



## FEATURES

- Universal 85-264VAC or 120-370VDC input voltage
- Accepts AC or DC input (dual-use of same terminal)
- Operating ambient temperature range: -40°C to +70°C
- High I/O isolation test voltage up to 4000VAC
- Industrial-grade design
- OVC III (EN61558-1 standards)
- Low standby power consumption, high efficiency
- Low ripple & noise
- Output short circuit, over-current, over-voltage protection
- Withstand 300VAC surge input for 5s
- DIN rail TS35X7.5/ TS35X15 mountable
- Safety according to EN61558

LI60-20BxxPR2 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 international IEC62368 standards for EMC and safety specifications meet IEC/EN61000-4, CISPR32, EN55032, UL62368, IEC62368 and EN62368. 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.

## Selection Guide

Certification	Part No.*	Output Power (W)	Nominal Output Voltage and Current (Vo/Io)	Output Voltage Adjustable SRange ADJ (V)**	Efficiency at 230VAC (%) Typ.	Capacitive Load (μF) Max.
UL/EN/IEC/BIS/UKCA	LI60-20B05PR2	32.5	5V/6.5A	4.9-5.5	84	20000
	LI60-20B12PR2	54	12V/4.5A	10.8-13.8	88	10000
	LI60-20B15PR2	60	15V/4.0A	13.5-18.0	89	8000
	LI60-20B24PR2	60	24V/2.5A	21.6-29.0	90	4000
	LI60-20B48PR2	60	48V/1.25A	43.2-55.2	91	680

Note: \*LI60-20B24PR2-Q with 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	--	
	230VAC	--	60	--	
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	--	±2	--	%
Line Regulation	Rated load	--	±0.5	--	
Load Regulation	230VAC	--	±1.5	--	

Output Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	5V output	--	--	100	mV
		12V output	--	--	120	
		15V output	--	--	120	
		24V output	--	--	150	
		48V output	--	--	240	
Temperature Coefficient			--	±0.02	--	%/°C
Stand-by Power Consumption	230VAC input	5V/12V/15V/24V output	--	--	0.3	W
		48V output	--	--	0.4	
Short Circuit Protection			Hiccup, continuous, self-recovery			
Over-current Protection			≥120%Io, self-recovery			
Over-voltage Protection	5V output	≤7.5V	Output voltage clamp or hiccup			
	12V output	≤16V				
	15V output	≤20V				
	24V output	≤36V				
	48V output	≤60V				
Minimum Load		0	--	--	%	
Start-up Delay Time		--	--	3	s	
Hold-up Time	115VAC	--	15	--	ms	
	230VAC	--	80	--		

Note: \*Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.

## General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Isolation	Input - output	Electric Strength Test for 1min., (leakage current < 5mA)	4000	--	--	VAC
Operating Temperature		-40	--	+70	°C	
Storage Temperature		-40	--	+85		
Storage Humidity		--	--	95	%RH	
Operating Altitude		--	--	2000	m	
Switching Frequency		--	65	--	kHz	
Power Derating	-40°C to -30°C	5V/12V/48V output	3.0	--	--	% / °C
		24V output	7.0	--	--	
		15V output	8.0	--	--	
	+45°C to +70°C		2.0	--	--	
	85VAC - 100VAC	1.0	--	--	%/VAC	
Safety Standard	LI60-20BxxPR2	UL/IEC62368-1, IS13252 (Part1) safety approved & EN62368-1, BS EN 62368-1 (Report); Design refer to EN61558-1				
	LI60-20B24PR2-Q	Design refer to UL/IEC62368-1, IS13252 (Part1) & EN61558-1, EN62368-1, BS EN 62368-1				
Safety Class		CLASS II				
MTBF	MIL-HDBK-217F@25°C	> 300,000 h				

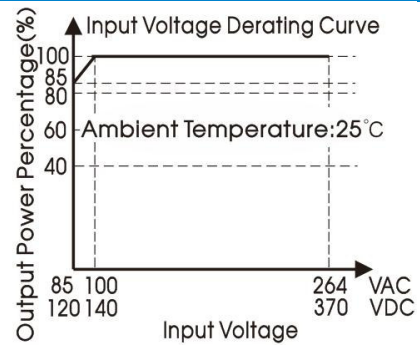
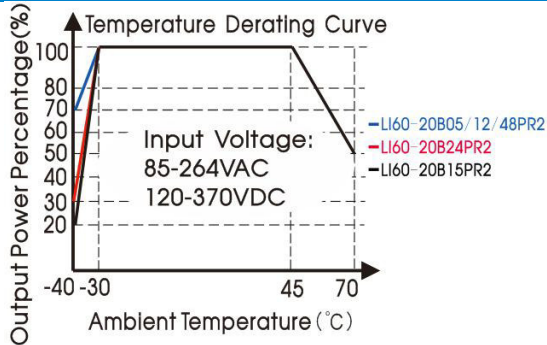
## Mechanical Specifications

Case Material	Plastic, heat-resistant (UL94V-0)
Package Dimensions	92.66 x 52.00 x 58.00mm
Weight	175g (Typ.)
Cooling Method	Free air convection

### Electromagnetic Compatibility (EMC)

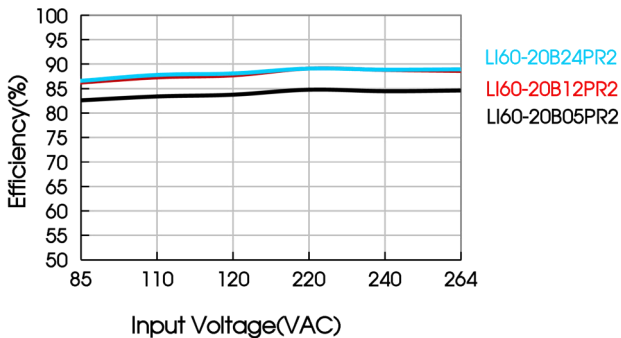
Emissions	CE	CISPR32/EN55032	CLASS B	
	RE	CISPR32/EN55032	CLASS B	
Immunity	ESD	IEC/EN61000-4-2	Contact $\pm 6\text{KV}$ /Air $\pm 8\text{KV}$	Perf. Criteria A
	RS	IEC/EN61000-4-3	10V/m	Perf. Criteria A
	EFT	IEC/EN61000-4-4	$\pm 2\text{KV}$	Perf. Criteria A
	Surge	IEC/EN61000-4-5	Line to line $\pm 2\text{KV}$	Perf. Criteria A
	CS	IEC/EN61000-4-6	10Vr.m.s	Perf. Criteria A
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11	100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods	Perf. Criteria A

### Product Characteristic Curve

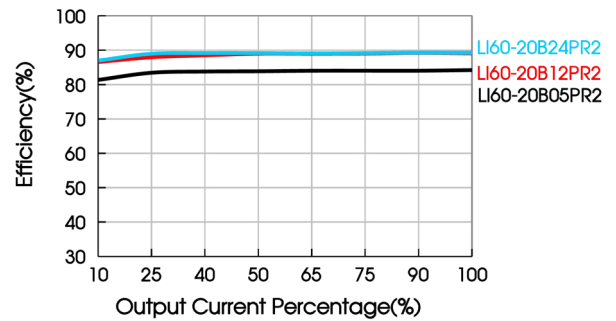


Note: ① With an AC input between 85-100VAC and a DC input between 120-140VDC, the output power must be derated as per temperature derating curves;  
 ② This product is suitable for applications using natural air cooling; For applications in closed environment please consult Mornsun FAE.

Efficiency Vs Input Voltage (Full Load)

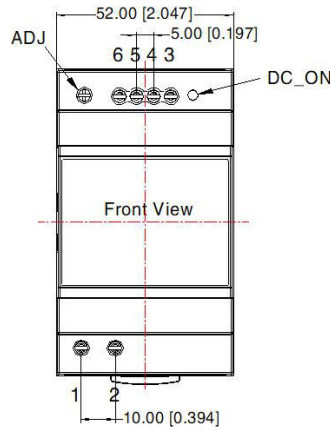
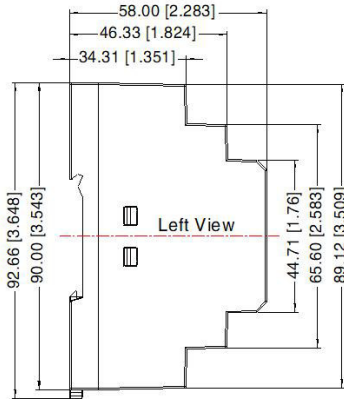
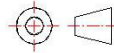


Efficiency Vs Output Load (Vin=230VAC)



### Dimensions and Recommended Layout (LI60-20BxxPR2、LI60-20B24PR2-Q)

THIRD ANGLE PROJECTION



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](http://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. All index testing methods in this datasheet are based on our company corporate standards;
4. We can provide product customization service, please contact our technicians directly for specific information;
5. Specifications are subject to change without prior notice.
6. Products are related to laws and regulations: see "Features" and "EMC";
7. 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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