



RoHS



FEATURES

- Universal 85-264VAC or 120-370VDC input voltage
- Withstand 305VAC surge input for 5s
- Accepts AC or DC input (dual-use of same terminal)
- Operating ambient temperature range -40°C to +85°C
- High I/O isolation voltage up to 4000VAC
- OVC III (design refer to EN62477/2000m)
- Low ripple & noise, high efficiency
- Output short circuit, over-current, over-voltage protection
- The output has CV constant current function
- DIN rail TS35X7.5/ TS35X15 mountable
- Meets Class I (peripheralize), Class II (no perimeter required)
- Design refer to UL/EN/BS EN62368, UL508, EN60335, EN61558, EN62477

LI60-20BxxPR3 is Mornsun's AC-DC series featuring a cost-effective, energy efficient solution for standard DIN-rail mounting. The products offer a high level of stability and immunity to noise, compliant with IEC62368 standards for EMC and safety specifications meet IEC/EN61000-4, CISPR32/EN55032, UL/EN/BS EN62368, UL508, EN60335, EN61558, EN62477. These light weight AC-DC converters also have an extremely compact design for space saving and are ideal for applications such as industrial control equipment machinery and all kinds of applications in a harsh environment. For extremely harsh EMC environment, we recommend using the application circuit show in Design Reference of this datasheet.

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.	Capacitive Load (μF) Max.
/	LI60-20B05PR3	32.5	5V/6.5A	4.9-5.5	86	20000
	LI60-20B12PR3	54	12V/4.5A	10.8-13.8	91	10000
	LI60-20B15PR3	60	15V/4.0A	13.5-18.0	91	8000
	LI60-20B24PR3	60	24V/2.5A	21.6-29.0	91	4000
	LI60-20B48PR3	60	48V/1.25A	43.2-55.2	91.5	680

Note: *Use suffix "Q" for 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	AC input	85	--	264	VAC
	DC input	120	--	370	VDC
Input Frequency		47	--	63	Hz
Input Current	115VAC	--	--	1.2	A
	230VAC	--	--	0.8	
Inrush Current	115VAC	--	30	38	
	230VAC	--	60	78	
Leakage Current	264VAC	0.25mA RMS max.			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	0% - 100% load	5V	--	±2	%
		12V/15V/24V/48V	--	±1	
Line Regulation	Rated load	--	±0.5	--	

AC/DC 60W DIN-Rail Power Supply

LI60-20BxxPR3 Series

MORNSUN®

Load Regulation	230VAC	5V	--	±1.5	--	
		12V/15V/24V/48V	--	±1.0	--	
Output Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	5V	--	--	80	mV
		12V/15V	--	--	120	
		24V	--	--	150	
		48V	--	--	240	
Temperature Coefficient			--	±0.02	--	%/°C
Stand-by Power Consumption	230VAC input	5V/12V/15V/24V	--	--	0.3	W
		48V	--	--	0.4	
Short Circuit Protection			Hiccup, continuous, self-recovery			
Over-current Protection			≥110% Io, self-recovery			
			Belch or constant current mode when output voltage < 50% or constant current mode when output voltage < 50% When the output voltage is 50%-100%, it is in constant current mode, and the load abnormal condition can be automatically restored after removal			
Over-voltage Protection	5V		≤7.5V	Output voltage hiccup		
	12V		≤16V			
	15V		≤22.5V			
	24V		≤36V			
	48V		≤60V			
Minimum Load			0	--	--	%
Start-up Time			--	--	1	s
Hold-up Time	115VAC		--	15	--	ms
	230VAC		--	80	--	
Note: The "Tip and barrel method" is used for ripple and noise test, with a 0.1uf ceramic capacitor & 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 < 5mA)			4000	--	--	VAC
Insulation Resistance	Input - output	Test voltage: 500VDC			100	--	--	MΩ
Operating Temperature					-40	--	+85	℃
Storage Temperature					-40	--	+85	
Storage Humidity		Non-condensing			--	--	95	%RH
Operating Humidity					--	--	90	
Altitude					--	--	5000	m
Output Power Derating		Operating temperature derating	-40℃ to -30℃	Other output	3.0	--	--	% /℃
				24V	7.0	--	--	
				15V	8.0	--	--	
			+45℃ to +70℃		2.0	--	--	
			+70℃ to +85℃		2.0	--	--	
		Input voltage derating	85VAC - 100VAC		1.0	--	--	%/VAC
Safety Standard					Design refer to UL/EN/BS EN62368-1, UL508, EN60335-1, EN61558-1, EN62477			
Safety Class					Class I (peripheralize), Class II (no perimeter required)			
MTBF		MIL-HDBK-217F@25℃			> 300,000 h			

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Mechanical Specifications

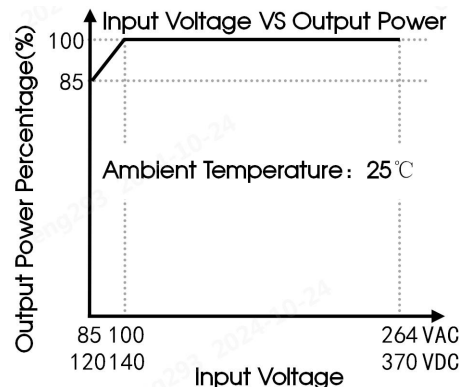
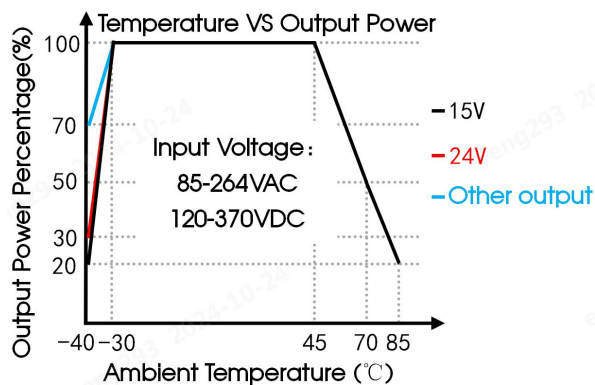
Case Material	Plastic, heat-resistant (UL94V-0)
Package Dimensions	92.66 x 52.00 x 58.00mm
Weight	180g (Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

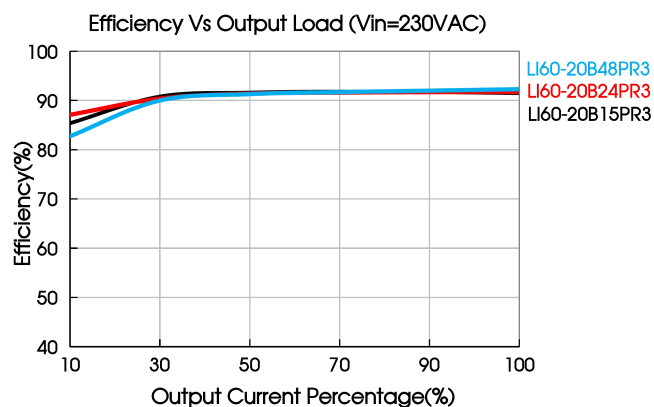
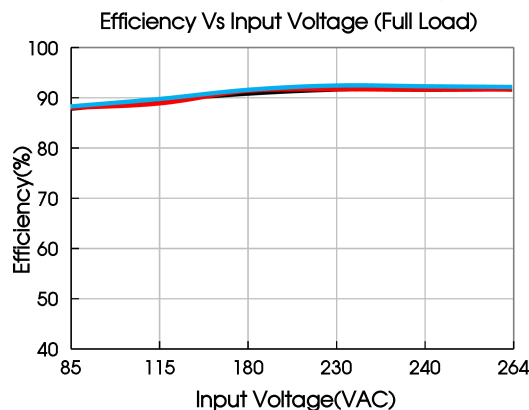
EMI	CE	CISPR32/EN55032	CLASS B	
	RE	CISPR32/EN55032	CLASS B	
	Harmonic current	IEC/EN61000-3-2	CLASS A	
	Voltage flicker	IEC/EN61000-3-3		
EMS	ESD	IEC/EN61000-4-2	Contact ±6KV/Air ±8KV	Perf. Criteria A
	RS	IEC/EN61000-4-3	10V/m	Perf. Criteria A
	EFT	IEC/EN61000-4-4	±2KV	Perf. Criteria A
		IEC/EN61000-4-4	±4KV(See Fig. 1 for typical application circuit)	Perf. Criteria B
	Surge	IEC/EN61000-4-5	Line to line ±2KV	Perf. Criteria A
			Line to PE ±4KV (See Fig. 1 for typical application circuit)	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 Variations*	IEC61000-6-2/IEC61000-4-11	70% U _n , 25/30cycle(50/60Hz); 40% U _n , 10/12cycle(50/60Hz); 0% U _n , 1cycle	Perf. Criteria B
	Short interruptions*	IEC61000-6-2/IEC61000-4-11	0% U _n , 250/300cycle(50/60Hz)	Perf. Criteria C

Note: * U_n Maximum input nominal voltage.

Product Characteristic Curve



Note: 1. With an AC input between 85-100VAC and a DC input between 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.



EMC compliance recommended circuit

1. Recommended circuit 1

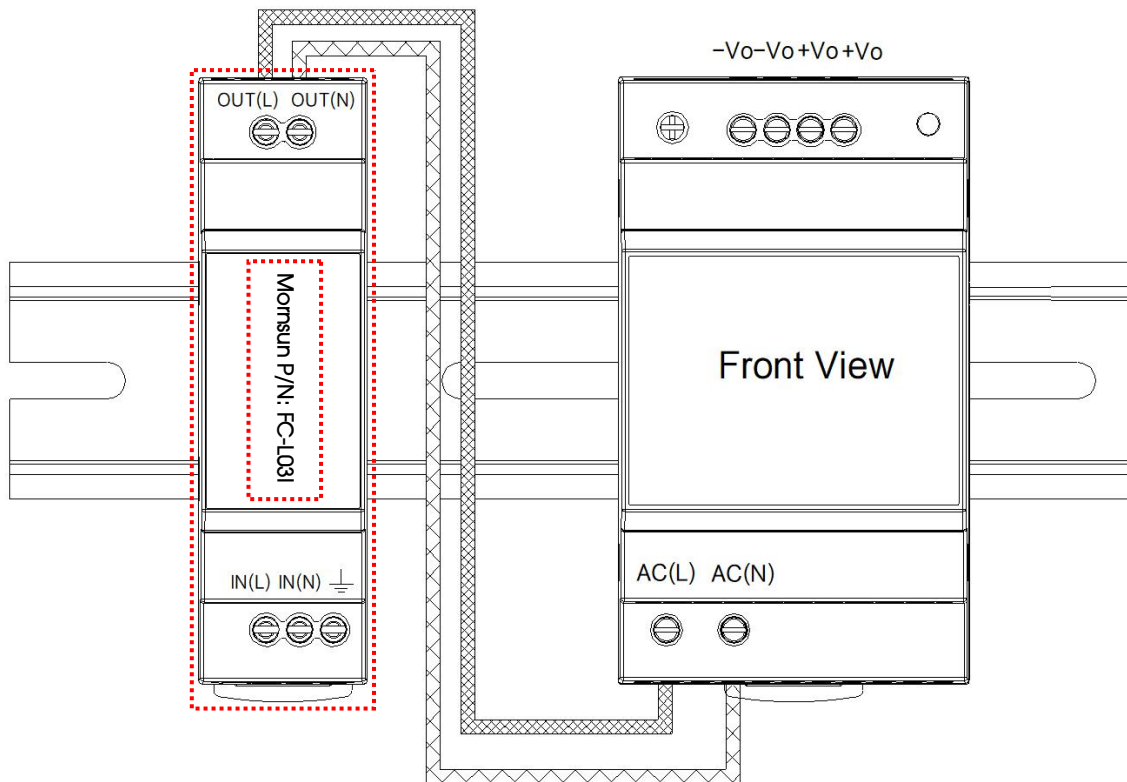
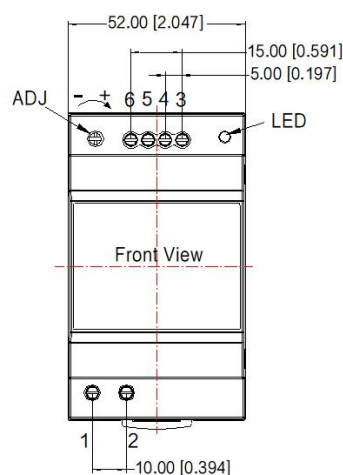
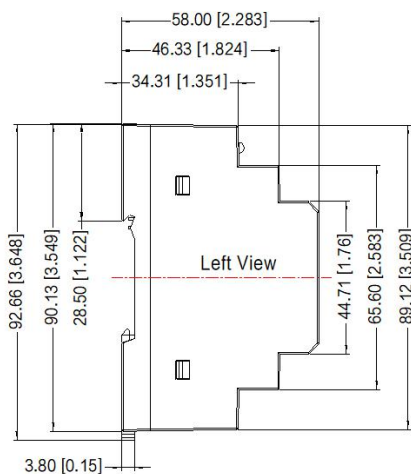


Fig. 1

Note: Applies to Class I (with peripherals), Class II (without peripherals).

Dimensions and Recommended Layout

第三角投影



Pin-Out	
Pin	LI60-20B
1	AC(L)
2	AC(N)
3	+Vo
4	+Vo
5	-Vo
6	-Vo

Note:

Unit: mm[inch]

ADJ: adjustable resistance to change output voltage

Wire range: 24-12 AWG

Tightening torque: Max 0.4 N · m

Mounting rail: TS35

General tolerances: $\pm 1.00 [\pm 0.039]$

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220196;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, humidity<75% with nominal input voltage and rated output load;
3. The room temperature derating of $3.5^{\circ}\text{C}/1000\text{m}$ is needed for operating altitude greater than 2000m;
4. All index testing methods in this datasheet are based on our company corporate standards;
5. We can provide product customization service, please contact our technicians directly for specific information;
6. Specifications are subject to change without prior notice.
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.

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