AC/DC 120W DIN-Rail Power Supply

LI120-23BxxR3, LI120-23BxxR3-Q Series

MORNSUN®

UK CA CE Report RoHS

BS EN 62368-1 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℃
- High I/O isolation test voltage up to 4000VAC
- Low ripple & noise
- Output short circuit, over-current, over-voltage, over-temperature protection
- DIN rail TS-35/7.5 or 15 mountable
- 3 years warranty
- Suitable for small chassis and narrow space installation
- Safety according to UL61010, IEC/UL62368, EN60335, EN61558, GB4943

LI120-23BxxR3 is Mornsun AC-DC converter series featuring a cost-effective, energy efficient green power supply solution for standard DIN-rail mounting. The products offer a high level of stability and immunity to noise for industrial control equipment, machinery, and other industrial equipment in a variety of harsh environments. These light weight AC-DC converters have an extremely compact design and the standard rail installation for space saving. With good EMC performance, compliant with international UL61010, IEC/EN/UL/BS EN62368, EN60335, EN61558, GB4943 standards for EMC and safety.

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)
EN	LI120-23B24R3	120	24V/5A	24-28V	90	4000
	LI120-23B48R3		48V/2.5A	48-53V	91.5	1000

Note: *Use 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		--	--	2.7	A
	230VAC		--	--	1.6	
Inrush Current	115VAC	Cold start	--	35	--	
	230VAC		--	65	--	
Leakage Current	277VAC		<1mA			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range		--	±1.0	--	%
Line Regulation	Rated load		--	±0.5	--	
Load Regulation	0% - 100% load		--	±1.0	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	24V	--	120	--	
		48V	--	150	--	
Temperature Coefficient			--	±0.03	--	%/℃

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Minimum Load		0	--	--	%
Stand-by Power Consumption	115VAC	--	--	--	W
	230VAC	--	1.0	1.5	
Hold-up Time	115VAC	--	8	--	ms
	230VAC	--	16	--	
Short Circuit Protection	Recovery time <5s after the short circuit disappear.	Constant current mode, continuous, self-recovery			
Over-current Protection	230VAC, rated load	>105%Io, self-recovery			
Over-voltage Protection	24V	≤33VDC (Hiccup, self-recovery)			
	48V	≤63VDC (Hiccup, self-recovery)			
Over-temperature Protection	230VAC, rated load, 60℃	Output voltage turn off, self-recovery after the temperature drops			

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 - ⏚	Electric strength test for 1min., leakage current <10mA			2000	--	--	VAC
	Input - output				4000	--	--	
	Output - ⏚				500	--	--	
Insulation Resistance	Input - ⏚	At 500VDC			50	--	--	MΩ
	Input - output				50	--	--	
	Output - ⏚				50	--	--	
Operating Temperature					-40	--	+85	℃
Storage Temperature					-40	--	+85	
Operating Humidity		Non-condensing			10	--	95	%RH
Storage Humidity					20	--	95	
Switching Frequency					--	150	--	kHz
Power Derating		Operating temperature derating	-40℃ to -30℃		5	--	--	%/℃
			+45℃ to +85℃	115VAC	2.15	--	--	
			+50℃ to +85℃	230VAC	2.5	--	--	
		Input voltage derating	85VAC - 110VAC		0.8	--	--	%/VAC
			277VAC - 305VAC		0.71	--	--	
Safety Standard					EN62368-1, BS EN62368-1 (Report) Design refer to UL61010-1, EN60335-1, GB4943.1, IEC/UL62368-1, EN61558-1			
Safety Class					CLASS I			
MTBF		MIL-HDBK-217F@25℃			≥300,000 h			

Mechanical Specifications

Case Material	Metal (AL1100, SGCC)
Dimensions	125.0mm x 87.5mm x 32.0mm
Weight	400g (Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032 CLASS B
	RE	CISPR32/EN55032 CLASS B
	Harmonic current	IEC/EN61000-3-2 CLASS A

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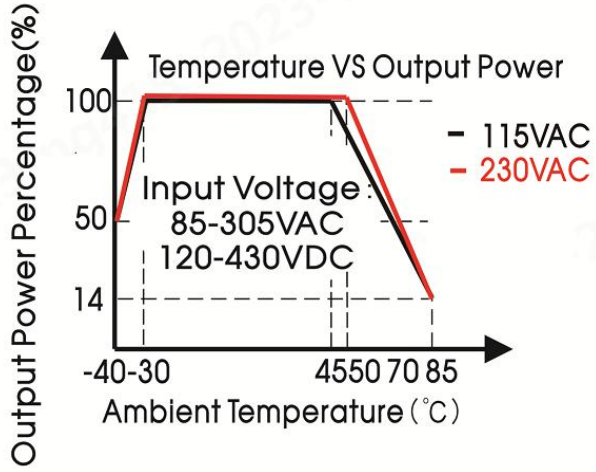
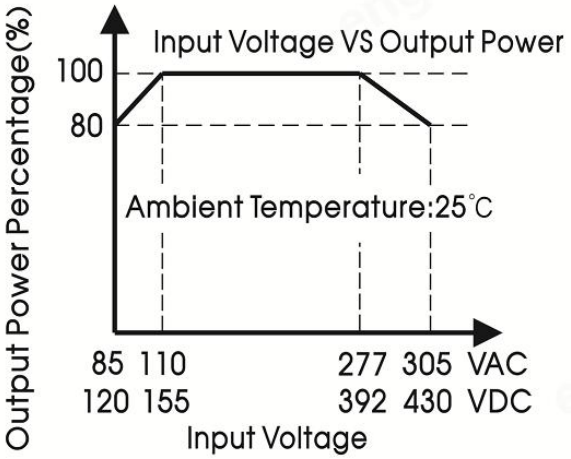
Immunity	ESD	IEC/EN 61000-4-2 Contact ±6KV/Air ±8KV	perf. Criteria A
	RS	IEC/EN 61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN 61000-4-4 ±2KV	perf. Criteria A
	Surge	IEC/EN 61000-4-5 line to line ±2KV/line to ground ±4KV	perf. Criteria B
	CS	IEC/EN61000-4-6 10 Vr.m.s	perf. Criteria A
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11 0%, 70%	perf. Criteria B

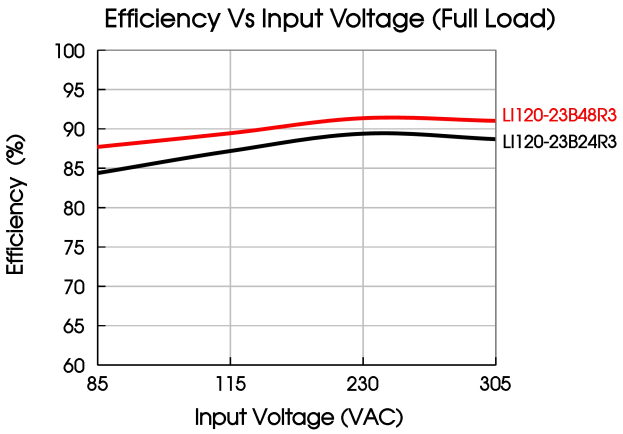
Product Characteristic Curve

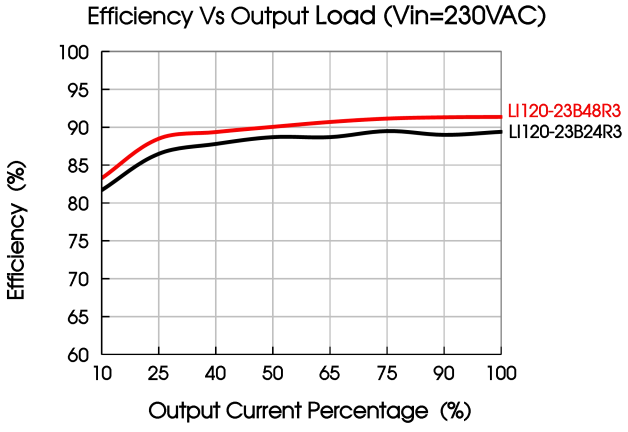




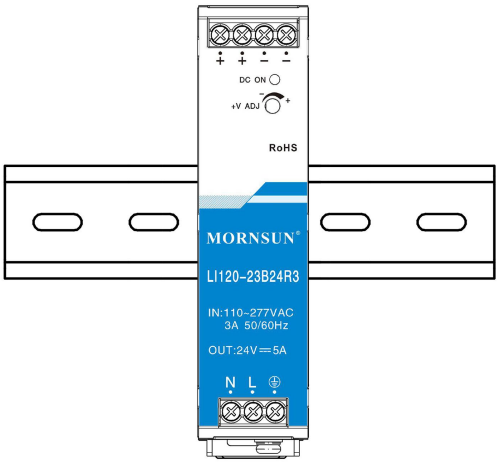
Note: 1. With an AC input voltage between 85 - 110VAC/277 - 305VAC and a DC input between 120 - 155VDC/392 - 430VDC the output power must be derated as per the temperature derating curves;

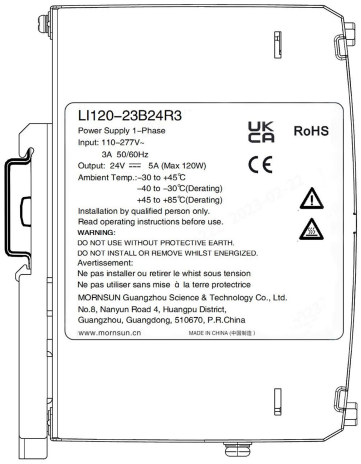
2. This product is suitable for applications using natural air cooling; for applications in closed environment please consult Mornsun FAE.





Installation Diagram





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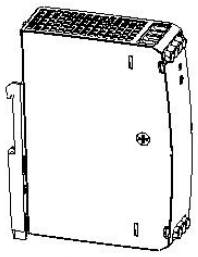
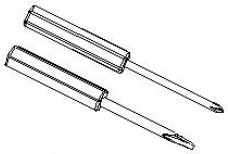
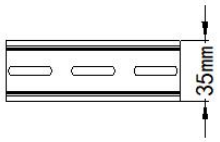
Bill Of Material		
1	Product	1 PCS
2	Phillips screwdriver Slotted screwdriver	1 PCS
3	TS35/7.5 or TS35/15	1 PCS
4	26–10AWG wires	/ PCS
	All above is only for reference, the actual wiring diameter and locking torque refer to the appearance size diagram	



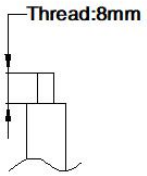
Product



Phillips screwdriver
Slotted screwdriver
Diameter of the cutting tools: 3mm



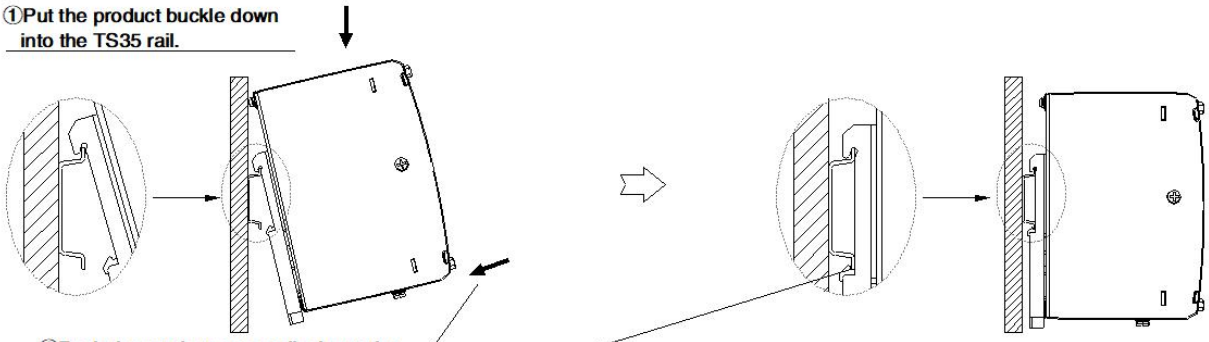
TS35/7.5 or TS35/15



26–10AWG wires

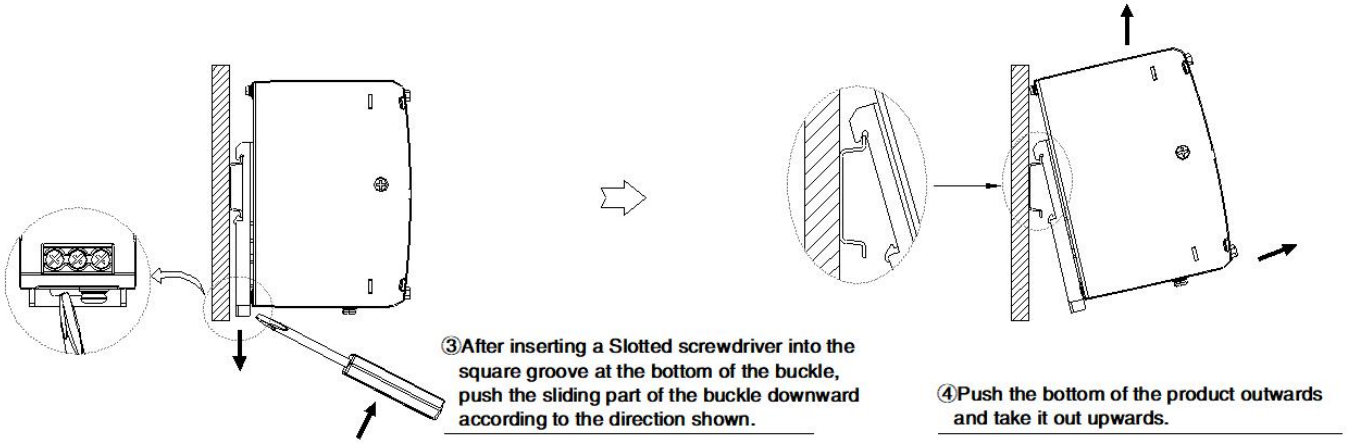
Installation steps ①–②

①Put the product buckle down into the TS35 rail.



②Push the product perpendicular to the TS35 rail until hear the sound of the clip snapping into the rail.

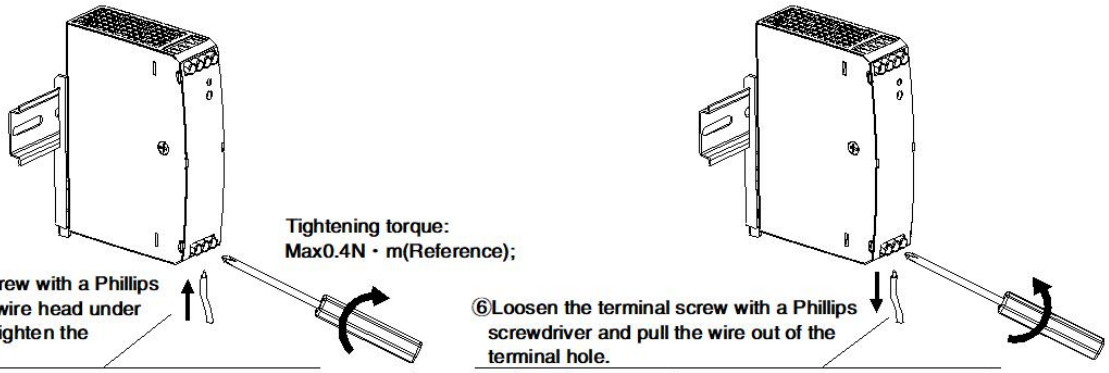
Disassembly steps ③–④



③After inserting a Slotted screwdriver into the square groove at the bottom of the buckle, push the sliding part of the buckle downward according to the direction shown.

④Push the bottom of the product outwards and take it out upwards.

Connecting/Disconnecting Steps ⑤–⑥



Tightening torque:
Max0.4N · m(Reference);

⑤Loosen the terminal screw with a Phillips screwdriver, insert the wire head under the terminal, and then tighten the terminal screw.

⑥Loosen the terminal screw with a Phillips screwdriver and pull the wire out of the terminal hole.

Note: Keep the following installation clearances: 20mm on top, 20mm on the bottom, 5mm on the left and right sides are recommended when the device is loaded permanently with more than 50% of the rated power. Increase this clearance to 15mm in case the adjacent device is a heat source (e.g. another power supply).

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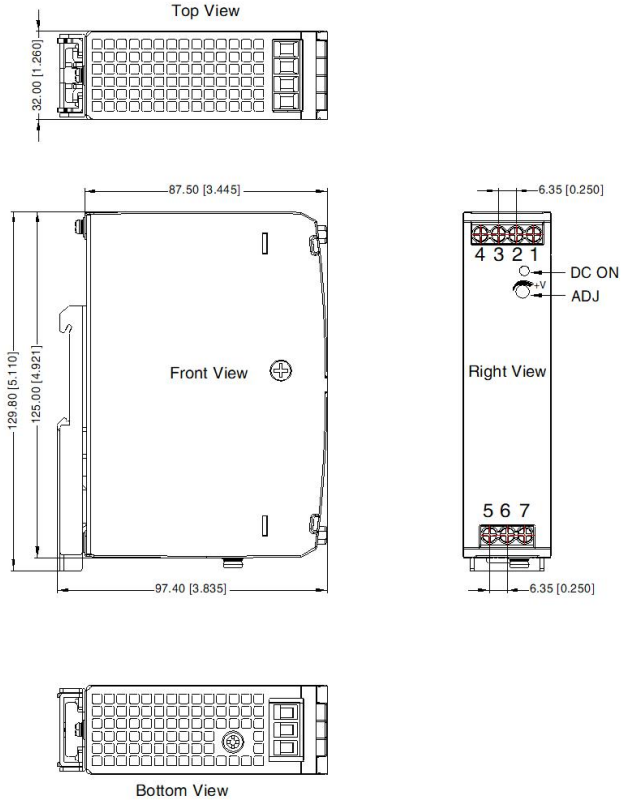
Dimensions and Recommended Layout



THIRD ANGLE PROJECTION

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

Note:
Unit: mm[inch]
ADJ: Output adjustable resistor
Wire range: 26–10 AWG
Tightening torque: Max 0.79N・m
Mounting rail: TS35, rail needs to connect safety ground
General tolerances: ± 1.00[± 0.039]

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220214;
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. The room temperature derating of 5℃/1000m is needed for operating altitude greater than 2000m;
4. All index testing methods in this datasheet are based on our company corporate standards;
5. 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;
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. The output voltage can be adjusted by the ADJ, clockwise to increase;
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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