yes
UL/cUL (CSA) approval	UL-recognized (UL 2367) File E328600; cURus (UL 508, CSA22.2 No. 107.1), File E197259	UL-recognized (UL 2367) File E328600; cURus (UL 508, CSA22.2 No. 107.1), File E197259	UL-Recognized (UL 2367) File E328600; cURus (UL 508, CSA C22.2 No. 107.1) File E197259; cURus (UL 60950, CSA C22.2 No. 60950), File E151273
Explosion protection	ATEX (EX) II 3G Ex nAC II T4; cCSAus (CSA E60079, UL 60079), Class I, Div. 2. Gr ABCD T4	ATEX (EX) II 3G Ex nAC II T4; cCSAus (CSA E60079, UL 60079), Class I, Div. 2. Gr ABCD T4	ATEX (EX) II 3G Ex nAC IIC T4 U; cCSAus (CSA C22.2 No. 60079, UL 60079), Class I, Div. 2. Gr ABCD T4
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			
Permitted ambient temperature	0 ... +60 °C with natural convection	0 ... +60 °C with natural convection	0 ... +60 °C with natural convection
Transport/storage temperature range	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Humidity class	Climate class 3K3 according to EN 60721, no condensation	Climate class 3K3 according to EN 60721, no condensation	Climate class 3K3 according to EN 60721, no condensation
Mechanics			
Connections			
• Input +24 V	2 screw terminals for 0.5 ... 10 mm ²	2 screw terminals for 0.5 ... 10 mm ²	2 screw terminals for 0.33 ... 10 mm ²
• Input 0 V	2 screw terminals for 0.5 ... 4 mm ²	2 screw terminals for 0.5 ... 4 mm ²	2 screw terminals for 0.22 ... 4 mm ²
• Output 1 ... 4	1 screw terminal each for 0.5 ... 4 mm ²	1 screw terminal each for 0.5 ... 4 mm ²	1 screw terminal each for 0.22 ... 4 mm ²
• Signaling contact	3 screw terminals for 0.5 ... 4 mm ²	3 screw terminals for 0.5 ... 4 mm ²	2 screw terminals for 0.22 ... 4 mm ²
• Remote reset	1 screw terminal for 0.5 ... 4 mm ²	1 screw terminal for 0.5 ... 4 mm ²	–
Dimensions (W × H × D) in mm	72 × 80 × 72	72 × 80 × 72	72 × 90 × 90
Weight, approx.	0.2 kg	0.2 kg	0.4 kg
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

Expansion modules

24 V DC

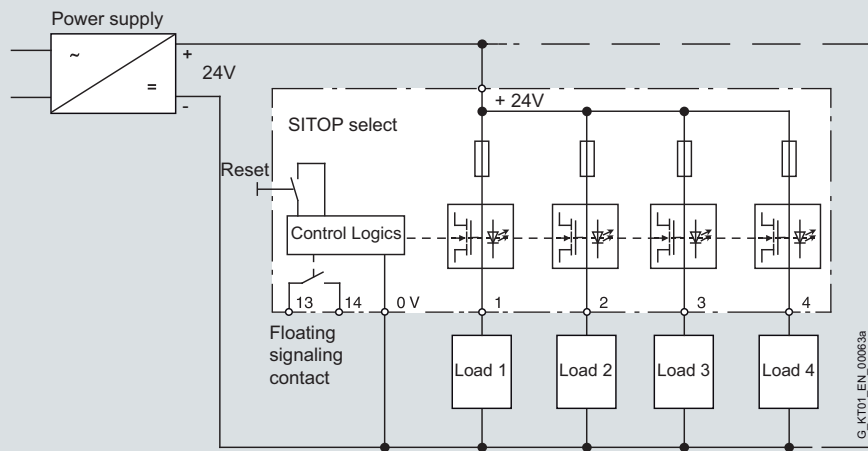
PSE200U selectivity module,
SITOP select diagnostics module

Characteristics

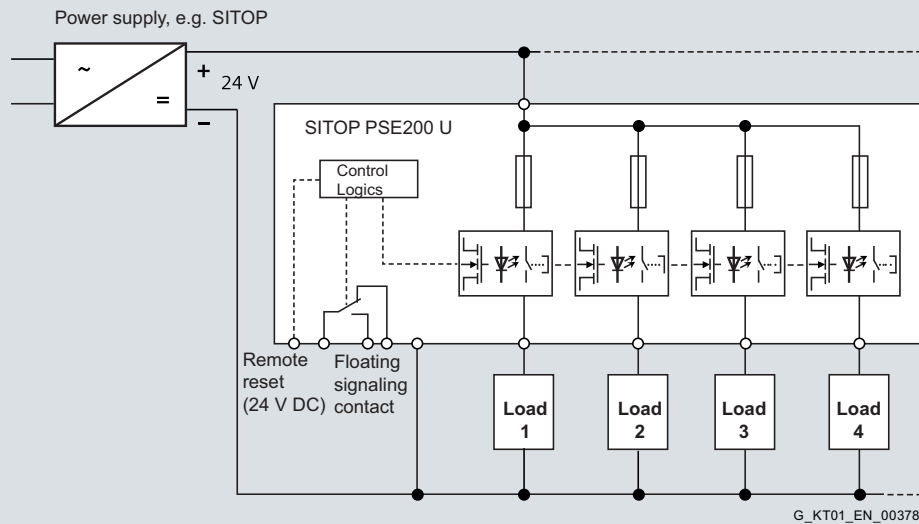


Switch-off characteristic

Circuit diagrams



Switching principle SITOP select



Switching principle SITOP PSE200U

Overview

Product	SITOP inrush current limiter
Order No.	6EP1 967-2AA00



The SITOP inrush current limiter module is used to reliably reduce the starting currents that are caused, for example, by capacitors 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 208 V to 480 V on the line side upstream of capacitors and power supplies and it limits the inrush current temperature-independently up to e. g. < 10 A at 230 V. In static operation the limit resistance is bypassed after approx. 120 ms and the resulting power loss is reduced.

Technical specifications

Product	SITOP inrush current limiter
Order No.	6EP1 967-2AA00
Input	
	AC voltage 1-phase, 2-phase, 50/60 Hz
Rated voltage value $V_{in \text{ rated}}$	100 ... 480 V AC
Voltage range	85 ... 575 V
Overvoltage resistance	–
Input current $I_{in \text{ rated}}$	–
Output	
Rated voltage $V_{out \text{ rated}}$	In accordance with the supply voltage
Rated current value $I_{out \text{ rated}}$	Max. 10 A
Mains buffering	–
Buffering time, max.	–
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	–

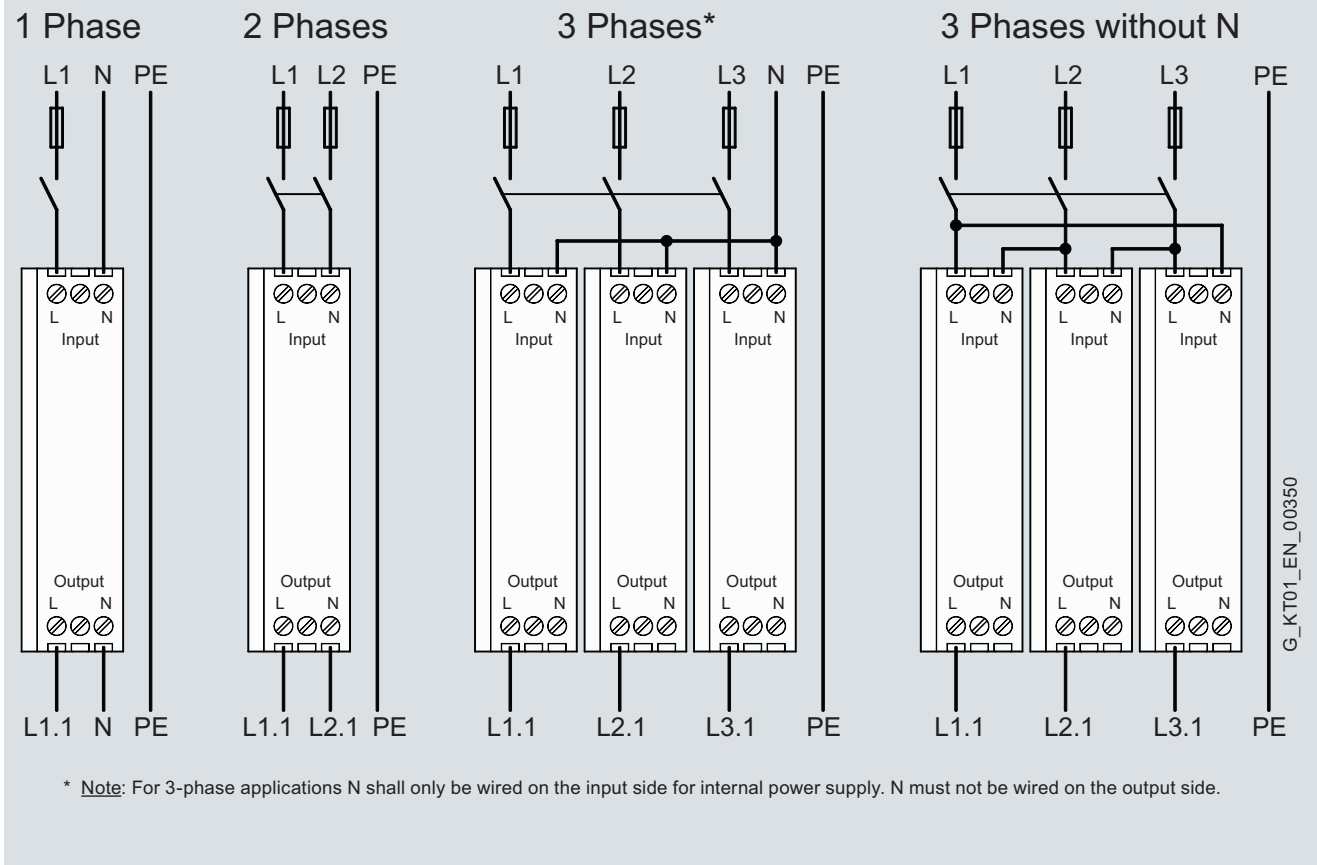
Product	SITOP inrush current limiter
Order No.	6EP1 967-2AA00
Safety	
	In accordance with EN 60950-1 and EN 50178
Galvanic isolation	No
Protection class	Class II
CE mark	Yes
UL/cUL (CSA) approval	Yes, cULus-listed (UL 508, CSA C22.2 No. 107.1), File E197259
Degree of protection (EN 60529)	IP20
EMC	
Emitted interference	EN 61000-6-3
Noise immunity	EN 61000-6-2
Operating data	
Permitted ambient temperature	0 ... +60 °C with natural convection
Transport/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 single-core/finely stranded;
Dimensions (W × H × D) in mm	22.5 × 80 × 91
Weight, approx.	0.12 kg
Installation	Snaps onto DIN rail EN 60715 35x7.5/15

Expansion modules

100 - 480 V AC

SITOP inrush current limiter

Circuit diagrams



SITOP inrush current limiter connection diagram

Selection and ordering data

Product	Input Voltage V_{in} rated	Output Voltage V_{out} rated	Current I_{out} rated	Order No.	Price
SITOP modular signaling module	–	–	–	6EP1 961-3BA10	
					
PSE202U redundancy module	24 V DC	V_{in} – approx. 0.5 V	20 A	6EP1 961-3BA21	
					
SITOP modular buffer module	24 V DC	V_{in} – approx. 1 V	40 A	6EP1 961-3BA01	
					
SITOP PSE200U selectivity module	24 V DC	V_{in} – approx. 0.2 V	4 x 3 A 4 x 10 A	6EP1 961-2BA11 6EP1 961-2BA21	
					
SITOP select diagnostics module	24 V DC	V_{in} – approx. 0.3 V	4 x 10 A	6EP1 961-2BA00	
					
SITOP inrush current limiter	100-480 V AC	100-480 V AC	10 A	6EP1 967-2AA00	
					

Further information

Additional information is available in the Internet under:

- 2D dimensional drawings, 3D CAD data, circuit diagram macros:
www.siemens.com/sitop-cax
- Operating instructions:
www.siemens.de/sitop-manuals

Expansion modules

Notes

