AC/DC 40W DIN-Rail Power Supply

LI40-20BxxPU Series

MORNSUN®

RoHS

FEATURES

- Universal 85 - 264VAC/120-370VDC input voltage (350VAC transient 3s)
- Accepts AC or DC input (dual-use of same terminal)
- Operating ambient temperature range: -30℃ to +70℃
- High I/O isolation voltage up to 4000VAC
- Efficiency up to 90%
- DC OK function
- Operating altitude up to 5000m
- Output short circuit, over-current, over-voltage protection
- DIN rail TS35X7.5/ TS35X15 mountable
- Design refer to UL508, UL/EN/IEC62368, UL61010

LI40-20BxxPU 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 international UL508, UL/EN/IEC62368, UL61010 standards for EMC and safety.

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 (μF)
/	LI40-20B05PU	30.0	5V/6.00A	5-6	80	10000
	LI40-20B12PU	40.0	12V/3.33A	12-15	86	5000
	LI40-20B24PU	40.8	24V/1.70A	24-30	89	1200
	LI40-20B48PU	39.8	48V/0.83A	48-56	90	550

Note: *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)		100	--	240	VAC
	Transient (3s)		--	--	305	
	AC input		85	--	264	
	DC input		120	--	370	VDC
Input Voltage Frequency			47	--	63	Hz
Input Current	115VAC		--	--	1.1	A
	230VAC		--	--	0.7	
Inrush Current	115VAC	Cold start	--	30	--	
	230VAC		--	60	--	
Leakage Current	240VAC		<0.5mA RMS max			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	All load range	5V	--	±2	--	%
		12V/24V/48V	--	±1	--	

Line Regulation	Rated load		--	±1	--	
Load Regulation	230VAC		--	±1	--	
Start-up Delay Time			--	--	1.5	s
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	5V	--	--	80	mV
		12V	--	--	120	
		24V	--	--	150	
		48V	--	--	200	
Stand-by Power Consumption	230VAC	5V	--	--	0.75	W
		12V	--	--	1.00	
		24V	--	--	1.20	
		48V	--	--	1.50	
Temperature Coefficient			--	±0.03	--	%/℃
Hold-up Time	Room temperature, full load	115VAC input	--	20	--	ms
		230VAC input	--	50	--	
DC OK Signal**	Resistive load		30VDC/1A Max.			
Over-current Protection			⩾125% Io, constant current mode, self-recover			
Short Circuit Protection			Constant current mode, recovers automatically after fault condition is removed			
Over-voltage Protection	5V		⩽7.5V	Output voltage hiccup, self-recover		
	12V		⩽18V			
	24V		⩽36V			
	48V		⩽64.8V			

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;
**DC OK Signal: When the output voltage is normal, the relay is connected. When the output voltage is abnormal, the relay is disconnected.

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	--	95	
Altitude				--	--	5000	m
Power Derating		Operating temperature derating	+60℃ to +70℃	4	--	--	%/℃
		Input voltage derating	85VAC - 100VAC	1.33	--	--	%/VAC
Switching Frequency		230VAC, 100% load		--	65	--	kHz
Safety Standard				Design refer to UL508, UL/EN/IEC62368-1, UL61010-1			
Safety Class				CLASS I			
MTBF		MIL-HDBK-217F@25℃		⩾300,000 h			

Mechanical Specifications

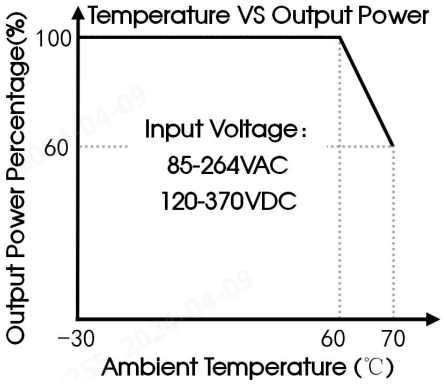
Case Material	Plastic, heat-resistant (UL94V-0)
Dimensions	100.00 x 36.50 x 90.00mm
Weight	205g (Typ.)
Cooling Method	Free air convection

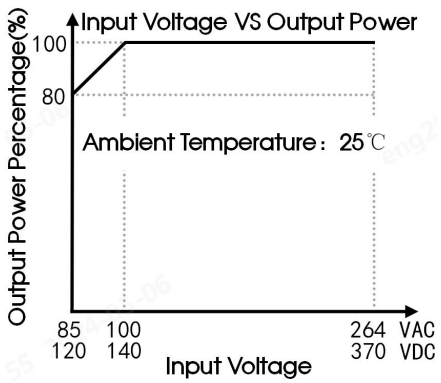
Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN 55032	CLASS B	
	RE	CISPR32/EN 55032	CLASS B	
	Harmonic Current	IEC/EN 61000-3-2	CLASS A	
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 line ±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/EN61000-4-11	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

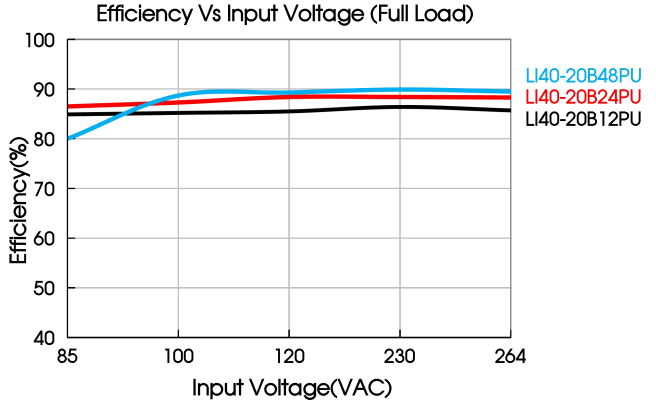
Note: * U_n Maximum input nominal voltage.

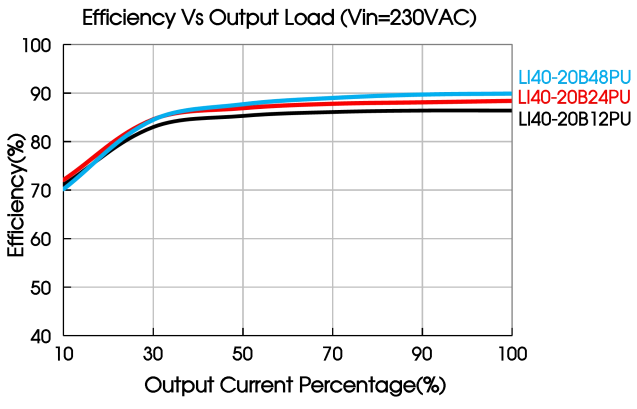
Product Characteristic Curve



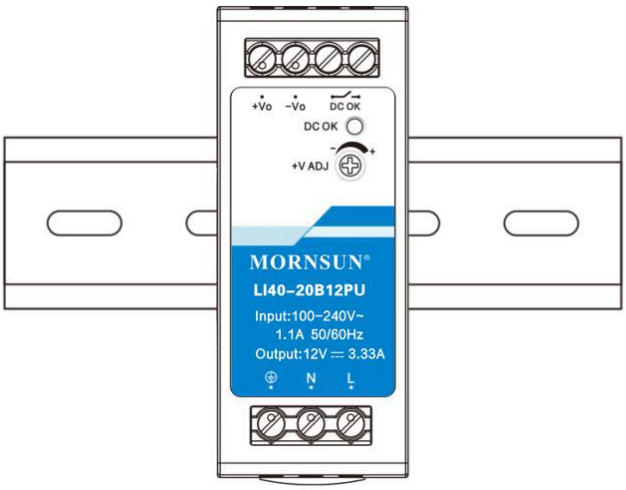


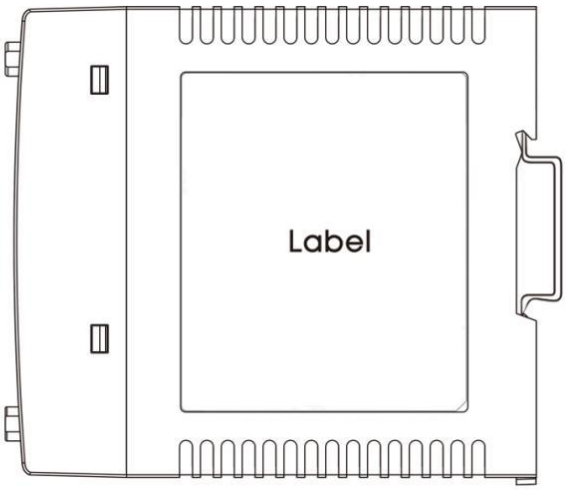
Note: 1.With an AC input between 85 - 100VAC/120 - 140VDC the output power must be derated as per temperature derating curves;
2.This product is suitable for applications using natural free air cooling; for applications in closed environment please consult Mornsun FAE.



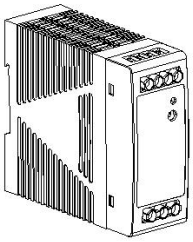


Installation Diagram



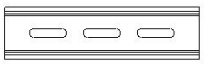


Materials required in the installation		
1	Product	1PCS
2	Slotted screwdriver	1PCS
3	TS35/7.5 or TS35/15	1PCS
4	26-10AWG Wire	/ PCS
5	The content is for reference only. Regarding the actual wire diameter and tightening torque, refer to the dimensional drawing.	

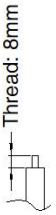


Product

Slotted screwdriver
Diameter : 3mm

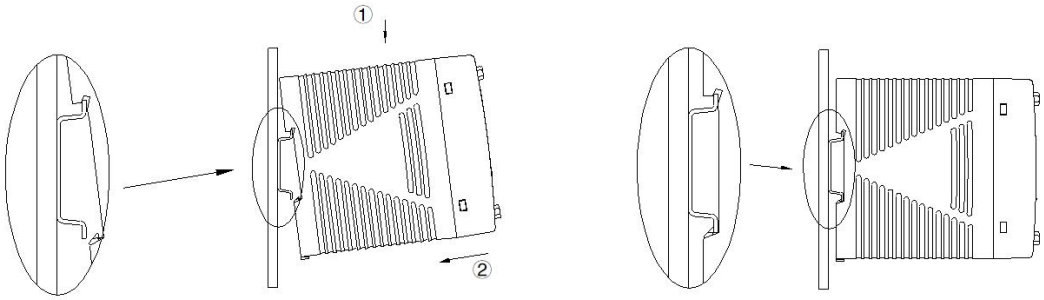


TS35/7.5 or TS35/15



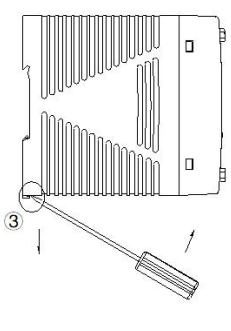
Installation steps ①-②

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

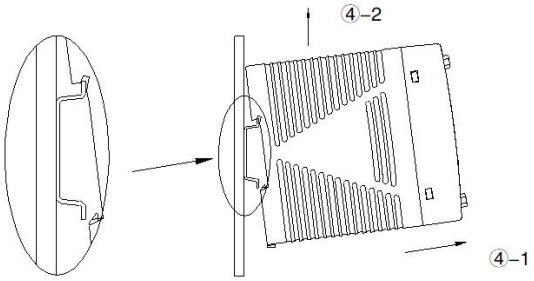


②Push the product vertically towards the TS35 DIN rail until hearing the sound of the buckle snapping into it.

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.

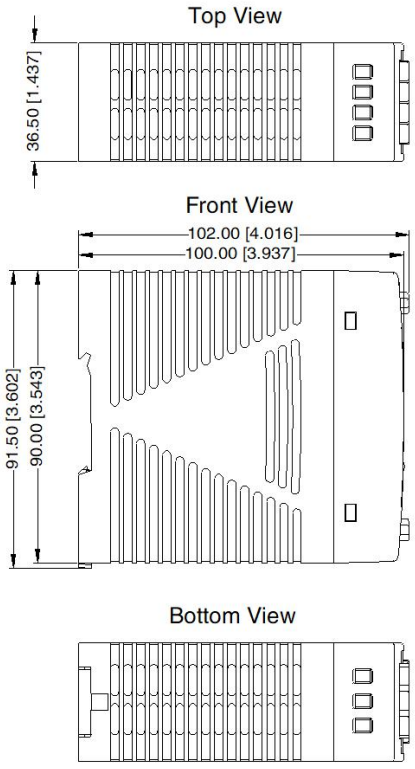


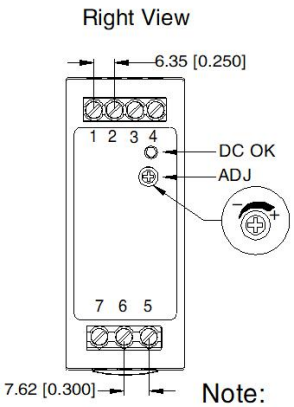
④Hold the bottom of the product and push it outwards while pushing down the slider, then lift the product up to take the product out of the DIN rail.

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	
5	AC(L)
6	AC(N)
7	⏚

Note:
Unit: mm[inch]
DC ON: Output status indicator LED
ADJ: adjustable resistance to change output voltage
Wire range Input: 26–10 AWG (14–10AWG for pin7)
Output: 5V：14–10AWG
12V：18–14AWG
24V、48V：20–18AWG
Tightening torque: M3, 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: 58220618;
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. The output voltage can be adjusted by the ADJ, clockwise to increase;
9. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
10. 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. The Din-rail products needs to be connected to the system ground, please consult FAE for EMC test operation instructions. Please consult our FAE for EMC test operation instructions.

Mornsun Guangzhou Science & Technology Co., Ltd.

Address: No.8 Nanyun 4th Road, Huangpu District, Guangzhou, China

Tel: 86-20-38601850 Fax: 86-20-38601272 E-mail: info@mornsun.cn www.mornsun-power.com