DC/DC Parallel Redundancy Module

LIR-20

MORNSUN®

FEATURES

- Input voltage range: 22 - 60VDC
- Operating ambient temperature range: -40℃ to +80℃
- High efficiency up to 97%
- 1500VAC insulation voltage
- Two input status indicators, relay contact signal output
- DC OK function
- Operating altitude up to 5000m
- Supporting for N+1 parallel redundancy
- EN62368 safety approved, safety according to IEC/UL62368, EN61558, EN60335

LIR-20 is one of Mornsun Din-rail parallel redundancy module. It features wide input voltage range, wide operating temperature, cost-effective, high efficiency and high reliability. It offers excellent EMC performance and meet IEC/EN61000-4, CISPR32/EN55032, IEC/EN/UL62368, EN61558, EN60335 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)	Efficiency (24/48VDC, %/Typ.)
CE	LIR-20	0.65	20	97

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	DC input	22	24/48	60	VDC
Input Current Range	The sum of the two input currents is not more than 20A, input current rating of 10A per channel.	--	--	20	A
Input Under-voltage Alarm*	One input 24V, test another input voltage when triggers the under-voltage alarm (one LED turns off, the relay changes from on to off)	--	18	--	VDC
	One input 48V, test another input voltage when triggers the under-voltage alarm (one LED turns off, the relay changes from on to off)	--	36	--	
Input Over-voltage Alarm*	One input 24V, test another input voltage when triggers the over-voltage alarm (one LED turns off, the relay changes from on to off)	--	32	--	
	One input 48V, test another input voltage when triggers the over-voltage alarm (one LED turns off, the relay changes from on to off)	--	64	--	
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
DC OK Function	When the two input voltages are normal and the voltage difference does not exceed the over-voltage or under-voltage alarm, the DC OK function is normal (the relay on), the two input LED indicators light on	--	--	--	--
Output Power	24V/20A	--	480	--	W
	48V/20A	--	960	--	

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.

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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		50	--	--	MΩ
Operating Temperature				-40	--	+80	℃
Storage Temperature				-40	--	+85	
Storage Humidity		Non-condensing		--	--	95	%RH
Power Derating		Operating temperature derating	+60℃ to +80℃	2.25	--	--	%/℃
Safety Standard				Meet IEC/EN/UL62368/EN61558/EN60335			
Safety Certification				EN62368			
Safety Class				CLASS I			
MTBF		MIL-HDBK-217F@25℃		>1000,000 h			

Mechanical Specifications

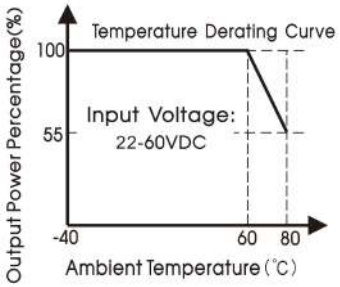
Case Material	Metal (AL1100, SGCC)
Dimensions	35.00 x 125.00 x 112.70 mm
Weight	365g (Typ.)
Cooling Method	Natural air cooling

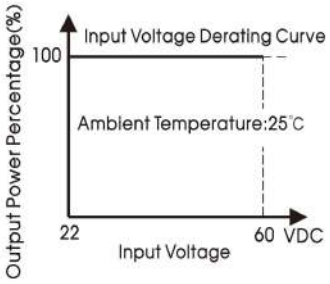
Electromagnetic Compatibility (EMC)

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 10V/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 10 Vr.m.s	perf. Criteria A

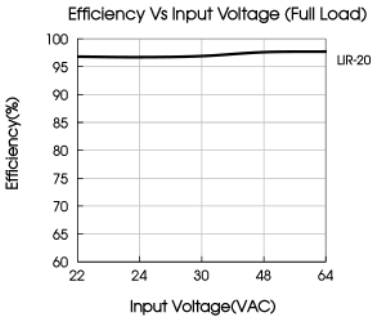
Note: *For immunity test, please add AC-DC module at front of LIR-20 (Mornsun LI120/240/480 series products are recommended).

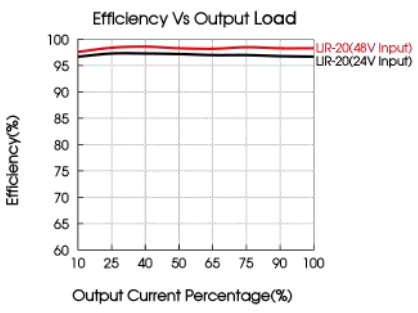
Product Characteristic Curve





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





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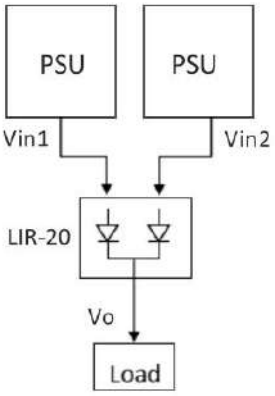
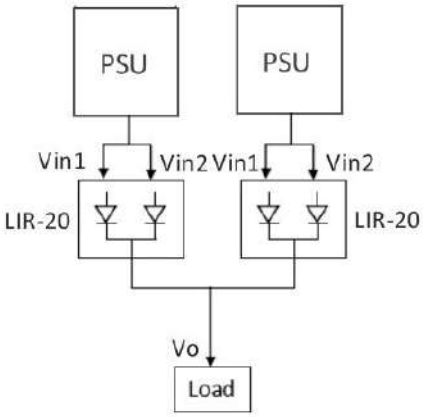
Typical Application

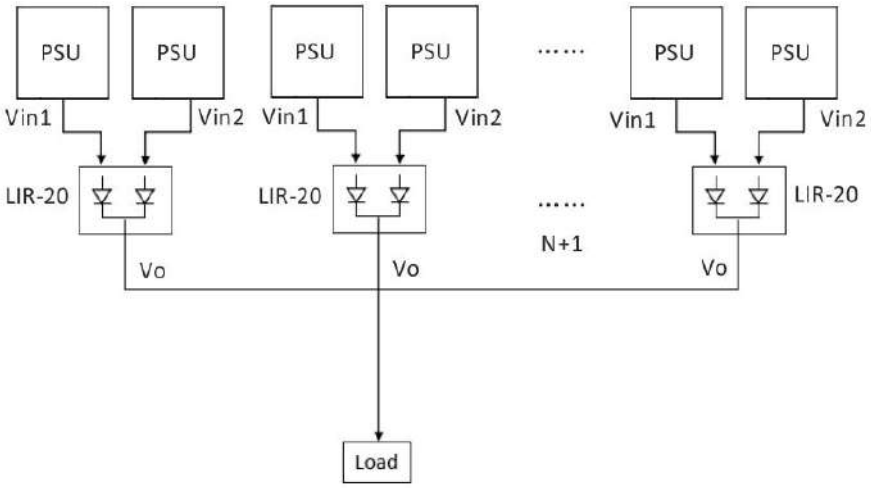
1. 1+1 Redundancy: Using 1 more PSU as the redundant unit.



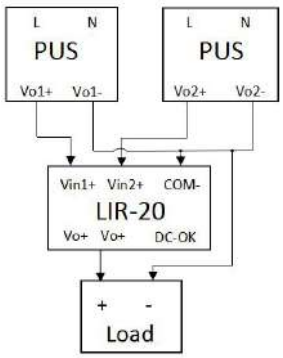
2. Single Use: Connecting only one PSU to one LIR-20 module to reduce the stress of the diodes and hence increase the reliability.



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



4.Refer to the wiring



Note: 1. Please add AC-DC module at front of LIR-20 (Mornsun LI120/240/480 series products are recommended);
2. When the output is short circuited, the pre-stage AC-DC module short circuit protection will be triggered;
3. This product cannot be used in parallel to increase power.

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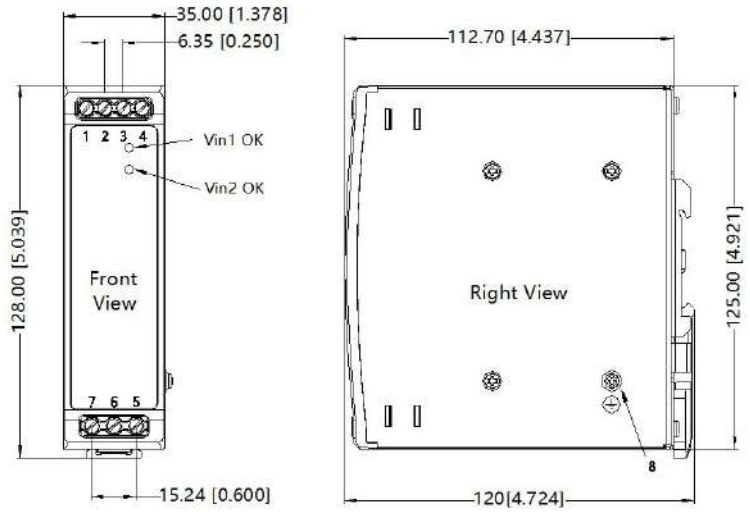
Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



Pin-Out	
Pin	Function
1	DC_OK
2	DC_OK
3	+Vo
4	+Vo
5	Vin1
6	Vin2
7	COM
8	⏚

Note:
Unit: mm[inch]
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]

Note:

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

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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