



FEATURES

- Ultra-low ripple noise domestic power supply
RMS value: 0.3mV (Typ.), peak-to-peak value: 1mV (Typ.)
- Low floating ground voltage mV level
- Remote sense function, output voltage adjustable
- Semi-potted process, fanless design
- EMI compliant to CISPR32/EN55032 CLASS B
- Universal 85-264VAC or 100-370VDC input voltage
- Input withstand 305VAC/5s
- Operating ambient temperature range: -30°C to +70°C
- High I/O isolation voltage up to 4000VAC
- Output short circuit, over-current, over-voltage protection
- OVC II, 5000m altitude (design refer to EN/IEC60601)
- Design refer to UL/EN62368, ES/EN60601, EN61558, EN60335, GB4943, F47 (220-240VAC)

LRN150-20Bxx series is one of Mornsun's power supply for instruments and meters. It features AC input and at the same time accepts DC input voltage, low ripple & noise, common mode noise, differential mode noise, floating ground voltage are low, high efficiency and high reliability. These converters offer excellent EMC performance and design refer to IEC/EN61000-4, CISPR32/EN55032, UL/EN62368, ES/EN60601, EN61558, EN60335, GB4943, F47 (220-240VAC) standards and they are widely used in areas of medical, semiconductor, high-precision instruments, etc.

Selection Guide

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.
LRN150-20B12	150	12V/12.5A	10.8-13.2	87.5	6000
LRN150-20B24		24V/6.3A	21.6-26.4	89	3000

Note: *Under any conditions, the total power of the product should not exceed the rated power. When the output voltage is increased, the total output power cannot exceed the rated output power, when the output voltage is decreased, the output current cannot exceed the rated output current.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input		85	--	264	VAC
	DC input		100	--	370	VDC
Input Voltage Frequency			47	--	63	Hz
Input Current	100VAC		--	--	1.9	A
	200VAC		--	--	1.0	
Inrush Current*	100VAC	Cold start	--	20	--	
	200VAC		--	40	--	
Power Factor	100VAC	Full load	PF ≥ 0.98			
	200VAC		PF ≥ 0.93			
Leakage Current	264VAC, 60Hz		<0.075mA RMS			
Input Temporary Over-voltage	Rated load output, 305VAC input		5s/time, interval 10s, product without damaging			
Hot Plug			Unavailable			

Note: *Inrush current test: Peak currents within 0.1ms are not recorded.

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range		--	±1	--	%
Line Regulation	Rated load		--	±0.4	--	
Load Regulation	230VAC	12V	--	±0.8	--	
		24V	--	±0.625	--	
Minimum Load			0	--	--	
Ripple & Noise*	20MHz bandwidth (RMS value)		--	0.3	--	mV
	20MHz bandwidth (peak-to-peak value)		--	1	--	
Stand-by Power Consumption	230VAC		--	--	7	W
Temperature Coefficient	0°C to +30°C		--	±0.02	--	%/°C
Short Circuit Protection			Hiccup, continuous, self-recovery			
Over-current Protection			110% - 300% Io, self-recover			
Over-voltage Protection	12V		≤16V	Output voltage hiccup		
	24V		≤32V			
Starting Time			--	--	3	s
Hold-up Time	115VAC/230VAC		--	30	--	ms
Remote Sense	The compensation for the drop of output voltage from the product output to the load terminal is taken from the user terminals +S and -S					
ON/OFF Input Signal	Power on	ON/OFF LOW	0	--	0.8	VDC
	Power off	ON/OFF High	7	--	17	

Note: *The method 1 for ripple and noise: Use a 1:1 probe+Tip and barrel method" is used for ripple and noise test, output parallel 47uF electrolytic capacitor and 0.1uF ceramic capacitor, please refer to AC-DC Converter 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	
	Input - ⊕		2000	--	--		
	Output - ⊕		708	--	--	VDC	
Insulation Resistance	Input - output	Test voltage: 500VDC	100	--	--	MΩ	
	Input - ⊕						
	Output - ⊕						
Operating Temperature			-30	--	+70	°C	
Storage Temperature			-30	--	+85		
Storage Humidity	Non-condensing		--	--	95	%RH	
Operating Humidity			--	--	95		
Output Power Derating	Operating temperature derating	-30°C to -10°C	1.5	--	--	% / °C	
		+35°C to +50°C	1.33	--	--		
		+50°C to +60°C	2.0	--	--		
		+50°C to +60°C	230VAC	4.0	--		--
		+60°C to +70°C	1.0	--	--		
	Input voltage derating	85VAC - 100VAC	1.33	--	--	%/VAC	
Altitude derating	2000 - 5000m	5	--	--	%/Km		
Safety Standard			Design refer to UL/EN62368-1, ES/EN60601-1, EN61558-1, EN60335-1, GB4943.1, F47(220-240VAC)				
Safety Class			CLASS I				
MTBF	MIL-HDBK-217F@25°C		≥300,000 h				

Mechanical Specifications

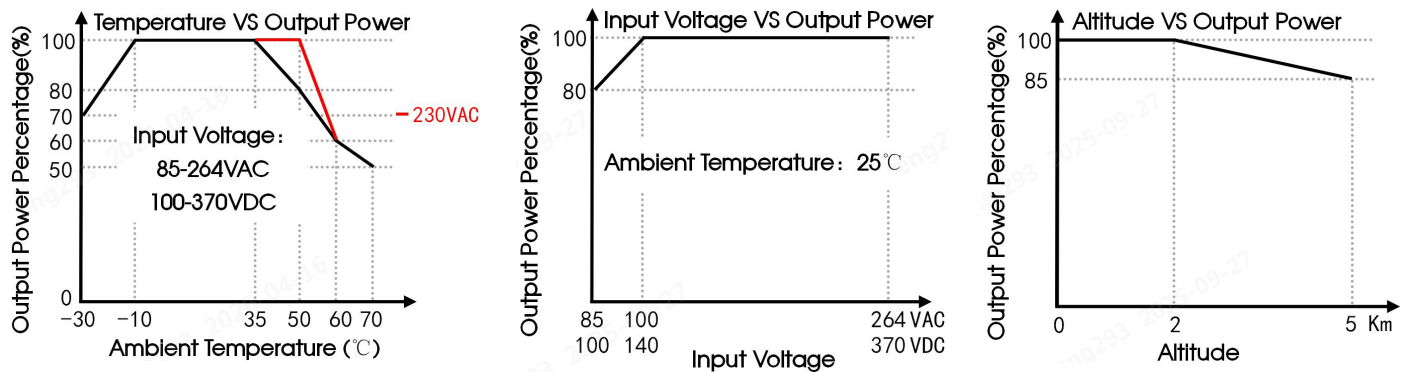
Dimension	171.00 x 70.00 x 42.00mm
Weight	560g (Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

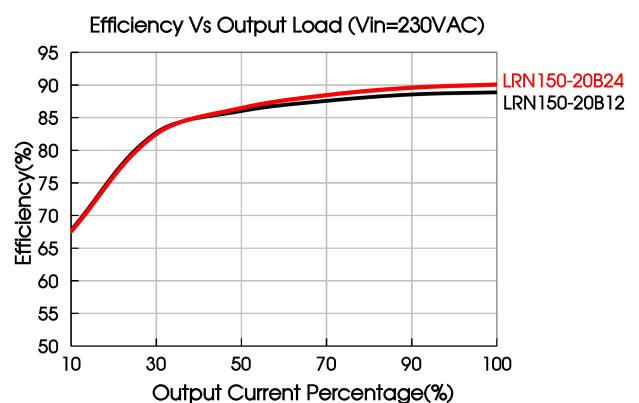
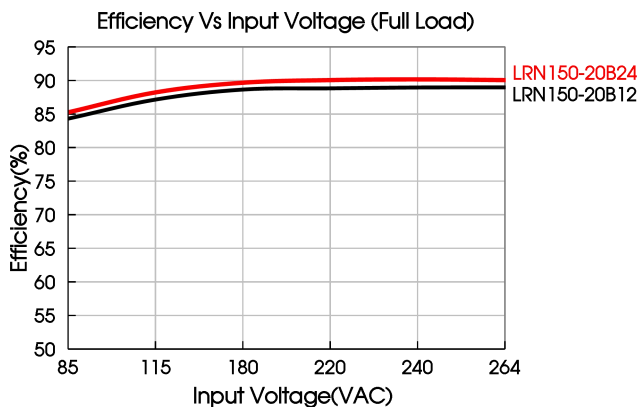
Emissions	CE	CISPR32/EN55032	CLASS B	
	RE	CISPR32/EN55032	CLASS B	
	Harmonic current	IEC/EN61000-3-2	CLASS A and CLASS D	
	Voltage flicker	IEC/EN 61000-3-3		
Immunity	ESD	IEC/EN61000-4-2	Contact ±8KV /Air ±15KV	Perf. Criteria A
	RS	IEC/EN61000-4-3	10V/m	Perf. Criteria A
	EFT	IEC/EN61000-4-4	±4KV	Perf. 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 variations*	IEC/EN61000-4-11	0% Un , 0.5 cycle; Monophase: 0° , 45° , 90° , 135° , 180° , 225° , 270° , 315° 70% Un, 25/30 cycle (50/60Hz); 40% Un, 10/12 cycle (50/60Hz); 0% Un, 1 cycle	Perf. Criteria B
Voltage interruptions*	IEC61000-6-2/IEC61000-4-11	0% Un, 250/300 cycle (50/60Hz)	Perf. Criteria C	

Note: *Un, Maximum input nominal voltage.

Product Characteristic Curve

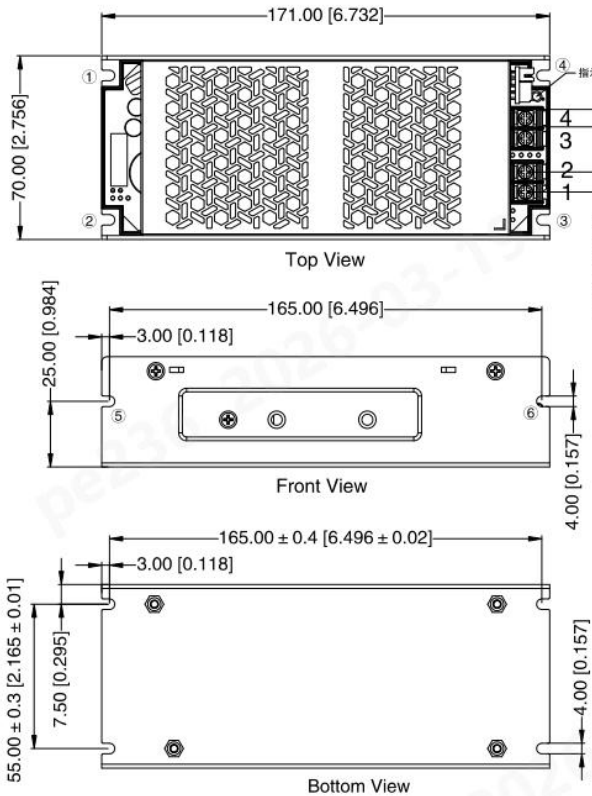


Note: 1. With an AC input voltage between 85-100VAC and a DC input between 100-140VDC the output power must be derated as per the temperature derating curves;
 2. This product is suitable for applications using natural air cooling; for applications in closed environment please consult Mornsun FAE.



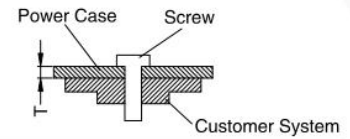
Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



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

Position	Screw Spec.	T	Recommended Torque
①-④	M3	1.5mm	0.65N · m ± 10%



Pin-Out		Customer Connector
2	①	Housing: TKP DH2-4P or HRS DF11-4DS-2C or equivalent Contact: TKP DHT or HRS DF11-22SC or equivalent
4	②	
3	③	
4	④	

CN1: Remote control function(2, 4)
Remote sensing signal input port(1, 3)

- Note:
- Unit: mm[inch]
 - General tolerances: ± 1.00 [± 0.040]
 - Connection range: Input: 20-12AWG
Output: 16-12AWG
 - Terminal recommended torque: M3, 0.4N · m ± 10%

The layout of the device is for reference only, please refer to the actual product

- Note:
- For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220706;
 - Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25°C, humidity <75% RH with nominal input voltage and rated output load;
 - All index testing methods in this datasheet are based on our company corporate standards;
 - 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;
 - We can provide product customization service, please contact our technicians directly for specific information;
 - Products are related to laws and regulations: see "Features" and "EMC";
 - The out case needs to be connected to PE(⊕) of system when the terminal equipment in operating;
 - The output voltage can be adjusted by the ADJ, clockwise to increase;
 - CAUTION: Double pole, neutral fusing. Disconnect mains before servicing. /"ATTENTION: Double pôle/fusible sur le neutre. Débrancher l'alimentation avant l'entretien;
 - 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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