AC/DC 480W DIN-Rail Power Supply

LIF480-20BxxR3 Series

MORNSUN®



RoHS

FEATURES

- Universal 85 - 264VAC or 120 - 370 VDC Input voltage
- Accepts AC or DC input (dual-use of same terminal)
- Operating ambient temperature range: -40℃ to +85℃
- High efficiency up to 95%, high reliability
- DC OK function(Supports single-machine fault alarms in direct parallel mode)
- Active PFC
- 150% peak load output for 3 seconds
- DC ON output status indicator LED
- Output short circuit, over-current, over-voltage, over-temperature protection
- Operating altitude up to 5000m
- OVCIII @ EN62477 2000m
- Safety according to IEC/UL/BS EN 62368/61010/Semi F-47
- 3 years warranty

LIF480-20BxxR3 series is the cost-effective, standard rail installation, and energy-efficient green power supply provided by Mornsun for customers. For industrial control equipment, machines and other industrial equipment in harsh environments to provide high stability, high anti-interference power supply. The power supply is small, lightweight, compact, and standard rial mounted to save customers a lot of space. The products offer a high level of stability and immunity to noise, compliant with international IEC62368 standards for EMC and safety specifications design refer to IEC/EN/UL/BS EN 62368/61010.

Selection Guide

Certification	Part No.*	Output Power (W)*	Nominal Output Voltage and Current (Vo/Io)	Output Voltage Adjustable Range (V)	Efficiency at 230VAC (%) Typ.	Max. Capacitive Load (μF)
--	LIF480-20B24R3	480	24V/20A	24-28	95	20000
	LIF480-20B48R3		48V/10A	48-55		10000

Note: 1.*The total power should not exceed the rated power of 480w at any state state, and the output current should not exceed the rated output current.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	Rated input (Certified voltage)		100	--	240	VAC
	AC input		85	--	264	
	DC input		120	--	370	VDC
Input Frequency			47	--	63	Hz
Input Current	115VAC		--	--	5	A
	230VAC		--	--	2.5	
Inrush Current	115VAC	Cold start	--	--	15	
	230VAC		--	--	30	
Power Factor	115VAC		0.99	--	--	--
	230VAC		0.95	--	--	
Leakage Current	240VAC		<2mA			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range	--	±1.0	--	%
Line Regulation	Rated load	--	±0.5	--	
Load Regulation	0% - 100% load	--	±1.0	--	

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Ripple & Noise*	20MHz bandwidth (peak-peak value)	24V	--	--	100	mV
		48V	--	--	120	
Temperature drift coefficient			--	±0.03	--	%/℃
Minimum load			0	--	--	%
Hold-up Time			16	22	--	ms
DC OK Signal	When the output voltage is normal, the dry contact of the relay closes; when the output voltage is abnormal, the dry contact of the relay opens.		30VDC/1A Max.			
Short Circuit Protection	Recovery time < 10s after the short circuit disappear.		Hiccup mode, continuous, self-recover			
Over-current Protection	230VAC, rated load		≥105% Io, self-recover			
Over-voltage Protection	24V		≤35V (Out voltage hiccup, self-recover)			
	48V		≤60V (Out voltage hiccup, self-recover)			
Over-temperature Protection	115Vac, 100% load	Over-temperature protection start	--	--	90	℃
		Over-temperature protection release	60	--	--	

Note: 1.*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 Enclosed Switching Power Supply Application Notes for specific information;
2.*Over-temperature protection: The output voltage is shut off, and the over-temperature anomaly is resolved automatically after recovery;
3.*When the input voltage is lower than 150Vac, the over-current protection is 130%, and the output is shut off for 10 seconds before self-recovery.

General Specifications

Item		Operating Conditions		Min.	Typ.	Max.	Unit
Isolation Test	Input - ⏚	Electric strength test for 1min., leakage current <5mA		2500	--	--	VAC
	Input - output			4000	--	--	
	Output - ⏚			1500	--	--	
Insulation Resistance	Input - ⏚	Ambient temperature：25±5℃ Relative humidity：Less than95%，uncondensed Test voltage：500VDC		100	--	--	MΩ
	Input - output			100	--	--	
	Output - ⏚			100	--	--	
Operating Temperature				-40	--	+85	℃
Storage Temperature				-40	--	+85	
Operating Humidity		Non-condensing		20	--	95	%RH
Storage Humidity				10	--	90	
Switching Frequency		Preceding stage	230VAC, rated load	--	65	--	kHz
		Backward stage		--	75	--	
Power Derating		Operating temperature derating	-40℃ to -30℃	3.35	--	--	%/℃
			+60℃ to +85℃	3	--	--	
		Input voltage derating	85VAC-100VAC	1.33	--	--	%/VAC
Safety Standards		12V/24V/48V		Safety according to IEC/UL/BS EN 62368/61010/Semi F-47			
Safety Class				CLASS I			
MTBF		MIL-HDBK-217F@25℃		> 300,000 h			
Warranty				3 years			

General Specifications

Case Material	Metal (AL5052, SPCC)
Dimensions	124.00mm x 48.00mm x 127.00mm
Weight	900g (Typ.)
Cooling Method	Natural air cooling

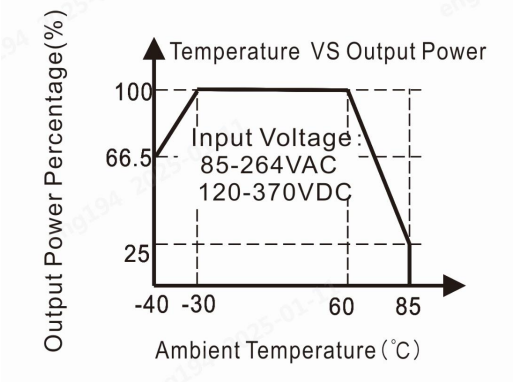
EMC Specifications

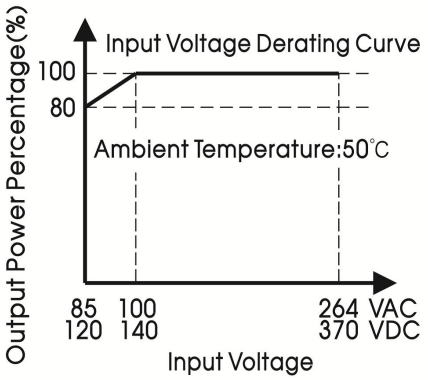
EMI	CE	CISPR32/EN55032 Class B
	RE	CISPR32/EN55032 Class B

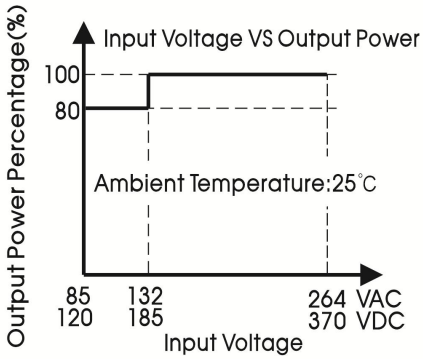
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	Harmonic current	IEC/EN61000-3-2	CLASS A and CLASS D	
EMS	ESD	IEC/EN61000-4-2	Contact ±8KV/Air ±15KV	perf. Criteria A
	RS	IEC/EN61000-4-3	80MHz – 1GHz 10V/m 1.4GHz – 2GHz 3V/m 2GHz – 2.7GHz 1V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4	±4KV	perf. Criteria A
	Surge	IEC/EN61000-4-5	line to line ±2KV/line to ground ±4KV	perf. Criteria A
	CS	IEC/EN61000-4-6	10 Vr.m.s	perf. Criteria A
	MS	IEC/EN61000-4-8	30A/m	perf. Criteria A
	Voltage dips	IEC/EN61000-4-11	0% of 115Vac, 0Vac, 1 cycle	perf. Criteria B
			40% of 115Vac, 46Vac, 10/12 cycle	
			70% of 115Vac, 80.5Vac, 25/30 cycle	
			0% of 230Vac, 0Vac, 1 cycle	
			40% of 230Vac, 92Vac, 10/12 cycle	
			70% of 230Vac, 161Vac, 25/30 cycle	
	Voltage interruption	IEC/EN61000-4-11	0% of 200Vac, 0Vac, 250/300 cycle	
	Semi F-47	80% of 200VAC 160Vac 1000ms 70% of 200VAC 140Vac 500ms 50% of 200VAC 100Vac 200ms		perf. Criteria A

Product Characteristic Curve



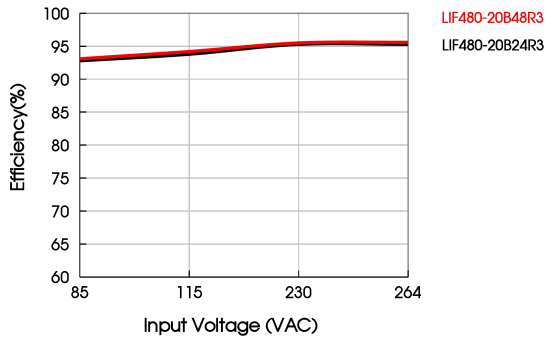




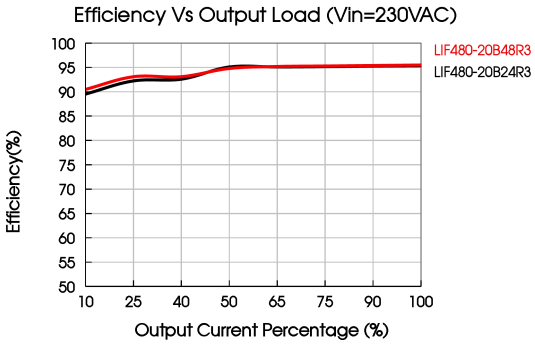
Note:
1. With an AC input voltage between 85 -132VAC and a DC input between 120-185VDC the output power must be derated as per the temperature derating curves;
2. This product is suitable for applications using natural air cooling; for applications in closed environment please consult Mornsun FAE.

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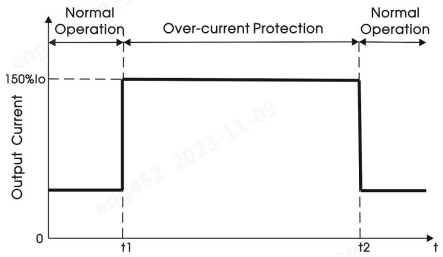
Efficiency Vs Input Voltage (Full Load)



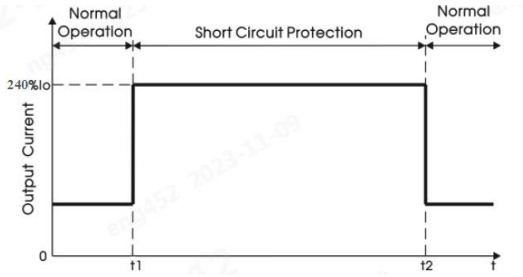
Efficiency Vs Output Load (Vin=230VAC)



Over-current protection curve (Typ.)



Short circuit protection curve (Typ.)

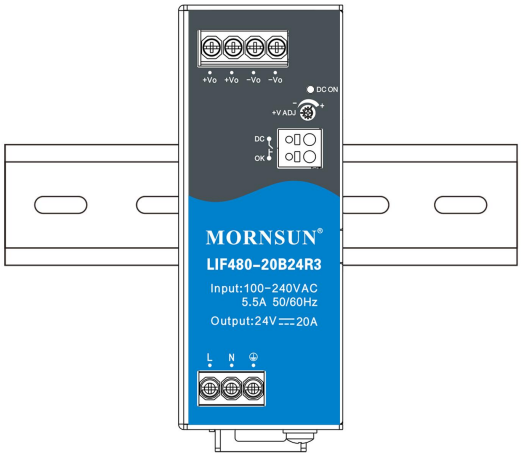


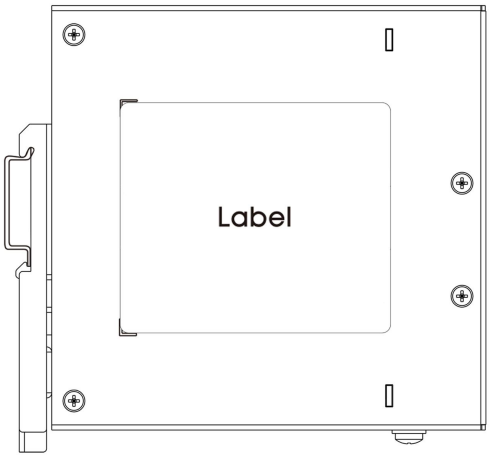
Remark :

1.AC input 230vac supports 1.5 times the peak power load, and the maintenance of the rated voltage output continues 3s(the duration of t1 to t2 in the figure), exceeds the 3s output;

2.In dynamic power applications, such as peak power to low power dynamic change load, the actual equivalent average output power should not exceed the rated power.

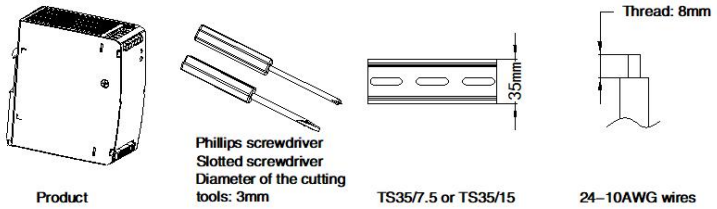
Installation Diagram



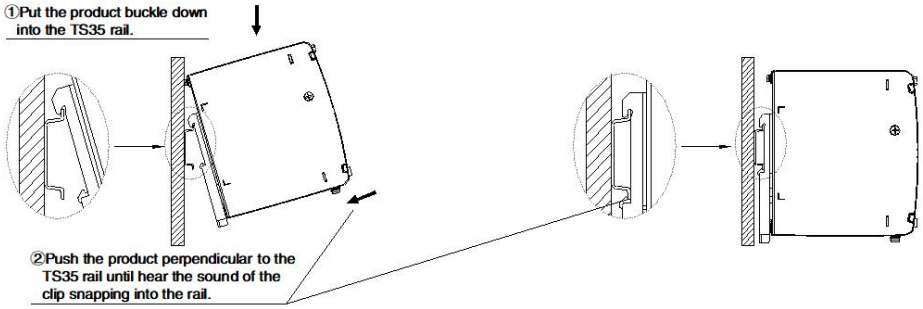


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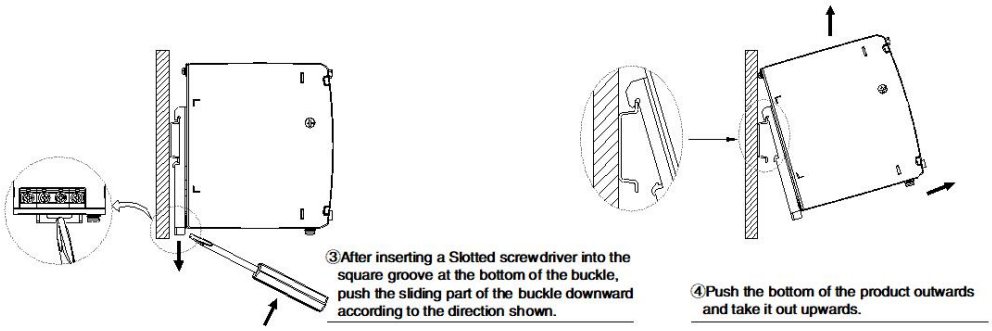
Bill Of Material		
1	Product	1 PCS
2	Phillips screwdriver Slotted screwdriver	1 PCS
3	TS35/7.5 or TS35/15	1 PCS
4	24–10AWG wires	/ PCS
	All above is only for reference, the actual wiring diameter and locking torque refer to the appearance size diagram	



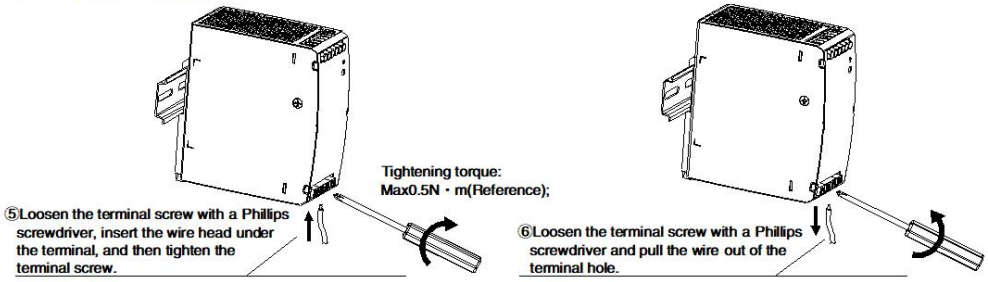
Installation steps ①–②



Disassembly steps ③–④



Connecting/Disconnecting Steps ⑤–⑥

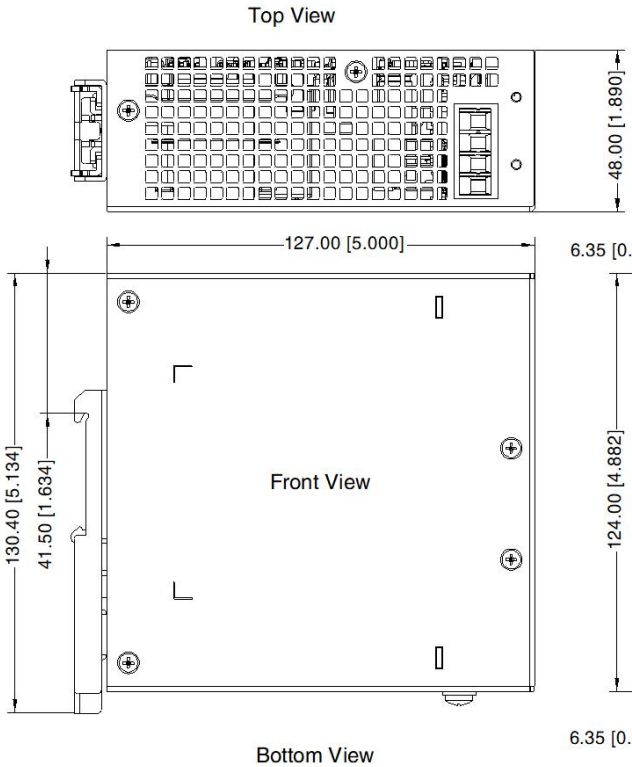


Note: Keep the following installation clearances: 20mm on top, 20mm on the bottom, 5mm on the left and right sides are recommended when the device is loaded permanently with more than 50% of the rated power. Increase this clearance to 15mm in case the adjacent device is a heat source (e.g. another power supply).

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Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



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

Note:
Unit: mm[inch]
DC ON: Output status indicator LED
ADJ: Output adjustable resistor
Wire range: Input: 20-10AWG
Output: 24V: 14-10AWG
48V: 18-10AWG
DC OK: 24-16AWG
Connector Tightening torque: 0.5 N·m±10%
Mounting rail: TS35, rail needs to connect safety ground
General tolerances: ±1.00[±0.039]

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WARNING Risk of electrical shock, fire, personal injury or death:
AVERTISSEMENT AVERTISSEMENT Risque de choc électrique, d'incendie, de blessures corporelles ou de décès :

1. Do not use the power supply without proper grounding (Protective Earth). Use the terminal on the input block for earth connection and not one of the screws on the housing;
   N'utilisez pas l'alimentation électrique sans mise à la terre appropriée (Terre protectrice). Utilisez le terminal sur le bloc d'entrée pour la connexion terrestre et non pas une des vis sur le boîtier;
2. Turn power off before working on the device, protect against inadvertent re-powering;
   Éteignez l'alimentation avant de travailler sur l'appareil, protégez-vous contre la réénergisation accidentelle;
3. Make sure that the wiring is correct by following all local and national codes;
   Assurez-vous que le câblage est correct en suivant tous les codes locaux et nationaux;
4. Do not modify or repair the unit;
   Ne modifiez pas ou ne réparez pas l'appareil;
5. Do not open the unit as high voltages are present inside;
   Ne modifiez pas ou ne réparez pas l'appareil;
6. Use caution to prevent any foreign objects from entering the housing;
   Faire preuve de prudence pour empêcher les objets étrangers d'entrer dans le logement;
7. Do not use in wet locations or in areas where moisture or condensation can be expected;
   Faire preuve de prudence pour empêcher les objets étrangers d'entrer dans le logement;
8. Do not touch during power-on, and immediately after power-off, hot surfaces may cause burns;
   Ne touchez pas pendant l'alimentation et, immédiatement après l'alimentation, les surfaces chaudes peuvent causer des brûlures.
9. For ambient temperature ≤60℃, use ≥90℃ - copper wire only; for ambient temperature >60℃ to 85℃, use ≥105℃ - copper wire only; use only wires with a minimum dielectric strength of 300V (input) and 60V (output);
   Température ambiante ≤60℃, utiliser ≥90℃ - seulement fils de cuivre; Température ambiante >60℃ et 85℃, utiliser ≥105℃ - seulement fils de cuivre; Uniquement pour l'ulilisation de fils de cuivre d'une résisitance d'isolation minimale de 300V (d'entrée) et 60V (de sortie).

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com.Packaging bag number: 58220880;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<95% RH with nominal input voltage and rated output load;
3. The room 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. The out case needs to be connected to the earth (⏚) of system when the terminal equipment in operating, see "Dimensions and Recommended Layout" ;
9. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
10. The output voltage can be adjusted by the output adjustable resistance ADJ, turn it up clockwise;
11. The power supply is considered a component which will be installed into a terminal equipment. All EMC tests should be confirmed with the final equipment. Please consult our FAE for EMC test operation instructions.
12.

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