AC/DC 60W Enclosed Switching Power Supply

LM60-10A15

MORNSUN®

CE Report RoHS

EN62368-1

FEATURES

- Special switching power supply designed for professional laser galvanometer industry
- Universal 85 - 264VAC or 120 - 370VDC Input voltage
- Operating ambient temperature range: -25℃ to +70℃
- High efficiency, high reliability, high life
- Output short circuit, over-current, over-voltage protection
- High I/O isolation test voltage up to 3000VAC
- Operating altitude up to 5000m

LM60-10A15 is one of Mornsun's dual output non-isolation enclosed AC-DC switching power supply. It features universal AC input and at the same time accepts DC input voltage, cost-effective, high efficiency, high reliability and double or reinforced insulation. These converters offer excellent EMC performance and meet IEC/EN61000-4, IEC/UL/EN62368, GB4943 standards and they are not only specific used in the laser galvanometer industry, but also widely used in current sensors, motors and other fields.

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)	
			(Vo1/Io1)	(Vo2/Io2)			Vo1	Vo2
EN	LM60-10A15	60	+15V/2.0A	-15V/2.0A	14.25-15.75	82	4000	2000

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input		85	--	264	VAC
	DC input		120	--	370	VDC
Input Voltage Frequency			47	--	63	Hz
Input Current	115VAC		--	--	2	A
	230VAC		--	--	1	
Inrush Current	230VAC	Cold start	--	60	--	
Leakage Current	240VAC		<0.75mA			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range	Vo1	--	±1.0	--	%
		Vo2	--	±3.0	--	
Line Regulation	Rated load	Vo1	--	±1.0	--	
Load Regulation	10% - 100% load (Balanced load)	Vo1	--	±1.0	--	
		Vo2	--	±3.0	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)		--	--	100	mV
Temperature Coefficient	Vo1		--	±0.03	--	%/℃
Start-up Delay Time	Rated input voltage		--	--	3	s
Hold-up Time	230VAC		20	--	--	ms
Minimum Load			10	--	--	%
Short Circuit Protection	Recovery time <5s after the short circuit disappear.		Hiccup, continuous, self-recovery			
Over-current Protection	Dual output with balanced load		110% - 200% Io, hiccup, self-recovery			
Over-voltage Protection	Vo1		≤22VDC (Output voltage hiccup, turn off or clamp)			

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.

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	--	--	
Insulation Resistance	Input - ⏚	At 500VDC		50	--	--	MΩ
	Input - output			50	--	--	
	Output - ⏚			50	--	--	
Operating Temperature				-25	--	+70	℃
Storage Temperature				-40	--	+85	
Storage Humidity		Non-condensing		--	--	95	%RH
Power Derating		Operating temperature derating	-25℃ to -20℃	6	--	--	%/℃
			+50℃ to +70℃	2	--	--	
		Operating voltage derating	85VAC - 90VAC	5	--	--	
Safety Standard				EN62368-1 (Report) Design refer to IEC/UL62368-1, EN60335-1, EN61558-1, GB4943.1			
Safety Class				CLASS I			
MTBF		MIL-HDBK-217F@25℃		>300,000 h			

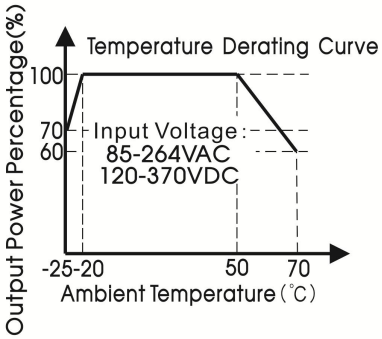
Mechanical Specifications

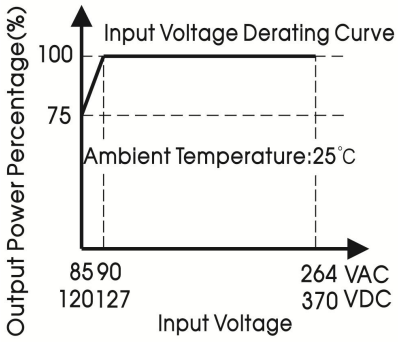
Case Material	Metal (AL1100, SGCC)
Dimensions	99.00 x 97.00 x 30.00 mm
Weight	245g (Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032 CLASS A	
	RE	CISPR32/EN55032 CLASS A	
Immunity	ESD	IEC/EN 61000-4-2 Contact ±6KV/Air ±8KV	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
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11 0%, 70%	perf. Criteria B

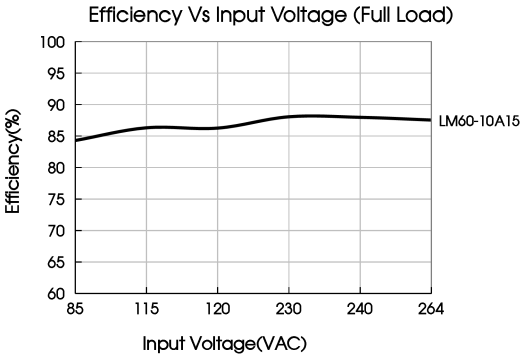
Product Characteristic Curve

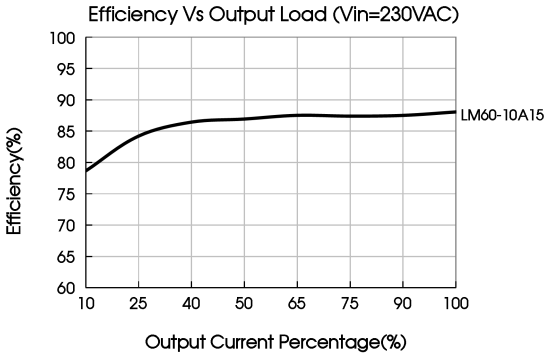




Note: 1. With an AC input voltage between 85 - 90VAC and a DC input between 120 - 127VDC the output power must be derated as per the temperature derating curves;

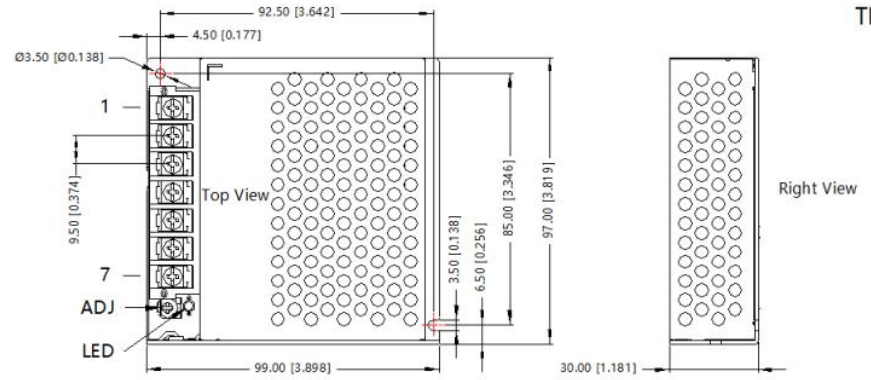
2. This product is suitable for applications using natural air cooling; for applications in closed environment please consult Mornsun FAE.

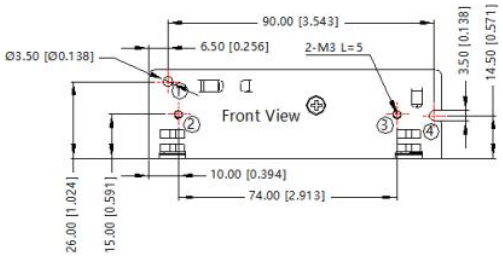


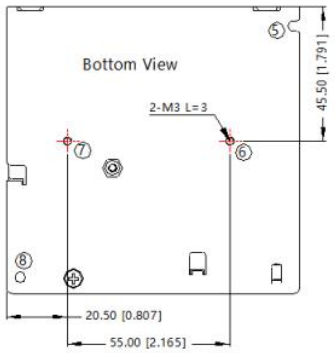


Dimensions and Recommended Layout

THIRD ANGLE PROJECTION

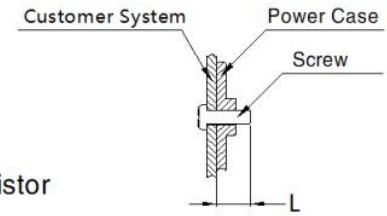






Pin-Out	
Pin	Function
1	AC(L)
2	AC(N)
3	⏚
4	Vo2
5	COM
6	COM
7	Vo1

Position	Screw Spec.	L(max)	Torque(max)
② - ③	M3	5mm	0.4N·m
⑥ - ⑦	M3	3mm	0.4N·m



Note:
Unit: mm[inch]
ADJ: Output adjustable resistor
Wire range: 22-14AWG
Connector tightening torque: M3, Max 0.4N·m
General tolerances: ±1.00[±0.039]
①- ⑧any position must be connected to PE

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220119;
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 lower;
10. 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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