

FEATURES

- Universal 176 - 305VAC/240 - 430VDC input voltage
- Accepts AC or DC input (dual-use of same terminal)
- Operating ambient temperature range: - 40°C to +85°C
- High I/O isolation test voltage up to 4000VAC
- Compact size, high power density
- High efficiency, high reliability
- Output short circuit, over-current, over-voltage, over-temperature protection
- OVC III (designed to meet EN62477)
- 5000m altitude application

LM200-22BxxR2 series is the ultra-small Mornsun second-generation new industrial standard enclosed power supply, which has innovated the industrial power supply standard from the aspect of dimension, performance, technology and structure. 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, UL/EN/IEC/BS EN62368, EN/IEC60335, EN651558, EN62477, 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 ADJ (V)	Efficiency at 230VAC (%) Typ.	Max. Capacitive Load (uF)
EN/CQC (Pending)	LM200-22B12R2	204	12V/17A	11.4-13.8	89	4000
	LM200-22B15R2	210	15V/14A	14.25-17.25	89	3300
	LM200-22B24R2	211.2	24V/8.8A	22.8-27.6	91	1500
	LM200-22B36R2	212.4	36V/5.9A	34.2-41.4	91.5	1500
	LM200-22B48R2	211.2	48V/4.4A	43.2-52.8	92	470
	LM200-22B54R2	210.6	54V/3.9A	51.3-56.7	92	330

Note: *Use suffix "C" for terminal with protective cover, suffix "Q" for bottom conformal coating and "QQ" for both sides conformal coating.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range (by switch)	AC input		176	--	305	VAC
	DC input		240	--	430	VDC
Input Voltage Frequency			47	--	63	Hz
Input Current	230VAC		--	--	3	A
Inrush Current	230VAC	Cold start	--	60	80	
Leakage Current	277VAC		<0.75mA			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range	12V/15V	--	±1.5	--	%
		24V/36V/48V/54V	--	±1.0	--	
Line Regulation	Rated load		--	±0.5	--	
Load Regulation	0% - 100% load	12V/15V	--	±1.0	--	
		24V/36V/48V/54V	--	±0.5	--	

Output Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	12V/15V/24V	--	150	--	mV
		36V/48V/54V	--	200	--	
Temperature Coefficient			--	±0.03	--	%/°C
Minimum Load			0	--	--	%
Stand-by Power Consumption	230VAC, 25°C		--	--	0.75	W
Hold-up Time	230VAC		16	--	--	ms
Short Circuit Protection	Recovery time <5s after the short circuit disappear.	Hiccup, continuous, self-recover				
Over-current Protection		120% - 250% Io, hiccup, self-recover after fault elimination				
Over-voltage Protection	12V	≤16.2VDC (hiccup or clamp, self-recover after fault elimination)				
	15V	≤21VDC (hiccup or clamp, self-recover after fault elimination)				
	24V	≤33.6VDC (hiccup or clamp, self-recover after fault elimination)				
	36V	≤46.8VDC (hiccup or clamp, self-recover after fault elimination)				
	48V	≤60VDC (hiccup or clamp, self-recover after fault elimination)				
	54V	≤63VDC (hiccup or clamp, self-recover after fault elimination)				
Over-temperature Protection		Output voltage turn off, self-recover after fault elimination				

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

General Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Isolation	Input - ⊕	Electric strength test for 1min., leakage current <5mA	2000	--	--	VAC
	Input - output		4000	--	--	
	Output - ⊕		500	--	--	
Insulation Resistance	Input - ⊕	Testing voltage at 500VDC	100	--	--	MΩ
	Input - output		100	--	--	
	Output - ⊕		100	--	--	
Operating Temperature		-40	--	+85	°C	
Storage Temperature		-40	--	+85		
Storage Humidity	Non-condensing	10	--	95	%RH	
Operating Humidity		20	--	90		
Power Derating	+50°C to +70°C	2.5	--	--	% / °C	
	+70°C to +85°C	1.33	--	--		
Safety Standard	Design refer to IEC/EN/UL62368-1, EN/IEC60335-1, EN61558-1/62477-1, GB4943.1					
Safety Class	CLASS I					
MTBF	MIL-HDBK-217F@25°C > 300,000 h					

Mechanical Specifications

Case Material	Metal (AL5052, SGCC)	
Dimensions	12/15V	159.00 x 97.00 x 30.00mm
	24/36/48/54V	129.00 x 97.00 x 30.00mm
Weight	12/15V	410g (Typ.)
	24/36/48/54V	350g (Typ.)
Cooling Method	Free air convection	

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS A	
	RE	CISPR32/EN55032	CLASS A	
Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV/Air ±8KV	perf. Criteria A
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4	±4KV	perf. Criteria A
	Surge	IEC/EN61000-4-5	line to line ±2KV/line to PE ±4KV	perf. Criteria A
	CS	IEC/EN61000-4-6	10Vr.m.s	perf. Criteria A
	PFMF	IEC/EN61000-4-8	30A/m	perf. Criteria A
	Voltage dip, short interruption and voltage variation	IEC/EN61000-4-11	0%, 70%	perf. Criteria B

Remark:

1. This power supply does not meet the harmonic current requirements specified in EN61000-3-2.

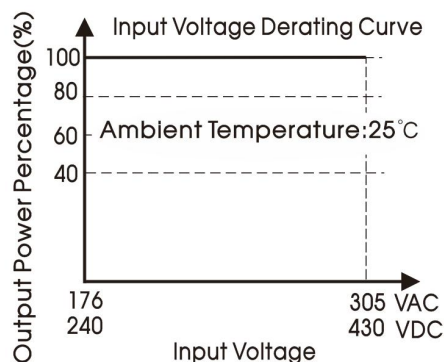
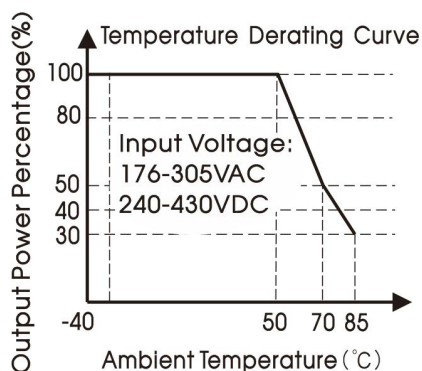
Please do not use this power supply under the following conditions:

- 1) The terminal equipment is used in the European Union.
- 2) Supporting terminals are connected to a public power grid with 220VAC or a higher voltage that comply with the requirements of EN61000-3-2.
- 3) The power supply is installed in terminal equipment with average or continuous input power greater than 75W.
- 4) The power supply belong to a part of lighting system.

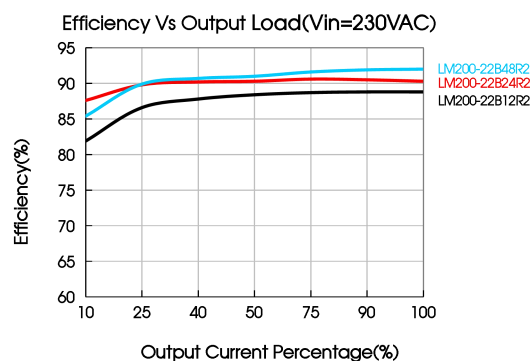
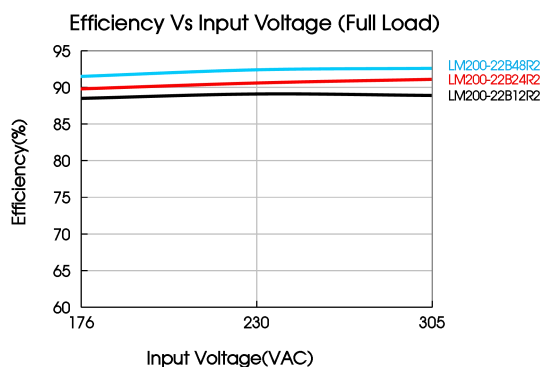
Exception: The power supply used in the following terminal equipment does not need to meet EN61000-3-2.

- 1) Professional equipment with a total rated input power greater than 1000W.
- 2) Symmetrically controlled heating element with a rated power less than or equal to 200W.

Product Characteristic Curve



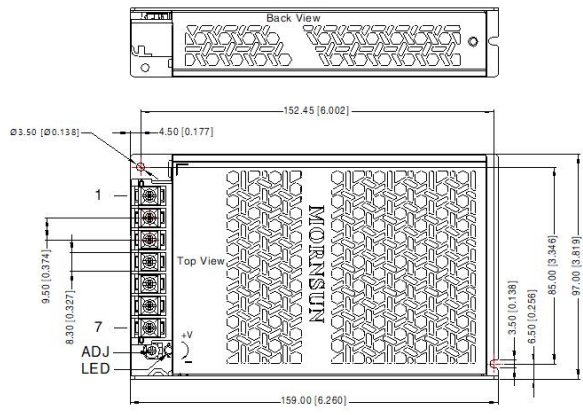
Note: ① This product is suitable for applications using natural air cooling; for applications in closed environment please consult factory or one of our FAE.



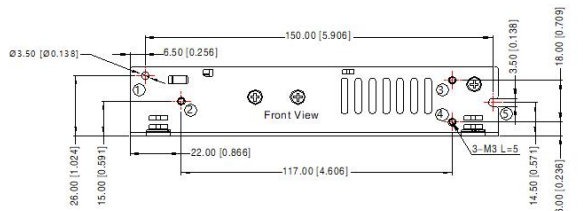
12/15V Dimensions and Recommended Layout

LM200-22B12/15R2 (-Q、-QQ) Series

THIRD ANGLE PROJECTION 

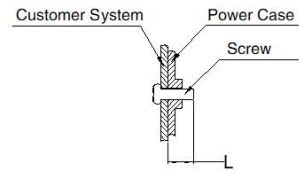
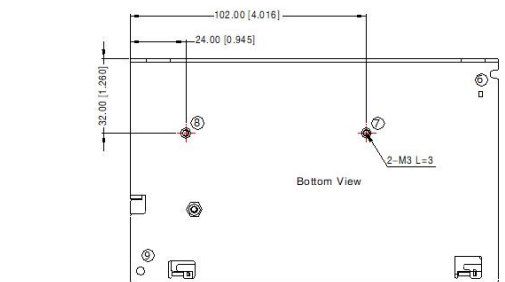


Pin-Out	
Pin	Mark
1	AC(L)
2	AC(N)
3	\oplus
4	-Vo
5	-Vo
6	+Vo
7	+Vo




① - ⑨ any position must be connected to the earth(\oplus)

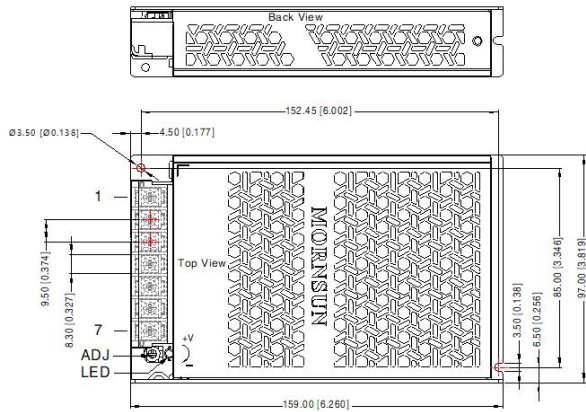
Position	Screw Spec.	L(max)	Torque(max)
② - ④	M3	5mm	0.4N · m
⑦ - ⑧	M3	3mm	0.4N · m




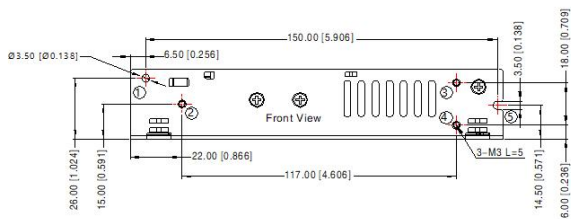
Note:
 Unit: mm[inch]
 ADJ: Output adjustable resistor
 Wire range: Input: 20-10AWG(16-10AWG for pin3)
 Output: 12V, 15V: 12-10AWG
 Connector tightening torque: M3.5, 0.8N · m max.
 General tolerances: $\pm 1.00[\pm 0.039]$

LM200-22B12/15R2 (-CQ、-CQQ) Series

THIRD ANGLE PROJECTION 

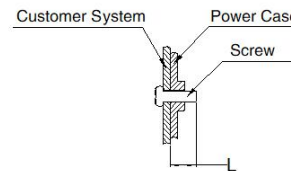
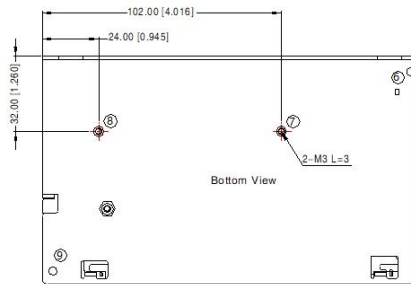


Pin-Out	
Pin	Mark
1	AC(L)
2	AC(N)
3	
4	-Vo
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6	+Vo
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① - ⑨ any position must be connected to the earth (⊥)

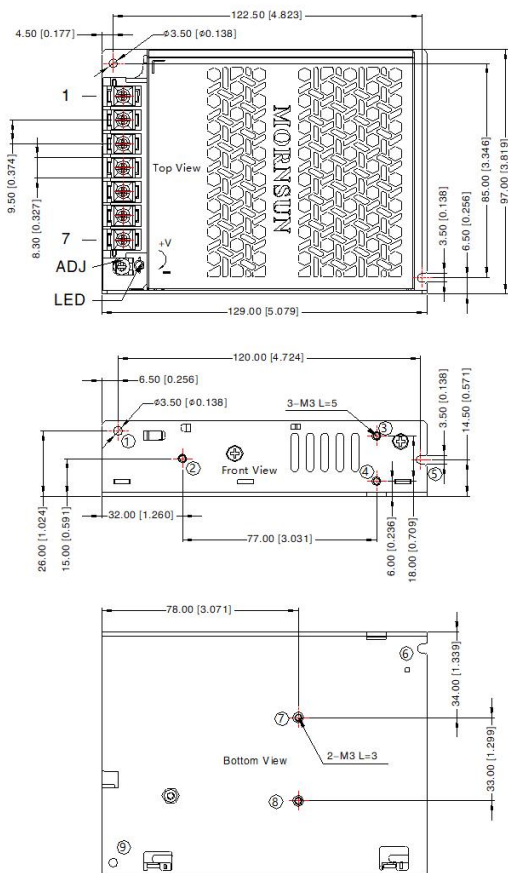
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② - ④	M3	5mm	0.4N · m
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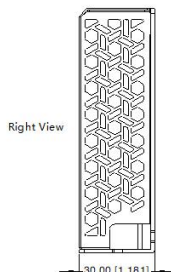
Note:
 Unit: mm[inch]
 ADJ: Output adjustable resistor
 Wire range: Input: 20-10AWG(16-10AWG for pin3)
 Output: 12V, 15V: 12-10AWG
 Connector tightening torque: M3.5, 0.8N · m max.
 General tolerances: $\pm 1.00[\pm 0.039]$

24/36/48/54V Dimensions and Recommended Layout

LM200-22B24/36/48/54R2 (-Q、-QQ) Series



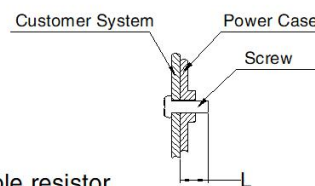
THIRD ANGLE PROJECTION



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

① - ⑨ any position must be connected to the earth()

Position	Screw Spec.	L(max)	Torque(max)
② - ④	M3	5mm	0.4N · m
⑦ - ⑧	M3	3mm	0.4N · m



Note:

Unit: mm[inch]

ADJ: Output adjustable resistor

Wire range: Input: 20-10AWG(16-10AWG for pin3)

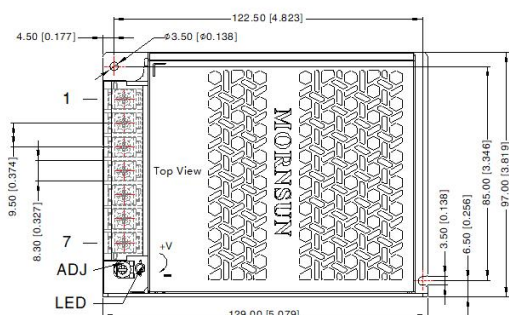
Output: 24V, 36V: 16-10AWG

48V, 54V: 20-10AWG

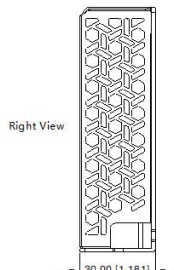
Connector tightening torque: M3.5, 0.8N · m max.

General tolerances: ± 1.00[± 0.039]

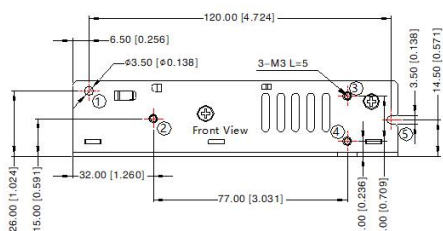
LM200-22B24/36/48/54R2 (-CQ、-CQQ) Series



THIRD ANGLE PROJECTION

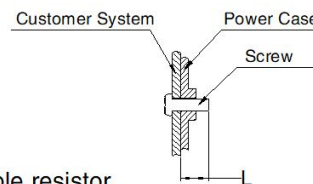
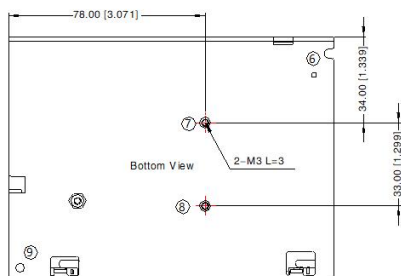


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Note:

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48V, 54V: 20-10AWG

Connector tightening torque: M3.5, 0.8N · m max.

General tolerances: ± 1.00[± 0.039]

Note:

- For additional information on Product Packaging please refer to www.mornsun-power.com. 12/15V Packaging bag number: 58220329; 24/36/48/54V Packaging bag number: 58220270;
- 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;
- The ambient temperature derating of $5^{\circ}\text{C}/1000\text{m}$ 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 increase;
- 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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