

# SIMATIC S7-1500 Advanced Controllers

## Power supplies

### 1-phase, 24 V DC (for S7-1500 and ET200MP)

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#### Overview



The design and functionality of the SIMATIC PM 1507 single-phase load power supply (PM = power module) with automatic range selection of the input voltage makes it an optimal match to the SIMATIC S7-1500 PLC. It supplies the S7-1500 system components such as CPU, system power supply (PS), I/O circuits of the input and output modules and, if necessary, the sensors and actuators with 24 V DC.

#### Ordering data

#### Article No.

<b>SIMATIC PM 1507</b> Stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC Output: 24 V DC/3 A	<b>6EP1332-4BA00</b>
<b>SIMATIC PM 1507</b> Stabilized power supply for SIMATIC S7-1500 Input: 120/230 V AC Output: 24 V DC/8 A	<b>6EP1333-4BA00</b>
<b>Accessories</b>	
<b>Power plug</b> With coding element for power supply module; spare part, 10 units per packing unit	<b>6ES7590-8AA00-0AA0</b>
<b>Top hat DIN rail adapter</b> For adapting S7-1500 DIN rails on low or flat top hat DIN rails, as pre-assembled in control cabinets and terminal boxes, for example. An adapter must be positioned every 25 cm. Including mounting hardware. 10 units per packing unit	<b>6ES7590-6AA00-0AA0</b>

#### Technical specifications

	<b>6EP1332-4BA00</b>	<b>6EP1333-4BA00</b>
Article number	6EP1332-4BA00	6EP1333-4BA00
Product	S7-1500 PM1507	S7-1500 PM1507
Power supply, type	24 V/3 A	24 V/8 A
<b>Input</b>		
Input	1-phase AC	1-phase AC
• Note	Automatic range selection	Automatic range selection
supply voltage		
• 1 at AC rated value	120 V	120 V
• 2 at AC rated value	230 V	230 V
input voltage		
• 1 at AC	85 ... 132 V	85 ... 132 V
• 2 at AC	170 ... 264 V	170 ... 264 V
Wide-range input	No	No
Oversvoltage resistance	2.3 × Vin rated, 1.3 ms	2.3 × Vin rated, 1.3 ms
Mains buffering	at Vin = 93/187 V	at Vin = 93/187 V
Mains buffering at Iout rated, min.	20 ms; at Vin = 93/187 V	20 ms; at Vin = 93/187 V
Rated line frequency 1	50 Hz	50 Hz
Rated line frequency 2	60 Hz	60 Hz
Rated line range	45 ... 65 Hz	45 ... 65 Hz
input current		
• at rated input voltage 120 V	1.4 A	3.7 A
• at rated input voltage 230 V	0.8 A	1.7 A
Switch-on current limiting (+25 °C), max.	23 A	62 A
duration of inrush current limiting at 25 °C		
• maximum	3 ms	3 ms
I <sup>2</sup> t, max.	1.3 A <sup>2</sup> ·s	12 A <sup>2</sup> ·s
Built-in incoming fuse	T 3,15 A/250 V (not accessible)	T 6.3 A/250 V (not accessible)
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: 10 A characteristic B or 6 A characteristic C	Recommended miniature circuit breaker: 16 A characteristic B or 10 A characteristic C

### Technical specifications

Article number	6EP1332-4BA00	6EP1333-4BA00
Product	S7-1500 PM1507	S7-1500 PM1507
Power supply, type	24 V/3 A	24 V/8 A
<b>Output</b>		
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage $U_{out}$ DC	24 V	24 V
• output voltage at output 1 at DC rated value	24 V	24 V
Total tolerance, static $\pm$	1 %	1 %
Static mains compensation, approx.	0.1 %	0.1 %
Static load balancing, approx.	0.1 %	0.1 %
Residual ripple peak-peak, max.	50 mV	50 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	150 mV	150 mV
product function output voltage adjustable	No	No
Status display	LED green for 24 V OK; LED red for error; LED yellow for stand-by	LED green for 24 V OK; LED red for error; LED yellow for stand-by
On/off behavior	No overshoot of $V_{out}$ (soft start)	No overshoot of $V_{out}$ (soft start)
Startup delay, max.	1.5 s	1.5 s
Voltage rise, typ.	10 ms	10 ms
Rated current value $I_{out}$ rated	3 A	8 A
Current range	0 ... 3 A	0 ... 8 A
supplied active power typical	72 W	192 W
short-term overload current		
• on short-circuiting during the start-up typical	12 A	35 A
• at short-circuit during operation typical	12 A	35 A
duration of overloading capability for excess current		
• on short-circuiting during the start-up	70 ms	70 ms
• at short-circuit during operation	70 ms	70 ms
Parallel switching for enhanced performance	Yes	Yes
Numbers of parallel switchable units for enhanced performance	2	2
<b>Efficiency</b>		
Efficiency at $U_{out}$ rated, $I_{out}$ rated, approx.	87 %	90 %
Power loss at $U_{out}$ rated, $I_{out}$ rated, approx.	11 W	21 W
<b>Closed-loop control</b>		
Dynamic mains compensation ( $U_{in}$ rated $\pm 15$ %), max.	0.1 %	0.1 %
Dynamic load smoothing ( $I_{out}$ : 50/100/50 %), $U_{out} \pm$ typ.	1 %	2 %
Dynamic load smoothing ( $I_{out}$ : 10/90/10 %), $U_{out} \pm$ typ.	3 %	3 %
Load step setting time 10 to 90%, typ.	5 ms	5 ms
Load step setting time 90 to 10%, typ.	5 ms	5 ms
setting time maximum	5 ms	5 ms
<b>Protection and monitoring</b>		
Output overvoltage protection	Additional control loop, limitation (closed loop control) at < 28.8 V	Additional control loop, limitation (closed loop control) at < 28.8 V
Current limitation	3.15 ... 3.6 A	8.4 ... 9.6 A
Current limitation, typ.	3.4 A	9 A
property of the output short-circuit proof	Yes	Yes
Short-circuit protection	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart
Overload/short-circuit indicator	-	-
<b>Safety</b>		
Primary/secondary isolation galvanic isolation	Yes	Yes
Protection class	Safety extra-low output voltage $U_{out}$ acc. to EN 60950-1 and EN 50178 and EN 61131-2	Safety extra-low output voltage $U_{out}$ acc. to EN 60950-1 and EN 50178 and EN 61131-2
leakage current	Class I	Class I
• maximum	3.5 mA	3.5 mA
• typical	0.4 mA	1.3 mA
Degree of protection (EN 60529)	IP20	IP20

# SIMATIC S7-1500 Advanced Controllers

## Power supplies

### 1-phase, 24 V DC (for S7-1500 and ET200MP)

#### Technical specifications

Article number	6EP1332-4BA00	6EP1333-4BA00
Product	S7-1500 PM1507	S7-1500 PM1507
Power supply, type	24 V/3 A	24 V/8 A
<b>Approvals</b>		
certificate of suitability		
• CE marking	Yes	Yes
• UL/cUL (CSA) approval	Yes; cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289	Yes; cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289
• cCSAus, Class 1, Division 2	No	No
• ATEX	Yes; ATEX (EX) II 3G Ex nA nC IIC T4 Gc	Yes; ATEX (EX) II 3G Ex nA nC IIC T3 Gc
certificate of suitability		
• relating to ATEX	IECEX Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cULus (ANSI/ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T4, File E330455	IECEX Ex nA nC IIC T3 Gc; ATEX (EX) II 3G Ex nA nC IIC T3 Gc; cULus (ANSI/ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T3, File E330455
• IECEX	Yes; IECEX Ex nA nC IIC T4 Gc	Yes; IECEX Ex nA nC IIC T3 Gc
• NEC Class 2	No	No
• ULhazloc approval	Yes	Yes
• FM registration	Yes; Class I, Div. 2, Group ABCD, T4	Yes; Class I, Div. 2, Group ABCD, T4
type of certification CB-certificate	Yes	Yes
certificate of suitability		
• EAC approval	Yes	Yes
certificate of suitability shipbuilding approval	Yes	Yes
shipbuilding approval	ABS, BV, DNV GL	ABS, BV, DNV GL
Marine classification association		
• American Bureau of Shipping Europe Ltd. (ABS)	Yes	Yes
• French marine classification society (BV)	Yes	Yes
• DNV GL	Yes	Yes
• Lloyds Register of Shipping (LRS)	No	No
• Nippon Kaiji Kyokai (NK)	No	No
<b>EMC</b>		
Emitted interference	EN 55022 Class B	EN 55022 Class B
Supply harmonics limitation	EN 61000-3-2	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2
<b>environmental conditions</b>		
ambient temperature		
• during operation	0 ... 60 °C	0 ... 60 °C
- Note	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, 5 ... 95% no condensation	Climate class 3K3, 5 ... 95% no condensation
<b>Mechanics</b>		
Connection technology	Screw/spring clamp connection	Screw/spring clamp connection
Connections		
• Supply input	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm <sup>2</sup>	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm <sup>2</sup>
• Output	L+, M: 2 spring-loaded terminals each for 0.5 to 2.5 mm <sup>2</sup>	L+, M: 2 spring-loaded terminals each for 0.5 to 2.5 mm <sup>2</sup>
product function		
• removable terminal at input	Yes	Yes
• removable terminal at output	Yes	Yes
width of the enclosure	50 mm	75 mm
height of the enclosure	147 mm	147 mm
depth of the enclosure	129 mm	129 mm
required spacing		
• top	40 mm	40 mm
• bottom	40 mm	40 mm
• left	0 mm	0 mm
• right	0 mm	0 mm
Weight, approx.	0.45 kg	0.74 kg
product feature of the enclosure housing can be lined up	Yes	Yes
Installation	Can be mounted onto S7-1500 rail	Can be mounted onto S7-1500 rail
MTBF at 40 °C	1 611 993 h	1 362 918 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)

### Overview



- System power supplies for SIMATIC S7-1500
- For conversion of AC or DC line voltages to the operating voltages required for the internal electronics
- 25 or 60 W output power
- Can be used for S7-1500 or ET 200MP
- Engineering and configuration via STEP 7 V12 and higher (PS 60W 24/48/60V DC HF: from STEP 7 V14 SP1)
- In addition with PS 60W 24/48/60V DC HF: Retentive storage of CPU work memory (data) for all S7-1500 CPUs

### Ordering data

### Article No.

#### System power supply

For supplying the backplane bus of the S7-1500 Controller

24 V DC input voltage, power 25 W

**6ES7505-0KA00-0AB0**

24/48/60 V DC input voltage, power 60 W

**6ES7505-0RA00-0AB0**

24/48/60 V DC input voltage, power 60 W, buffering functionality

**6ES7505-0RB00-0AB0**

120/230 V AC input voltage, power 60 W

**6ES7507-0RA00-0AB0**

#### Accessories

##### SIMATIC S7-1500 DIN rail

Fixed lengths, with grounding elements

- 160 mm
- 245 mm
- 482 mm
- 530 mm
- 830 mm

**6ES7590-1AB60-0AA0**  
**6ES7590-1AC40-0AA0**  
**6ES7590-1AE80-0AA0**  
**6ES7590-1AF30-0AA0**  
**6ES7590-1AJ30-0AA0**

For cutting to length by customer, without drill holes; grounding elements must be ordered separately

- 2 000 mm

**6ES7590-1BC00-0AA0**

##### PE connection element for 2 000 mm DIN rail

Spare part, 20 units

**6ES7590-5AA00-0AA0**

##### Power plug

With coding element for power supply module; spare part, 10 units

**6ES7590-8AA00-0AA0**

### Technical specifications

Article number	<b>6ES7505-0KA00-0AB0</b>	<b>6ES7505-0RA00-0AB0</b>	<b>6ES7505-0RB00-0AB0</b>	<b>6ES7507-0RA00-0AB0</b>
	S7-1500, PS 25W 24V DC	S7-1500, PS 60W 24/48/60V DC	S7-1500, PS 60W 24/48/60V DC HF	S7-1500, PS 60W 120/230V AC/DC
<b>General information</b>				
Product type designation	PS 25W 24VDC	PS 60 W 24/48/60 V DC	PS 60 W 24/48/60 V DC HF	PS 60 W 120/230 V AC/DC
<b>Engineering with</b>				
• STEP 7 TIA Portal configurable/integrated from version	V12 / V12	V12 / V12	V14 SP1	V12 / V12
• STEP 7 configurable/integrated from version	V5.5 SP3 or higher	V5.5 SP3 or higher		V5.5 SP3 or higher
<b>Installation type/mounting</b>				
Rail mounting		Yes		Yes
<b>Supply voltage</b>				
Rated value (DC)	24 V	24 V / 48 V / 60 V	24 V / 48 V / 60 V	120 V / 230 V
Rated value (AC)				120 V / 230 V
Reverse polarity protection	Yes	Yes	Yes	
Short-circuit protection	Yes	Yes	Yes	Yes
<b>Line frequency</b>				
• Rated value 50 Hz				Yes
• permissible range, lower limit				47 Hz
• permissible range, upper limit				63 Hz
<b>Mains buffering</b>				
• Mains/voltage failure stored energy time	20 ms	20 ms	20 ms	20 ms

# SIMATIC S7-1500 Advanced Controllers

## Power supplies

### System power supplies

#### Technical specifications

Article number	<b>6ES7505-0KA00-0AB0</b> S7-1500, PS 25W 24V DC	<b>6ES7505-0RA00-0AB0</b> S7-1500, PS 60W 24/48/60V DC	<b>6ES7505-0RB00-0AB0</b> S7-1500, PS 60W 24/48/60V DC HF	<b>6ES7507-0RA00-0AB0</b> S7-1500, PS 60W 120/230V AC/DC
<b>Input current</b>				
Rated value at 24 V DC	1.3 A	3 A	3 A	
Rated value at 48 V DC		1.5 A	1.5 A	
Rated value at 60 V DC		1.2 A	1.2 A	
Rated value at 120 V DC				0.6 A
Rated value at 230 V DC				0.3 A
Rated value at 120 V AC				0.6 A
Rated value at 230 V AC				0.34 A
Inrush current, max.			≤ 8 A for t ≤ 1 s	
<b>Output current</b>				
Short-circuit protection	Yes	Yes	Yes	Yes
<b>Power</b>				
Infeed power to the backplane bus	25 W	60 W	60 W	60 W
<b>Power loss</b>				
Power loss at nominal rating conditions	6.2 W	12 W	12 W	12 W
<b>Interrupts/diagnostics/status information</b>				
Status indicator	Yes	Yes	Yes	Yes
<b>Potential separation</b>				
primary/secondary	Yes	Yes; Electrical isolation for 230 V AC (reinforced isolation)		Yes
<b>EMC</b>				
<b>Interference immunity against voltage surge</b>				
• Interference immunity on supply lines acc. to IEC 61000-4-5	Yes; ±1 kV (acc. to IEC 61000-4-5; 1995; surge symm.), ±2 kV (acc. to IEC 61000-4-5; 1995; surge asymm.), no external protective circuit required	Yes; ±1 kV (acc. to IEC 61000-4-5; 1995; surge symm.), ±2 kV (acc. to IEC 61000-4-5; 1995; surge asymm.), no external protective circuit required	Yes; ±1 kV (acc. to IEC 61000-4-5; 1995; surge symm.), ±2 kV (acc. to IEC 61000-4-5; 1995; surge asymm.), no external protective circuit required	Yes; ±1 kV (acc. to IEC 61000-4-5; 1995; surge symm.), ±2 kV (acc. to IEC 61000-4-5; 1995; surge asymm.), no external protective circuit required
<b>Degree and class of protection</b>				
Equipment protection class	III, with protective conductor	I, with protective conductor	I, with protective conductor	I, with protective conductor
<b>Ambient conditions</b>				
<b>Altitude during operation relating to sea level</b>				
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual			
<b>Dimensions</b>				
Width	35 mm	70 mm	105 mm	70 mm
Height	147 mm	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm	129 mm
<b>Weights</b>				
Weight, approx.	350 g	600 g	865 g	600 g

## SIMATIC S7-1500 Advanced Controllers

### SIPLUS power supplies

1-phase, 24 V DC (for S7-1500 and ET200MP)

#### Overview



The design and functionality of the SIMATIC PM 1507 single-phase load power supply (PM = power module) with automatic range selection of the input voltage makes it an optimal match to the SIMATIC S7-1500 PLC. It supplies the S7-1500 system components such as CPU, system power supply (PS), I/O circuits of the input and output modules and, if necessary, the sensors and actuators with 24 V DC.

#### Note

SIPLUS extreme products are based on Siemens standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

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SIPLUS S7-1500 PM 1507		
Article No.	6AG1332-4BA00-7AA0	6AG1333-4BA00-7AA0
Article number based on	6EP1332-4BA00	6EP1333-4BA00
Ambient temperature range	-40 ... +70 °C	
Conformal coating	Coating of the printed circuit boards and the electronic components	
Technical specifications	The technical specifications of the standard product apply, except for the ambient conditions.	
<b>Ambient conditions</b>		
Extended range of environmental conditions	<ul style="list-style-type: none"> <li>• with reference to ambient temperature, air pressure and altitude</li> </ul> Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	
Relative humidity	<ul style="list-style-type: none"> <li>• with condensation, max.</li> </ul> 100 %; RH incl. bedewing/frost (no commissioning in bedewed state)	
Resistance	<ul style="list-style-type: none"> <li>• to biologically active substances/compliance with EN 60721-3-3</li> <li>• to chemically active substances/compliance with EN 60721-3-3</li> <li>• to mechanically active substances, compliance with EN 60721-3-3</li> </ul> Yes; Class 3B2 mold and fungal spores (except fauna); the supplied plug covers must remain in place on the unused interfaces during operation. Yes; Class 3C4 (RH < 75%) incl. salt spray in accordance with EN 60068-2-52 (severity 3); the supplied plug covers must remain in place on the unused interfaces during operation. Yes; Class 3S4 incl. sand, dust; the supplied plug covers must remain in place on unused interfaces during operation.	

#### Ordering data

##### SIPLUS S7-1500 PM 1507

(Extended temperature range and exposure to media)

Input 120/230 V AC, output 24 V DC, 3 A

Input 120/230 V AC, output 24 V DC, 8 A

#### Article No.

6AG1332-4BA00-7AA0

6AG1333-4BA00-7AA0

#### Article No.

##### Accessories

See power supplies, page 4/208