

SIMATIC S5-115U/H/F

Power supply modules

PS 951 power supply modules for the S5-115U/H

Application



Power supply modules generate the voltages required by the programmable controller from the external power supply:

- + 5 V as supply voltage for all modules;
- + 5,2 V as supply voltage for the PG 605 programmer, the OP 393 and OP 396 operator panels and the BT 777 (observe max. current);
- + 24 V for the 20 mA current loop interfaces.

Design

Power supply modules are available with one or two backup batteries, depending on the model. These can be replaced even when the power supply is switched off. In the case of the power

supply modules with only one backup battery, the backup voltage is supplied via sockets during replacement. In those with two backup batteries, the second battery begins to supply the backup

voltage as soon as the first one fails. This also applies when it is removed for replacement. Five power supply modules are available for the S5-115U/H programmable controller.

Technical specifications					
Power supply module	6ES5 951-7LB21	6ES5 951-7LD21	6ES5 951-7NB21	6ES5 951-7ND51	6ES5 951-7ND41
Supply voltage					
• Rated value	230/120 V AC	230/120 V AC	24 V DC	24 V DC	24 V DC
• Ripple V_{pp}	max. —	—	3.6 V	3.6 V	3.6 V
• Permissible range (including ripple)	187 ... 264 V 94 ... 132 V	187 ... 264 V 94 ... 132 V	19.2 ... 30 V	9.2 ... 30 V	9.2 ... 30 V
• Frequency range	47 ... 63 Hz	47 ... 63 Hz	—	—	—
Current consumption					
• Rated value I_N	0.4/0.6 A	0.4/0.6 A	1.5 A	5 A	5.6 A
• Inrush current	max. 0.8/1.4 A	0.8/1.4 A	$15 \times I_N$	$15 \times I_N$	$15 \times I_N$
• I^2t	$15 \times I_N$ $15 \times I_N$ 0.2 A ² s 1.8 A ² s	$15 \times I_N$ $15 \times I_N$ 0.2 A ² s 1.8 A ² s	0.4 A ² s	16 A ² s	4.5 A ² s
Mains buffering	20 ms	20 ms	20 ms	20 ms	20 ms
Output voltage V_1	+ 5 V ± 1.5 %	+ 5 V ± 1.5 %	+ 5 V ± 1.5 %	+ 5 V ± 1.5 %	+ 5 V ± 1.5 %
Auxiliary voltages					
• V_2 (e.g. for programmers)	+ 5.2 V (1 A)	+ 5.2 V (2.5 A)	+ 5.2 V (1 A)	+ 5.2 V (2.5 A)	+ 5.2 V (2.5 A)
• V_3 (e.g. for CP 525)	+ 24 V (0.2 A)	+ 24 V (0.35 A)	+ 24 V (0.2 A)	+ 24 V (0.35 A)	+ 24 V (0.35 A)
Output current¹⁾					
• Rated value for operation					
Without fan	3 A	7 A	3 A	7 A	7 A
With fan	3 A	15 A	3 A	15 A	15 A
• Permissible range	0.3 ... 3 A	0.3 ... 15 A	0.3 ... 15 A	0.3 ... 15 A	0.3 ... 15 A
Backup battery	1 x lithium battery Size C, (3.6 V/5 Ah)	2 x lithium battery Size AA, (3.6 V/2 x 1.75 Ah)	1 x lithium battery Size C, (3.6 V/5 Ah)	2 x lithium battery Size AA, (3.6 V/2 x 1.75 Ah)	2 x lithium battery Size AA, (3.6 V/2 x 1.75 Ah)
• Backup time	min. 1 year (at 0.3 mA, 25 °C and uninterrupted buffering)				
• External backup voltage	+ 3.4 ... + 9 V				
Short-circuit protection	Electronic				
Open-circuit protection	Yes				
Fuse (primary circuit)	Integral				
Class of protection	Class 1				
Galvanic isolation	Yes	Yes	No	No	Yes
Test voltage	2.5 kV AC	2.5 kV AC	—	—	500 V AC
RI specification	A in acc. with VDE 0871	A in acc. with VDE 0871	A in acc. with VDE 0871	A in acc. with VDE 0871	A in acc. with VDE 0871
Weight	approx. 1.6 kg (3.5 lb)	1.9 kg (4.1 lb)	1.6 kg (3.5 lb)	1.6 kg (3.5 lb)	1.6 kg (3.5 lb)

1) Fan subassembly required for output currents from 7 to 15 A (page 3/77)

PS 951 power supply modules for the S5-115U/H (continued)

Ordering data	Order No.	Order No.
<p>PS 951 power supply module for internal power supply of the S5-115U/H (without backup battery) 230/120 V AC; 5 V, 3 A 230/120 V AC; 5 V, 7/15 A¹⁾ 24 V DC; 5 V, 3 A; non-floating 24 V DC; 5 V, 7/15 A¹⁾; non-floating DC 24 V; 5 V, 7/15 A¹⁾; floating Operating instructions included in the S5-115U manual (see page 3/23).</p>	<p>6ES5 951-7LB21 6ES5 951-7LD21 6ES5 951-7NB21 6ES5 951-7ND51 6ES5 951-7ND41</p>	<p>Backup battery, lithium battery Size C, 3.6 V/5 Ah Size AA, 3.6 V/1.75 Ah</p> <p>6EW1 000-7AA 6ES5 980-0AE11</p>

1) Fan subassembly required in the subrack (see page 3/77)

SIMATIC S5-115U/H/F

Power supply modules

PS 951 power supply module for the S5-115F

Application



The PS 951 power supply module generates the internal operating voltage of 5 V DC required by the programmable controller from the external power supply 24 V DC. Only the PS 951-7ND41 is approved for the S5-115F failsafe programmable controller.

Moreover, the module makes backup supply of the RAM modules of the CPU possible. Two backup batteries are installed for that in the PS 951-7ND41. These can be replaced even when the power supply is switched off. The second battery begins to supply the backup voltage as soon as the first one fails or is removed for replacement.

Design

The PS 951 power supply module is potential-isolated and is suitable for applications

where the input circuit of the I/O modules is operated without ground connection.

The lines with the supply voltage are connected to the bottom of the power supply module with the help of screw terminals.

Technical specifications			
Supply voltage			
• Rated value		24 V DC	
• Ripple V_{pp}	max.	3.6 V	
• Permissible range (including ripple)		19.2 ... 30 V	
Current consumption			
• Rated value I_N		5.6 A	
• Inrush current	max.	$15 \times I_N$	
• $I^2 t$		4.5 A ² s	
Mains buffering		20 ms	
Output voltage V_1		+ 5 V \pm 1.5 %	
Auxiliary voltage			
• V_2 (e.g. for programming devices)		+ 5.2 V (2.5 A)	
• V_3 (e.g. for CP 525)		+ 24 V (0.35 A)	
Output current			
• Rated value for operation			
Without fan			7 A
With fan			15 A
• Permissible range			0.3 ... 15 A
Backup battery			2 x lithium battery Size AA, (3.6 V/2 x 1.75 Ah)
• Backup time	min.		1 year (at 0.3 mA, 25 °C and uninterrupted buffering)
• External backup voltage			+ 3.4 ... + 9 V
Short-circuit protection			Electronic
Open-circuit protection			Yes
Fuse (primary circuit)			Integral
Class of protection			Class 1
Galvanic isolation			Yes
Test voltage			500 V AC
RI specification			A in acc. with VDE 0871
Weight		approx.	1.9 kg (4.1 lb)

Ordering data	Order No.	Order No.
PS 951 power supply module for S5-115F for internal power supply (without backup battery) 24 V DC; 5 V, 7 A; non-floating	6ES5 951-7ND41	6ES5 980-0AE11
		Backup battery (lithium battery) Size AA, 3.6 V/1.75 Ah