



## FEATURES

- Universal 85 - 305VAC or 120 - 430VDC Input voltage
- Accepts AC or DC input (dual-use of same terminal)
- Operating temperature range: -30°C to +70°C
- Built-in active PFC function
- High I/O isolation test voltage up to 4000VAC
- Output short circuit, over-current, over-voltage, over-temperature protection
- Safety according to IEC/EN/UL62368, EN60335, GB4943
- Compact size with a low 1U profile
- LED indicator for power on
- Emissions meets CISPR32/EN55032 CLASS B
- Start-up delay time less than 5 seconds at -30°C
- Operating altitude up to 5000m

LMF200-23Bxx 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, built-in active PFC function, high efficiency and high reliability. These converters offer excellent EMC performance and meet IEC/EN61000-4, CISPR32/EN55032, IEC/EN/UL62368, EN60335, 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)	Output Voltage Adjustable Range(V)	Efficiency at 230VAC (%) Typ.	Max. Capacitive Load (μF)
UL/CE/CCC	LMF200-23B12	200.4	12V/16.7A	11.4 - 12.6	88.0	4000
	LMF200-23B15	201.0	15V/13.4A	14.25 - 15.75	88.0	3300
	LMF200-23B24	201.6	24V/8.4A	22.8 - 25.2	90.0	1500
	LMF200-23B48	201.6	48V/4.2A	45.6 - 50.4	89.0	470

Note: \*Use suffix "C" for terminal with protective cover and suffix "Q" for conformal coating.

## Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit	
Input Voltage Range	AC input		85	--	305	VAC	
	DC input		120	--	430	VDC	
Input Voltage Frequency			47	--	63	Hz	
Input Current	115VAC		--	2.5	3.0	A	
	230VAC		--	1.3	2.0		
Input Inrush Current	115VAC		Cold Start		--		
	230VAC		--	65	--		
Power Factor	115VAC		At full Load		--	--	
	230VAC		--	0.95	--		
Hot Plug			Unavailable				

## Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full Load Range	12V/15V/24V/48V	--	±1	--	%

# AC/DC 200W Enclosed Switching Power Supply

## LMF200-23Bxx, LMF200-23Bxx-C, LMF200-23Bxx-Q Series

# MORNSUN

Line Regulation	Rated Load	12V/15V/24V/48V	--	±0.5	--	
Load Regulation	230VAC, 0% - 100% load	12V/15V/24V/48V	--	±0.5	--	
Output Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	12V/15V/24V	--	150	--	mV
		48V	--	240	--	
Stand-by Power Consumption	Normal temperature, 230VAC		--	0.75	1.0	W
Temperature Coefficient	0-45°C		--	±0.03	--	%/°C
Minimum Load			0	--	--	%
Hold-up Time	Normal temperature, Full Load	115VAC	--	8	--	ms
		230VAC	--	8	--	
Short Circuit Protection	recover time <5s after the short circuit disappear.		Hiccup , continuous, self-recover			
Over-current Protection*			105%-200% Io, self-recover			
Over-voltage Protection	12V		≤ 16.2V (Output voltage turn off, re-power on for recover)			
	15V		≤ 21.8V (Output voltage turn off, re-power on for recover)			
	24V		≤ 32.4V (Output voltage turn off, re-power on for recover)			
	48V		≤ 60.0V (Output voltage turn off, re-power on for recover)			
Over-temperature Protection*	Over-temperature Protection Activation		--	--	85	°C
	Over-temperature Protection Deactivation		55	--	--	

Note: 1.\*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.  
 2.\*Over-current Protection: Test at rated output voltage, Io is rated output current load.  
 3.\*Over-temperature Protection needs to be tested under rated full load conditions.

## General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Isolation Test	Input - ⊕	2000	--	--	VAC	
	Input-output	4000	--	--		
	output - ⊕	500	--	--		
Insulation Resistance	Input - ⊕	100	--	--	MΩ	
	Input - output	100	--	--		
	output - ⊕	100	--	--		
Operating Temperature		-30	--	+70	°C	
Storage Temperature		-40	--	+85		
Operating Humidity	Non-condensing	20	--	90	%RH	
Storage Humidity		10	--	95		
Power Derating	Operating temperature derating	-30°C to +45°C	0	--	--	% / °C
		+45°C to +70°C	2.0	--	--	
	Input voltage derating	85VAC - 100VAC@50Hz	2.0	--	--	% / VAC
		85VAC - 100VAC@60Hz	1.67	--	--	
		100VAC - 305VAC	0	--	--	% / VDC
		120VDC - 140VDC	1.25	--	--	
140VDC - 430VDC	0	--	--			
Safety Standard	Meet IEC/EN/UL62368/EN60335/GB4943					
Safety Certification	IEC/EN/UL62368/GB4943					
Safety Class	CLASS I					
MTBF	MIL-HDBK-217F@25°C	>250,000 h				

Mechanical Specifications

Case Material	Metal (AL1100)
Dimensions	179.00 x 99.00 x 30.00 mm
Weight	475.0g (Typ.)
Cooling Method	Free air convection

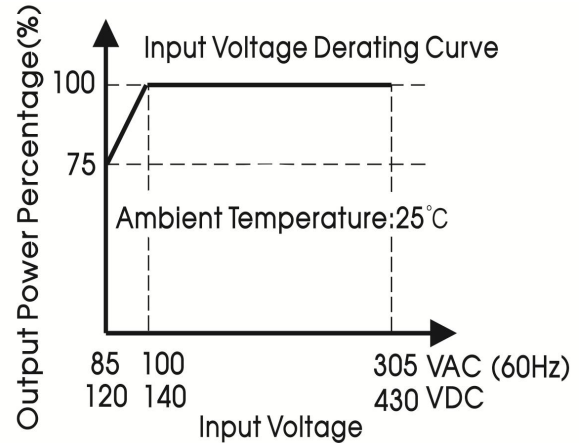
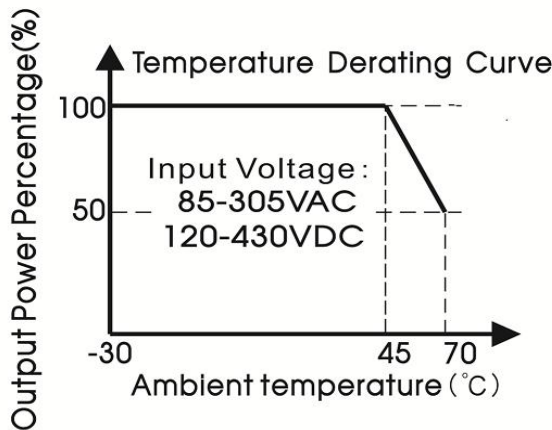
Electromagnetic Compatibility (EMC)\*

Emissions(EMI)*	CE	CISPR32/EN55032	CLASS B	
	RE	CISPR32/EN55032	CLASS B	
	Harmonic current	IEC/EN61000-3-2	CLASS A	
	Voltage Flicker	IEC/EN61000-3-3		
Immunity(EMS)*	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	±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
	DIP	IEC/EN61000-4-11	0%, 70%	perf. Criteria B

Note: 1.\*One magnetic bead(nickel-zinc ferrite)should be coupled with the output load line during CE/RE testing.

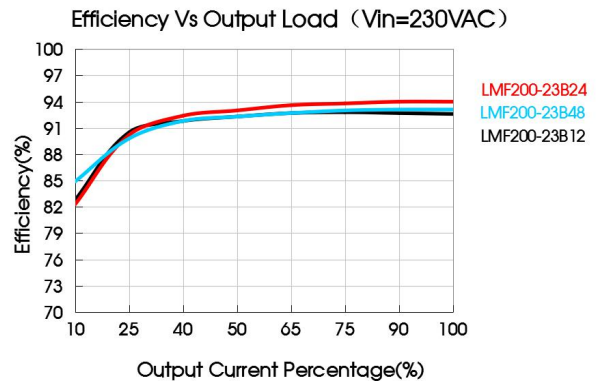
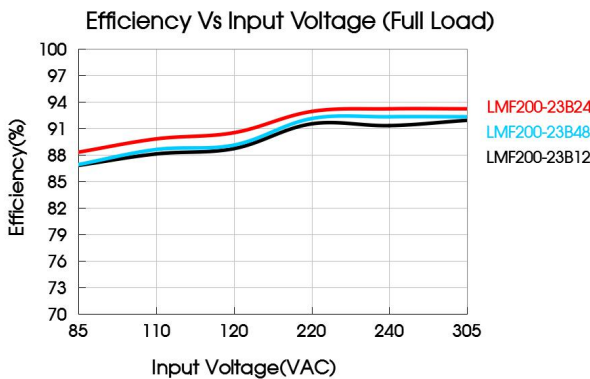
2.\*The power supply is considered a component as part of system, all EMC items are tested on a metal plate (LxWxH, 450mmx450mmx3mm). Power supply should be combined with final equipment for EMC confirmation.

Product Characteristic Curve



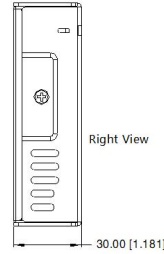
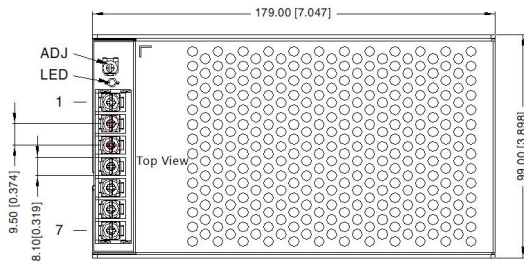
Note: ①With an input voltage between 85-100VAC and a DC input between 120-140VDC, the output power must be derated as per the temperature derating curves;

②This product is suitable for applications using natural air cooling; for applications in closed environment please consult Mornsun FAE.



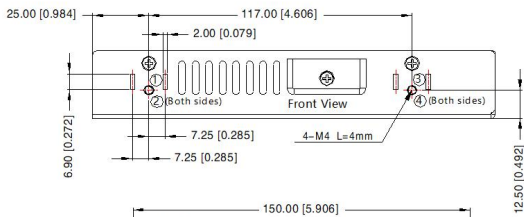
Dimensions and Recommended Layout

LMF200-23Bxx, LMF200-23Bxx-Q Series



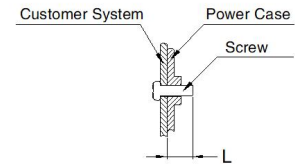
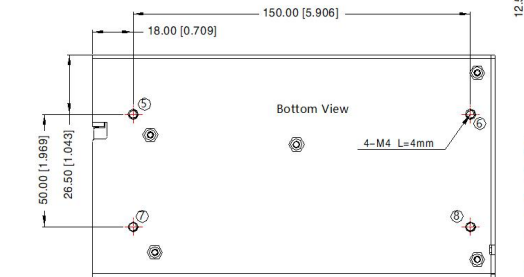
THIRD ANGLE PROJECTION

Pin-Out	
Pin	Function
1	+Vo
2	+Vo
3	-Vo
4	-Vo
5	⊕
6	AC(N)/DC(-)
7	AC(L)/DC(+)



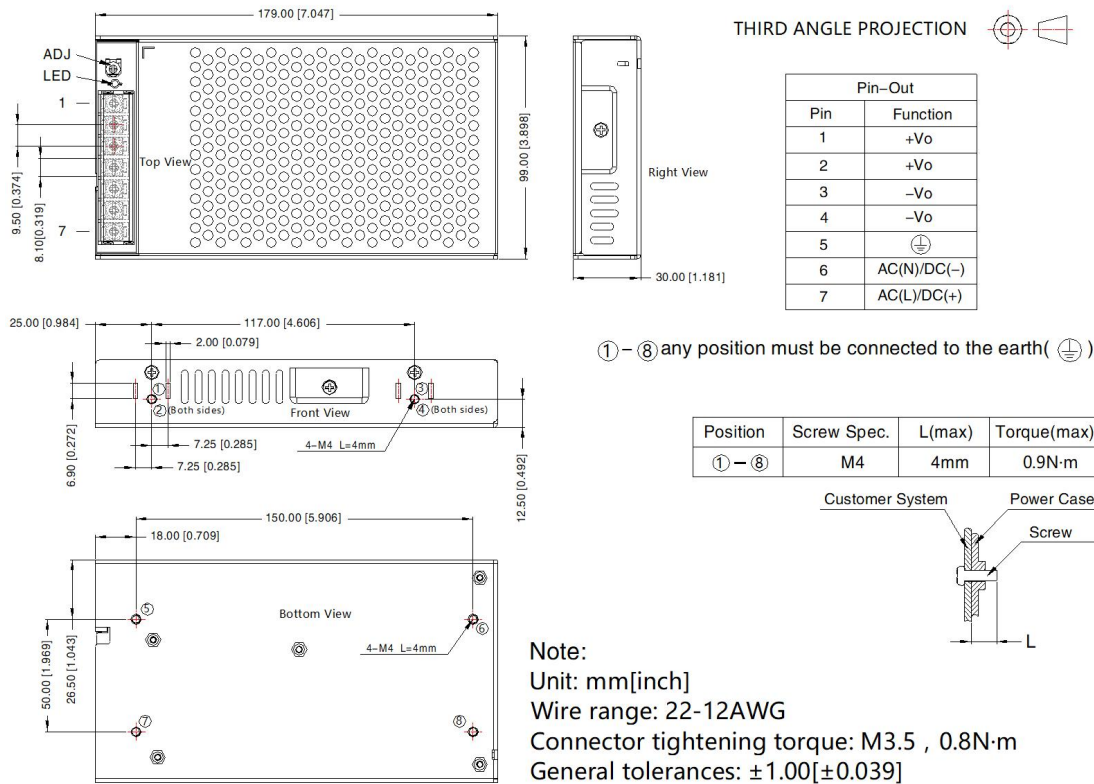
①-⑧ any position must be connected to the earth(⊕)

Position	Screw Spec.	L(max)	Torque(max)
①-⑧	M4	4mm	0.9N·m



Note:  
 Unit: mm[inch]  
 Wire range: 22-12AWG  
 Connector tightening torque: M3.5 , 0.8N·m  
 General tolerances: ±1.00[±0.039]

LMF200-23Bxx-C Series



Note:

- For additional information on Product Packaging please refer to [www.mornsun-power.com](http://www.mornsun-power.com). Packaging bag number: 58220136;
- 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 ambient 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;
- 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 final equipment. All EMC tests should be confirmed with the final equipment. Please consult our FAE for EMC test operation instructions.

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# Betriebsanleitung und Sicherheitsinformationen

## Vor Inbetriebnahme lesen!

Alle Modelle dürfen nur von qualifiziertem Fachpersonal (nach einschlägigen Normen, z. B. IEC 60364, VDE0100, VDE0105) installiert werden! Bei Funktionsstörungen oder Beschädigungen ist die Versorgungsspannung sofort zu unterbrechen und das Gerät zur Überprüfung an den Hersteller zu senden. Das Gerät ist wartungsfrei und enthält keine Servicebauteile. Interne Sicherungen (sofern vorhanden) lösen im Fehlerfall irreversibel aus

## WARNUNG

Die Missachtung der in dieser Betriebsanleitung und den Spezifikationen enthaltenen Informationen kann einen elektrischen Schlag, Brände, schwere Unfälle und Schäden an Personen, Haus- und Nutztieren und Gütern zur Folge haben!

- Bei diesem Schaltnetzteil handelt es sich um ein Einbauteil, das in einen Schaltschrank oder ein anderes geeignetes Gehäuse einzubauen ist
- Installations- und Wartungsarbeiten dürfen nur durch eine qualifizierte Fachkraft erfolgen
- Das Berühren von Bauteilen oder freiliegenden Anschlüssen kann einen elektrischen Schlag verursachen! Vor Installations- und Wartungsarbeiten ist die Versorgungsspannung zu unterbrechen, gegen unbeabsichtigtes Wiedereinschalten zu sichern und die Wirksamkeit zu prüfen
- Aufgrund frei zugänglicher Anschlüsse ist dieses Netzteil im Betriebszustand gegen versehentliches Berühren wirkungsvoll zu sichern. Anschlussklemmen sind mit Berührungsschutz zu versehen. Im Innern herrschen gefährliche Spannungen. Bei Vorhandensein eines Gehäuses darf dieses nicht geöffnet werden
- Die auf dem Typenschild angegebenen Spezifikationen sind einzuhalten. Achten Sie auf die korrekte Spannung und Polarität, sowie die Eignung des Netzteils für die vorgesehene Verwendung. Die angeschlossene Last darf die Nennwerte für Ausgangsstrom und -leistung nicht überschreiten. Einschlägige Normen und Unfallverhütungsvorschriften (UVV) zu Einbau, Anschluss und Betrieb sind zu beachten. Bei Vorhandensein eines Erdanschlusses (FG) muss dieser geerdet sein
- Bei Funktionsstörungen oder Beschädigungen umgehend von der Versorgungsspannung trennen und gegen weitere Verwendung sichern
- Das Netzteil darf nur in trockenen Innenräumen verwendet werden, nicht abgedeckt oder direkter Sonneneinstrahlung ausgesetzt werden. Nicht in der Nähe von Wärmequellen betreiben. Die zulässige Umgebungstemperatur ist dem Datenblatt oder den Spezifikationen zu entnehmen
- Dieses Schaltnetzteil ist nach den gültigen EMV-Richtlinien und -Normen entwickelt worden. Es ist als Komponente bewertet und für den Einbau in ein Endgerät entwickelt. Nach dem Einbau müssen die elektromagnetischen Eigenschaften des Endgeräts erneut überprüft werden

## Bestimmungsgemäßer Gebrauch

Dieses Schaltnetzteil ist als Stromversorgung von Niederspannungsverbrauchern entwickelt worden und erfüllt die Anforderungen der entsprechenden europäischen Richtlinien. Das Netzteil ist als Komponente für den Einbau in ein Endgerät oder eine elektrische Anlage bestimmt und ist mit einem geeigneten Gehäuse zu versehen

## Hinweis

Durch Kombination oder Zusammenstellung von Betriebsmitteln mit CE-Kennzeichnung entsteht nicht zwangsläufig ein konformes System. Eine erneute Bewertung der Einhaltung der vorgeschriebenen Richtlinien durch den Hersteller des Gesamtsystems ist vorzunehmen



## Entsorgung

Dieses Gerät darf nicht im Hausmüll entsorgt werden. Entsorgen Sie es über eine Sammelstelle für Elektronik-Altgeräte. Weitere Informationen sowie die nächstgelegene Abgabestelle finden Sie im Internet unter [www.ElektroG.de](http://www.ElektroG.de) – WEEE-Reg.-Nr.: DE 26967630

# User Manual and Safety Information

## Read Before Use!

All models must be installed by a qualified technician only! Adhere to relevant industry standards (e.g. IEC 60364, VDE0100, VDE0105). Disconnect from mains supply in case of malfunction or damage and send the unit to the manufacturer for inspection. The unit is maintenance-free and does not contain serviceable parts. In fault condition internal fuses (if existing) trip off irreversibly

## WARNING

Not adhering to the instructions contained in this manual and the product specifications might cause electric shock, fires, severe accidents, injuries, and damages to persons, animals and property!

- This switching power supply is classified as a component and is to be installed into a control cabinet or an appropriate enclosure
- Installation and maintenance is to be performed by a qualified technician only
- Contact with parts or exposed connections can cause an electric shock! Prior to installation or maintenance disconnect from mains power supply and secure effectively against accidental re-powering. Check effectiveness of measure
- In operating condition an effective protection against accidental contact to live parts is required. Connecting terminal must be outfitted with touch protection. Dangerous voltages occur on the inside of the unit. If existing, the housing must not be opened
- Adhere to the specifications on the nameplate. Check for correct voltage and polarity, as well as the suitability of the power supply for the intended use. Load must not exceed nominal values. Relevant industry standards and accident-prevention regulations for installation, connection and operation must be observed. Ground (FG), if any exists, must be connected to earth ground
- Any defective or faulty unit must not be operated and is to be disconnected from mains power immediately and secured against further use
- For dry indoor environments only. Keep dry and out of direct sunlight, do not cover. Do not operate near heat sources. Retrieve information on permissible ambient conditions from specification or datasheet
- This power supply is in accordance with valid EMC regulations and standards. Since being classified as a component for integration into a system, the electromagnetic characteristics of the system are to be re-evaluated

## Intended Use

This switching power supply is intended for powering low voltage consuming devices and is in conformance with relevant European Directives. The unit is classified as a component for integration into a device or system and is to be installed into a control cabinet or an appropriate enclosure

## Notice

Combination or assembly of different units bearing a CE mark does not necessarily form a compliant system. Re-evaluation of conformity to the mandatory directives is to be performed by the manufacturer of the completed system



## Disposal

This device must not be disposed of in domestic waste. Always dispose of electronic appliances at the designated collection facilities. For more information refer to [www.ElektroG.de](http://www.ElektroG.de) – WEEE-Reg.-No.: DE 26967630