AC/DC 150W DIN-Rail Power Supply

LI150-20B24R2S

MORNSUN®

RoHS

FEATURES

- Universal 90 - 264VAC or 127 - 370VDC Input voltage
- Accepts AC or DC input (dual-use of same terminal)
- Operating ambient temperature range: -20℃ to +60℃
- High I/O isolation test voltage up to 4000VAC
- Low ripple & noise, high efficiency
- Output short circuit, over-current, over-voltage, over-temperature protection
- DIN rail TS-35/7.5 or 15 mountable
- Ultra slim design: suitable for small chassis and narrow space installation
- Design refer to UL508, UL61010, EN/BS EN62368

LI150-20B24R2S is Mornsun AC-DC converter 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, design refer to UL61010, UL508, EN/BS EN62368 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)
/	LI150-20B24R2S	156	24V/6.5A	24-28	88	1200

Note: *Use suffix "QQ" for both sides conformal coating;
**The actual adjustment range may extend outside the values stated, care should be exercised to ensure that the output voltage and power levels remain within the published maximum values.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	Rated input (Certified voltage)		170	--	240	VAC
	AC input		90	--	264	
	DC input		127	--	370	VDC
Input Voltage Frequency			47	--	63	Hz
Input Current	170VAC		--	--	3.0	A
	230VAC		--	--	1.8	
Inrush Current	230VAC	Cold start	--	35	--	
Leakage Current	240VAC		<1.0mA			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range		--	±1	--	%
Line Regulation	Rated load		--	±0.5	--	
Load Regulation	230VAC		--	±1	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)		--	--	150	mV
Temperature Coefficient			--	±0.03	--	%/℃
Minimum Load			0	--	--	%
Hold-up Time	Room temperature, full load	230VAC input	--	30	--	ms
Short Circuit Protection			Constant current, continuous, self-recovery			

Over-current Protection		105%-150% Io, constant current mode, automatic recover after fault condition is removed
Over-voltage Protection		≤33V (output voltage hiccup)
Over-temperature Protection		Output voltage turn off, automatic recover after fault condition is removed

Note: *Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf &47uf parallel capacitor, please refer to Enclosed Switching Power Supply Application Notes for specific information.

General Specifications

Item		Operating Conditions			Min.	Typ.	Max.	Unit
Isolation	Input - output	Electric strength test for 1min., leakage current <10mA			4000	--	--	VAC
	Input - ⏚				2000	--	--	
	Output - ⏚				500	--	--	
Insulation Resistance	Input - output	At 500VDC			100	--	--	MΩ
	Input - ⏚							
	Output - ⏚							
Operating Temperature					-20	--	+60	℃
Storage Temperature					-40	--	+85	
Storage Humidity		Non-condensing			--	--	95	%RH
Operating Humidity					--	--	90	
Power Derating		Operating temperature derating	-20℃ to -10℃	115VAC	2.0	--	--	%/℃
			+40℃ to +60℃		2.5	--	--	
			+50℃ to +60℃	230VAC	5	--	--	
		Input voltage derating	90VAC-170VAC		0.375	--	--	%/VAC
Safety Standard					Design refer to UL508, UL61010-1, UL61010-2-201 & EN62368-1, BS EN62368-1			
Safety Class					CLASS I			
MTBF		MIL-HDBK-217F@25℃			≥300,000 h			

Mechanical Specifications

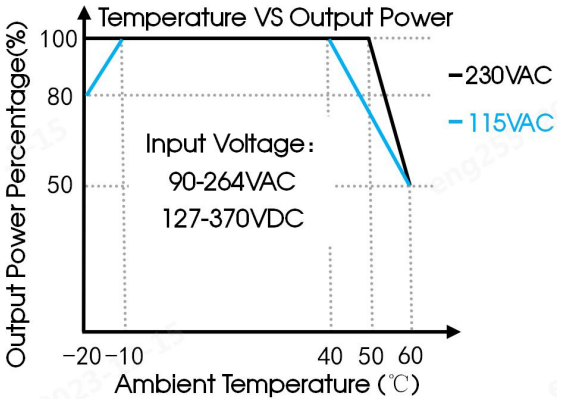
Case Material	Metal (AL1100, SGCC)
Dimensions	36.00 x 125.00 x 100.00mm
Weight	445g (Typ.)
Cooling Method	Free air convection

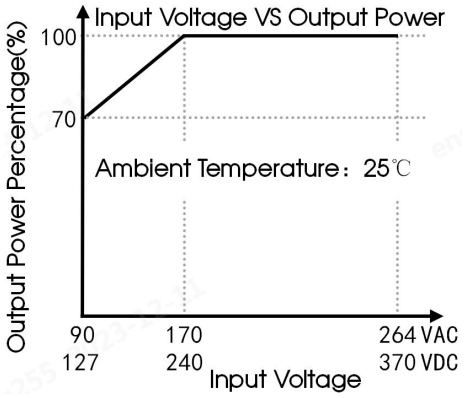
Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS A	
	RE	CISPR32/EN55032	CLASS A	
	Harmonic current	IEC/EN 61000-3-2	CLASS A (100W)	
	Voltage flicker	IEC/EN 61000-3-3		
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	±4KV	Perf. Criteria A
	Surge	IEC/EN 61000-4-5	Line to line ±2KV/line to PE ±4KV	Perf. Criteria A
	CS	IEC/EN 61000-4-6	10Vr.m.s	Perf. Criteria A
	PFMF	IEC/EN 61000-4-8	30A/m	Perf. Criteria A
	Voltage variations*	IEC/EN 61000-4-11	0% U_n , 0.5 cycle; 0° /45° /90° /135° /180° /225° /270° /315°	Perf. Criteria B
			0% U_n , 1 cycle; 70% U_n , 25/30 cycle (50/60Hz);	

			Monophase：0	
	Short interruptions*	IEC61000-4-11	0% U_n , 250/300 cycle (50/60Hz)	Perf. Criteria C
Note: * U_n Maximum input nominal voltage.				

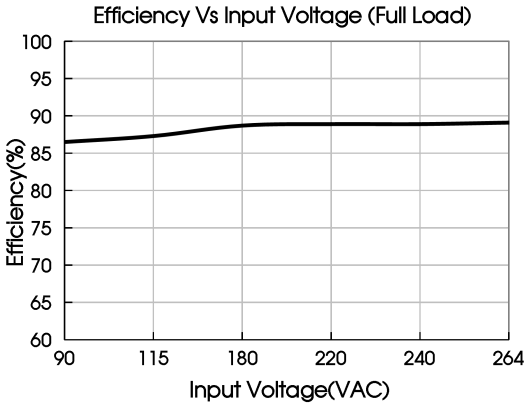
Product Characteristic Curve

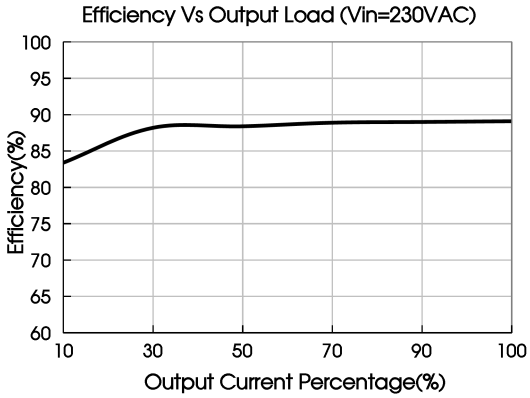




Note: 1.With an AC input voltage between 90 -170VAC and a DC input between 127-240VDC the output power must be derated as per the temperature derating curves;

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

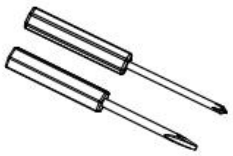




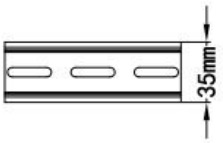
Installation Diagram

Materials required in the installation		
1	Product	1 PC
2	Phillips screwdriver Slotted screwdriver	1 PC
3	TS35/7.5 or TS35/15	1 PC
4	24–10AWG Wire	/ PCS
	The content is for reference only. Regarding the actual wire diameter and tightening torque, refer to the dimensional drawing.	

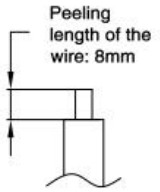
Product



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



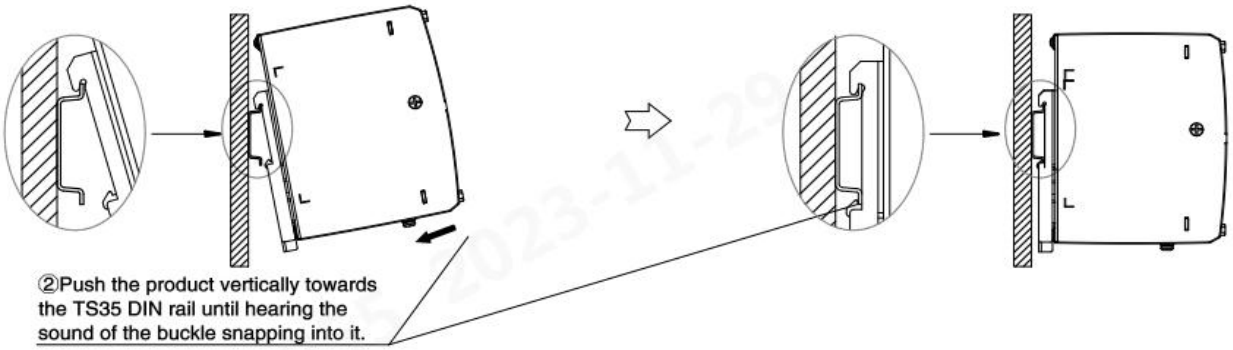
TS35/7.5 or TS35/15



22–10AWG Wire

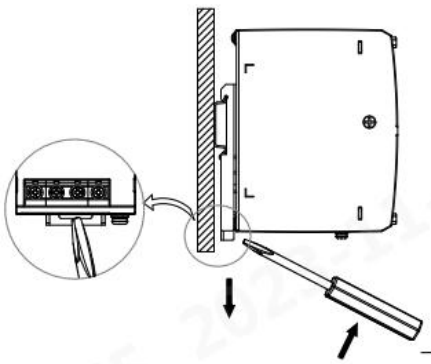
Installation Steps ①–②

①Clamp the buckle of the product into the TS35 DIN rail;

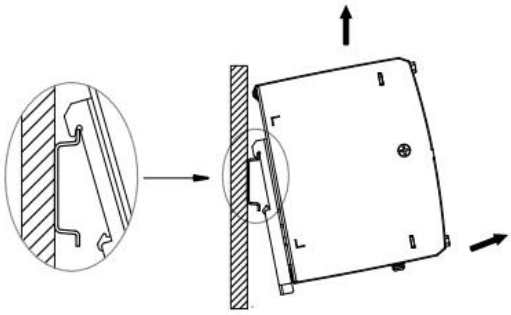


②Push the product vertically towards the TS35 DIN rail until hearing the sound of the buckle snapping into it.

Disassembly Steps ③–④

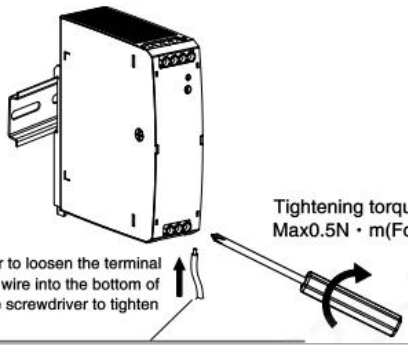


③After inserting the Slotted screwdriver into the square groove at the bottom of the buckle, push the slider of the buckle downward in the direction shown in the figure.



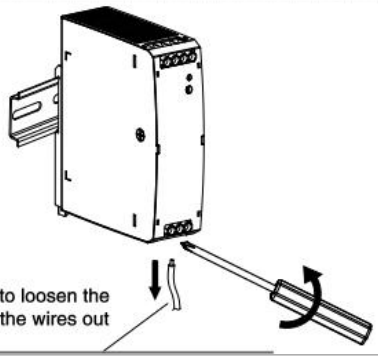
④Hold the bottom of the product and push it outwards, then lift the product up to take the product out of the DIN rail.

Wiring / Unwiring Steps ⑤–⑥



Tightening torque:
Max0.5N · m(For reference);

⑤Use the Phillips screwdriver to loosen the terminal screws, insert the head of the wire into the bottom of the terminal, and then turn the screwdriver to tighten the terminal screws.

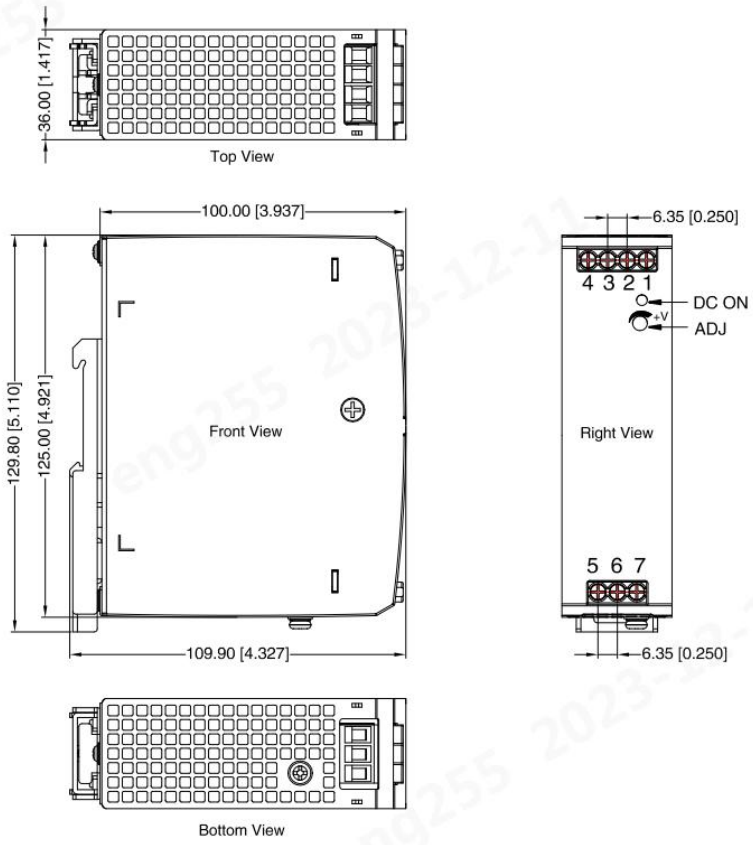


⑥The Phillips screwdriver to loosen the terminal screws and pull the wires out of the terminal holes

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 i 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 powe supply).

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]
DC ON: Output status indicator LED
ADJ: Output adjustable resistor
Wire range: Input: 22–10AWG(12–10AWG for pin7)
Output: 18–10AWG
Tightening torque: (1–7) M3, Max 0.5N・m
M4, 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: 58220163;
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 at high input voltage, there will be audible noise generated, but it does not affect product performance and reliability;
5. We can provide product customization service, please contact our technicians directly for specific information;
6. Products are related to laws and regulations: see "Features" and "EMC";
7. The out case needs to be connected to PE (⏚) of system when the terminal equipment in operating;
8. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
9. 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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