

APPROVAL APPLICATION

CUSTOMER	
MODEL NO	AN-P14.5I
CUSTOMER MODEL	
ISSUED DATE	

SIGNATURE	DESIGN	CHECK	APPROVAL
ProTech			
CUSTOMER			
CIRCULATION			

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SPECIFICATION	MODEL NO : AN-P14.5I	SIGNATURE	DESIGN	CHECK	APPROVAL
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1. Scope

The product is switching mode power supply (SMPS) for building-in

PRODUCT	SMPS
SPEC No.	AN-P14.5I

2. General Description

The product is AC-DC convertor which input voltage 90 - 264Vac, 1 group DC output and Maximum output power 14.5W.

3. Electrical Performance

All specification are typical at nominal input and full load at 25°C, unless otherwise specified.

3-1. Input Voltage

Normal Voltage	Voltage Range	Input Current	Normal Output Power	Input Frequency	Note
AC110V	90-132Vac	500mA	14.5W	50 / 60Hz	
AC220V	180-264Vac	250mA			

3-2. Leakage Current

Leakage current shall be less than 3.5mA at 110Vac/220Vac input and full load condition.

3-3. Inrush Current

3-3-1. Inrush current shall be less than 30A at 110Vac input and full load condition.

3-3-2. Inrush current shall be less than 60A at 220Vac input and full load condition.

3-4. Output Characteristics

Nominal Output Voltage	Load Condition		Output Voltage Range	Ripple & Noise
	Min. load	Full load		
+14.5V	0A	1.0A	+14.0V~ +15.0V	100mVp-p(Max)

Ripple & Noise test method: It shall be measured with 47uF electrolytic capacitor parallel with 0.1uF ceramic capacitor across supply output, these capacitors shall be connected to the output connector with measuring bandwidth 20 MHz .

3-5. Efficiency

The efficiency shall be more than 72% at normal input voltage and full load condition.

3-6. Line Regulation

Line regulation shall be less than $\pm 0.1\%$.

3-7. Load Regulation

Load regulation shall be meet 3-4 (+14.0V ~ +15.0V) .

3-8. Turn On Delay Time

The turn on delay time shall be less than 2.0S at normal input voltage and full load condition.

3-9. Hold Up Time

The hold up time shall be more than 10mS at 220Vac input and full load condition.

3-10. Over Current Protection

When output current over specification limits, the power supply output shall be shut down, output current pulsing mode point shall be less than 4.5A .

The OCP point shall be less than 3.5A .

Remove the over current issue, the power supply output auto-recovery.

3-11. Short Circuit Protection

There is no damage when output short circuit, and output voltage auto-recovery after remove the short circuit error.

4. System Description

4-1. Insulation Resistance

Insulation resistance shall be more than 100M Ω at 500Vdc between primary circuit and secondary circuit.

4-2. Dielectric Strength (Hi-pot)

Primary circuit to secondary circuit 3000Vac / 60S, leakage current < 5mA

4-3. Burn-In Test

Burn-In test conditions as below:

LOAD CONDITION	80%Full load
INPUT VOLTAGE	AC220V
BURN-IN TEST TIME	4 Hours
TEST TEMPERATURE	45 $^{\circ}$ C \pm 5 $^{\circ}$ C

4-4. Reliability

4-4-1. MTBF

The power supply mean time between failure shall be more than 50000hours at 80% confidence-level while operating under the following conditions:

Input voltage: 100 – 220Vac

Output current: Full load

Operating temperature: Room temperature

4-4-2. VIBRATION

OVTMM (Omni-Vibration Table Top) : 30Grm

4-5. Operating Temperature : -10 $^{\circ}$ C ~ +50 $^{\circ}$ C (When ambient temperature is over 40 $^{\circ}$ C,

output power must be derated, derating curve is linear --- 40 $^{\circ}$ C: 100%*Po; 50 $^{\circ}$ C: 80%*Po)

4-6. Storage Temperature : $-25^{\circ}\text{C} \sim +65^{\circ}\text{C}$

4-7. Operating Humidity : 10% ~ 90%RH, Non-condensing

4-8. Storage Humidity : 5% ~ 95%RH, Non-condensing

5. Safety Requirement

5.1 Rated input voltage

Input voltage range varies depending on a model, applying the wrong voltage severely damages the power supplies.

5.2 Leakage current

Leakage current flows between power supply wires and earth ground within the rated value. In case of the multiple operations, however, the total leakage current will be the sum of the leakage current flows from each power supply.

5.3 Wires

Rated voltage and current varies depending on a wire. It is necessary to use thick wires, which cover the rated output current of a power supply.

5.4 Earth

The earth terminal of power supply should be connected to the equipment where power supply is placed as thicker and shorter to protect electric shock or noise interference.

5.5 Fuse

When the internal fuse is blown, the power supply is most likely damaged. If this happens, please ship the unit back to us for repair.

5.6 High voltage

Some parts are generating high voltage inside the power supply. Please do not touch by hand directly to avoid electric shock.

6. Reliability (Environment)

6.1 Water Humidity

When the unit is operated where water drops into the power supply, it may cause failure. In this case, please arrange waterproofing.

6.2 Temperature

Power supply itself has a lifetime, and this depends on ambient temperature. When operated continuously in long period, an overhaul is recommended.

6.3 Dust

When the unit is operated at dusty place, it sometimes causes failure. In this case, please consider about dust proof measure.

6.4 Gas

When the unit is operated in an atmosphere with corrosive gas, it may cause failure.

6.5 Vibration / Impact

When installing the power supply at where vibration or impacts are given, please make a certain measure about the vibration or impact.

6.6 Electromagnetic field

When the unit is operated in an excessive strength of electromagnetic field, it may cause failure.

7. Note:

- 7.1 This product is only for inclusion by professional installers within other equipment and must not be operated as a stand-alone product.
- 7.2 There remains high voltage inside the power supply after the load test or Hi-Pot test are performed. When maintenance is performed.
- 7.3 At no load, there remains high voltage inside the power supply for several minutes after switch OFF. When maintenance is performed, pay special attention to electric shock.
- 7.4 Use insulated tool to adjust output voltage.
- 7.5 Series operation and parallel operation are not recommended. If you operate our power supplies in series or parallel in your equipment, please contact us for details.

8. Assembling and installation method:

8.1 Installation method

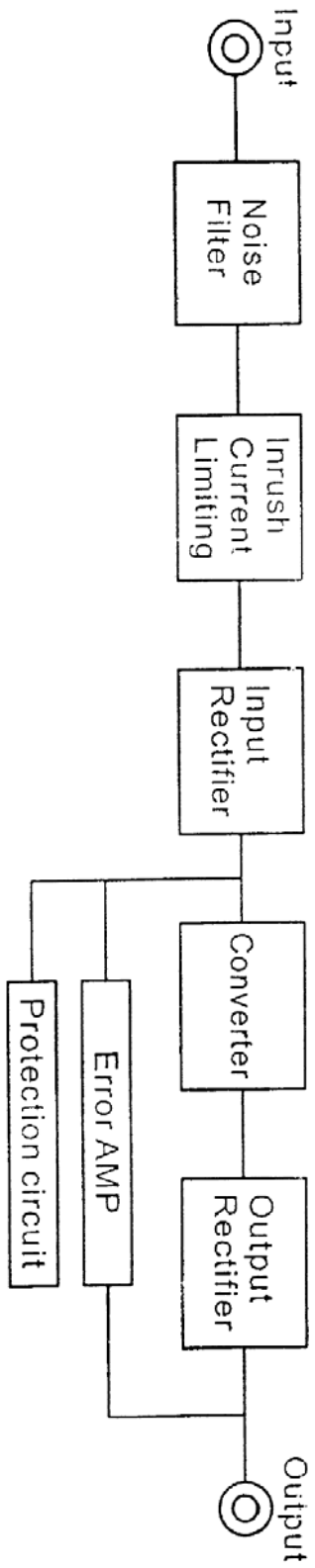
When two or more power supplies are used side-by-side, position them with proper intervals to allow enough air ventilation. Ambient temperature around each power supply should not exceed the temperature range shown in specification.

8.2 Mounting screw

Keep isolation distance between screw and internal components. The maximum screw penetration is 3.5mm.

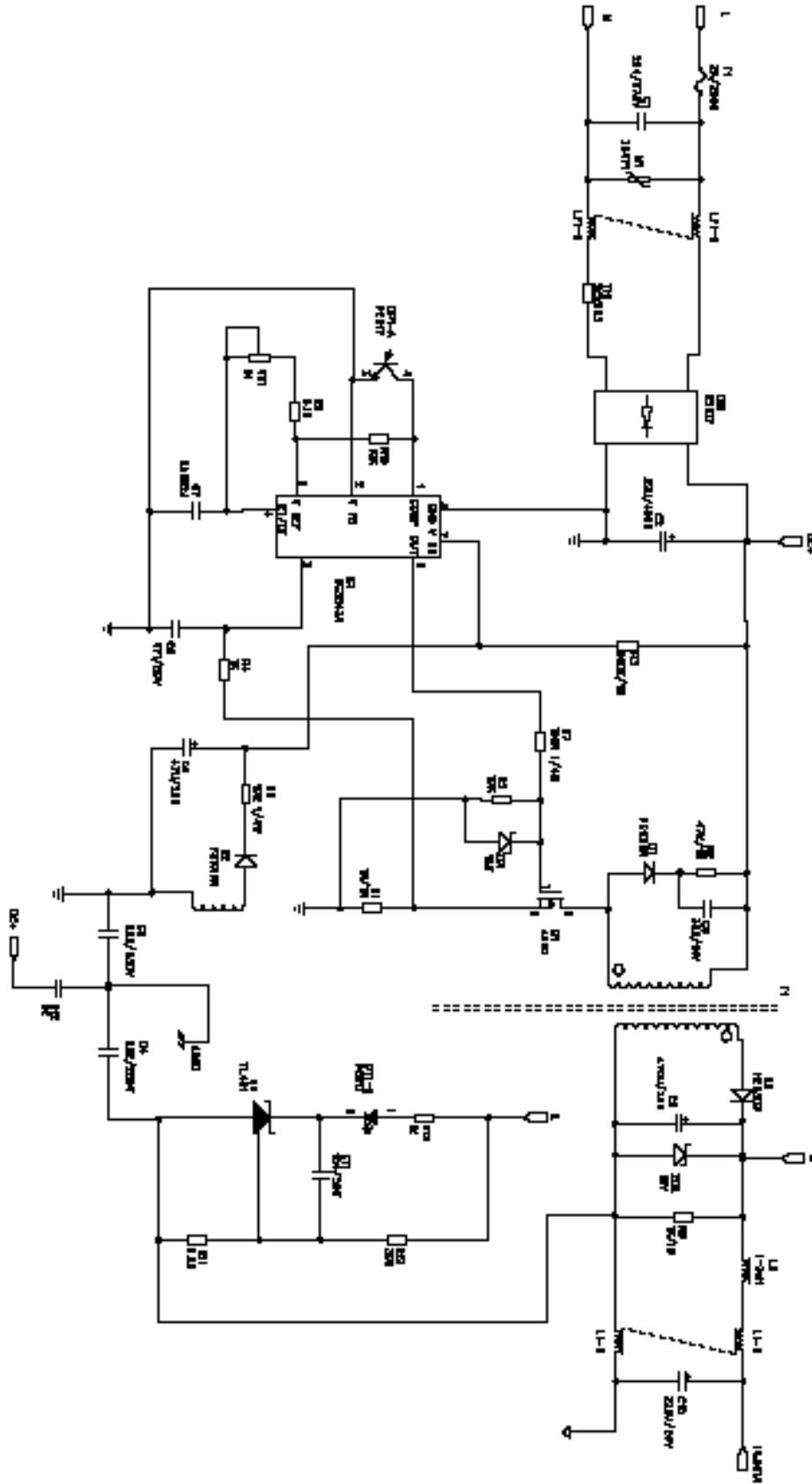
AN-P14.5I BLOCK DIAGRAM

电源框图：

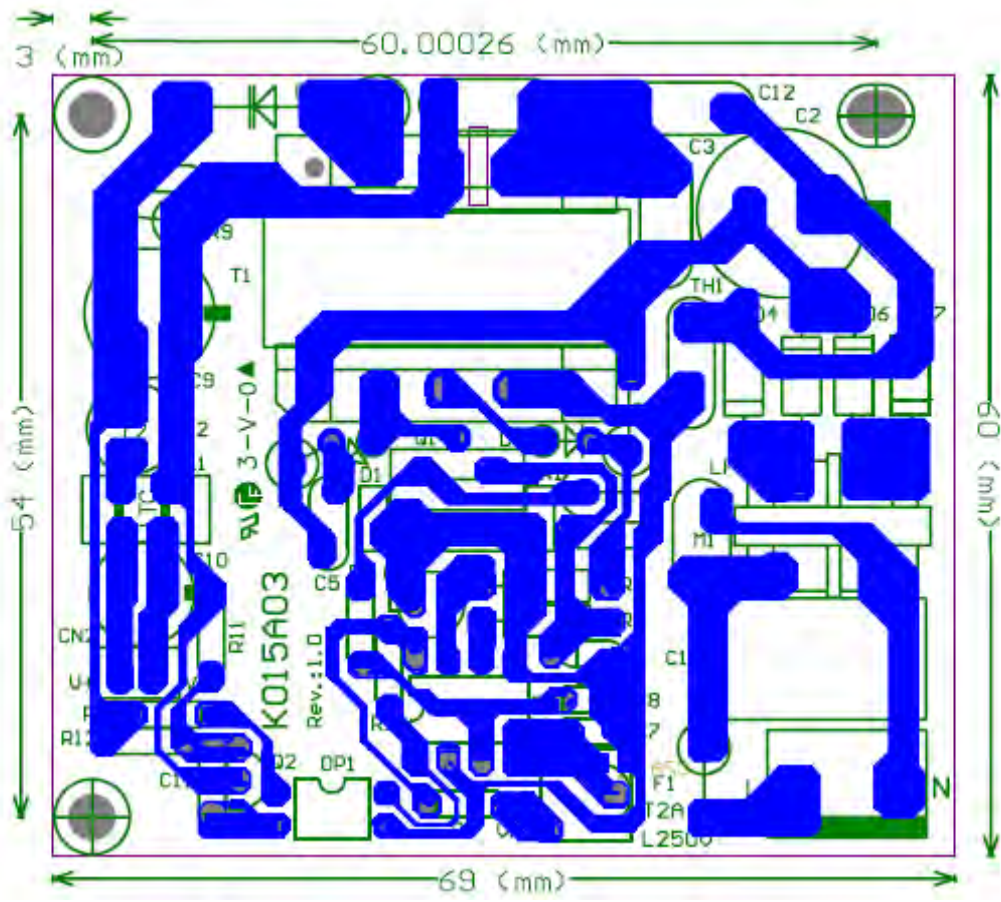


9. Attachments

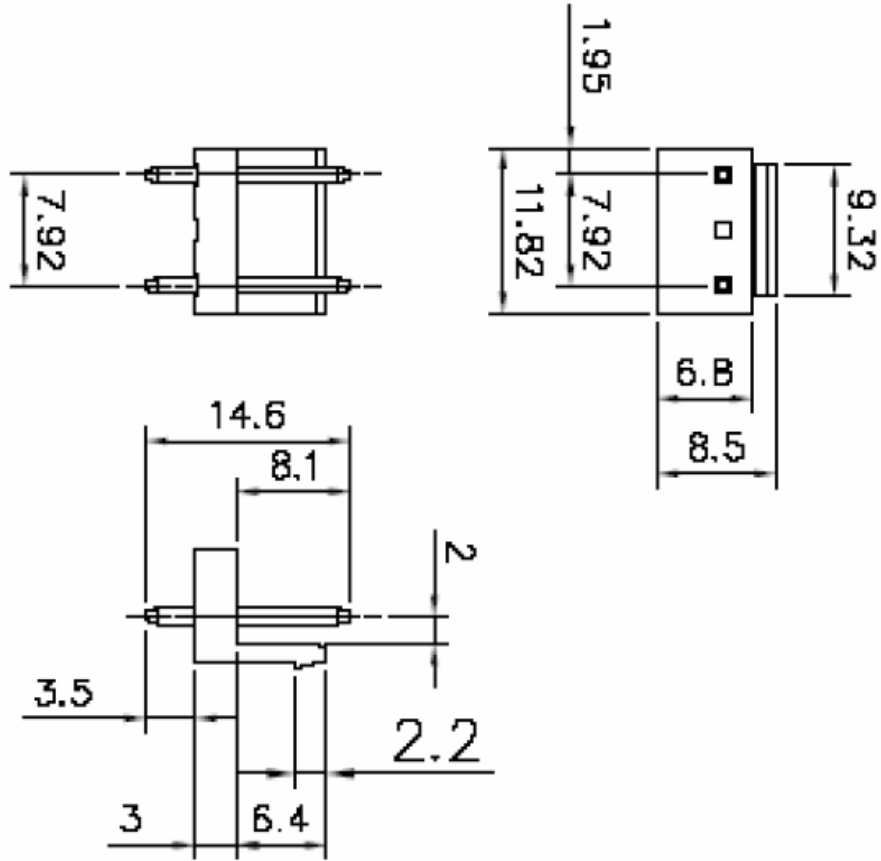
SCHEMATIC



PCB DRAWING



INPUT CONNECTOR (CN1)

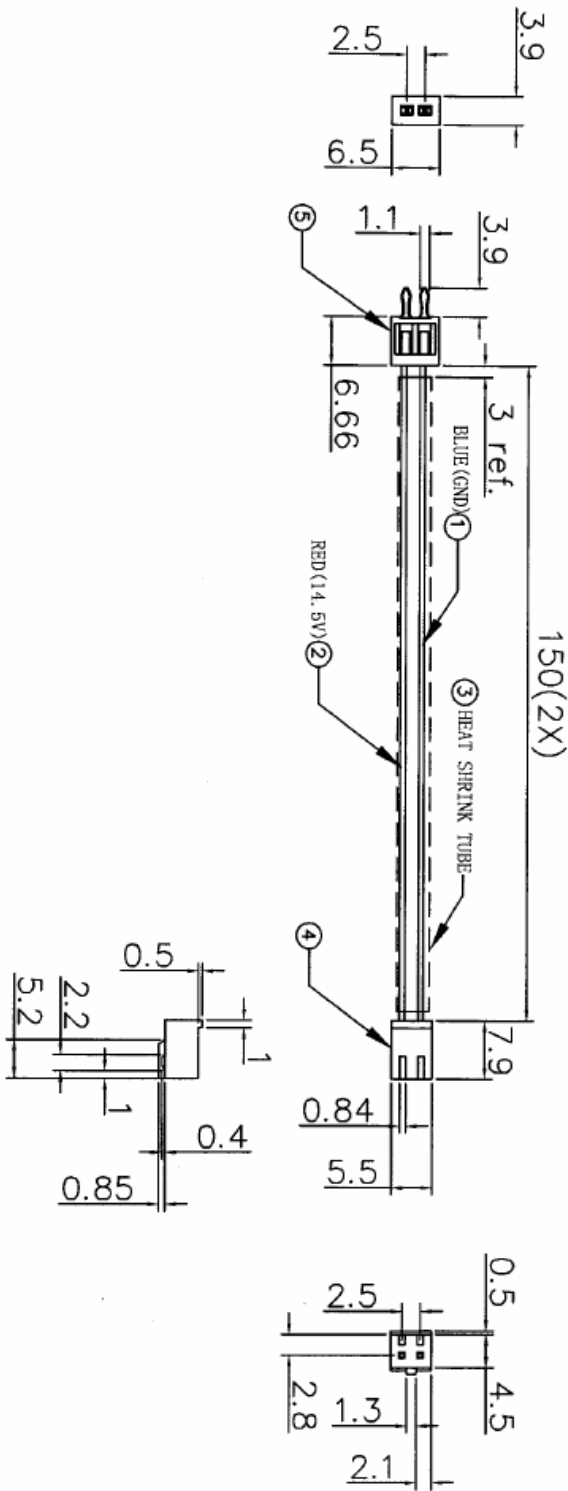


NOTES:

1. UNITS: MM
2. MATERIAL: BASE: NYLON 66
CONTACT: BRASS, TIN PLATING
3. BASE COLOUR: NATURE (WHITE)

OUTPUT CONNECTOR (CN2)

NO	MATERIAL	DESCRIPTION
①	WIRE	WIRE UL1007 22AWG BLUE
②	WIRE	WIRE UL1007 22AWG RED
③	HEAT SHRINK TUBE	L147MM, ID 4MM
④	CONNECTOR	PITCH: 2.5MM COLOR: BROWN
⑤	CONNECTOR	PITCH: 2.5MM COLOR: WHITE



NOTES:

1. UNIT: MM
2. THE TERMINAL SHOULD MATE WITH THE HOUSING
3. ALL MATERIAL SHOULD APPROVED BY WEIHUA ENGINEER