



FEATURES

- Input voltage range: 85 - 264VAC/120 - 370VDC
- Compact size: 4" x 2" x 1"
- Operating ambient temperature range: -40°C to +70°C
- Active PFC
- High I/O isolation test voltage up to 4000VAC
- Operating altitude up to 5000m
- Very low leakage current <0.1mA
- No-load power consumption <0.3W
- The base plate with conformal coating
- Output short circuit, over-current, over-voltage, over-temperature protection
- Installing in system of Safety Class I/II is available
- Safety according to IEC/EN/UL62368, IEC/EN60335, IEC/EN61558, GB4943, IEC/EN/ES60601

LOF225-20Bxx series is one of Mornsun's 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

Certification	Part No.	Cool Mode	Output Power (W)	Nominal Output Voltage and Current (Vo/Io)	Output adj. Range (V)	Efficiency at 230VAC (% Typ.)	Max. Capacitive Load (µF)
UL/CE (Pending)	LOF225-20B12	Air cooling	140	12V/11.67A	11.8-12.6	93	6000
		13CFM	225	12V/18.75A			
	LOF225-20B15	Air cooling	140	15V/9.33A	14.7-15.8	93	5000
		13CFM	225	15V/15A			
	LOF225-20B24	Air cooling	140	24V/5.83A	23.5-25.2	94	3200
		13CFM	225	24V/9.4A			
	LOF225-20B27	Air cooling	130	27V/4.81A	26.5-28.4	94	2400
		13CFM	225	27V/8.35A			
	LOF225-20B48	Air cooling	140	48V/2.91A	47.1-50.4	94	1600
		13CFM	225	48V/4.7A			





Notes: Under any conditions, the total power of the product should not exceed the rated power of 225w and the output current should not exceed the rated output current.



Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit	
Input Voltage Range	AC input		85	--	264	VAC	
	DC input		120	--	370	VDC	
Input Frequency			47	--	63	Hz	
Input Current	115VAC		--	--	3	A	
	230VAC		--	--	2		
Inrush Current	115VAC		Cold start		--		A
	230VAC		--	75	--		
Power Factor	115VAC		Full load		0.99	--	
	230VAC		Full load		0.95		
Leakage Current	240VAC		<0.1mA; Single failure<0.5mA				
Hot Plug	Unavailable						

Output Specifications						
Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy*	Full load range		--	±1	--	%
Line Regulation	Rated load		--	±0.5	--	
Load Regulation	0%-100% load		--	±0.5	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	12V	--	--	60	mV
		15V/24V/27V/48V	--	--	100	
Temperature Coefficient			--	±0.03	--	%/°C
Minimum Load			0	--	--	%
Hold-up Time	230VAC	140W	--	16	--	ms
		225W	--	12	--	
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			≥110%Io, self-recovery			
Over-voltage Protection	12V		≤16VDC (Output voltage turn off, re-power on for recover)			
	15V		≤20VDC (Output voltage turn off, re-power on for recover)			
	24V		≤32VDC (Output voltage turn off, re-power on for recover)			
	27V		≤35VDC (Output voltage turn off, re-power on for recover)			
	48V		≤60VDC (Output voltage turn off, re-power on for recover)			
Over-temperature Protection			Output voltage turn off, re-power on to recovery after abnormal removed			
Fan power	15V		Offer output power of 24V/0.25A with output voltage accuracy ±15%			
	12V/24V/27V/48V		Offer output power of 12V/0.5A with output voltage accuracy ±15%			

Notes: 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. *When the product works at light load (≤15% IO), in order to improve the efficiency to reach at green working mode, the value of ripple and noise will be double.
4. *For all the above test items, please refer to our company standard "AC-DC Black Box Test Specification" for specific test specifications and methods.

General Specifications							
Item	Operating Conditions		Min.	Typ.	Max.	Unit	
Isolation Test	Input - output	Electric strength test for 1min., leakage current <10mA	4000	--	--	VAC	
	Input - 		1500	--	--		
	Output - 		500	--	--		
Insulation Resistance	Input - 	Ambient temperature: 25 ± 5°C Relative humidity: < 95%RH, no condensation Test voltage: 500VDC	50	--	--	MΩ	
	Input - output		50	--	--		
	Output - 		50	--	--		
Operating Temperature			-40	--	+70	°C	
Storage Temperature			-40	--	+85		
Storage Humidity	No condensation		10	--	95	%RH	
Operating Humidity			20	--	90		
Switching Frequency			--	--	--	KHz	
Power Derating	Operating temperature derating	Air cooling	+45°C to +70°C	2.0	--	--	% / °C
		13CFM	+50°C to +70°C	2.5	--	--	
		225W	-40°C to -30°C	2	--	--	
	Input voltage derating	85VAC-115VAC	1	--	--	%/VAC	
Safety Standard			Meet IEC/EN/UL62368/EN60335/EN61558 /GB4943/EN60601				

Safety Certification		IEC/EN/UL/CB62368 (Pending)
Safety Class		CLASS I
Isolation level	Input - output	2 x MOPP
	Input - 	1 x MOPP
	Output - 	1 x MOPP
MTBF	MIL-HDBK-217F@25°C	≥300,000 h
Warranty	Ambient temperature: <50°C	5 years

Mechanical Specifications

Case Material	Open frame
Dimension	101.6 x 50.8 x 25.4 mm
Weight	175g (Typ.)
Cooling Method*	Air convection (140W) / 13CFM (225W)

Note: *Cooling method and power derating refer to typical characteristic curves.

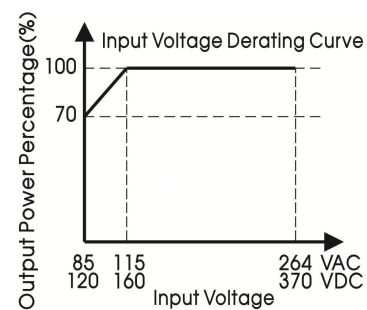
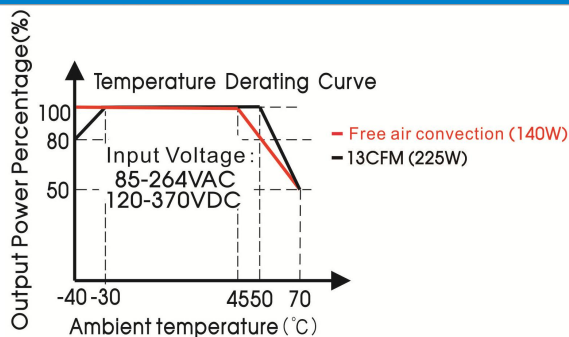
Electromagnetic Compatibility (EMC)

Emissions*	CE	CISPR32/EN55032	CLASS B		
	RE	CISPR32/EN55032	(Category I, CLASS B; Category II, CLASS A)		
	Harmonic current	IEC/EN61000-3-2	CLASS D		
Immunity	ESD	IEC/EN 61000-4-2	Contact ±8KV/Air ±15KV	Perf. Criteria A	
	RS	IEC/EN 61000-4-3	10V/m	perf. Criteria A	
	EFT	IEC/EN 61000-4-4	±4KV	perf. Criteria A	
	Surge	IEC/EN 61000-4-5	±2KV/±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

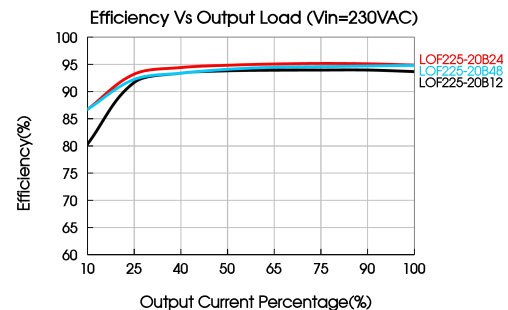
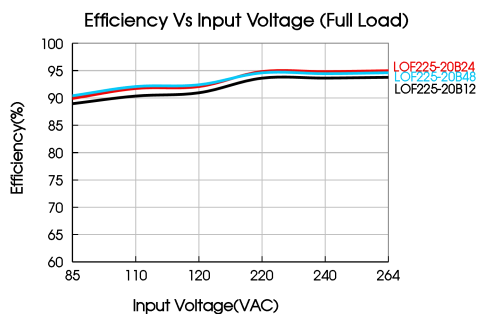
Note: 1.*The power supply should be considered as a part of the components in the system. All EMC performance are been tested on a metal plate with a thickness of 1mm and a length of 360mm x 360mm. The power supply must be combined with the terminal equipment for electromagnetic compatibility confirmation.

2.*Category I products with PE, category II products without PE.

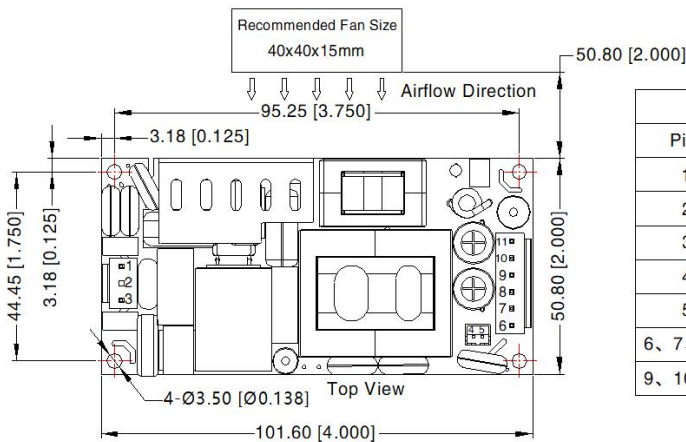
Product Characteristic Curve



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.

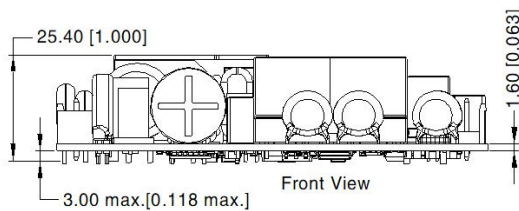


Dimensions and Recommended Layout



THIRD ANGLE PROJECTION

Pin-Out			
Pin	Function	Product Connector	Customer Connector
1	AC(N)/DC-	JST B3P-VH or equivalent	Housing: JST VHR Terminal: JST SVH-21T-P1.1 or equivalent
2	NC		
3	AC(L)/DC+		
4	Fan-	JST B2B-PH-K-S or equivalent	Housing: JST PHR-2 Terminal: JST SPH-002T-P0.56 or equivalent
5	Fan+		
6, 7, 8	-Vo	JST B6P-VH or equivalent	Housing: JST VHR Terminal: JST SVH-21T-P1.1 or equivalent
9, 10, 11	+Vo		



Note:

1. Unit: mm[inch]
2. General tolerances: $\pm 1.00[\pm 0.039]$
3. Do not use fan power to power other devices
4. The layout of the device is for reference only, please refer to the actual product

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220137;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, humidity<75% with nominal input voltage and rated output load;
3. All index testing methods in this datasheet are based on our company corporate standards;
4. We can provide product customization service, please contact our technicians directly for specific information;
5. Products are related to laws and regulations: see "Features" and "EMC";
6. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

Mornsun Guangzhou Science & Technology Co., Ltd.

Address: No. 5, Kehui St. 1, Kehui Development Center, Science Ave., Science City, Huangpu District, Guangzhou, P. R. China
Tel: 86-20-38601850 Fax: 86-20-38601272 E-mail: info@mornsun.cn www.mornsun-power.com