AC/DC 10W DIN-Rail Power Supply

LI10-20BxxPU Series

MORNSUN®

RoHS

FEATURES

- Universal 85 - 264VAC or 120 - 370VDC Input voltage
- Accepts AC or DC input (dual-use of same terminal)
- Operating ambient temperature range: -30℃ to +70℃
- Efficiency up to 84%
- High I/O isolation voltage up to 4000VAC
- DC OK function
- Operating altitude up to 5000m
- Output short circuit, over-current, over-voltage protection
- DIN rail TS35X7.5/ TS35X15 mountable
- Withstand 305VAC input voltage 3s
- Design refer to UL/EN/IEC/BS EN62368, UL61010, UL508

LI10-20BxxPU series 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, design refer to UL/EN/IEC/BS EN62368, UL61010, UL508 standards for EMC and safety.

Selection Guide

Certification	Part No.	Output Power (W)	Nominal Output Voltage and Current (Vo/Io)	Efficiency at 230VAC (%) Typ.	Max. Capacitive Load (μF)
/	LI10-20B05PU	10	5V/2.00A	80	5000
	LI10-20B12PU		12V/0.84A	81	2000
	LI10-20B15PU		15V/0.67A	81	820
	LI10-20B24PU		24V/0.42A	84	470

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input		85	--	264	VAC
	DC input		120	--	370	VDC
Input Voltage Frequency	AC input		47	--	63	Hz
Input Current	115VAC		--	--	0.33	A
	230VAC		--	--	0.21	
Inrush Current	115VAC	Cold start	--	20	--	
	230VAC		--	35	--	
Leakage Current	240VAC		<0.5mA			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range	5V	--	±3	--	%
		12V/15V/24V	--	±2	--	
Line Regulation	Rated load		--	±1	--	
Load Regulation	230VAC	5V	--	±3	--	
		12V/15V/24V	--	±2	--	
Minimum Load			0	--	--	

Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	5V	--	60	80	mV
		12V/15V	--	100	120	
		24V	--	120	150	
Temperature Coefficient			--	±0.03	--	%/℃
Hold-up Time	115VAC		--	25	--	ms
	230VAC		--	120	--	
DC OK Signal	Output voltage range	5V	3.75-6V/50mA			
		12V	9-13.5V/40mA			
		15V	11.5-16.5V/40mA			
		24V	18-27V/20mA			
Over-current Protection			⩾125% Io, hiccup, self-recovery			
Short Circuit Protection			Hiccup, continuous, self-recovery			
Over-voltage Protection	5V		⩽6.75V	Output voltage clamp		
	12V		⩽16.2V			
	15V		⩽20.25V			
	24V		⩽32.4V			

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	Input - output	Electric strength test for 1min., leakage current <10mA			4000	--	--	VAC
	Input - ⏚				2000	--	--	
	Output - ⏚				500	--	--	
Insulation Resistance	Input - output	Test voltage: 500VDC			100	--	--	MΩ
	Input - ⏚							
	Output - ⏚							
Operating Temperature					-30	--	+70	℃
Storage Temperature					-40	--	+85	
Storage Humidity		Non-condensing			10	--	95	%RH
Operating Humidity					20	--	90	
Output Power Derating		Operating temperature derating	+50℃ to +70℃	5V	2.5	--	--	%/℃
			+60℃ to +70℃	12V/15V/24V	5.0	--	--	
		Input voltage derating	85VAC-100VAC		1.33	--	--	%/VAC
Switching Frequency		230VAC, 100% load			--	65	--	kHz
Safety Standard					Design refer to UL/EN/IEC/BS EN62368-1, UL61010-1, UL508			
Safety Class					CLASS I			
MTBF		MIL-HDBK-217F@25℃			⩾300,000 h			

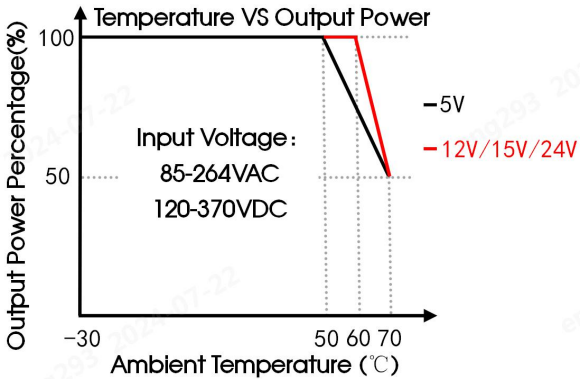
Mechanical Specifications

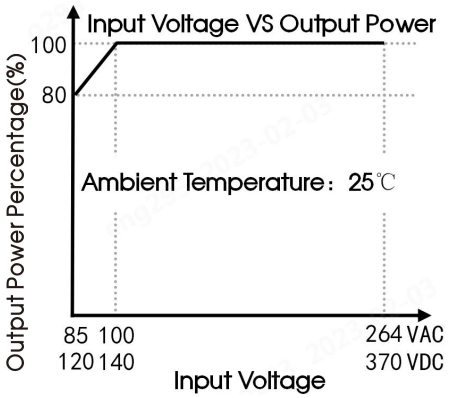
Case Material	Plastic, heat-resistant (UL94V-0)
Dimensions	95.00 x 22.50 x 85.00mm
Weight	104g (Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS B	
	RE	CISPR32/EN55032	CLASS B	
	Harmonic current	IEC/EN61000-3-2	CLASS A	
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	±2KV	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 dips, short interruption and voltage variations	IEC/EN61000-4-11	100% dip 1 periods, 30% dip 25 periods (50Hz), 30 periods (60Hz)	Perf. Criteria B

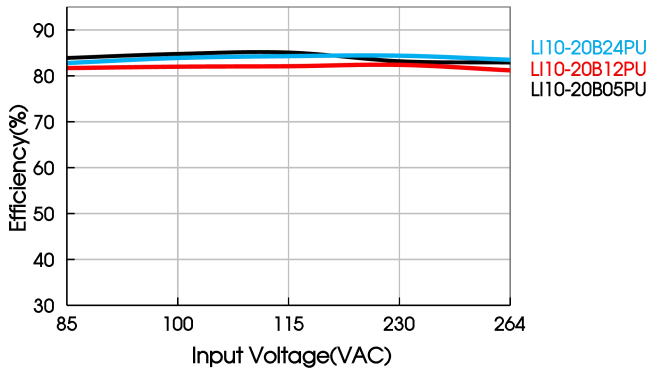
Product Characteristic Curve



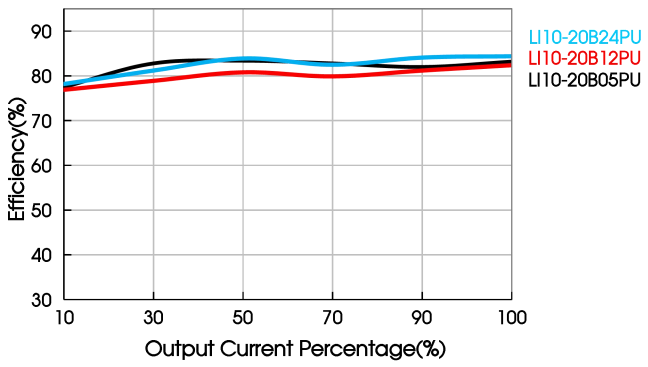


Note: 1.With an AC input voltage between 85-100VAC and a DC input between120-140VDC the output power must be derated as per the temperature derating curves;
2.This product is suitable for applications using free air convection; for applications in closed environment please consult Mornsun FAE.

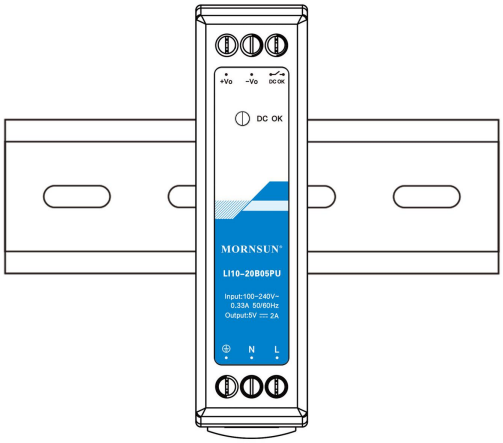
Efficiency Vs Input Voltage (Full Load)

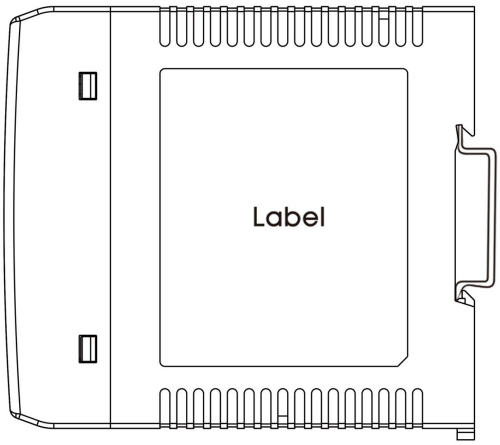


Efficiency Vs Output Load (Vin=230VAC)

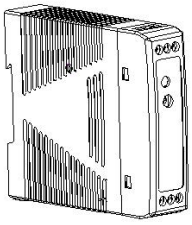


Installation Diagram



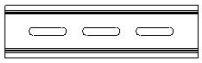


Materials required in the installation		
1	Product	1PCS
2	Slotted screwdriver	1PCS
3	TS35/7.5 or TS35/15	1PCS
4	22–12AWG Wire	/PCS
5	The content is for reference only. Regarding the actual wire diameter and tightening torque, refer to the dimensional drawing.	

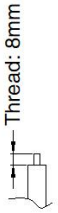


Product

Slotted screwdriver
Diameter : 3mm

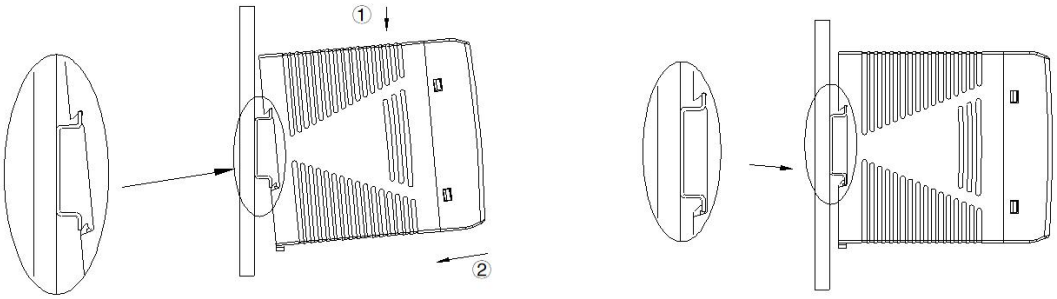


TS35/7.5 or TS35/15



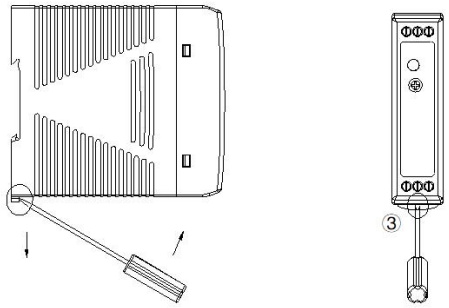
Installation steps ①-②

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

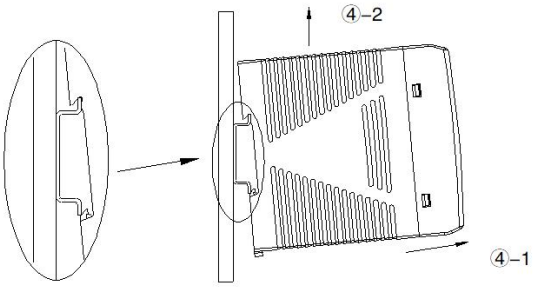


②Push the product vertically towards the TS35 DIN rail until hearing the sound of the buckle snapping into it.

Disassembly Steps③–④

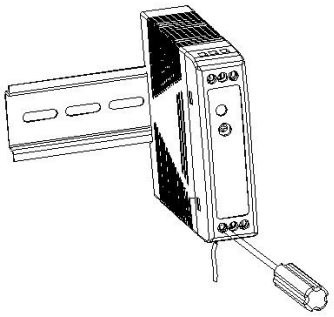


③After inserting the slotted screwdriver into the square groove at the bottom of the buckle, push the slider of the buckle downward in the direction shown in the figure.

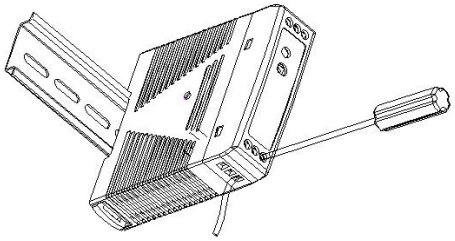


④Hold the bottom of the product and push it outwards while pushing down the slider, then lift the product up to take the product out of the DIN rail.

Wiring / Unwiring Steps ⑤–⑥



⑤Turn the Slotted screwdriver to the left to loosen the terminal screws, insert the head of the wire into the bottom of the terminal, and then turn the screwdriver to the right to tighten the terminal screws

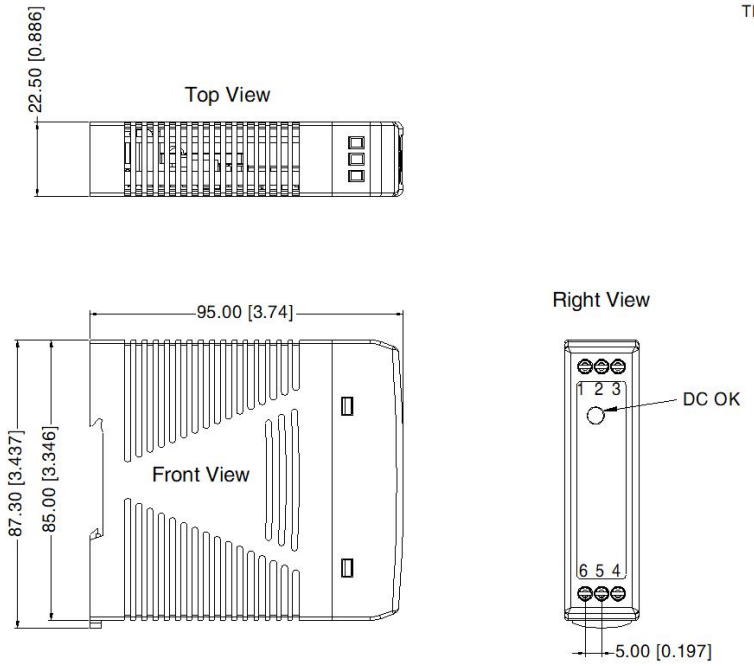


⑥Turn the Slotted screwdriver to the left to loosen the terminal screw and pull the wire out of the bottom of the terminal

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).

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



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

Note:
Unit: mm[inch]
DC OK: Output status indicator LED
ADJ: Output adjustable resistor
Wire range Input: 22-12 AWG
Output: 20-12AWG
Tightening torque: Max 0.4 N·m
Mounting rail: TS35
General tolerances: ±1.00[±0.039]

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220672;
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 3.5℃/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. 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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