

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

SIEMENS

6EP1434-2BA20

SITOP PSU300S 24 V/10 A POWER SUPPLY

Used with the applicable SITOP smart - Three-phase 24 V DC system configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official pages follow this cover with source pagination retained.

Siemens Manual C98130-A7587-A1-7-7629

Technical data

Note

Technical data apply for a rated input voltage, rated load and 25 °C ambient temperature if nothing else is specified.

6.1 Input

	6EP1433-2BA20 (24 V/5 A)	6EP1434-2BA20 (24 V/10 A)	6EP1436-2BA10 (24 V/20 A)	6EP1437-2BA20 (24 V/40 A)
Input	3-phase, AC			
Rated voltage $U_{in \text{ rated}}$	400 - 500 V			
Voltage range	340 - 550 V			
Wide-range input	Yes			
Line failure buffering at $I_{out \text{ rated}}$, min	18 ms	7 ms	6 ms	6 ms
Power-failure buffering	At $U_{in} = 400 \text{ V}$			
Rated line frequency	50 - 60 Hz			
Line frequency range	47 - 63 Hz			
Input current / at rated value of input voltage 400 V	0.45 A	0.7 A	1.2 A	2 A
Input current / at rated value of input voltage 500 V	0.4 A	0.6 A	1 A	1.7 A
Inrush current limiting (25 °C), max.	20 A	20 A	36 A	60 A
I^2t , max	0.5 A ² s	0.5 A ² s	0.9 A ² s	3.4 A ² s
Integrated input fuse	None			
Protection in the line feeder cable (IEC 898)	required: 3-pole, coupled miniature circuit breaker 3 - 16 A characteristic C or circuit breaker 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489-listed, DIVQ)		required: 3-pole, coupled miniature circuit breaker 6 - 16 A characteristic C or circuit breaker 3RV2011-1DA10 (setting 6 A) or 3RV2711-1DD10 (UL 489-listed, DIVQ)	required: 3-pole, coupled miniature circuit breaker 10 - 16 A characteristic C or circuit breaker 3RV2011-1DA10 (setting 3 A) or 3RV2711-1DD10 (UL 489-listed, DIVQ)
Overvoltage strength	-	-	$2.3 \times U_{in \text{ rated}}$ 1.3 ms	-

6.2 Output

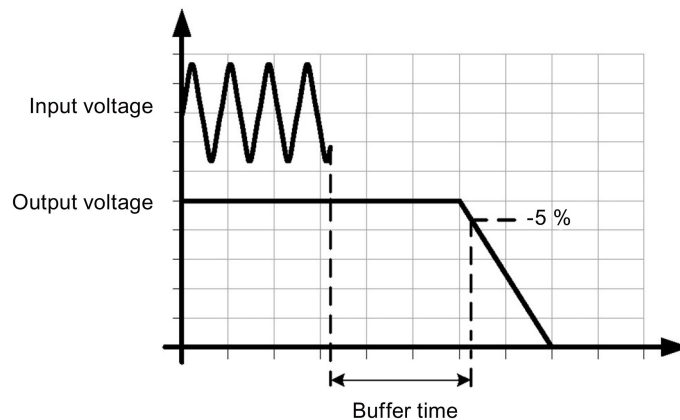


Figure 6-1 Power-failure buffering

6.2 Output

	6EP1433-2BA20 (24 V/5 A)	6EP1434-2BA20 (24 V/10 A)	6EP1436-2BA10 (24 V/20 A)	6EP1437-2BA20 (24 V/40 A)
Output	Regulated, isolated DC voltage			
Rated voltage $U_{\text{out rated}}$ DC	24 V			
Total tolerance, static $\pm$	3 %	3 %	3 %	3 %
Static line regulation, approx.	0.1 %	0.1 %	0.5 %	1 %
Static load regulation, approx.	0.1 %	0.15 %	1 %	2 %
Residual ripple in the load range peak-peak, max.	200mV: 0 - 1.1 A 150mV: >1.1 A	200mV: 0 - 1.1 A 150mV: >1.1 A	150 mV	150 mV
Spikes peak-peak, max. (bandwidth, 20 MHz)	240 mV	240 mV	240 mV	240 mV
Adjustment range	24 - 28 V			
Product function / output voltage can be adjusted	Yes			
Output voltage setting	Using a potentiometer			
• Remark	Max. 120 W	Max. 240 W	Max. 480 W	Max. 960 W
Status display	LED green for "24V O.K."			
Signaling	Relay contact (NO contact, rating 60 VDC/0.3 A) for "24V O.K."			

	6EP1433-2BA20 (24 V/5 A)	6EP1434-2BA20 (24 V/10 A)	6EP1436-2BA10 (24 V/20 A)	6EP1437-2BA20 (24 V/40 A)
Response when switching on/off	Overshoot, $1.05 \times U_{\text{out rated}}$	Overshoot, $1.05 \times U_{\text{out rated}}$	No overshoot of U_{out} (soft start)	
Starting delay, max.	1.5 s	1.5 s	1.5 s	1.5 s
Voltage rise, typ.	60 ms	50 ms	30 ms	15 ms
Voltage rise time / of the output voltage / maximum	500 ms	500 ms	500 ms	500 ms
Rated current $I_{\text{out rated}}$	5 A	10 A	20 A	40 A
Current range	0 - 5 A	0 - 10 A	0 - 20 A	0 - 40 A
• Remark	6 A to 45 °C 60 ... 70 °C derating: 5 % $I_{\text{out rated}}/K$	12 A to 45 °C 60 ... 70 °C derating: 5 % $I_{\text{out rated}}/K$	24 A to 45 °C 60 ... 70 °C derating: 2 % $I_{\text{out rated}}/K$	48 A to 45 °C 60 ... 70 °C derating: 3 % $I_{\text{out rated}}/K$
Output active power / typical	120 W	240 W	480 W	960 W
Short-time overload current / for a short circuit when powering up / typical	-	-	35 A	65 A
Duration of the overload capability, over-current / for a short circuit while powering up	-	-	100 ms	100 ms
Short-time overload current / for a short circuit in operation / typical	-	-	35 A	65 A
Duration of the overload capability, over-current / for a short circuit in operation	-	-	100 ms	100 ms
• Remark			every 2.5 s	every 2.5 s
Can be connected in parallel to increase the power rating	Yes			
Number of devices that can be connected in parallel to increase the power rating, units	2			
Overload capability (Extra Power)	7.5 A for 5 s/min	15 A for 5 s/min	30 A for 5 s/min	60 A for 5 s/min
Output characteristic	See Figure 6-3 Output characteristic 6EP1433-2BA20 (Page 38)	See Figure 6-4 Output characteristic 6EP1434-2BA20 (Page 38)	See Figure 6-5 Output characteristic 6EP1436-2BA10 (Page 39)	See Figure 6-6 Output characteristic 6EP1437-2BA20 (Page 39)

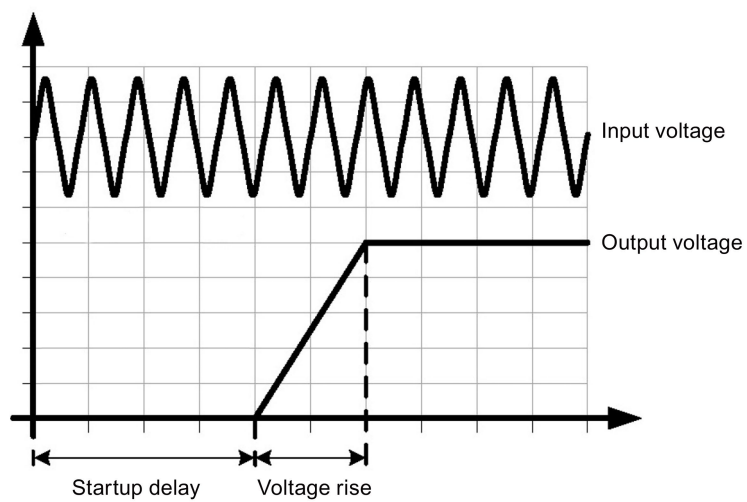


Figure 6-2 Startup delay/voltage rise

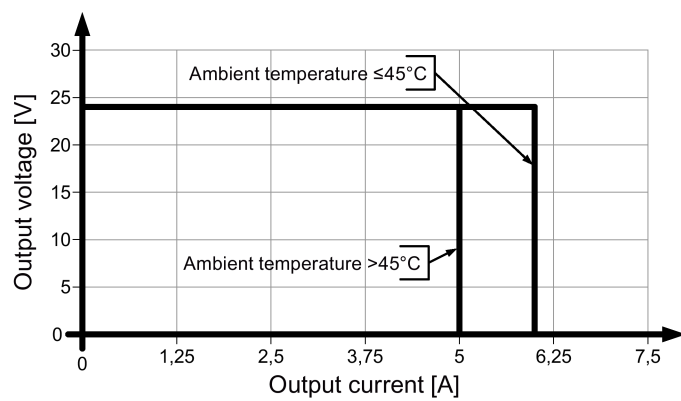


Figure 6-3 Output characteristic 6EP1433-2BA20

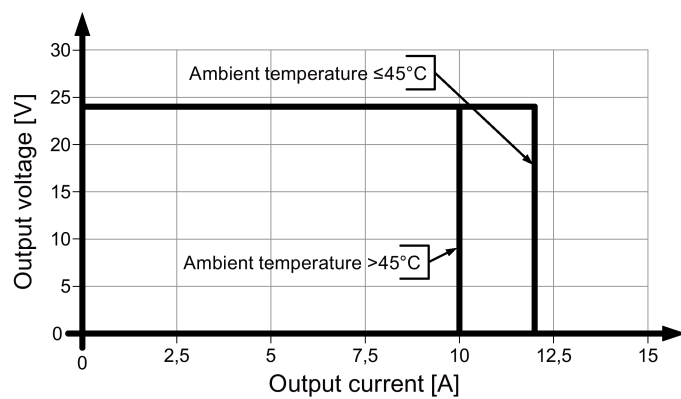


Figure 6-4 Output characteristic 6EP1434-2BA20

6.3 Efficiency

	6EP1433-2BA20 (24 V/5 A)	6EP1434-2BA20 (24 V/10 A)	6EP1436-2BA10 (24 V/20 A)	6EP1437-2BA20 (24 V/40 A)
Efficiency at $U_{\text{out rated}}, I_{\text{out rated}}, \text{approx.}$	89.5 %	91 %	91 %	91.5 %
Power loss at $U_{\text{out rated}}, I_{\text{out rated}}, \text{approx.}$	12.6 W	24 W	47 W	89 W
No-load operation power loss, approx.	2 W	2 W	2.5 W	5 W

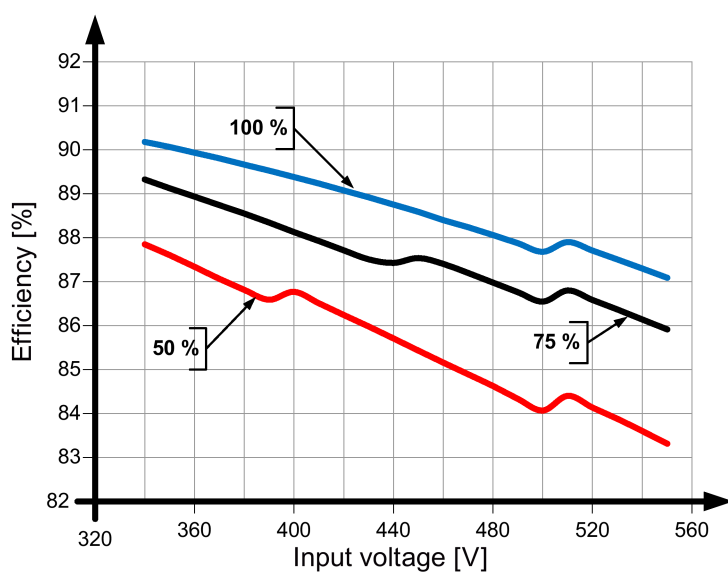


Figure 6-7 Efficiency 6EP1433-2BA20

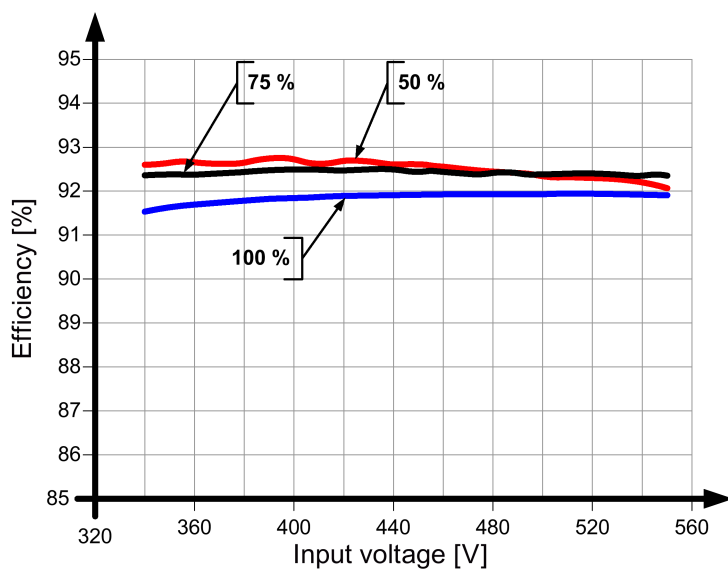


Figure 6-10 Efficiency 6EP1437-2BA20

6.4 Closed-loop control

	6EP1433-2BA20 (24 V/5 A) 6EP1434-2BA20 (24 V/10 A)	6EP1436-2BA10 (24 V/20 A)	6EP1437-2BA20 (24 V/40 A)
Dyn. line regulation ($U_{in rated} \pm 15\%$), max.	1 %	3 %	3 %
Dyn. load regulation ($I_{out}: 10/90/10\%$), $U_{out} \pm typ.$	3 %	3 %	3 %
Load step regulation time 10 to 90%, typ.	4 ms	2 ms	1 ms
Load step regulation time 90 to 10%, typ.	4 ms	2 ms	1 ms
Dyn. load regulation ($I_{out}: 50/100/50\%$), $U_{out} \pm typ.$	1 %	3 %	1.5 %
Load step regulation time 50 to 100%, typ.	3 ms	2 ms	1 ms
Load step regulation time 100 to 50%, typ.	3 ms	2 ms	1 ms
Regulation time / maximum	10 ms	10 ms	10 ms

6.5 Protection and monitoring

	6EP1433-2BA20 (24 V/5 A)	6EP1434-2BA20 (24 V/10 A)	6EP1436-2BA10 (24 V/20 A)	6EP1437-2BA20 (24 V/40 A)
Output overvoltage protection	in the case of an internal fault $U_{out} < 35 \text{ V}$			
Current limitation, typ.	6.6 A	13 A	25.5 A	50 A
Property of the output/short-circuit proof	Yes			
Short-circuit protection	Constant current characteristic		Electronic trip, automatic restart	
Continuous short-circuit current / rms value / maximum	8 A	16 A	7 A	14 A
Continuous short-circuit current / rms value / typical	6.6 A	13 A	-	-
• Remark	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

6.6 MTBF

	6EP1433-2BA20 (24 V/5 A)	6EP1434-2BA20 (24 V/10 A)	6EP1436-2BA10 (24 V/20 A)	6EP1437-2BA20 (24 V/40 A)
Mean Time Between Failures	SN29500: > 500000 h (typ. 1500000 h) at 40 °C, rated load, 24 hour operation	SN29500: > 500000 h (typ. 1450000 h) at 40 °C, rated load, 24 hour operation	SN29500: > 800000 h at 40 °C, rated load, 24 hour operation	SN29500: > 500000 h (typ. 700000 h) at 40 °C, rated load, 24 hour operation

6.7 Mechanical system

	6EP1433-2BA2 (24 V/5 A)	6EP1434-2BA20 (24 V/10 A)	6EP1436-2BA10 (24 V/20 A)	6EP1437-2BA20 (24 V/40 A)
Connection system	screw-type terminal			
Connections / line supply	L1, L2, L3, PE: 1 screw terminal each for 0.2 - 4 mm ² solid/finely stranded			
Connections / output	+, -: 2 screw terminals each for 0.2 - 4 mm ²			+, -: 2 screw terminals each for 0.5 - 10 mm ²
Connections / auxiliary contacts	(13, 14) (signal): 1 screw terminal each for 0.14 - 1.5 mm ²			
Width of the housing	50 mm	70 mm	90 mm	145 mm
Height of the housing	125 mm	125 mm	145 mm	145 mm
Depth of the housing	120 mm	120 mm	150 mm	150 mm
Installation width	50 mm	70 mm	90 mm	145 mm
Mounting height	225 mm	225 mm	225 mm	225 mm
Weight, approx.	0.5 Kg	0.7 Kg	1.6 kg	3.1 kg
Product feature of the housing / housing that can be lined up next to one another	Yes			
Type of mounting / panel mounting	No			
Type of mounting / rail mounting	Yes			
Type of mounting / S7-300 rail mounting	No			
Mounting	Can be snapped onto standard TH35-15/7,5 (EN 60715) mounting rails			Can be snapped onto standard TH35-15 (EN 60715) mounting rails

6.8 Accessories

	6EP1433-2BA20 (24 V/5 A) 6EP1434-2BA20 (24 V/10 A) 6EP1436-2BA10 (24 V/20 A) 6EP1437-2BA20 (24 V/40 A)
Electrical accessories	Redundancy module, buffer module, diagnostics module SITOP select (for 6EP1433-2BA20 only PSE200U) or DC USV
Mechanical accessories	Device identification labels 20 mm × 7 mm, pastel turquoise 3RT1900-1SB20