

## Single-phase, primary switched mode power supply **PM 1AC**



### General Data

Input voltage range 85 - 264 Vac
Nominal output voltage: DC 12 - 48 V
Nominal output current: 1 - 20 A
Ambient temperature -25 °C to +70 °C
Conform to domestic appliances EN 60335-1
Protection index IP 20
Plastic housing

### Advantages

Stabilised and adjustable output voltage
Low stand-by consumption <1 W
Constant current limiting without overload shutdown
DC OK signalling
Parallel operation option
Push-in terminals
Panel installation on mounting rails
In compliance with EN 60335-1

### Applications

Efficient, primary switched mode power supply in slim plastic housing. A powerful and flexible option that's still light and compact. Our real all-rounders, these power supply units are suitable for a highly diverse range of applications in solar, measurement and control technology as well as industrial and building automation. The devices cover the lower and average power requirements from 25 W to 100 W. Versions with 12 V, 24 V, and 48 V are available, enabling a whole range of applications. A version with 3.8 A rated current is available for establishing NEC Class 2 circuits. All power supplies also comply with the EN 60335-1 standard for domestic appliances. The output voltage can be easily set using the rotary potentiometer on the front of the housing. The DIN rail fastening method and push-in connection terminals enable fast and secure mounting.

For applications in the medical field, power supplies are available with approval according to UL 60601-1.

### Standards

Primary switched mode power supply  
to UL 60950, UL 508

Safety:  
EN 61558-2-16, EN 60950-1, EN 60335-1

EMC:  
EN 61204-3

### Approvals



UL/CSA 60950 recognised, UL508 listed, Germanischer Lloyd; Medical  
Netzteil: UL 60601-1 (3rd ed. 2MOPP)



## Single-phase, primary switched mode power supply **PM 1AC**

Typ	PM-0112-020-0	PM-0112-040-0	PM-0112-070-0	PM-0124-010-0
<b>Electrical data</b>				
Special features				
Characteristics	-	-	-	-
Input				
Input rated voltage	100 - 240 Vac	100 - 240 Vac	100 - 240 Vac	100 - 240 Vac
Input voltage range	85 - 264 Vac (120 - 373 Vdc)	85 - 264 Vac (120 - 373 Vdc)	85 - 264 Vac (120 - 373 Vdc)	85 - 264 Vac (120 - 373 Vdc)
Input voltage derating	-2.5 %/Vac < 95 Vac	-2.5 %/Vac < 95 Vac	-2.5 %/Vac < 95 Vac	-2.5 %/Vac < 95 Vac
Rated frequency range	44 Hz - 66 Hz / 0 Hz	44 Hz - 66 Hz / 0 Hz	44 Hz - 66 Hz / 0 Hz	44 Hz - 66 Hz / 0 Hz
Input rated current (rated load)	0.44 A (100 Vac) / 0.22 A (240 Vac)	0.83 A (100 Vac) / 0.41 A (240 Vac)	1.87 A (100 Vac) / 0.94 A (240 Vac)	0.43 A (100 Vac) / 0.2 A (240 Vac)
Starting current limiter	< 30 A, NTC	< 30 A, NTC	< 30 A, NTC	< 30 A, NTC
Switch-on time	1.5 s (100 Vac) / 0.4 s (230 Vac)	1.5 s (100 Vac) / 0.7 s (230 Vac)	0.5 s (100 Vac) / 0.3 s (230 Vac)	2.3 s (100 Vac) / 0.74 s (230 Vac)
Power factor	0.48	0.48	0.55	0.48
Input fuse internal	2 A	4 A	4 A	2 A
Recommended back-up fuse (circuit breaker)	6 A, 10 A, 16 A, characteristic B, C	6 A, 10 A, 16 A, characteristic B, C	6 A, 10 A, 16 A, characteristic B, C	6 A, 10 A, 16 A, characteristic B, C
Mains buffering (rated load)	15 ms (100 Vac) / 120 ms (230 Vac)	15 ms (100 Vac) / 120 ms (230 Vac)	15 ms (100 Vac) / 80 ms (230 Vac)	20 ms (100 Vac) / 120 ms (230 Vac)
Transient surge voltage protection	Varistor	Varistor	Varistor	Varistor
Output				
Output rated voltage	12 Vdc	12 Vdc	12 Vdc	24 Vdc
Output voltage range	11.5 - 14.5 Vdc	11.5 - 14.5 Vdc	11.5 - 14.5 Vdc	23 - 28.5 Vdc
Output rated current	2 A	4 A	7 A	1 A
Output limited current	2.2 ... 2.4 A (constant current)	4.4 ... 4.8 A (constant current)	7.7 ... 8 A (constant current)	1.25 ... 1.4 A (constant current)
Class 2 output (UL Limited Power Source, LPS)	✓	✓	-	✓
Parallel connection	Yes	Yes	Yes	Yes
Serial operation	Yes	Yes	Yes	Yes
Power dissipation, no load/rated load	0.7 W / 5.3 W (230 Vac)	<1 W / 8 W (230 Vac)	<1 W / 16.2 W (230 Vac)	<1 W / 4 W (230 Vac)
Max. power losses	5.7 W (100 Vac / 12 V / 2 A)	9.1 W (100 Vac / 12 V / 4 A)	19.8 W (100 Vac / 12 V / 7 A)	5 W (100 Vac / 24 V / 1 A)
Ripple factor	typ. 20 mVss	typ. 20 mVss	typ. 20 mVss	typ. 20 mVss
Resistance to reverse feed max.	25 Vdc	25 Vdc	25 Vdc	35 Vdc
Over-voltage-protection	max. 35 Vdc	max. 35 Vdc	max. 32 Vdc	max. 39 Vdc
Efficiency	82 %	86 %	86 %	86 %
Signaling				
Status indicator	LED green Uout > typ. 10 Vdc LED lit permanently	LED green Uout > typ. 10 Vdc LED lit permanently	LED green Uout > typ. 10 Vdc LED lit permanently	LED green Uout > typ. 21.5 Vdc LED lit permanently
Signal output	Active high signal Uout > typ. 10 Vdc max. 40 mA@12 Vdc short circuit proof	Active high signal Uout > typ. 10 Vdc max. 40 mA@12 Vdc short circuit proof	Active high signal Uout > typ. 10 Vdc max. 40 mA@12 Vdc short circuit proof	Active high signal Uout > typ. 21.5 Vdc max. 20 mA@24 Vdc short circuit proof
Approvals	cURus, cULus, GL	cURus, cULus, GL	cURus, cULus, GL	cURus, cULus, GL
Environment				
Storage temperature	-25 °C to +85 °C	-25 °C to +85 °C	-25 °C to +85 °C	-25 °C to +85 °C
Ambient temperature	-25 °C to +70 °C	-25 °C to +70 °C	-25 °C to +70 °C	-25 °C to +70 °C
Derating	-3 %/K > +50 °C	-3 %/K > +50 °C	-3 %/K > +50 °C	-3 %/K > +50 °C
Mounting position	horizontal for standard rail DIN TS35	horizontal for standard rail DIN TS35	horizontal for standard rail DIN TS35	horizontal for standard rail DIN TS35
Type of cooling	Natural convection	Natural convection	Natural convection	Natural convection
Required minimum spacing (left/right)	0 mm	0 mm	0 mm	0 mm
Required minimum spacing (over/under)	50 mm	50 mm	50 mm	50 mm
Safety and protection				
Protection index	IP 20	IP 20	IP 20	IP 20
Safety class	II, without PE connection	II, without PE connection	II, without PE connection	II, without PE connection
Order numbers				
<b>Order Number</b>	<b>PM-0112-020-0</b>	<b>PM-0112-040-0</b>	<b>PM-0112-070-0</b>	<b>PM-0124-010-0</b>



## Single-phase, primary switched mode power supply **PM 1AC**

Typ	PM-0124-020-0	PM-0124-020-4	PM-0124-038-0	PM-0124-040-0
<b>Electrical data</b>				
<b>Special features</b>				
Characteristics	-	Suitable for the medical field	For establishing NEC Class 2 circuits	-
<b>Input</b>				
Input rated voltage	100 - 240 Vac	100 - 240 Vac	100 - 240 Vac	100 - 240 Vac
Input voltage range	85 - 264 Vac (120 - 373 Vdc)	85 - 264 Vac (120 - 373 Vdc)	85 - 264 Vac (120 - 373 Vdc)	85 - 264 Vac (120 - 373 Vdc)
Input voltage derating	-2.5 %/Vac < 95 Vac	-2.5 %/Vac < 95 Vac	-2.5 %/Vac < 95 Vac	-2.5 %/Vac < 95 Vac
Rated frequency range	44 Hz - 66 Hz / 0 Hz	44 Hz - 66 Hz / 0 Hz	44 Hz - 66 Hz / 0 Hz	44 Hz - 66 Hz / 0 Hz
Input rated current (rated load)	0.73 A (100 Vac) / 0.37 A (240 Vac)	0.82 A (100 Vac) / 0.48 A (230 Vac)	1.5 A (100 Vac, 91 W) / 0.6 A (240 Vac, 91 W)	1.52 A (100 Vac) / 0.66 A (240 Vac)
Starting current limiter	< 30 A, NTC	< 30 A, NTC	< 30 A, NTC	< 30 A, NTC
Switch-on time	0.5 s (100 Vac) / 0.27 s (230 Vac)	0.5 s (100 Vac) / 0.27 s (230 Vac)	<0.5 s (100 Vac) / <0.2 s (230 Vac)	0.24 s (100 Vac) / 0.14 s (230 Vac)
Power factor	0,47	0,47	0.5	0.5
Input fuse internal	4 A	4 AT	4 A	4 A
Recommended back-up fuse (circuit breaker)	6 A, 10 A, 16 A, characteristic B, C	6 A, 10 A, 16 A, characteristic B, C	6 A, 10 A, 16 A, characteristic B, C	6 A, 10 A, 16 A, characteristic B, C
Mains buffering (rated load)	20 ms (100 Vac) / 120 ms (230 Vac)	20 ms (100 Vac) / 120 ms (230 Vac)	>15 ms (100 Vac) / >80 ms (230 Vac)	15 ms (100 Vac) / 80 ms (230 Vac)
Transient surge voltage protection	Varistor	Varistor	Varistor	Varistor
<b>Output</b>				
Output rated voltage	24 Vdc	24 Vdc	24 Vdc	24 Vdc
Output voltage range	23 - 28.5 Vdc	23 - 28.5 Vdc	23 - 28.5 Vdc (> 24 Vdc constant capacity)	23 - 28.5 Vdc
Output rated current	2 A	2 A	3.8 A / NEC Class 2	4 A
Output limited current	2.2 ... 2.4 A (constant current)	2.2 ... 2.4 A (constant current)	3.8 ... 3.2 A (constant current, Class 2)	4.4 ... 4.7 A (constant current)
Class 2 output (UL Limited Power Source, LPS)	✓	-	✓	-
Parallel connection	Yes	Yes	Yes	Yes
Serial operation	Yes	Yes	Yes	Yes
Power dissipation, no load/rated load	< 1 W / 4 W (230 Vac)	< 1 W / 4 W (230 Vac)	2.8 W / 14 W (230 Vac)	< 1 W / 12 W (230 Vac)
Max. power losses	7 W (100 Vac / 24 V / 2 A)	7,0 W (100 Vac / 24 V / 2A)	<20 W (100 Vac / 91 W)	15 W (100 Vac / 24 V / 4 A)
Ripple factor	typ. 20 mVss	typ. 20mVss	typ. 20 mVss	typ. 20 mVss
Resistance to reverse feed max.	35 Vdc	35 Vdc	35 Vdc	35 Vdc
Over-voltage-protection	max. 37 Vdc	max. 37 Vdc	max. 40 Vdc	max. 40 Vdc
Efficiency	89 %	typ. 89 %	87 %	89 %
<b>Signaling</b>				
Status indicator	LED green Uout > typ. 21.5 Vdc LED lit permanently	LED green Uout > typ. 21.5 Vdc LED lit permanently	LED green Uout > typ. 21.5 Vdc LED lit permanently	LED green Uout > typ. 21.5 Vdc LED lit permanently
Signal output	Active high signal Uout > typ. 21.5 Vdc max. 20 mA@24 Vdc short circuit proof	Active high signal Uout > typ. 21.5 Vdc max. 20 mA@24 Vdc short circuit proof	Active high signal Uout > typ. 21.5 Vdc max. 20 mA@24 Vdc short circuit proof	Active high signal Uout > typ. 21.5 Vdc max. 20 mA@24 Vdc short circuit proof
<b>Approvals</b>				
Approvals	cURus, cULus, GL	cURus, cULus (UL 60601), GL	cURus, cULus, GL	cURus, cULus, GL
<b>Environment</b>				
Storage temperature	-25 °C to +85 °C	-25 °C to +85 °C	-25 °C to +85 °C	-25 °C to +85 °C
Ambient temperature	-25° C to +70° C	-25° C to +70° C	-25° C to +70° C	-25° C to +70° C
Derating	-3 %/K > +50 °C	-3 %/K > +50 °C	-3 %/K > +50 °C	-3 %/K > +50 °C
Mounting position	horizontal for standard rail DIN TS35	horizontal for standard rail DIN TS35	horizontal for standard rail DIN TS35	horizontal for standard rail DIN TS35
Type of cooling	Natural convection	Natural convection	Natural convection	Natural convection
Required minimum spacing (left/right)	0 mm	0 mm	0 mm	0 mm
Required minimum spacing (over/under)	50 mm	50 mm	50 mm	50 mm
<b>Safety and protection</b>				
Protection index	IP 20	IP 20	IP 20	IP 20
Safety class	II, without PE connection	II, without PE connection	II, without PE connection	II, without PE connection
<b>Order numbers</b>				
Order Number	<b>PM-0124-020-0</b>	<b>PM-0124-020-4</b>	<b>PM-0124-038-0</b>	<b>PM-0124-040-0</b>

1.1

1.2

1.3

2.1

2.2

3.1

3.2

3.3

4.0

5.1

5.2



## Single-phase, primary switched mode power supply **PM 1AC**

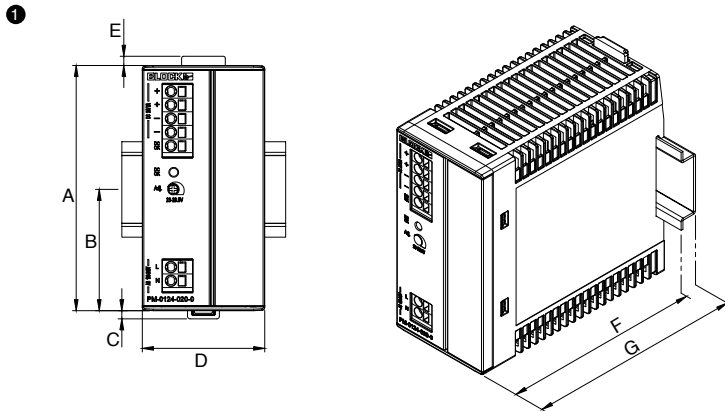
Typ		PM-0148-020-0
Electrical data	Special features	
	Characteristics	-
	Input	
	Input rated voltage	100 - 240 Vac
	Input voltage range	85 - 264 Vac (120 - 373 Vdc)
	Input voltage derating	-2.5 %/Vac < 95 Vac
	Rated frequency range	44 Hz - 66 Hz / 0 Hz
	Input rated current (rated load)	1.79 A (100 Vac) / 0.9 A (240 Vac)
	Starting current limiter	< 30 A, NTC
	Switch-on time	0.5 s (100 Vac) / 0.3 s (230 Vac)
Power factor	0.5	
Input fuse internal	4 A	
Recommended back-up fuse (circuit breaker)	6 A, 10 A, 16 A, characteristic B, C	
Mains buffering (rated load)	15 ms (100 Vac) / 80 ms (230 Vac)	
Transient surge voltage protection	Varistor	
Output		
Output rated voltage	48 Vdc	
Output voltage range	40 - 56 Vdc	
Output rated current	2 A	
Output limited current	2.2 ... 2.4 A (constant current)	
Class 2 output (UL Limited Power Source, LPS)	-	
Parallel connection	Yes	
Serial operation	Yes	
Power dissipation, no load/rated load	< 1 W / 16.2 W (230 Vac)	
Max. power losses	19.8 W (100 Vac / 48 V / 2 A)	
Ripple factor	typ. 20 mVss	
Resistance to reverse feed max.	63 Vdc	
Over-voltage-protection	max. 60 Vdc	
Efficiency	86 %	
Signaling		
Status indicator	LED green U <sub>out</sub> > typ. 39 Vdc LED lit permanently	
Signal output	Active high signal U <sub>out</sub> > typ. 39 Vdc max. 10 mA@48 Vdc short circuit proof	
Approvals		
Approvals	cURus, cULus, GL	
Environment		
Storage temperature	-25 °C to +85 °C	
Ambient temperature	-25° C to +70° C	
Derating	-3 %/K > +50 °C	
Mounting position	horizontal for standard rail DIN TS35	
Type of cooling	Natural convection	
Required minimum spacing (left/right)	0 mm	
Required minimum spacing (over/under)	50 mm	
Safety and protection		
Protection index	IP 20	
Safety class	II, without PE connection	
Order numbers		
<b>Order Number</b>	<b>PM-0148-020-0</b>	



Single-phase, primary switched mode power supply  
**PM 1AC**

Typ	Terminals input (direct plug-in technology Push-in)	Terminals output (direct plug-in technology Push-in)	Terminals signalling (direct plug-in technology Push-in)	Dimension (W x H x D)	Weight	Dimension picture (in mm)							
							A	B	C	D	E	F	G
PM-0112-020-0	max 2,5 mm <sup>2</sup>	max 2,5 mm <sup>2</sup>	max 2,5 mm <sup>2</sup>	22,5 x 90 x 90,5 mm	0,13 kg	1	90	45	3	22,5	3,5	90,5	98
PM-0112-040-0	max 2,5 mm <sup>2</sup>	max 2,5 mm <sup>2</sup>	max 2,5 mm <sup>2</sup>	45 x 90 x 90,5 mm	0,21 kg	2	90	45	3	45	3,5	90,5	98
PM-0112-070-0	max 2,5 mm <sup>2</sup>	max 2,5 mm <sup>2</sup>	max 2,5 mm <sup>2</sup>	52 x 90 x 103,5 mm	0,40 kg	3	90	45	3	52	3,5	103,5	111
PM-0124-010-0	max 2,5 mm <sup>2</sup>	max 2,5 mm <sup>2</sup>	max 2,5 mm <sup>2</sup>	22,5 x 90 x 90,5 mm	0,13 kg	4	90	45	3	22,5	3,5	90,5	98
PM-0124-020-0	max 2,5 mm <sup>2</sup>	max 2,5 mm <sup>2</sup>	max 2,5 mm <sup>2</sup>	45 x 90 x 90,5 mm	0,21 kg	5	90	45	3	45	3,5	90,5	98
PM-0124-020-4	max 2,5 mm <sup>2</sup>	max 2,5 mm <sup>2</sup>	max 2,5 mm <sup>2</sup>	45 x 90 x 90,5 mm	0,24 kg	6	90	45	3	45	3,5	90,5	98
PM-0124-038-0	max 2,5 mm <sup>2</sup>	max 2,5 mm <sup>2</sup>	max 2,5 mm <sup>2</sup>	52 x 90 x 103,5 mm	0,39 kg	7	90	45	3	52	3,5	103,5	111
PM-0124-040-0	max 2,5 mm <sup>2</sup>	max 2,5 mm <sup>2</sup>	max 2,5 mm <sup>2</sup>	52 x 90 x 103,5 mm	0,39 kg	8	90	45	3	52	3,5	103,5	111
PM-0148-020-0	max 2,5 mm <sup>2</sup>	max 2,5 mm <sup>2</sup>	max 2,5 mm <sup>2</sup>	52 x 90 x 103,5 mm	0,39 kg	9	90	45	3	52	3,5	103,5	111

Dimension pictures



1.1

1.2

1.3

2.1

2.2

3.1

3.2

3.3

4.0

5.1

5.2