DC/DC Parallel Redundancy Module

LIR40-40

MORNSUN®

CE Report UKCA RoHS 3 years Warranty

EN62368-1 BS EN62368-1

FEATURES

- Input voltage range: 9-60VDC
- Operating ambient temperature range: -40℃ to +85℃
- High efficiency up to 98%
- 1500VAC insulation voltage
- Built-in DC OK signal and alarm relay contact
- Double side conformal coating
- Operating altitude up to 5000m
- Supporting for N+1 parallel redundancy
- Safety according to UL/IEC62368, UL61010/508, ATEX, IECEx, EN61558, EN62477, IEC/UL60664
- 3 years warranty

LIR40-40 is one of Mornsun Din-rail parallel redundancy module. It is used with Mornsun high-end Din-rail series 240W/480W/960W and other series, it features wide input voltage range, wide operating temperature, cost-effective, high efficiency and high reliability. It offers excellent EMC performance and meet UL/IEC/EN62368, UL61010/508, ATEX, EN61558, IECEx, EN62477, IEC/UL60664 standards and it is widely used in areas of industrial, electricity, security, telecommunications etc.

Selection Guide

Certification	Part No.	Voltage Drop Vin-Vo (V/Typ.)	Nominal Output Current (A) Max.	Efficiency (24/48VDC, %/Typ.)
EN	LIR40-40	0.2	40	98

Note: *The rated voltage difference of the product is related to the input voltage and load condition, the higher the load, the higher the voltage difference.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	DC input	9	12/24/48	60	VDC
Input Current Range	Each input 0-40A, continuous	--	--	40	A
Input peak current	Each input 0-40A for 5s without damage	--	--	60	A
Hot Plug		Unavailable			

Note: *LED state: Vin1 triggers the under-voltage alarm, Vin1 LED turns off, Vin2 LED turns on; Vin1 triggers the over-voltage alarm, Vin1 LED turns on, Vin2 LED turns off.

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	200	--	mV
Output Power	48V/40A	--	1920	--	W
DC OK Function	The two input voltages are normal	DC OK function is normal (relay on), two input LED indicator light on			
LED1 (Vin1 OK)	ON	Vin1 input OK			
LED2 (Vin2 OK)	ON	Vin2 input OK			

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 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 < 2mA	1500	--	--	VAC
Insulation Resistance	Input output - ⏚	At 500VDC	100	--	--	MΩ
Operating Temperature			-40	--	+85	℃
Storage Temperature			-40	--	+85	

Storage Humidity	Non-condensing		--	--	95	%RH
Power Derating	Operating temperature derating	+60℃ to +70℃	2.5	--	--	%/℃
		+70℃ to +85℃	2.33	--	--	
Safety Standard			EN62368-1, BS EN62368-1(Report) Design refer to IEC/UL62368-1, UL61010/508-1, ATEX, IECEx, EN61558-1, EN62477-1, IEC/UL60664-1			
Safety Class			CLASS I			
MTBF	MIL-HDBK-217F@25℃		>1700,000 h			

Mechanical Specifications

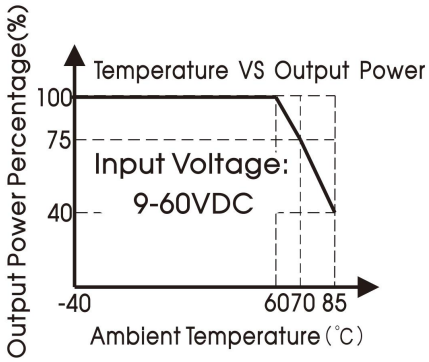
Case Material	Metal (AL1100, SGCC)
Dimensions	124.00mm x 54.00mm x 110.00mm
Weight	400g
Cooling Method	Natural air cooling

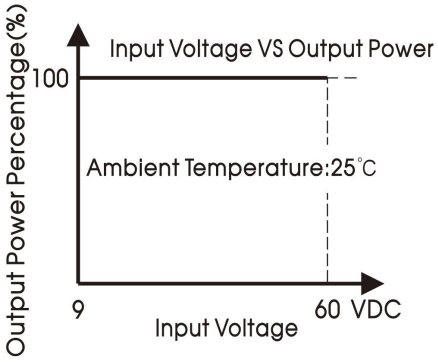
Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032 CLASS B	
	RE	CISPR32/EN55032 CLASS B	
Immunity*	ESD	IEC/EN 61000-4-2 Contact ±8KV/Air ±15KV	Perf. Criteria A
	RS	IEC/EN 61000-4-3 20V/m	perf. Criteria A
	EFT	IEC/EN 61000-4-4 ±2KV	perf. Criteria A
	Surge	IEC/EN 61000-4-5 line to line ±1KV/line to ground ±2KV	perf. Criteria A
	CS	IEC/EN61000-4-6 20 Vr.m.s	perf. Criteria A

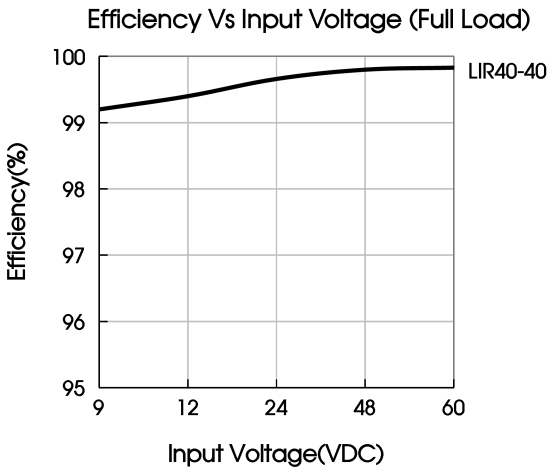
Note: *For immunity test, please add AC-DC module at front of LIR40-40 (Mornsun LI, LIF, LIMF, LIHF120/240/480 series products are recommended).

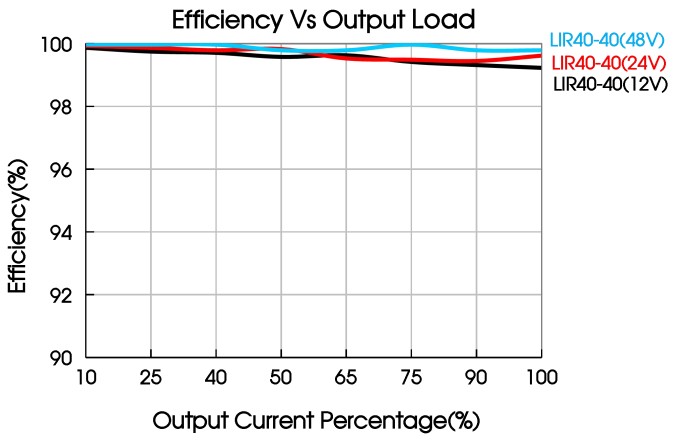
Product Characteristic Curve





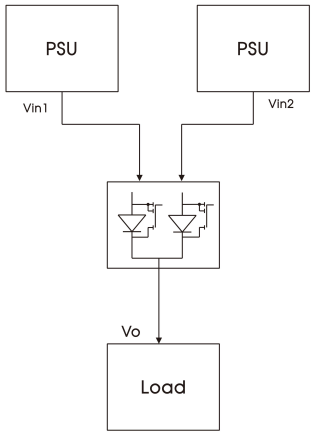
Note: This product is suitable for applications using natural air cooling, for applications in closed environment please consult Mornsun FAE.



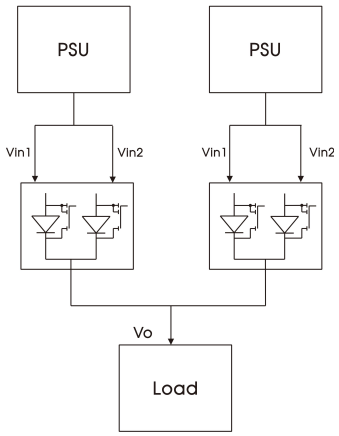


Typical Application

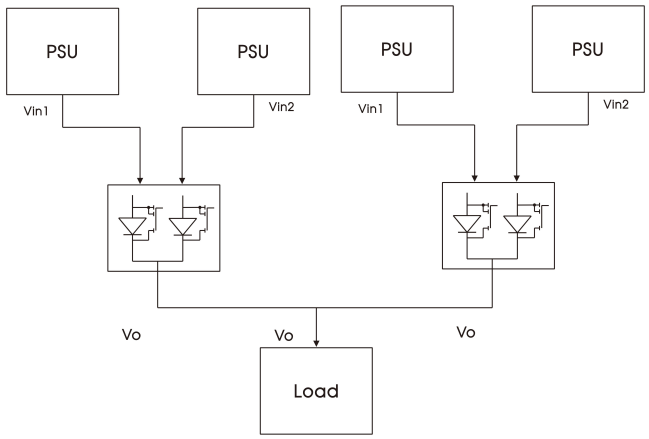
1. 1+1 Redundancy: Using 1 more PSU as the redundant unit.



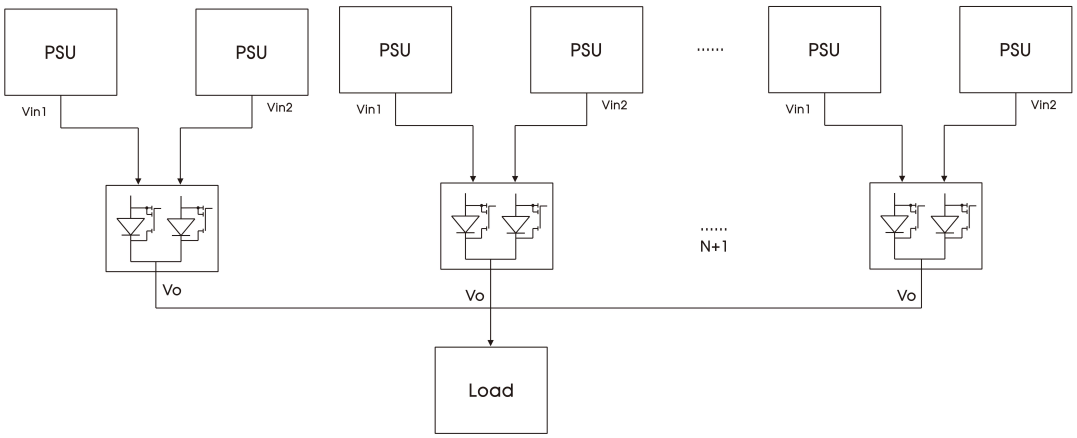
2. Single Use: Connecting only one PSU to one LIR40-40 module to reduce the stress of the MOS and hence increase the reliability.



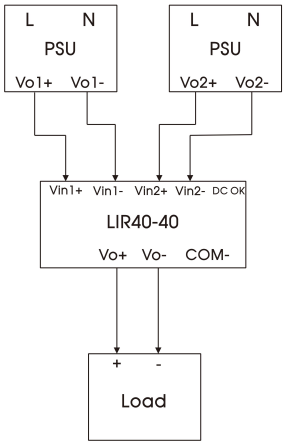
3. 2+2 Redundancy: Using 2 more PSU as the redundant unit.



4. N+1Redundancy: Using more PSUs as the redundant units to increase the reliability.

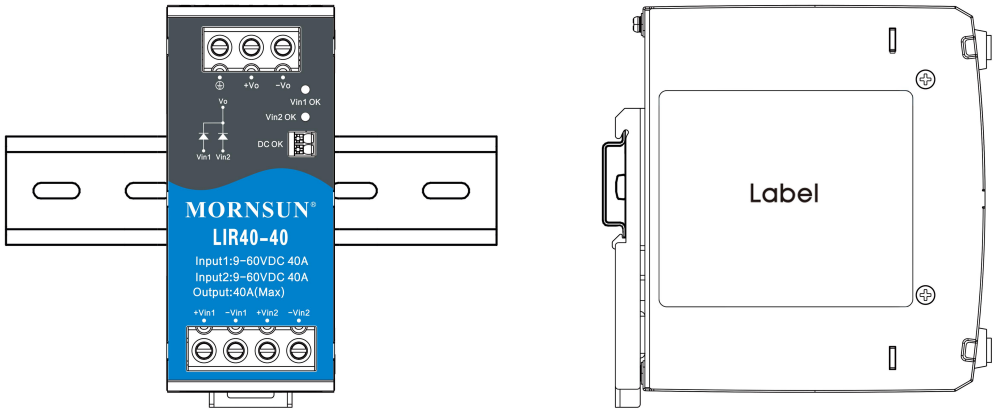


5. Cable connection reference

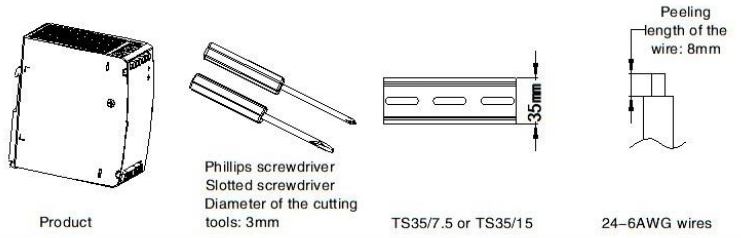


Note: 1. Please add AC-DC module at front of LIR40-40 (Mornsun LI, LIF, LIMF, LIHF120/240/480/960 series products are recommended);
2. When the output is short circuited, the pre-stage AC-DC module short circuit protection will be triggered;

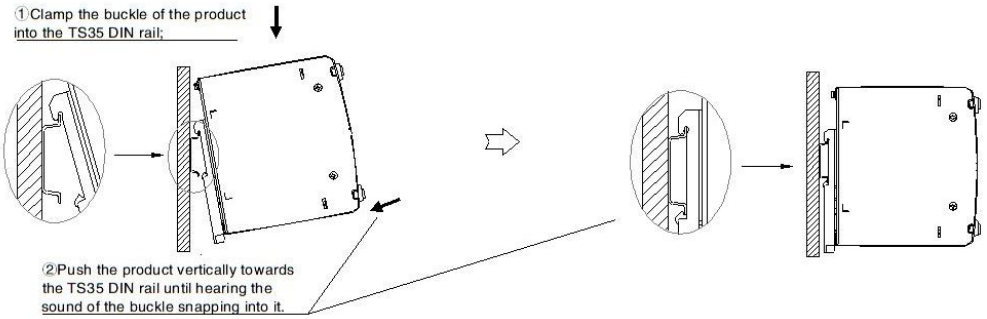
Installation Diagram



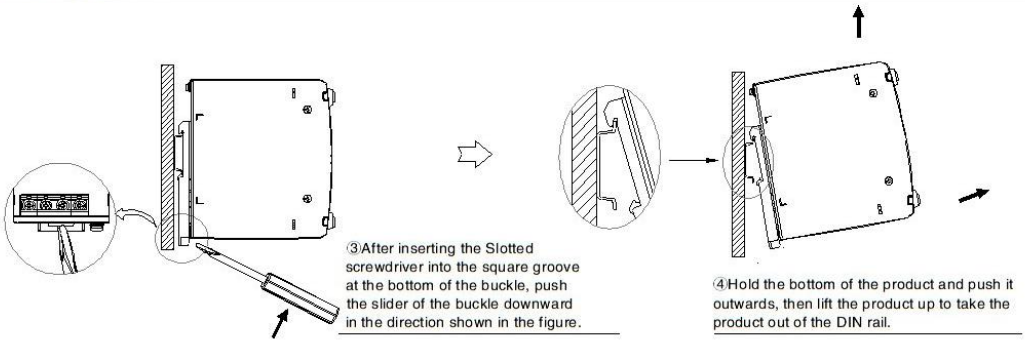
Materials required in the installation		
1	Product	1 PCS
2	Phillips screwdriver Slotted screwdriver	1 PCS
3	TS35/7.5 or TS35/15	1 PCS
4	24–6AWG wire	/ PCS
	The content is for reference only. Regarding the actual wire diameter and tightening torque, refer to the dimensional drawing.	



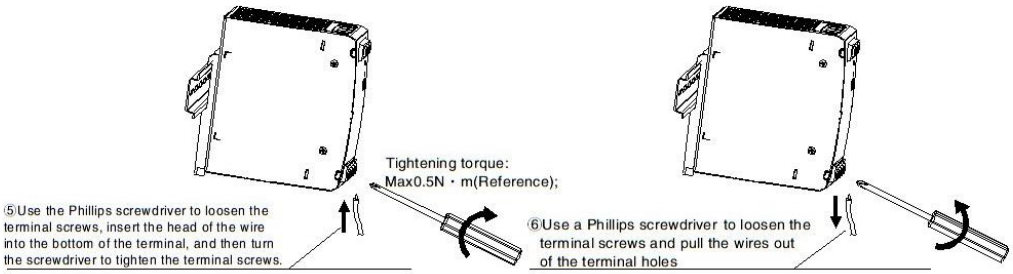
Installation Steps ①–②



Disassembly Steps ③–④

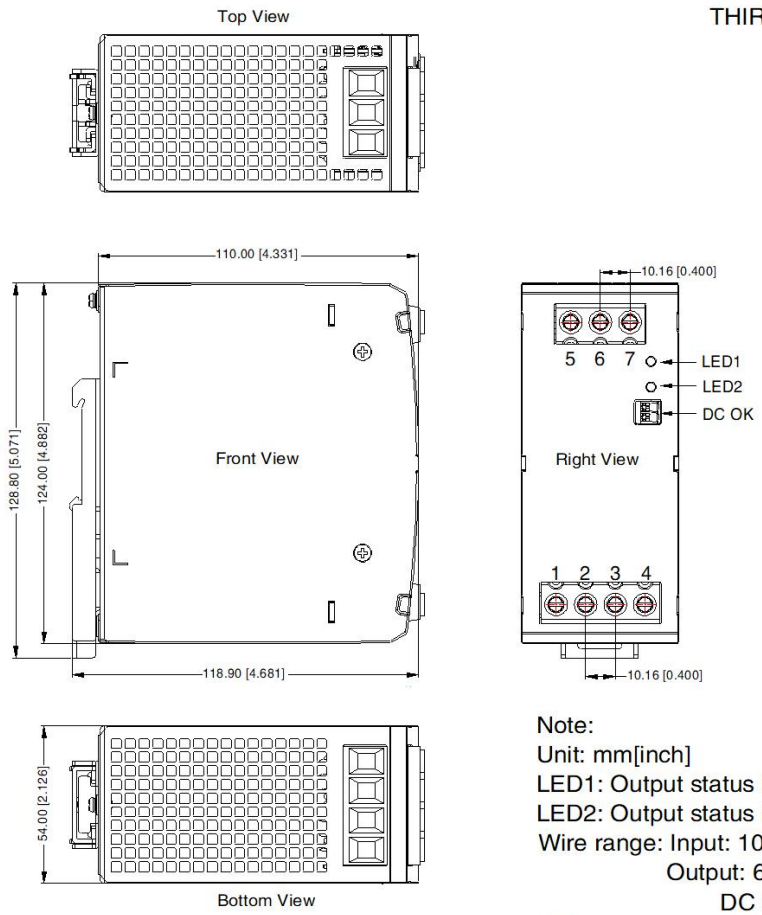


Wiring / Unwiring Steps ⑤–⑥



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



Pin–Out	
Pin	Mark
1	+Vin1
2	–Vin1
3	+Vin2
4	–Vin2
5	⏚
6	+Vo
7	–Vo

Note:
Unit: mm[inch]
LED1: Output status indicator LED
LED2: Output status indicator LED
Wire range: Input: 10–6AWG
Output: 60V: 10–6AWG
DC OK: 24–16AWG
Tightening torque: Max 0.79 N・m
Mounting rail: TS35, rail needs to connect safety ground
General tolerances: ± 1.00[± 0.039]

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220231;
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 ambient temperature derating of 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. 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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