LASER COMPONENTS®

LCE-PSU
Power Supply for APD- and PLD-Modules

1. General

1.1 Description

This specification defines the performance characteristics for a class II adapter, single-phase 6.0 watts. Single output level power supply.

- Simple design philosophy.
- Overload Latch-Off protection during either (a) specified power threshold requirements or (b) short circuit condition.
- Reliability level of 50K hours MTBF & 0.5% annual field failure rate @ 25 °C.
- DC output voltage must be Safe Extra Low Voltage (SEL V) & Limited Power as defined by IEC60950 3rd edition.

The maximum room ambient temperature (T_{mra}), as mentioned in clause 1.4.12 of IEC 60950 3rd edition, for the external power supply is 40 °C.

- Cooling: natural convection.

2. Input Requirements

2.1 Input Conditions

The Supply shall operate over the voltage ranges as follows:

Rated input voltage	100 – 240 Vac
Operating range	90 – 264 Vac
Rated input frequency	50/60 Hz +/- 3 Hz
Rated input current	0.18 A max.
Maximum input power	10.0 W
Power consumption (no loading)	Max. 0.5 W
Input current (no loading)	≤18 mA
Primary current protection	An adequate internal fuse on the AC input line is provide.
Configuration	2 Conductor

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2.2 AC Inrush Current

Peak inrush current shall be limited to 60 A for a cold start. Under both cold & warm start conditions, there shall be no immediate damage or long term impact on the reliability of the Supply. The conformance test for this require ment shall be performed at +12.5% of the rated input voltage. Voltage and current waveforms will be observed on an oscilloscope following closure of the external power switch. Switch closure will be repeated until the waveforms show closure coincident with a voltage peak. The current measured during this occurrence will be defined as the peak inrush current.

3. Output Requirements

3.1	Nominal dc output voltage	+12.0 V
3.2	Minimum load current	0.01 A
3.3	Rating load current	0.5 A
3.4	Peak load current	/
3.5	Rating output power	6.0 W
3.6	Line regulation	The line regulation is less than ±5% while measuring at rated load and +/-10% of input voltage changing.
3.7	Load regulation	The load regulation for +12.0 V is less than +/-5%, at measured output load from 10% to 100% rated load .
3.8	Peak load regulation	The peak load regulation for +12.0 V is less than / , at measured output load from 30% to 100% rated load.
3.9	Ripple and noise	100 mVp-p
		Add 0.1 uF/50 V ceramic capacitor and 10 uF/50 V aluminum electrolytic capacitor across the output terminal. Measured with 20 MHz bandwidth oscilloscope.
3.10	Switching efficiency	60.0% minimum
		115 V/60 Hz and 230 V/50 Hz, output current from 100%, 75%, 50%, 25%.
3.11	Turn on delay time	4000 mS At nominal input AC voltage and full load
3.12	Rise time	The supply shall have a start-up rise time of less than 20 mS to rise to within regulation limits for all DC outputs.
3.13	Hold up time	10 mS minimum At nominal input AC voltage and full load
3.14	Output over-shoot	Less than 7% of nominal voltage value
3.15	Temperature coefficient	Output voltage temperature coefficient ±0.05%/°C
3.16	LED indication function	/

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3.17	Protection function	
	Over-voltage protection	18 V max. The output voltage shall be clamped by internal protection zener.
	Short-circuit protection	The adapter shall not damage and with auto recovery function by short the DC output to Ground.
	Over current protection	The power supply will be protection when output current is at 110 – 200% of all rated dc output

4. Mechanical

4.1 Enclosure and Layout

Plastic case	UL94V-1
Weight	70 g (Max.)
Dimensions	65*36*27 mm
Colour	BLACK(PAHS+REACH)

4.2 Input and Output Configuration

Input pin	European PIN
Output connector	plug type: 5 mm
Polarity	
Cable	1.8M VW-1 2468 300V 80 °C 24AWG BLACK+WHITE(PAHS+REACH)

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5. Regulatory Compliance

5.1 Safety Requirements and Certification

5.1.1 Regulatory Standard

The power supply shall complied the following international regulatory standards

for short	Country	Certified Status	Standard
UL	USA	Meet	UL 60950-1
CSA	Canada	Meet	CSA C22.2 NO.950
TUV	Europe	Meet	TUV/VDE-EN60950-1
CE	Europe	Meet	Declared& CE Mark
PSE	Japan	Meet	J60950(H14)/J55001(H14)
BSMI	Taiwan	/	CNS13438
CCC	China	Meet	GB4943-2001
UK	Britain	Meet	EN60950-1:2000

5.1.2 Additional Safety Requirements

- Dielectric withstand voltage, Primary(input AC short)-to-Secondary(output DC short): 3000 Vac, 5 m A, 1 minute.
- Insulation resistance, input to output: 10 M Ω at 500 VDC.
- Reinforced insulation system, Primary-to-Ground and Primary-to-Secondary.
- The leakage current shall not exceed 0.25 mA.

6. Environmental Requirements

6.1 Temperature

Operating	0 °C +40 °C
Non-Operating	-20 °C +80 °C

6.2 Humidity

Operating	10%~90% (Non Condensing)
Non-Operating	10%~90% (Non Condensing)

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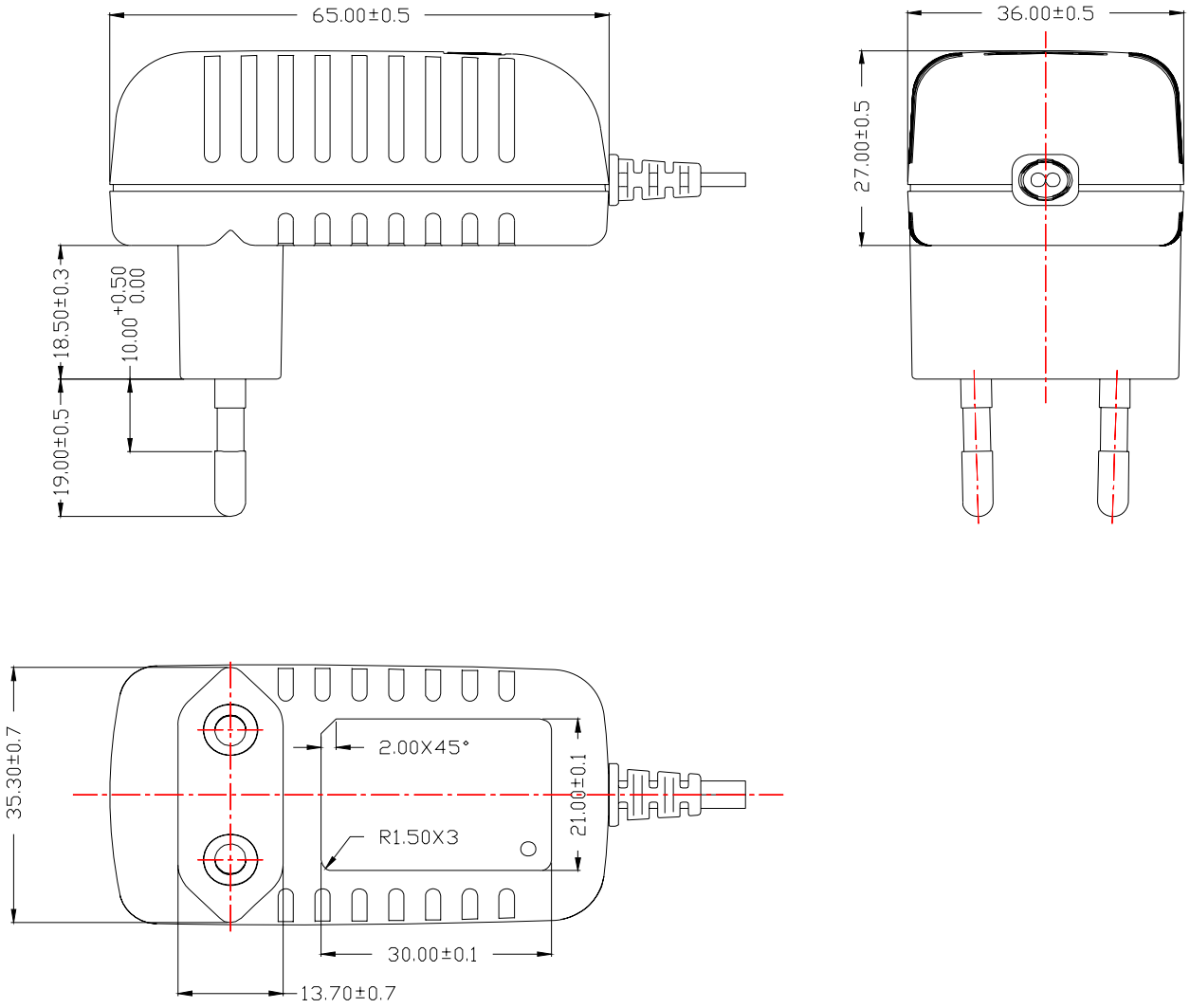
7. Appearance Drawing: (Unit: mm)



NOTE:
1. Case cover & chassis material: PPHOX (UL94V-1) BLACK
2. AC PIN MATERIAL: BRASS (NI PLATED)
3. PAHS+REACH

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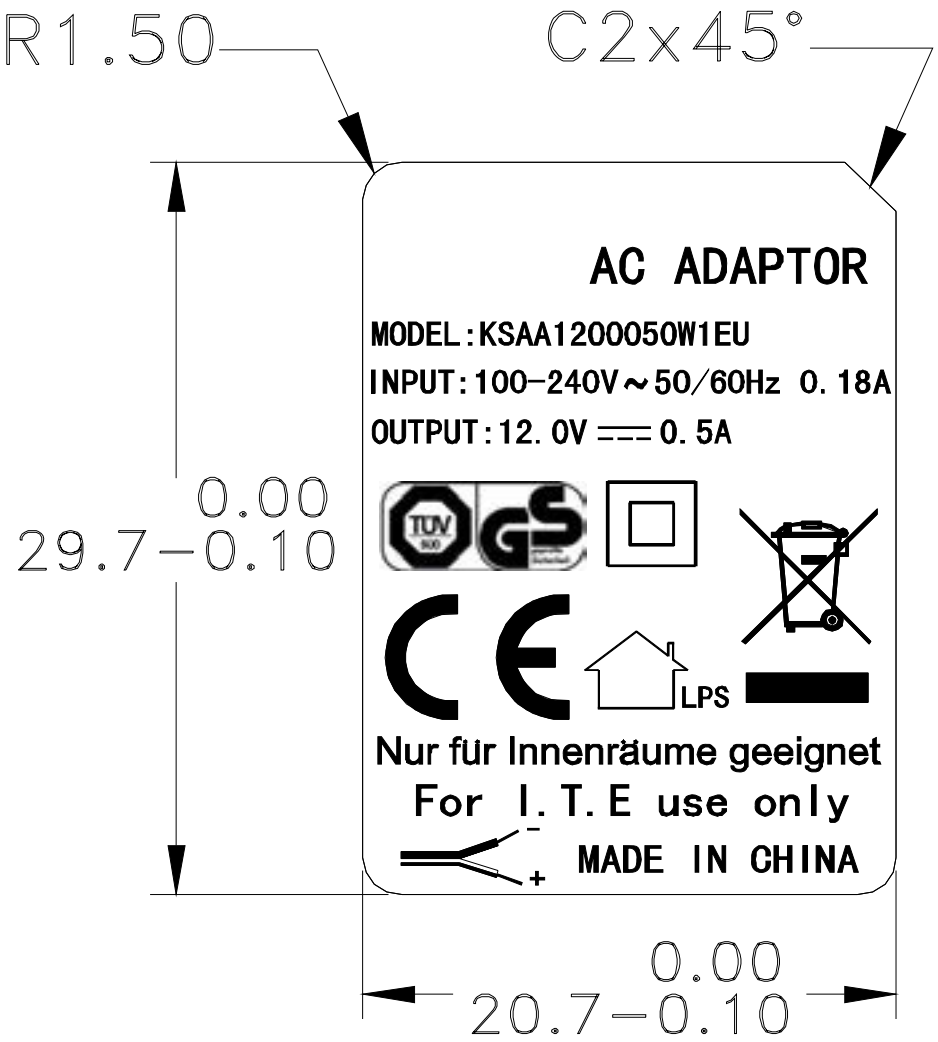
8. Name Plate



Note:
1. MATERIAL: POLYESTER+PVC; COATING:0.25+-0.05mm
2. White characters Black background
3. PAHS+REACH

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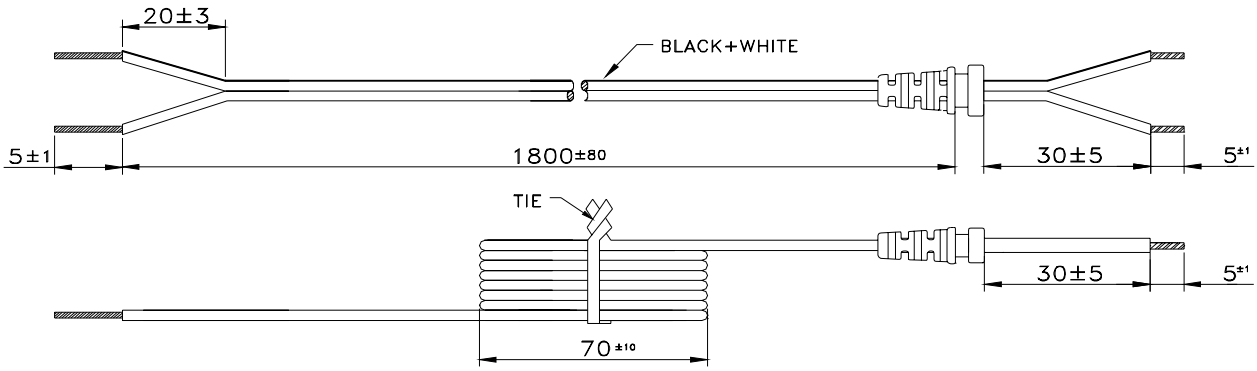
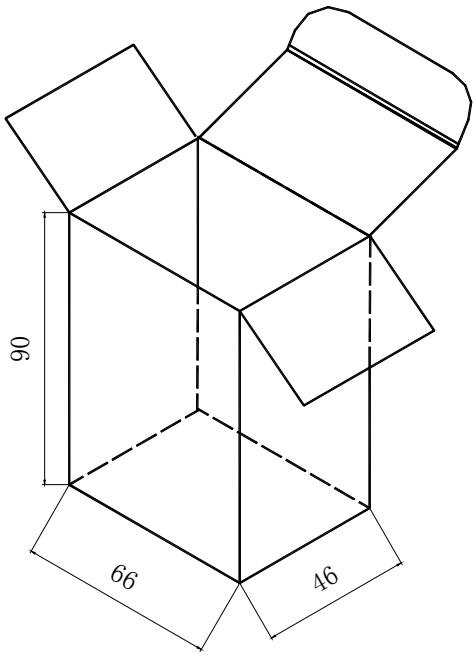
9. Dimension of Output Plug & DC Cord (Unit: mm)

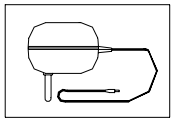


NOTE: (Unit: mm)
1. WIRE TYPE:VW-1 2468 80°C 300V L=1800mm 2C 24AWG BLACK+WHITE
   BLACK and WHITE—Positive BLACK—Negative
2. THE POLARITY:

3. PAHS+REACH

10. Box Drawing (Unit: mm)





Bag

NOTE:
WHITE BOX: 66*46*90 mm
MATERIAL:400g(LEAD FREE)

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