

120W AC to DC Open Frame Power Supply

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Features

- Universal 85V AC to 264V AC or 120V DC to 370V DC input voltage
- High power density, compact size: 3" × 2" × 1.22"
- Operating ambient temperature range: -40°C to +85°C
- Active PFC
- High I/O isolation test voltage up to 4000V AC
- Operating altitude up to 5000m
- Extremely low leakage current < 0.1mA
- Stand-by power consumption < 0.3W
- The base plate with conformal coating
- Output short circuit, over-current, over-voltage, over-temperature protection
- Efficiency up to 95%
- Installing in system of Safety Class I/II is available
- Safety according to IEC/EN/UL62368-1, IEC/EN60335-1, IEC/EN61558-1, GB4943-1, IEC/EN/ES60601-1

**RoHS
Compliant**

These series is one of AC-DC miniaturize open frame power supply. It features universal AC input and at the same time accepts DC input voltage, cost-effective, high efficiency, high reliability and double or reinforced insulation. These converters offer excellent EMC and safety performance, which meet IEC/EN/UL62368, GB4943, IEC/EN60335, IEC/EN61558, IEC/EN/ES60601 standards and they are widely used in areas of industrial, LED, street light control, electricity, security, telecommunications, smart home, medical, etc.

Selection Guide

Part Number	Nominal Output Power (W)	Nominal Output Voltage and Current (Vo/Io)	Transient Output Power*10S (W)	Output Voltage Adjustable Range (V)	Efficiency at 230VAC (%) Typ.	Max. Capacitive Load (µF)
MPOF120-20B12	114	12V/9.5A	141.6	11.4-12.6	94	6000
MPOF120-20B15	114	15V/7.6A	142.5	14.3-15.8	94	5000
MPOF120-20B24	120	24V/5A	150	22.8-25.2	95	3200
MPOF120-20B27	119.9	27V/4.44A	149.8	25.6-28.4	95	2400
MPOF120-20B48	120	48V/2.5A	150	45.6-50.4	94.5	1600

Note: *If the total output power exceeds the nominal output power, it can be maintained for a maximum of 10s. The power supply cannot exceed the transient power. When the output voltage is increased, the total output power cannot exceed the nominal output power.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input		85	--	264	VAC
	DC input		120	--	370	VDC
Input Voltage Frequency			47	--	63	Hz
Input Current	115VAC		--	--	2	A
	230VAC		--	--	1	
Inrush Current	115VAC	Cold start	--	40	--	A
	230VAC		--	75	--	
Power Factor	115VAC	Full Load	0.98	--	--	--
	230VAC		0.94	--	--	
Leakage Current	240VAC	< 0.1mA; Single fault < 0.5mA				
Hot Plug	Unavailable					

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Element14.com/multicomp-pro

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





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Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Output Voltage Accuracy*	Full load range	12V/15V	--	±2.0	--	%
		24V/27V/48V	--	±1.0	--	
Line Regulation	Rated load	--	±0.5	--		
Load Regulation	0% - 100% load	--	±1.0	--		
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	12V/15V	--	80	120	mV
		24V/27V	--	100	150	
		48V	--	120	200	
Temperature Coefficient		--	±0.03	--	%/°C	
Minimum Load		0	--	--	%	
Hold-up Time	230VAC	15	--	--	ms	
Stand-by Power Consumption		--	--	0.3	W	
Short Circuit Protection	Recovery time < 3s after the short circuit disappear.	Hiccup, continuous, self-recovery				
Over-current Protection		≥130% Io, hiccup, self-recovery				
Over-voltage Protection	12V	≤16V (Output voltage turn off, re-power on for recover)				
	15V	≤25V (Output voltage turn off, re-power on for recover)				
	24V	≤32V (Output voltage turn off, re-power on for recover)				
	27V	≤35V (Output voltage turn off, re-power on for recover)				
	48V	≤60V (Output voltage turn off, re-power on for recover)				
Over-temperature Protection		Output voltage turn off, re-power on to recovery after abnormal removed				
<p>Note: 1. *Output voltage accuracy: including the setting error, line regulation, load regulation; 2. *The "Tip and barrel method" is used for ripple and noise test, output parallel 10uF electrolytic capacitor and 0.1uF ceramic capacitor, please refer to AC-DC Converter Application Notes for specific information; 3. *For all the above test items, please refer to our company standard "AC-DC Black Box Test Specification" for specific test specifications and methods; 4. *Except for special instructions, the above data are measured at the full operating temperature range and humidity <75%.</p>						

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General Specifications						
Item		Operating Conditions	Min.	Typ.	Max.	Unit
Isolation Test	Input - 	Electric strength test for 1min., leakage current <5mA	1500	-	--	VAC
	Input - output		4000		--	
	Output - 		500		--	
Insulation Resistance	Input - 	Ambient temperature: 25 ± 5°C	100	-	--	MΩ
	Input - output	Relative humidity: < 95%RH, no condensation	100		--	
	Output - 	Test voltage: 500V DC	100		--	
Operating Temperature			-40		+85	°C
Storage Temperature			-40		+85	
Operating Humidity		Non-condensing	10		95	%RH
Storage Humidity			20		90	
Switching Frequency		Nominal output power	70		110	kHz
Power Derating	Operating temperature derating	+50°C to +85°C	2		--	% / °C
		-40°C to -30°C	2		--	
	Input voltage derating	85VAC - 115VAC	1		--	% / VAC
Safety Standard			Meet IEC/EN/UL62368-1/EN60335-1/IEC/EN61558-1 /GB4943-1/IEC/EN60601-1/ES60601-1(3.1 version)/CAN/CSA-C22.2 No.60601-1:14-Edition 3/ EN60601-1-2 Edition 4			
Safety Certification			IEC/EN/UL62368-1/EN60335/IEC61558(Pending)			
Safety Class			CLASS I			
Isolation level	Input - output		2 × MOPP			
	Input - 		1 × MOPP			
	Output - 		1 × MOPP			
MTBF		MIL-HDBK-217F@25°C	>300,000 h			
Warranty		Ambient temperature: <50°C	5 years			

Mechanical Specifications	
Case Material	Open frame
Dimensions	76.2mm x 50.8mm x 31mm
Weight	125g (Typ.)
Cooling Method	Free air convection
Note: *Cooling method and power derating refer to typical characteristic curves.	

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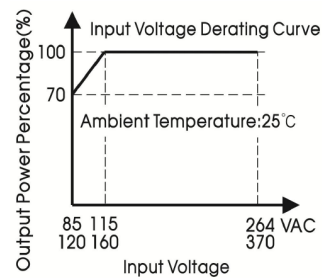
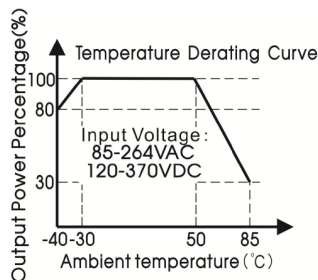
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Electromagnetic Compatibility (EMC)

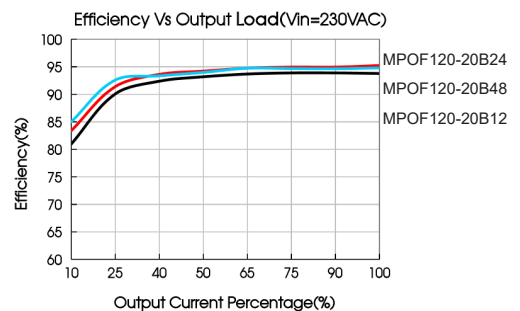
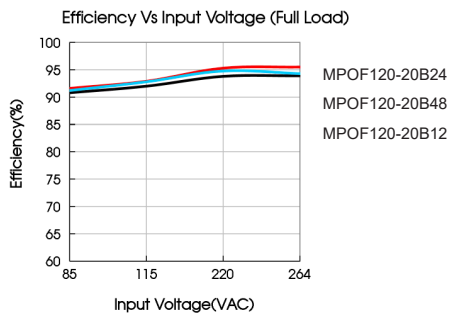
Emissions	CE	CISPR32/EN55032 CLASS B	
	RE	CISPR32/EN55032 (Category I, CLASS B, category II, CLASS A)	
	Harmonic current	IEC/EN61000-3-2 CLASS A	
Immunity	ESD	IEC/EN 61000-4-2	Contact ±6KV/Air ±8KV Perf. Criteria A
	RS	IEC/EN 61000-4-3	10V/m Perf. Criteria A
	EFT	IEC/EN 61000-4-4	±2KV Perf. Criteria A
	Surge	IEC/EN 61000-4-5	line to line ±2KV/line to ground ±4KV Perf. Criteria A
	CS	IEC/EN61000-4-6	10 Vr.m.s Perf. Criteria A
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11	0%, 70% perf. Criteria B

Note: *The power supply should be considered as a part of the components in the system. All EMC performance are been tested on a metal plate with a thickness of 1mm and a length of 360mm × 360mm. The power supply must be combined with the terminal equipment for electromagnetic compatibility confirmation.

Product Characteristic Curve



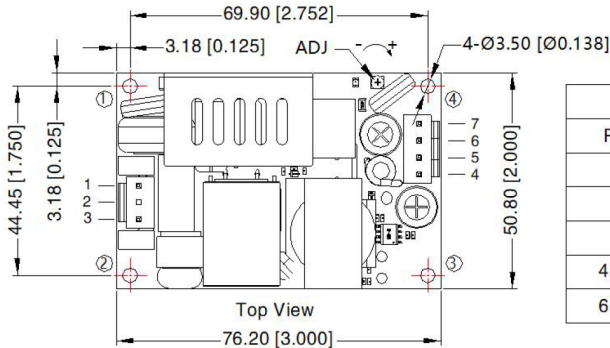
Note: With an AC input voltage between 85 - 115VAC and a DC input between 120 - 160VDC the output power must be derated as per the temperature derating curves.



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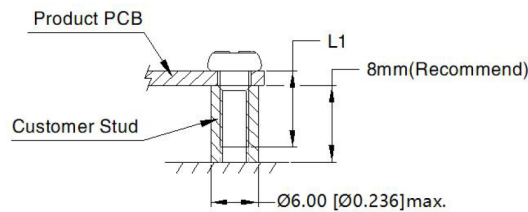
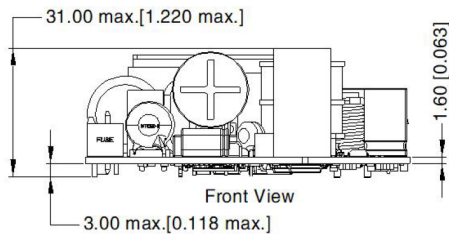
Dimensions and Recommended Layout



THIRD ANGLE PROJECTION

Pin-Out			
Pin	Function	Product Connector	Customer Connector
1	AC(N)	JST B3P-VH or equivalent	Housing:JST VHR Contact:JST SVH-21T-P1.1 or equivalent
2	NC		
3	AC(L)	JST B4P-VH or equivalent	Housing:JST VHR Contact:JST SVH-21T-P1.1 or equivalent
4, 5	-Vo		
6, 7	+Vo		

Position	Screw Spec.	L(Recommend)	Torque(max)
① - ④	M3	6mm	0.4N · m



Note:

1. Unit: mm[inch]
2. General tolerances: $\pm 1.00[\pm 0.039]$
3. The layout of the device is for reference only, please refer to the actual product

Notes:

1. Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^\circ\text{C}$, humidity<75%RH with nominal input voltage and rated output load;
3. All index testing methods in this datasheet are based on our company corporate standards;
4. In order to improve the efficiency at high input voltage, there will be audible noise generated, but it does not affect product performance and reliability;
5. We can provide product customization service, please contact our technicians directly for specific information;
6. Products are related to laws and regulations: see "Features" and "EMC";
7. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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