AC/DC 750W Enclosed Switching Power Supply

LMF750-23BxxUH(-C) Series

MORNSUN®

RoHS

Report EN62368-1 | GB4943.1 | BS EN62368-1 | UL62368-1

FEATURES

- Universal 85 - 305VAC or 120 - 430VDC input voltage
- Accepts AC or DC input (dual-use of same terminal)
- Semi-potted process, fanless design
- Operating ambient temperature range: -40℃ to +85℃
- Low Ripple & Noise, high efficiency
- Active PFC
- 150% peak load output for 1 second
- High I/O isolation test voltage up to 4000VAC
- Output short circuit, over-current, over-voltage, over-temperature protection
- 3 years warranty
- Operating altitude up to 5000m
- Safety according to IEC62368, IS13252 (Part1), IEC60335, EN61558

LMF750-23BxxUH(-C) series is one of Mornsun's enclosed fanless semi-potted ultra narrow AC-DC switching power supply, it is suitable for industrial and outdoor occasions where the application environment is relatively harsh. It features 305VAC all operating conditions, universal AC input and at the same time accepts DC input voltage, cost-effective, high PF value, high efficiency, high reliability, 150% peak load output and operating altitude up to 5000m. These converters offer excellent EMC performance and meet UL/EN62368, EN60335, EN61558, GB4943 standards and they are widely used in areas of industrial, lighting, electricity, security, telecommunications, smart home etc.

Selection Guide

Certification	Part No.*	Rated Output Power (W)*	Nominal Output Voltage and Current (Vo/Io)	Output Voltage Adjustable Range (V)	Efficiency at 230VAC (%) Typ.	25℃ Max. Capacitive Load (μF)	Low Temperature Max. Capacitive Load (μF)
EN CCC BS UL BIS	LMF750-23B12UH	720.0	12V/60A	12-14.4	94	12000	6000
	LMF750-23B24UH	751.2	24V/31.3A	24-28.8	95	10000	4000
	LMF750-23B28UH	750.4	28V/26.8A	28-33.6	95	9000	3500
	LMF750-23B36UH	752.4	36V/20.9A	36-43.2	95	8000	3000
	LMF750-23B48UH	753.6	48V/15.7A	48-57.6	96	6000	2000

Note: 1.*Use suffix "C" for terminal with protective cover;
2.*Under any conditions, the total power of the product should not exceed the rated output power, and the output current should not exceed the rated output current.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input		85	--	305	VAC
	DC input		120	--	430	VDC
Input Voltage Frequency			47	--	63	Hz
Input Current	115VAC		--	--	7.5	A
	230VAC		--	--	3.8	
Inrush Current	115VAC	Cold start	--	--	20	
	230VAC		--	--	40	
Power Factor	115VAC	Full load, 25℃	0.98	--	--	--
	230VAC		0.95	--	--	
Leakage Current	277VAC, 50Hz	Contact leakage current	<0.5mA			
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		--	±0.5	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value), 25℃	12V	--	--	150	mV
		24V/28V/36V/48V	--	--	200	
Minimum Load			0	--	--	%
Stand-by Power Consumption	25℃, 230VAC input		--	--	5	W
Peak Load Output	100 - 277VAC, test for 1s		--	150%	--	
Hold-up Time	25℃, full load, 115VAC/230VAC		12	--	--	ms
Short Circuit Protection	Recover time <5S after the short circuit disappear		Constant current hiccup protection, continuous, self-recover			
Over-current Protection			>110% - 170% Io, constant current hiccup protection, self-recover			
Over-voltage Protection	12V		14.5 - 17VDC		Hiccup, self-recover	
	24V		29.0 - 33VDC			
	28V		33.5 - 38VDC			
	36V		43.5 - 49VDC			
	48V		59.0 - 63VDC			
Over-temperature Protection			Output voltage turn off, self-recover after the temperature drops			

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 enclosed Switching Power Supply Application Notes for specific information. When the product is working at a light load (<10% of rated load), the product is in a green working mode to improve efficiency, and the ripple & noise specification is ≤2.0 times of the rated specification.

General Specifications

Item		Operating Conditions				Min.	Typ.	Max.	Unit
Isolation	Input - ⏚	Electric strength test for 1min., leakage current <5mA				2000	--	--	VAC
	Input - output					4000	--	--	
	Output - ⏚					1750	--	--	
Insulation Resistance	Input - ⏚	Environment temperature: 25±5℃ Relative humidity: <95%RH, non-condensing Testing voltage: 500VDC				50	--	--	MΩ
	Input - output						--	--	
	Output - ⏚						--	--	
Operating Temperature						-40	--	+85	℃
Storage Temperature						-40	--	+85	
Operating Humidity		Non-condensing				20	--	90	%RH
Storage Humidity						10	--	95	
Power Derating		Operating temperature derating	With aluminum plate or 23.5CFM fan*	12V	-40℃ to +45℃	0	--	--	%/℃
					+45℃ to +85℃	2	--	--	
				24V/28V/36V/48V	-40℃ to +50℃	0	--	--	
					+50℃ to +85℃	2.5	--	--	
			Without aluminum plate	12V/24V/28V/36V/48V (70% start derating)	-40℃ to +45℃	0	--	--	
					+45℃ to +85℃	1.58	--	--	
		Input voltage derating			85VAC - 180VAC	0.33	--	--	%/VAC
					180VAC - 305VAC	0	--	--	
Safety Standard						GB4943.1, UL62368-1, IEC60950-1 safety approved & EN62368-1(Report); Design refer to IEC62368-1, IS13252 (Part1), IEC60335-1, EN61558-1			

Safety Class		CLASS I
MTBF	MIL-HDBK-217F@25℃	⩾300,000 h

Note: *In order to optimize the heat dissipation performance, when the aluminum plate is used for auxiliary heat dissipation, please note: 1. The size of the aluminum plate is 450mm x 450mm x 3mm; 2. The surface of the aluminum plate mast be coated with thermal grease; 3. The product must be tightly attached to the aluminum plate.

Mechanical Specifications

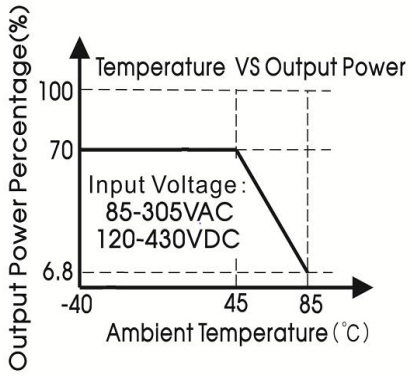
Case Material	Metal (AL6063, SGCC)
Dimensions	237.00mm x 100.00mm x 41.00mm
Weight	1300g (Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

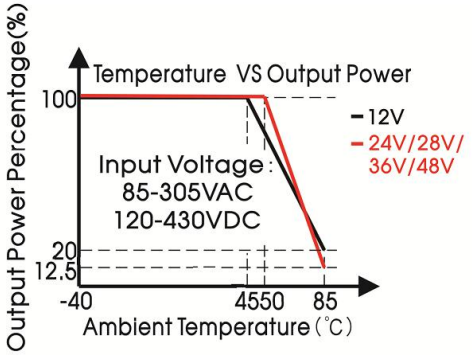
Emissions	CE	CISPR32/EN55032 CLASS B	
	RE	CISPR32/EN55032 CLASS B	
	Harmonic current	IEC/EN61000-3-2 CLASS A	
	Voltage flicker	IEC/EN6100-3-3	
Immunity	ESD	IEC/EN61000-4-2 Contact ±8KV/Air ±15KV	Perf. Criteria A
	RS	IEC/EN61000-4-3 10V/m	
	EFT (Input port)	IEC/EN61000-4-4 ±2KV	
	EFT (Output port)	IEC/EN61000-4-4 ±2KV	
	Surge (Input port)	IEC/EN61000-4-5 Line to line ±2KV/line to PE ± 4KV	
	Surge (Output port)	IEC/EN61000-4-5 Line to line ±0.5KV/line to PE ±1KV	
	CS (Input port)	IEC/EN61000-4-6 10Vr.m.s	
	CS (Output port)	IEC/EN61000-4-6 10Vr.m.s	
	Power frequency magnetic field	IEC/EN61000-4-8 10A/m	
	Voltage dip, short interruption and voltage variation	IEC/EN61000-4-11 0%, 70%	Perf. Criteria B
	Intercom interference test	MS-SOP-DQC-007	Perf. Criteria B

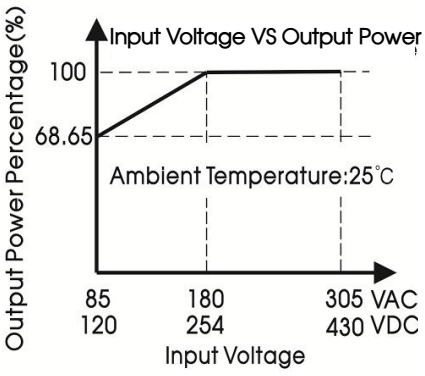
Product Characteristic Curve

No aluminum plate for heat dissipation

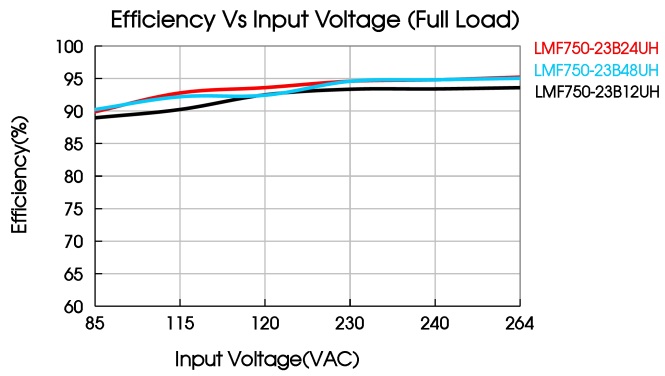


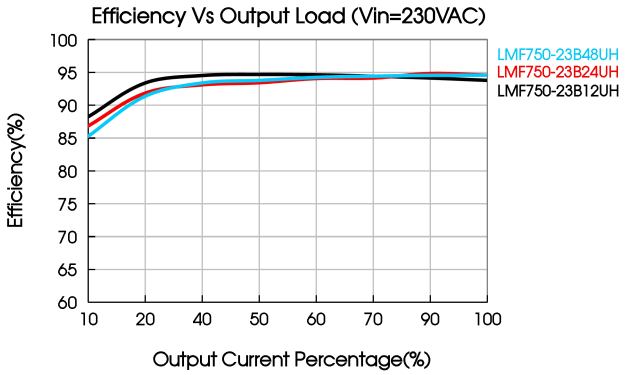
With aluminum plate for heat dissipation or 23.5CFM





Note: 1. With an AC input voltage between 85 -180VAC and a DC input between 120 - 254VDC 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.

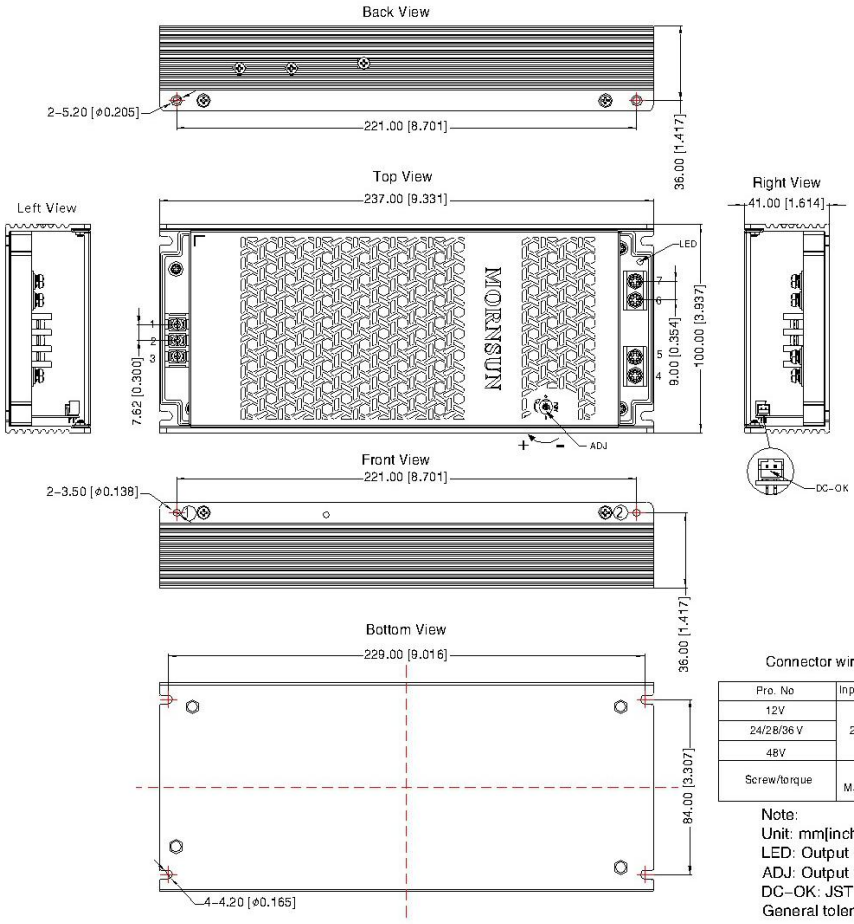




Dimensions and Recommended Layout

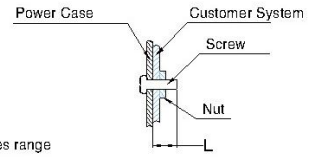
LMF750-23BxxUH

THIRD ANGLE PROJECTION



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

Position	Screw Spec.	L(max)	Torque(max)
①－②	M3	6mm	0.4N・m



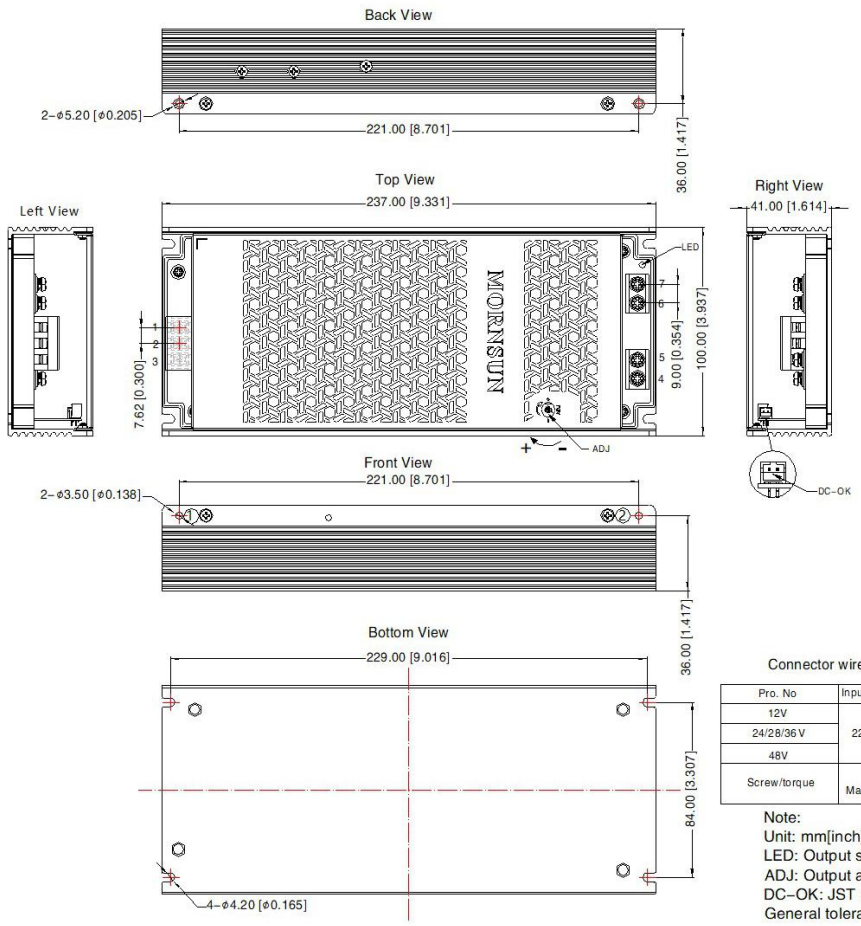
Connector wires range

Pro. No	Input connector	Output connector	Output connector (double wires) Pic.
12V	22-14AWG	14-12AWG	-Vo double wires
24/28/36 V		16-12AWG	
48V		18-12AWG	+Vo double wires
Screw/torque	M3.0, Max 0.5N・m	M4.0, Max 0.9N・m	

Note:
Unit: mm[inch]
LED: Output status indicator LED
ADJ: Output adjustable resistor
DC-OK: JST SPH-002T-P0.5S or equivalent
General tolerances: ±1.00[±0.039]

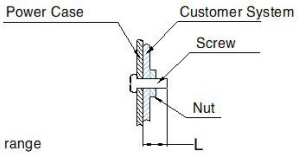
LMF750-23BxxUH-C

THIRD ANGLE PROJECTION



Pin-Out	
Pin	Mark
1	⏚
2	AC/N
3	AC/L
4	-VO
5	-VO
6	+VO
7	+VO

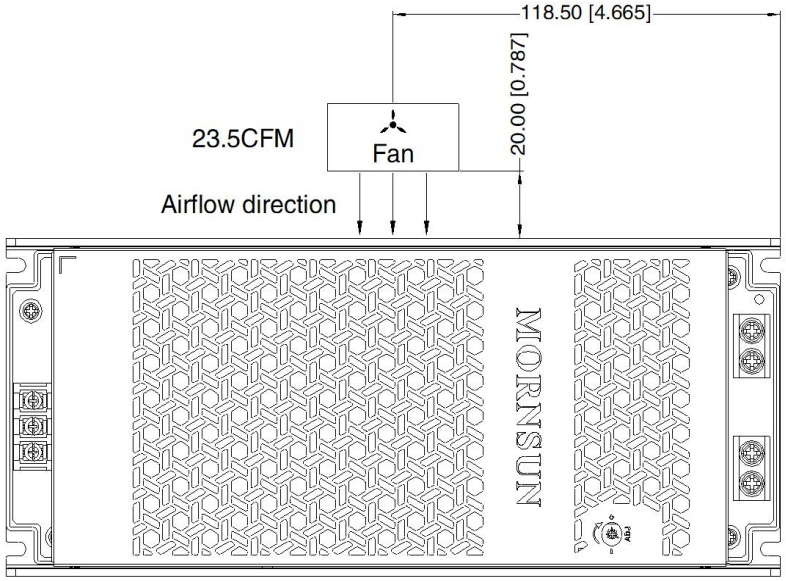
Position	Screw Spec.	L(max)	Torque(max)
①－②	M3	6mm	0.4N・m



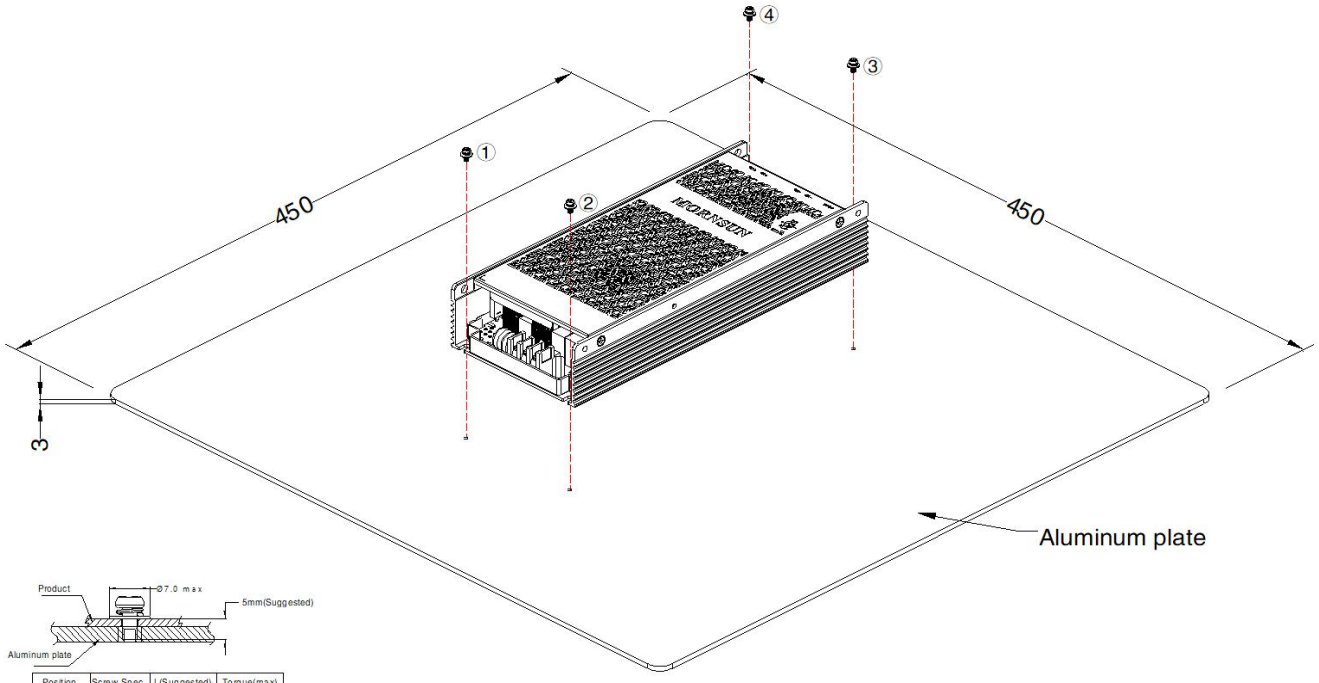
Connector wires range

Pro. No	Input connector	Output connector	Output connector (double wires) Pic.
12V	22-14AWG	14-12AWG	+Vo double wires
24/28/36 V		16-12AWG	
48V		18-12AWG	-Vo double wires
Screw/torque	M3.0, Max 0.5N・m	M4.0, Max 0.9N・m	

Note:
Unit: mm[inch]
LED: Output status indicator LED
ADJ: Output adjustable resistor
DC-OK: JST SPH-002T-P0.5S or equivalent
General tolerances: ± 1.00[± 0.039]



Installation Diagram



Position	Screw Spec.	L(Suggested)	Torque(max)
① - ④	M3	5MM	0.4N • m

Note: 1. In order to meet the "Derating Curve", the product testing must be installed onto an aluminum plate. The size of the suggested aluminum plate is shown as above. And for optimizing thermal performance, it is necessary to apply thermal grease on the bottom of the product.
2. It is suggested to install the product with M3 x 6 combination screws, and the product must be firmly installed at the center of the aluminum plate.

Note: This is the schematic diagram of the bottom installation, install with M3 x 6 round head screws, it is necessary to apply thermal grease on the bottom of the product, derating refer to with aluminum plate curve.

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220326;
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 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 PE (⏚) of system when the terminal equipment in operating;
9. The output voltage can be adjusted by the ADJ, clockwise to increase;
10. If product involves multi-brand materials and there are differences in color etc, please refer to the standards of each manufacturer;
11. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
12. 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.

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