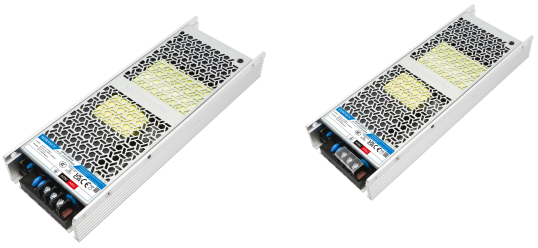


RoHS

EN62368-1 GB4943.1 BS EN62368-1

FEATURES

- Universal 85 - 305VAC or 120 - 430VDC Input voltage
- Accepts AC or DC input (dual-use of same terminal)
- Operating ambient temperature range: -40℃ to +85℃
- Output short circuit, over-current, over-voltage, over temperature protection
- Low ripple & noise
- High efficiency
- Active PFC
- 150% peak load output for 1 second
- Ultra narrow shape, semi-potted process, fanless design
- High I/O isolation test voltage up to 4000VAC
- Operating up to 5000m altitude
- 3 years warranty
- Design refer to IEC60335, EN61558

LMF500-23BxxUH(-C) series is one of Mornsun's enclosed fanless semi-potted ultra narrow AC-DC switching power supply, it is suitable for industrial and outdoor occasions where the application environment is relatively harsh. 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/UL/EN/BS EN62368, IEC60335, EN61558, 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.*	Rated Output Power (W)*	Nominal Output Voltage and Current (Vo/Io)	Output Voltage Adjustable Range (V)	Efficiency at 230VAC (%) Typ.	Room Temperature Max. Capacitive Load (uF)	Low Temperature Max. Capacitive Load (uF)
EN/BIS/BS	LMF500-23B05UH	400.0	5V/80.0A	4.5-5.5	90.0	12000	6000
	LMF500-23B12UH	500.4	12V/41.7A	11.4-12.6	94.0	10000	4000
	LMF500-23B24UH	501.6	24V/20.9A	22.8-25.2	94.5	8000	3000
	LMF500-23B36UH	500.4	36V/13.9A	34.2-37.8	95.0	6000	2000
	LMF500-23B48UH	501.6	48V/10.45A	45.6-50.4	95.0	4000	1000
EN/BS	LMF500-23B28UH	501.2	28V/17.9A	26.6-29.4	94.5	6000	2000
	LMF500-23B30UH	500.2	30.5V/16.4A	29.0-32.0	94.5	6000	2000
	LMF500-23B55UH	489.5	55V/8.9A	45.0-58.0	95.0	2000	600
CCC	LMF500-23B05UH	320.0	5V/64A	4.5-5.5	90.0	12000	6000
	LMF500-23B12UH	400.8	12V/33.4A	11.4-12.6	94.0	10000	4000
	LMF500-23B24UH	451.2	24V/18.8A	22.8-25.2	94.5	8000	3000
	LMF500-23B28UH	451.1	28V/16.11A	26.6-29.4	94.5	6000	2000
	LMF500-23B30UH	450.2	30.5V/14.76A	29.0-32.0	94.5	6000	2000
	LMF500-23B36UH	450.4	36V/12.51A	34.2-37.8	95.0	6000	2000
	LMF500-23B48UH	451.2	48V/9.4A	45.6-50.4	95.0	4000	1000
	LMF500-23B55UH	440.0	55V/8A	45.0-58.0	95.0	2000	600
--	LMF500-23B15UH	499.5	15V/33.3A	14.3-15.8	94.0	10000	4000

Note:1.*Use suffix "C" for terminal with protective cover;
2. *Under any conditions, the total power of the product should not exceed the rated output power, and the output current should not exceed the rated output current.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	Rated input (Certified voltage)		100	--	277	VAC
	AC input		85	--	305	
	DC input		120	--	430	VDC
Input Voltage Frequency			47	--	63	Hz
Input Current	115VAC		--	--	6.0	A
	230VAC		--	--	3.0	
Inrush Current	115VAC	Cold start	--	30	--	
	230VAC		--	60	--	
Leakage Current	277VAC		<0.75mA			
Hot Plug			Unavailable			
Power Factor	115VAC	Normal temperature, full load	PF ⩾ 0.98			
	230VAC		PF ⩾ 0.95			

Output Specifications*

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy*	Full load range	5V	--	±2.0	--	%
		Other output	--	±1.0	--	
Line Regulation	Rated load	5V	--	±0.5	--	
		Other output	--	±0.3	--	
Load Regulation	0% - 100% load	5V	--	±1.0	--	
		Other output	--	±0.5	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value), 25℃		--	--	200	mV
Hold-up Time	115VAC		10	12	--	mS
	230VAC		10	12	--	
Short Circuit Protection	Recover time <5S after the short circuit disappear		Hiccup, continuous, self-recover			
Over-current Protection			>110% Io, hiccup, self-recover			
Over-temperature Protection			Output voltage turn off, self-recover after the temperature drops			
Over-voltage Protection	5V		⩽6.75VDC	Output voltage turn off, re-power on for recover		
	12V		⩽15.6VDC			
	15V		⩽19.5VDC			
	24V		⩽31.2VDC			
	28V		⩽36.4VDC			
	30.5V		⩽39.7VDC			
	36V		⩽46.8VDC			
	48V		⩽60.0VDC			
	55V		⩽69.0VDC			

Note: 1. *Output Voltage Accuracy: including setting error, line regulation, load regulation;
2. *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;
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.

General Specifications

Item		Operating Conditions	Min.	Typ.	Max.	Unit
Isolation Test	Input - ⏚	Electric strength test for 1min., leakage current <10mA	2000	--	--	VAC
	Input - output		4000	--	--	
	Output - ⏚		1500	--	--	

Insulation Resistance	Input - ⏚	Ta=25±5℃ Relative humidity: <95%RH, non-condensing Testing voltage: 500VDC			50	--	--	MΩ
	Input - output				50	--	--	
	Output - ⏚				50	--	--	
Operating Temperature					-40	--	+85	℃
Storage Temperature					-40	--	+85	
Operating Humidity		Non-condensing			20	--	90	%RH
Storage Humidity		Non-condensing			10	--	95	
Power Derating		Operating temperature derating (with heat-sink plate*)	5V	+40℃ to +85℃	1.667	--	--	%/℃
			12V/15V	+45℃ to +85℃	2	--	--	
			24V/28V/30.5V/36V/48V /55V	+50℃ to +85℃	2.5	--	--	
		Operating temperature derating (110VAC input, without heat-sink plate)	5V (derating from 70% load)	+40℃ to +85℃	1.0	--	--	
			12V/15V/24V/28V/30.5V /36V/48V/55V (derating from 70% load)	+50℃ to +85℃	1.5	--	--	
		Operating temperature derating (230VAC input, without heat-sink plate)	5V (derating from 80% load)	+40℃ to +50℃	1.0	--	--	
				+50℃ to +85℃	1.5	--	--	
			12V/15V (derating from 90% load)	+40℃ to +85℃	1.33	--	--	
			24V/28V/30.5V/36V/48V /55V (derating from 90% load)	+45℃ to +85℃	1.6	--	--	
		Input voltage derating	85VAC - 110VAC		1.0	--	--	%/VAC
Safety Standard		5V/12V/24V/36V/48V			GB4943.1, IS13252 (Part1) safety approved & EN 62368-1; Design refer to UL62368-1, IEC60335-1, EN61558-1			
		28V/30V/55V			GB4943.1 safety approved & EN62368-1; Design refer to UL62368-1, IEC60335-1, EN61558-1			
		15V			Design refer to IEC60335-1, EN61558-1, UL/EN62368-1, GB4943.1, IS13252 (Part1)			
Safety Class					CLASS I			
MTBF		MIL-HDBK-217F@25℃			≥200,000 h			

Note: *In order to optimize the heat dissipation performance, when the aluminum plate is used for auxiliary heat dissipation, please note: 1. The size of the aluminum plate is 450mm x 450mm x 3mm; 2. The surface of the aluminum plate mast be coated with thermal grease; 3. The product must be tightly attached to the aluminum plate.

Mechanical Specifications

Product Appearance	Enclosed
Case Material	Metal (AL6063, SGCC)
Dimensions	232.00mm x 81.00mm x 31.00mm
Weight	985g (Typ.)
Cooling Method*	Free air convection

Note: *Cooling method and output power derating refer to the Product Characteristic Curve.

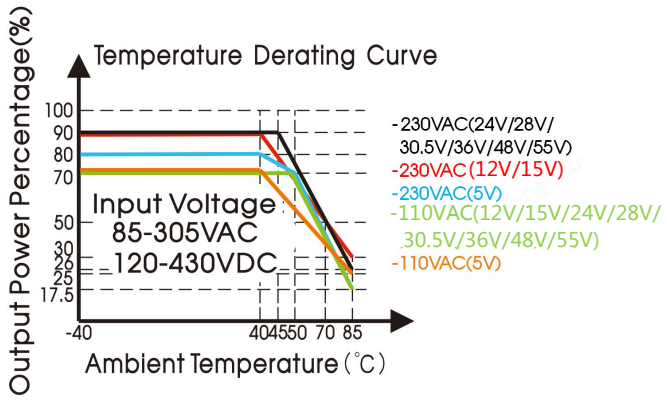
Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032 CLASS B	
	RE	CISPR32/EN55032 CLASS B	
	Harmonic current	IEC/EN61000-3-2 CLASS A/D	
	Voltage flicker	IEC/EN6100-3-3	
Immunity	ESD	IEC/EN61000-4-2 Contact ±8KV/Air ±15KV	Perf. Criteria A
	RS	IEC/EN61000-4-3 10V/m	

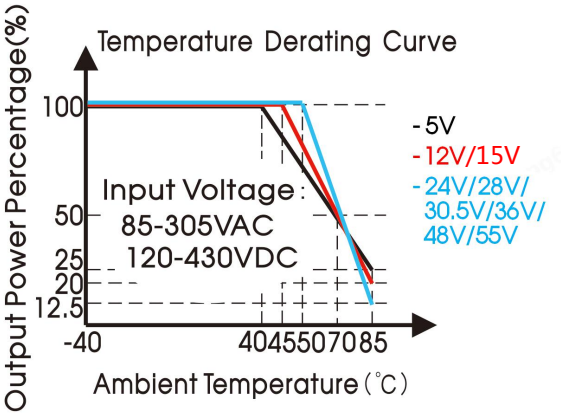
	EFT (Input port)	IEC/EN61000-4-4	±2KV	
	EFT (Output port)	IEC/EN61000-4-4	±2KV	
	Surge (Input port)	IEC/EN61000-4-5	Line to line ±2KV/line to PE ±4KV	
	Surge (Output port)	IEC/EN61000-4-5	Line to line ±0.5KV/line to PE ±1KV	
	CS (Input port)	IEC/EN61000-4-6	10Vr.m.s	
	CS (Output port)	IEC/EN61000-4-6	10Vr.m.s	
	Power frequency magnetic field	IEC/EN61000-4-8	30A/m	
	Voltage dip, short interruption and voltage variation	IEC/EN61000-4-11	0%, 70%	Perf. Criteria B
	Intercom interference test	MS-SOP-DQC-007		Perf. Criteria B

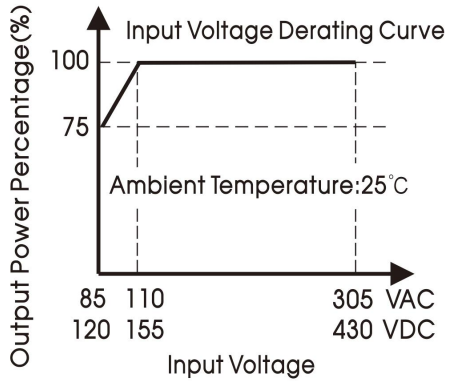
Product Characteristic Curve

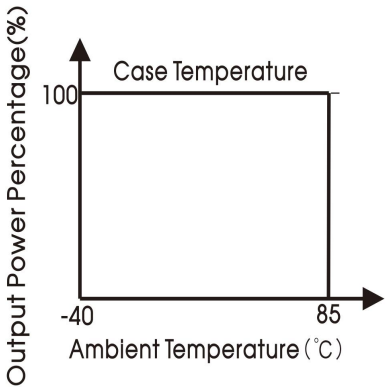
No aluminum plate for heat dissipation



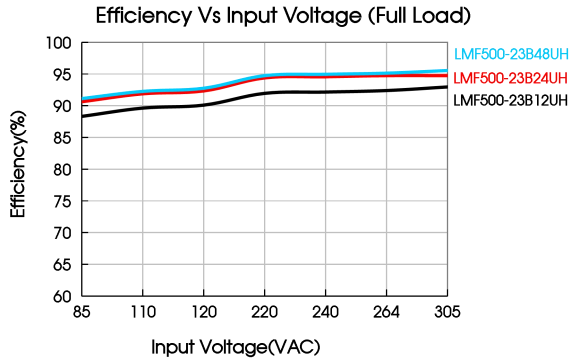
With aluminum plate for heat dissipation

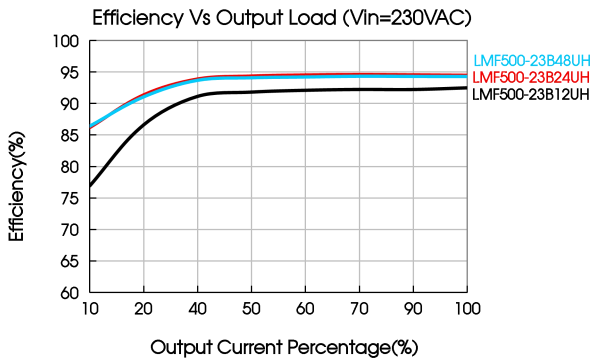






Note: 1. With an AC input voltage between 85 -110VAC and a DC input between 120 -155VDC the output power must be derated as per the temperature derating curves;
2.This product is suitable for applications using natural air cooling, for applications in closed environment please consult Mornsun FAE.

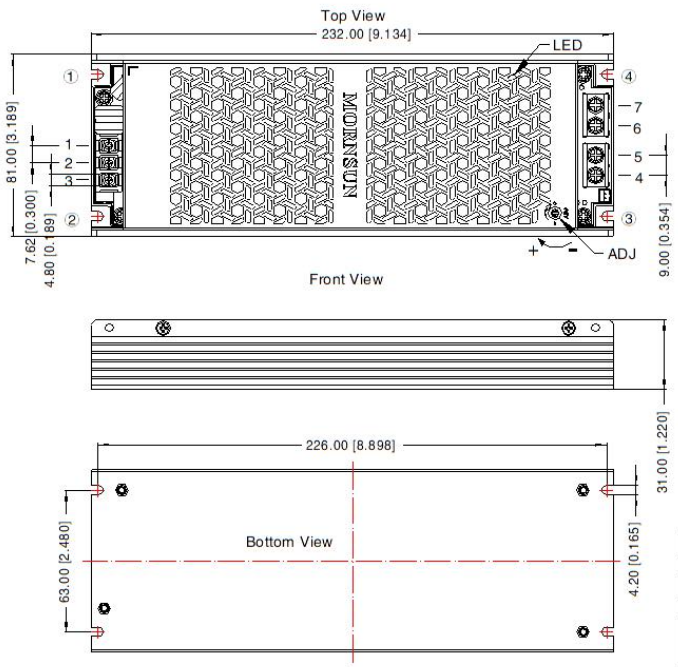




Dimensions and Recommended Layout

LMF500-23BxxUH

THIRD ANGLE PROJECTION



Pin-Out	
Pin	Mark
1	⏚
2	AC(N)
3	AC(L)
4	+Vo
5	+Vo
6	-Vo
7	-Vo

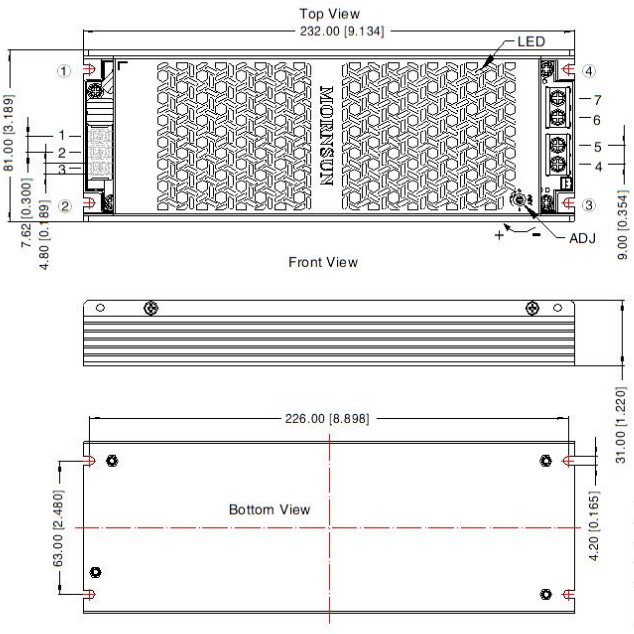
Connector wires range

Pro. No	Input connector	Output connector	Output connector (double wires) Pic.
5V	22-14AWG	10AWG	-Vo double wires
12V		14-12AWG	
24/28/30.5/36/48/55V		18-12AWG	+Vo double wires
Screw/torque	M3.0, Max 0.5N · m	M4, Max 0.9N · m	

Note:
Unit: mm[inch]
ADJ: Output adjustable resistor
General tolerances: ±1.00[±0.039]

LMF500-23BxxUH-C

THIRD ANGLE PROJECTION



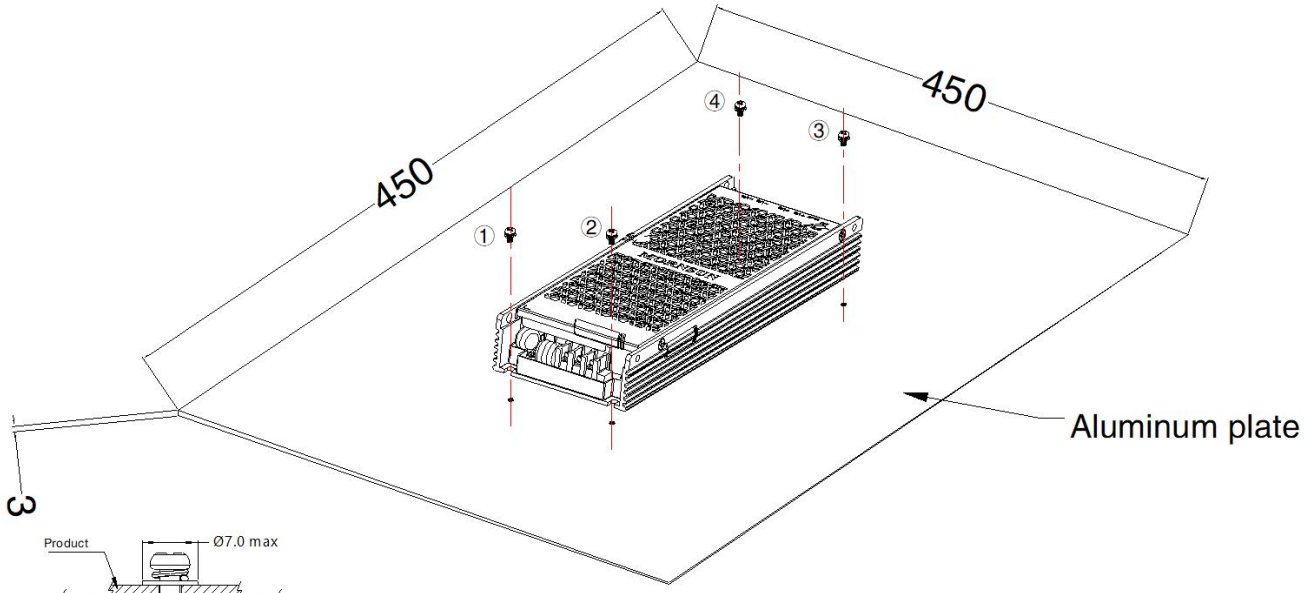
Pin-Out	
Pin	Mark
1	⏚
2	AC(N)
3	AC(L)
4	+Vo
5	+Vo
6	-Vo
7	-Vo

Connector wires range

Pro. No	Input connector	Output connector	Output connector (double wires) Pic.
5V	22-14AWG	10AWG	-Vo double wires
12V		14-12AWG	
24/28/30.5/36/48/55V		18-12AWG	+Vo double wires
Screw/torque	M3.0, Max 0.5N · m	M4, Max 0.9N · m	

Note:
Unit: mm[inch]
ADJ: Output adjustable resistor
General tolerances: ±1.00[±0.039]

Installation Diagram



Position	Screw Spec.	Torque(max)
① – ④	M3	0.4N • m

Note: 1. In order to meet the "Derating Curve", the product testing must be installed onto an aluminum plate. The size of the suggested aluminum plate is shown as above. And for optimizing thermal performance, it is necessary to apply thermal grease on the bottom of the product.
2. It is suggested to install the product with M3 combination screws, and the product must be firmly installed at the center of the aluminum plate.

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220297 ;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, 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, there will be audible noise generated when work at light load, but it does not affect product performance and reliability;
5. The room temperature derating of 5℃/1000m is needed for operating altitude greater than 2000m;
6. We can provide product customization service, please contact our technicians directly for specific information;
7. Products are related to laws and regulations: see "Features" and "EMC";
8. The out case needs to be connected to PE (⏚) of system when the terminal equipment in operating;
9. If product involves multi-brand materials and there are differences in color etc, please refer to the standards of each manufacturer;
10. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
11. 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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