



## FEATURES

- Wide range Input voltage 90 - 264VAC or 120 - 390VDC
- Accepts AC or DC input (dual-use of same terminal)
- Operating ambient temperature range: -40°C to +70°C (Non-condensing)
- High reliability , efficiency up to 94%
- 1 U height
- Wide range of adjustable output voltage
- Output short circuit, over-current, over-voltage protection, over-temperature protection
- Support 3+1 parallel redundancy, current sharing
- Built-in active PFC function
- Operating up to 5000m altitude
- Safety according to IEC/UL/EN62368, IEC/ES/EN60601, GB4943 (Pending)
- Fan speed automatic adjustable

LMF1000-20Bxx series is one of Mornsun's enclosed AC-DC switching power supply. It features universal AC input and at the same time accepts DC input voltage, cost-effective, low no load power consumption, high efficiency, high reliability and double or reinforced insulation. These converters offer excellent EMC performance and meet IEC/EN61000-4, CISPR32/EN55032, IEC/UL/EN62368, EN60335, EN60601, GB4943 standards and they are widely used in areas of industrial, LED, street light control, electricity, security, telecommunications, smart home. etc.

## Selection Guide\*

Certification	Part No.*	Output Power (W)		Nominal Output Voltage and Current (Vo/Io)	Efficiency at 230VAC (%) Typ.	Max. Capacitive Load (μF)
CE/UL/CCC (Pending)	LMF1000-20B12	960	Main	12V/80A	92	40000
		10	Auxiliary	5V/2A		1000
	LMF1000-20B24	1008	Main	24V/42A	94	10000
		10	Auxiliary	5V/2A		1000
	LMF1000-20B48	1008	Main	48V/21A		4000
		10	Auxiliary	5V/2A		1000

Note:1.\*For all applications, please refer to LMF1000-20B(-Q) Series Power Supply Application Notes.  
2.\*Use suffix "Q" for conformal coating.

## Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input		90	--	264	VAC
	DC input		120	--	390	VDC
Input Voltage Frequency			47	--	63	Hz
Input Current	115VAC		--	--	12	A
	230VAC		--	--	6	
Inrush Current	115VAC		--	20	--	
	230VAC		--	40	--	
Power Factor	115VAC		Room-temperature, full load			PF≥0.99
	230VAC					PF≥0.95
Contact Leakage Current	240VAC					<0.5mA

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Main		--	±1	--	%
	Auxiliary		--	±2	--	
Line Regulation	Main output full load		--	±0.5	--	
	Auxiliary output full load		--	±1	--	
Load Regulation	Main (5%-100% load)		--	±0.5	--	
	Auxiliary (5%-100% load)		--	±1	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	12V	--	150	--	mV
		24V	--	150	--	
		48V	--	200	--	
		Auxiliary	--	100	--	
Temperature Coefficient			--	±0.03	--	%/°C
Short Circuit Protection			Hiccups, continuous, self-recover			
Over Current Protection			≥110%Io, self-recover			
Over Voltage Protection	12V		≤16.5V (Output voltage turn off, re-power on for recover or PS_ON signal control recovery)			
	24V		≤33V (Output voltage turn off, re-power on for recover or PS_ON signal control recovery)			
	48V		<60V (Output voltage turn off, re-power on for recover or PS_ON signal control recovery)			
	Auxiliary		<7V (Output voltage turn off, re-power on for recover or PS_ON signal control recovery)			
Over-temperature Protection	Over-temperature Protection Activation		--	--	70	°C
	Over-temperature Protection Deactivation		50	--	--	
Minimum Load			0	--	--	%
Adjustable Output Voltage (Trim)	12V		12	--	14.4	V
	24V		24	--	28.8	
	48V		48	--	56	
Hold-up Time	Room-temperature, full load	115VAC	--	12	--	ms
		230VAC	--	12	--	
Fan	The fan speed is determined by the ambient temperature and output power and linearly adjusted					

Note: \*The "Tip and barrel method" is used for ripple and noise test, output parallel 47uF electrolytic capacitor and 0.1uF ceramic capacitor, please refer to Enclosed Switching Power Supply Application Notes for specific information.

General Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit	
Isolation Test	Input - output		4000	--	--	VAC	
	Input - ⊕	Electric Strength Test for 1min., leakage current <10mA	2000	--	--		
	Output - ⊕		1250	--	--		
Insulation Resistance	Input - output		100	--	--	MΩ	
	Input - ⊕	Environment temperature: 25±5°C, Relative humidity: <95%RH, non-condensing Testing voltage: 500VDC	100	--	--		
	Output - ⊕		100	--	--		
Operating Temperature			-40	--	+70	°C	
Storage Temperature			-40	--	+85		
Storage Humidity	Non-condensing		10	--	95	%RH	
Operating Humidity			20	--	90		
Switching Frequency	PFC circuit		--	65	--	kHz	
	LLC circuit		--	100	--		
Power Derating	Operating temperature derating	-40°C to -30°C		5.0	--	--	% / °C
		+45°C to +70°C	12V	1.6	--	--	
		+50°C to +70°C	24V/48V	2.0	--	--	
	Input voltage derating	90VAC to 100VAC		2.0	--	--	%/VAC

Safety Standard		Meet IEC/UL/EN62368/IEC/ES/EN60601
Safety Certification		IEC/UL/EN62368, GB4943 (Pending)
Safety Class		CLASS I
MTBF	MIL-HDBK-217F@25°C	≥250,000 h

### Mechanical Specifications

Case Material	SUS 304
Dimensions	190.0 x 127.0 x 40.5 mm
Weight	1.25Kg (Typ.)
Cooling Method	Forced cooling

### Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032 CLASS B	
	RE	CISPR32/EN55032 CLASS B	
	Harmonic current	EN61000-3-2 CLASS A	
	Flicker	IEC/EN61000-3-3	
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	IEC/EN61000-4-11 0%, 70%	perf. Criteria B

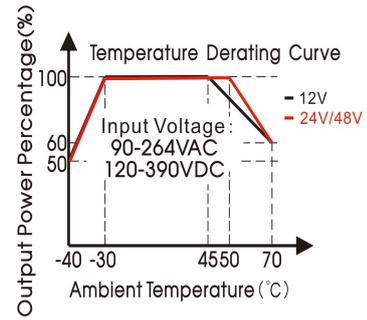
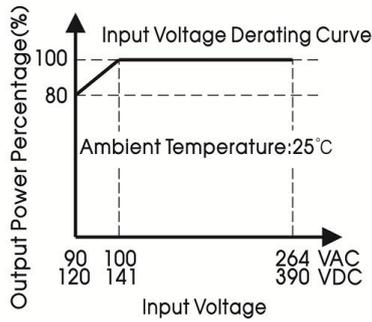
Note: \*The power supply should be considered as a part of the components in the system. RE performance are been tested on a metal plate with a thickness of 1mm and a length of 360mm x 360mm. The power supply must be combined with the terminal equipment for electromagnetic compatibility confirmation.

### Functional Specifications

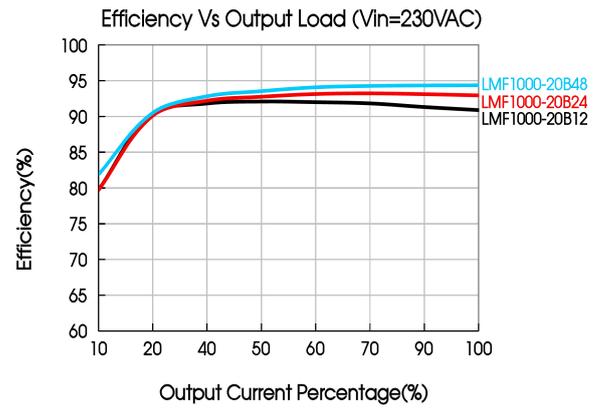
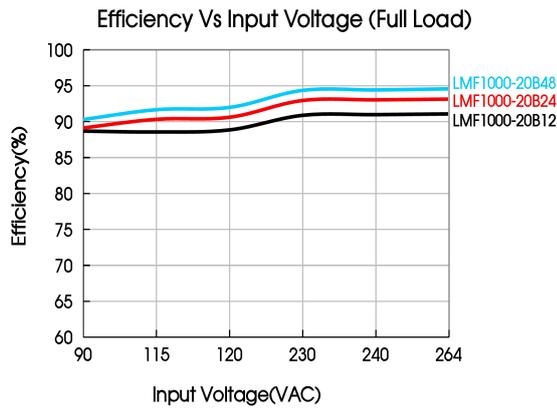
Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Remote Control Switch	All Input Voltage Range All load range	Turn-on Voltage	--	--	0.5	V
		Turn-off Voltage	2	--	5	
DC_OK Signal	All Input Voltage Range All load range	Power On	2.5	--	5	V
		Power Off	--	--	0.5	
Oring		Support direct parallel use, achieve 3+1 parallel redundancy				
Current Sharing Accuracy	When multiple are connected in parallel, the Sub-module shunts a single machine above 50% of the rated load	-5	--	+5	%	
LED Signal	Main output status indication	Normal Output	Steady green			/
		Abnormal Output, protected	Steady red			
		Power Off (AC Without Input)	Turn-off			
Remote Sense	Total compensate voltage (Vs+/Vs- shorted to Vo+/Vo- respectively)	--	200	--	mV	
SDA, SCL for I2C		Internal 2.4 kΩ pull-up resistor to internal 3.3 V				

Note: \*Please refer to LMF1000-20Bxx(-Q) Series Power Supply Application Notes for relevant function control logic and instructions.

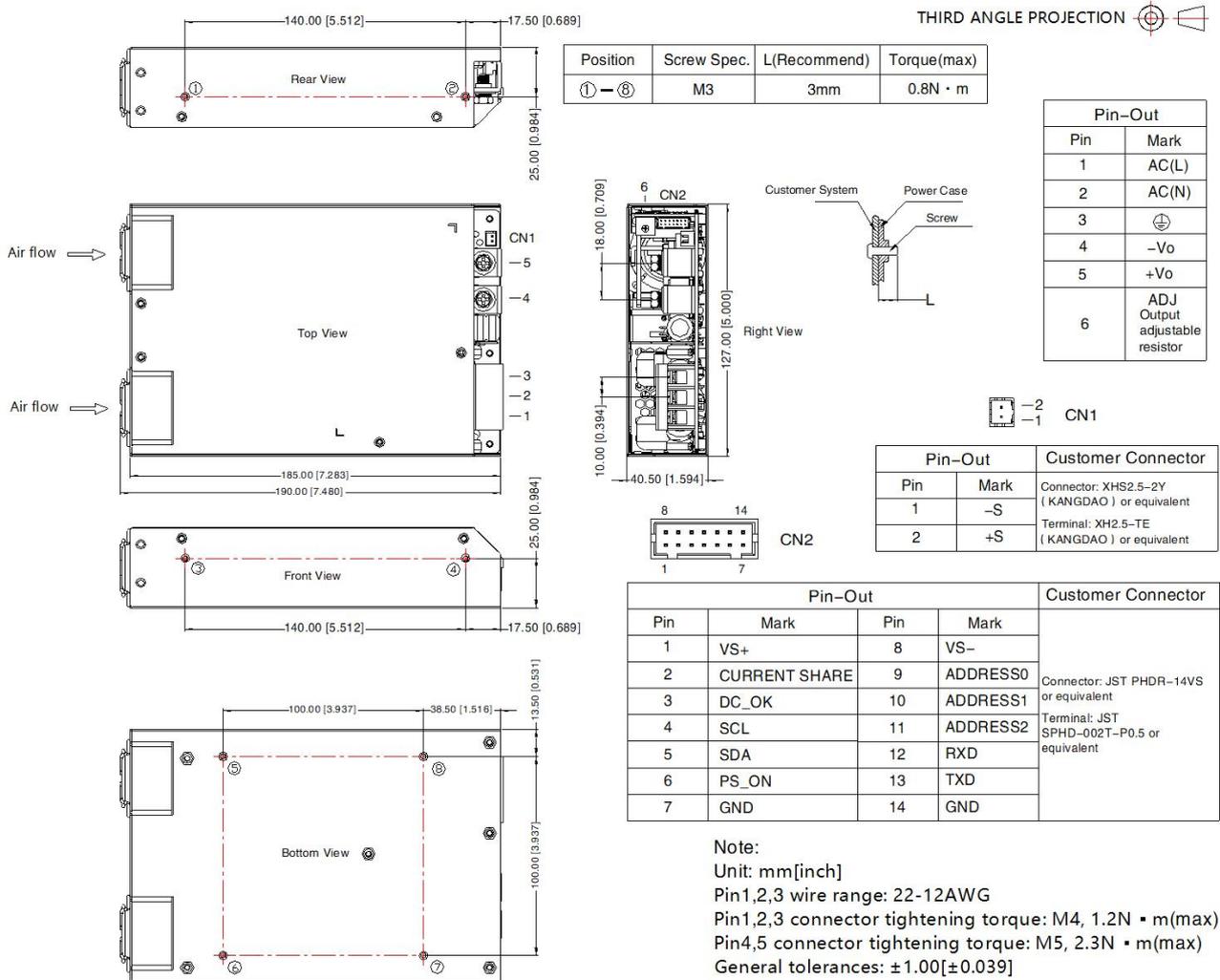
Product Characteristic Curve



Note: With an AC input voltage between 90-100VAC and a DC input between 120-141VDC the output power must be derated as per the temperature derating curves.



### Dimensions and Recommended Layout



**Note:**

- For additional information on Product Packaging please refer to [www.mornsun-power.com](http://www.mornsun-power.com). Packaging bag number: 58220175;
- Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25°C, humidity<75%RH with nominal input voltage and rated output load;
- The room temperature derating of 5°C/1000m is needed for operating altitude greater than 2000m;
- All index testing methods in this datasheet are based on our company corporate standards;
- 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;
- We can provide product customization service, please contact our technicians directly for specific information;
- Products are related to laws and regulations: see "Features" and "EMC";
- The out case needs to be connected to PE (⊕) of system when the terminal equipment in operating;
- The output voltage can be adjusted by the ADJ, clockwise to decrease;
- Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
- The power supply is considered a component which will be installed into a terminal equipment. All EMC tests should be confirmed with the final equipment. Please consult our FAE for EMC test operation instructions.

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