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120W DIN-rail AC-DC converter

FEATURES

- 85-305 VAC and 100 - 430VDC input voltage range
- Accepts AC and/or DC input (dual-use of same terminal)
- Low standby power consumption, High I/O isolation test voltage of up to 3000VAC
- Low ripple & noise
- Output short circuit, over-current, over-voltage protection
- Remote On/Off control and output voltage adjust
- Active Power Factor Correction (PFC)

RoHS

LI120 is Mornsun's 120W AC-DC converter series featuring a cost-effective, energy efficient solution for standard DIN-rail mounting. It offers stability and high noise immunity for industrial control equipment, machinery and other harsh environments of industrial equipment. The converter is compact size, light weight, compact structure, standard rail (35mm) Installation and save a lot of space for customers.

Selection Guide

Part No.	Output Power	Nominal Output Voltage and Current (Vo/Io)	Efficiency (230VAC, %/Typ.)	Max. Capacitive Load (µF)
LI120-13B12	120W	12V/10A	89	10000
LI120-13B24	120W	24V/5A	91	4700

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input		85	--	305	VAC
	DC input		100	--	430	VDC
Input Frequency			47	--	63	Hz
Input Current	115VAC		--	--	1.5	A
	230VAC		--	--	0.75	
Inrush Current	115VAC	LI120-13B12	--	45	--	
		LI120-13B24		50		
	230VAC		--	70	--	
Power Factor	230VAC		≥0.95			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy			--	±2	--	%
Line Regulation	Full load		--	±0.5	--	
Load Regulation	230VAC		--	±1	--	
Output Ripple & Noise*	20MHz bandwidth (peak-peak value)	LI120-13B12	--	--	100	mV
		LI120-13B24	--	--	200	
Temperature Drift Coefficient			--	±0.03	--	%/℃
Stand-by Power Consumption			--	--	0.75	W
Short Circuit Protection			Continuous, self-recovery			
Over-current Protection	LI120-13B12		110 - 150% Io, start protecting after 3 seconds, self-recovery			
	LI120-13B24		110 - 200% Io, start protecting after 3 seconds, self-recovery			
Over-voltage Protection			Continuous automatic restart until the over-voltage condition is removed			

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			0	--	--	%
Minimum Load			0	--	--	%
Start-up Time			--	--	5000	ms
Hold-up Time	230VAC		--	25	--	

Note：*The "Tip and barrel method" is used for ripple and noise test, please refer to AC-DC Converter Application Notes for specific information.

General Specifications

Item		Operating Conditions	Min.	Typ.	Max.	Unit
Isolation Test	Input-output	Electric Strength Test for 1min., leakage current <5mA	3000	--	--	VAC
	Input - ⏚		1500	--	--	
	Output - ⏚		500	--	--	
Operating Temperature			-25	--	+70	℃
Storage Temperature			-25	--	+85	
Storage Humidity			--	--	95	%RH
Switching Frequency			--	100	--	kHz
Power Derating	Operating temperature derating	+55℃ to +70℃	2.5	--	--	%/℃
	Input voltage derating	85VAC-100VAC	1.333	--	--	%/VAC
Safety Class		CLASS I				
MTBF	MIL-HDBK-217F@25℃	> 300,000 h				

Physical Specifications

Case Material		Heat-resistant plastic (UL94V-0) and metal
Package Dimensions		35.00 x 125.00 x 112.70 mm
Weight	LI120-13B12	580g (Typ.)
	LI120-13B24	560g (Typ.)
Cooling Method		Free air convection

EMC Specifications

EMI	CE	CISPR32/EN55032	CLASS B	
	RE	CISPR32/EN55032	CLASS B	
EMS	ESD	IEC/EN61000-4-2	Contact ±6KV/Air ±8KV	Perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4	±4KV	perf. Criteria B
	Surge	IEC/EN61000-4-5	line to line ±2KV/line to ground ±4KV	perf. Criteria B
	CS	IEC/EN61000-4-6	10Vr.m.s	perf. Criteria A
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11	0%,70%	perf. Criteria B

Product Characteristic Curve

Temperature Derating Curve
Output Power Percentage(%)
100
62.5
Input Voltage：85-305VAC 100-430VDC
-25 0 55 70
Ambient temperature (℃)

Input Voltage Derating Curve
Output Power Percentage(%)
100
80
Ambient Temperature:25℃
80 100 305 VAC
100 120 430 VDC
Input Voltage
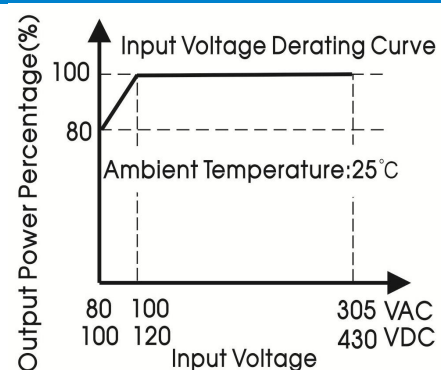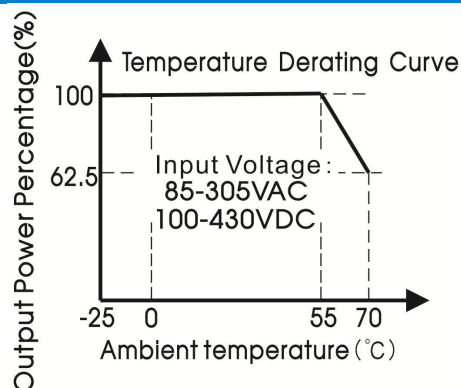
Note：①With an AC input voltage between 85 -100VAC and a DC input between 100-120VDC the output power must be derated as per the temperature derating curves;

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②This product is suitable for use in natural air cooling environments, if in a closed environment, please contact our company's FAE.

Efficiency Vs Input Voltage (Full Load)

Efficiency Vs Output Load(Vin=230VAC)
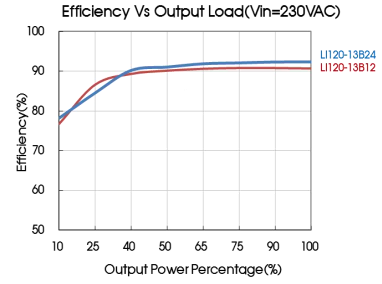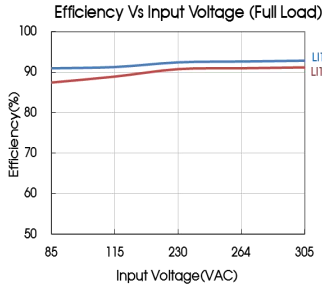
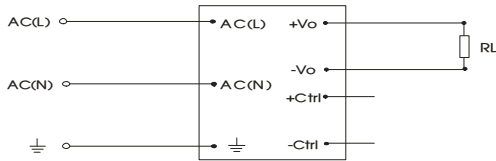## Design Reference

1. Typical application circuit

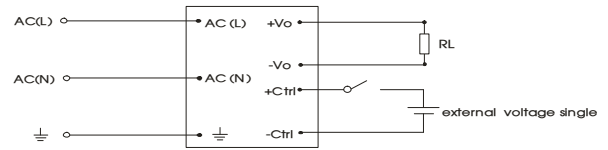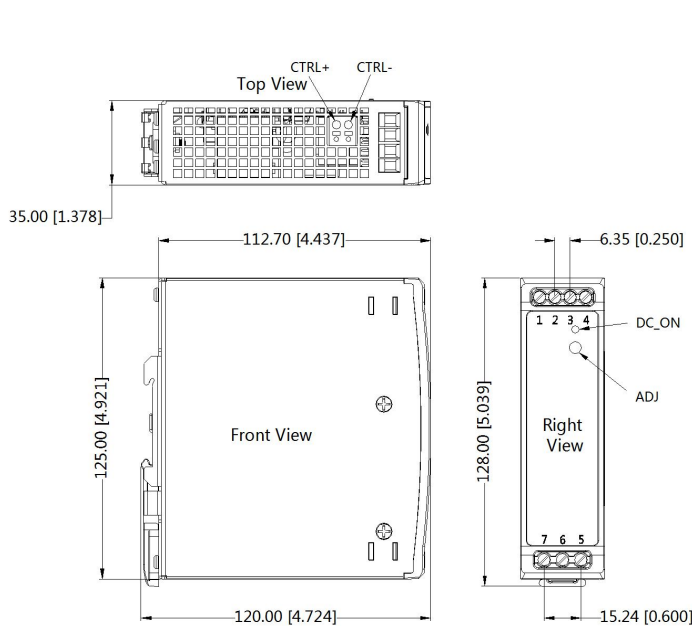Fig. 1: Typical application circuit

Fig. 2: Remote control Applications circuit
*Note: external voltage single range 4.5 - 12.5VDC realize the power off, the single disappears and recovery

2. For more information Please find the application notes on www.mornsun-power.com

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION

Pin-Out	
Pin	Function
1	+Vo
2	+Vo
3	-Vo
4	-Vo
5	AC(N)
6	AC(L)
7	⏚

Note:
Unit: mm[inch]
ADJ : adjustable resistance to change output voltage
Wire range: 26-10 AWG
Tightening torque: Max 0.4 N·m
Mounting rail: TS35, rail needs to connect safety ground
General tolerances: ±1.00[±0.039]

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Notes:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number：58220028;

2. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;

3. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25 ℃, humidity<75% with nominal input voltage and rated output load;

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. 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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