CHUANGHUI
创惠电子

# SPECIFICATION FOR APPROVAL

**Customer** _____

**Customer P/N** _____

**Porduct Type** 12V5A AC/DC ADAPTER

**Designed No.** _____ **Model No.** CH651DA-120500

**Sample Date** _____ **Version** A

| SUPPLIER APPROCED | | CUSTOMER APPROVED | |
|---|---|---|---|
| 拟制<br>PREPARED BY | | 确认<br>CONFIRM BY | |
| 审核<br>CHEKED BY | | 审核<br>CHEKED BY | |
| 批准<br>APPROVDE BY | | 批准<br>APPROVDE BY | |
| 签章/SIGANTURES | | 签章/SIGANTURES | |

**With your signature ,you agree that all contents in this approval sheet are correct and all production units will be built according to the specification described in this sheet.**

**REMARKS:The product EMI is ok with resistance ,Please make sure the test about EMI with our product and your suitable terminal connection is OK Before you sign signature.**


**SHENZHEN TONWORD ELECTRONIC TCHNOLOGYU CO.,LIMITED.**

**Contact person: MRJiang TEL:0755-23728670 FAX:0755-23502672**

**ADD:No.FL.2 Bld #A Xinglong Industry Zone , Songgang Road , Songgang Street Shenzhen**

# INDEX

# INDEX

## SPECIFICATION CHANGE RECORD

| Revision | Before Change | After Change | Arbiter | Changed date |
|---|---|---|---|---|
| A | Primary Release. | | | 2017.08.11 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Model No. | Part No. | Date | | Approved By | Checked By | Listed By |
|---|---|---|---|---|---|---|
| CH651DA-120500 | | 2017.08.11 | | | | |

## 2 DESCRIPTION

### 2.1 Power Supply Description

This is a series of general purpose AC/DC adapters which convert 90Vac ~264Vac to a stabilized DC voltage of 12V with rated output current of 5000mA.

### 2.2 Power Supply Change Notification

The vendor shall notify customer of any design changes, prior to implementation.

### 2.3 Power Supply Frame

☐ Wall mount ■ Desk-top
☐ Open frame ☐ Other

## 3 ELECTRICAL CHARACTERISTICS

### 3.1 AC Input Voltage and Frequency

2.1.1 Reliable Input Voltage : AC90-264V
2.1.2 Rated Input Voltage : AC100-240V
2.1.3 Reliable Input Frequency : 47-63Hz
2.1.4 Rated Input Frequency : 50/60Hz

### 3.2 Maximum AC Current

Input rated voltage,Ouput rated load. Input AC Current 1.5Amps Maximum.

Input rated voltage,Ouput no load. Input AC Current 0.05Amps Maximum.

### 3.3 Input Inrush Current

Input 110&230Vac 50/60Hz,Ouput rated load. Maximum cold start inrush Current 80Amps peak.

### 3.4 No-load Loss Power

Input Rated Voltage,Output no load. Maximum loss power 0.21Watts.

### 3.5 Output Voltage 输出电压

| Input | Output Rated Voltage | Load output voltage range | Output Rated Current |
|---|---|---|---|
| Rated Voltage | +12V | 11.4V ~ 12.6V | 5000mA |

### 3.6 Output Ripple Voltage

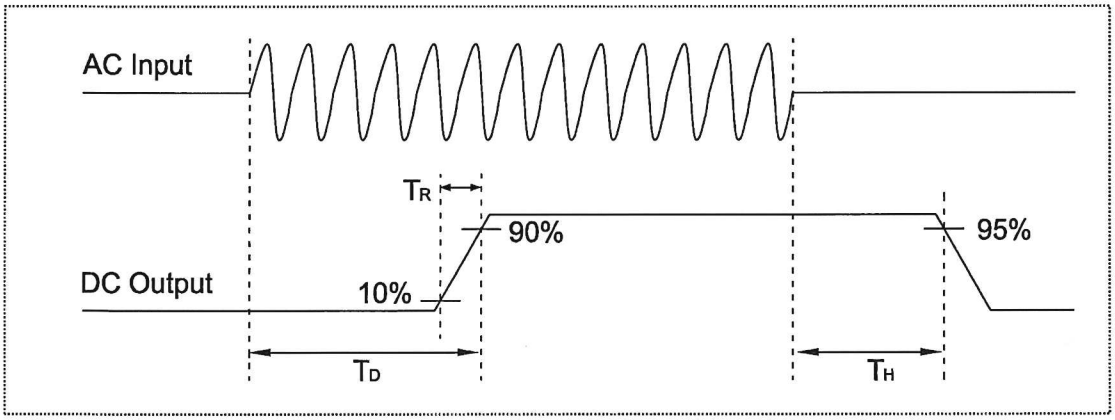
3.6.1 Output ripple test condition: input rated voltage and ouput rated load.

3.6.2 Peak to peak ripple is measured with an oscilloscope with a bandwidth of 20MHz.

3.6.3 Measurement of ripple should include a 0.1uFceramic capacitor and a 47uF electrolytic capacitor at the input of the measuring oscilloscope.

| Input | Output Rated Voltage | Output Current | Output Ripple Voltage |
|---|---|---|---|
| Rated Voltage | +12V | 5000mA | 120mVp-p Max. |

### 3.7 Time Sequence




3.7.1 Turn-On Delay Time(TD)

The maximum cold start turn-on delay shall not exceed 3 second at input 230Vac and the rated load condition.

3.7.2 Hold-Up Time(TH)

2.7.2.1 The maximum turn-off hold-up time shall be least 10mS at input 115Vac and the rated load condition.

2.7.2.2 The maximum turn-off hold-up time shall be least 20mS at input 230Vac and the rated load condition.

3.7.3 Output Rise Time(TR)

Input 110Vac/230Vac and rated load, The rise time shall not exceed 50mS that the output voltage rise from 10% to 90% rated voltage.

### 3.8 Output Overshoot

3.8.1 5% Rated Voltage Max. when the power turn on.

3.8.2 5% Rated Voltage Max. when the power turn off.

| Output Rated Voltage | Overshoot Voltage(V) | |
|---|---|---|
| | Turn on | Turn off |
| +12.0V | 5% | 5% |

### 3.9 Output transient response

| Load output voltage range | Rate Slew | Load change |
|---|---|---|
| 11.4V ~ 12.6V | 0.2A/Us | 0% to 50%Load and 50% to 100%Load. |
| Vout ± 5% | 0.2A/Us | 0% to 100%Load. |

### 3.10 Protection Function

3.10.1 Over Voltage Protection

Output voltage exceed the Rated specifications 120%-200% into the protection.

3.10.2 Over Current Protection

The power supply shall protect itself from any over current condition. and shall be self-recovery when the fault condition is removed. The maximum output current shall 120%~200% rate output current.

3.10.3 Short Circuit Protection

Shorting of output will not cause power supply to damage, or any safety hazard. The power supply shall resume normal operation after the short is removed.

3.10.4 Input Protection

The power supply has a current fuse to protect itself.

### 3.11 Average Efficiency

Input 115Vac / 230Vac. and 100%,75%,50%,25% Rated Load condition. Average efficiency (η): 87% Min.

**D.**

be

## 4 ENVIRONMENTAL REQUIREMENTS

4.1 Temperature 温度

4.1.1 Storage temperature (Non-operating)
-10 to +60 degrees C [-10] 至 [+60]

4.1.2 Operating temperature Limits
0 to +40 degrees C [0] 至 [+40]

4.2 Relative Humidity

4.2.1 Storage Humidity (Non-operating)
10% to 80% RH (Non-condensing) [10%] 至 [80%],

4.2.2 Operating Humidity Limits
0% to 85% RH (Non-condensing) [0%] 至 [85%]

4.3 The Sea Level Altitude

4.3.1 Storage Altitude :
0 to +20,000 feet above the sea leve [0] 至 [20,000]ft

4.3.2 Operating Altitude
0 to +10,000 feet above the sea leve [0] 至 [10,000]ft

4.4 Cooling Method
Natural convection or Forced air

Note: The power storage time during which the power has never been used should be less than 6 months, otherwise, the rush current tends to malfunction with power started.

## 5 Reliability

5.1 MTBF: Mean Time Between Failure

The power supply shall be designed and manufactured to have more than 30,000 operating hours (about 3.5 years for 24-hour-operation a day) of mean time between failure (MTBF) at 90% of confidence level while operating under the prevailing conditions below.

| | |
|---|---|
| AC Input Voltage: | 110/230Vac |
| Output Load: | 80% of maximum load |
| Ambient Temperature: | at 25 degrees C Room Temperature |

### 6.2.2 EMS

This power supply shall compliance with the following Criterion:

6.2.2.1 ESD

Standard: * IEC61000-4-2

AIR DISCHARGE at 8KV, CONTACT DISCHARGE at 4KV.

6.2.2.2 EFT

Standard: * IEC61000-4-4 1KV

6.2.2.3 Surge

Standard: * IEC61000-4-5 1KV

Remarks: EMC-SPECIFICATION test with the Pure resistance as load to test,and we only responsible for the product we supplied.

## 7 MECHANICAL CHARACTERISTICS

7.1 Bending Test

Fixed the main and plug of the adapter,and apply a load of 300g to the other ends. Turn the cable connected to each by ±60 degrees around the connection. Carry out this process 1000 times at a rate of 40 times per minute(a bending of 120 degrees shall be counted as one process) in X direction. (at:25℃±5℃). As following Figure A. The cable wires shall not be broken after this test. The electrical performance is normal.

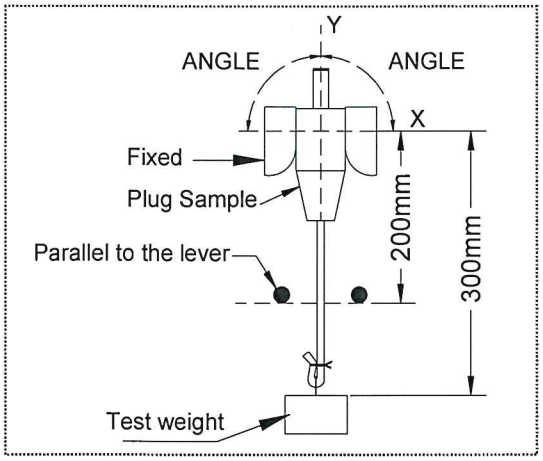



Figure A

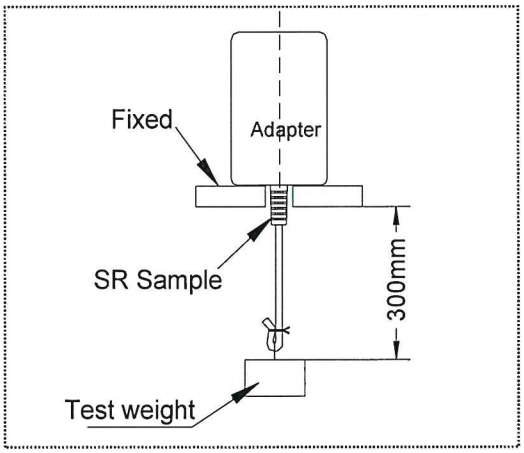



Figure B

7.2 Tensile Strength Test

Fixed either of the plug or the main body with the test tools, then apply a 20N load at the 30Cm distant from the SR for 60S. As fogire B. No short or open and SR shall be not loosen after tested.

### 5.2 Insulation Resistance

| Test Points | Condition & Specification 条件及规格 |
|---|---|
| Input to Output | DC500V 10MΩ min.<br>(at ambient temperature 25 degree C,humidity 70%)<br>DC500V 10MΩ min。 |
| Input to Case | DC500V 10MΩ min.<br>(at ambient temperature 25 degree C,humidity 70%)<br>DC500V 10MΩ min。 |
| Output To Case | Non Isolated |

### 5.3 Hi-Pot 绝缘耐压

| Test Points | Condition & Specification |
|---|---|
| Input to Output | 3000Vac 50Hz, 1Minute, ≤10mA. |
| Input to Case | 3000Vac 50Hz, 1Minute, ≤10mA. |
| Output To Case | Non Isolated |

When AC voltage of 3.0KV is applied, and the voltage applied to the insulation under test is gradually raised from zero to the prescribed voltage in 1s,and held at that value for 60s between the input and output and between the input and housing, the current sensitivity shall be less than 10mA. After this test, the adapter shall exhibit no electrical and mechanical abnormalities. （AC voltage of 3.6KV,2s and sensitivity current 10mA shall be applied to the product line).

### 5.4 Leakage Current

The leakage current shall not exceed 0.25mA for Class II when power supply is operated maximum input voltage and maximum load.

## SAFETY STANDARD

### 6.1 SAFETY STANDARD

* K60950, UL60950, EN60950, J60950

### 6.2 ELECTROMAGNETIC COMPATIBILITY (EMC)

#### 6.2.1 EMI

This power supply shall compliance with the following Criterion :

6.2.1.1 Conduction Emission

* EN55022, Class B * FCC Part15, Class B

6.2.1.2 Radiated Emission

* EN55022, Class B * FCC Part15, Class B

7.3 Drop Test

The adapter shall exhibit no abnormality in mechanical or electrical performance when it is dropped three times to hardwood(20mm thickness) from a height of 70cm, with each of the three different sides of the adapter one time. Small nicks or slight deformations in the corners of the housing, or cracks not penetrating the inside may be accepted. (at:25℃±5℃).

7.4 **Input and Output Connections**

7.4.1 Input Connection:

7.4.1.1 Wall plug or Cord to Cord Type

| | | |
|---|---|---|
| ☐ For EU | ☐ For UL 2PIN | ☐ For CCC |
| ■ For PSE | ☐ For UK 3PIN | ☐ For Korea |
| ☐ For IRAM | ☐ For SAA | ☐ For Gost |
| ☐ For Brazil | ☐ For PSB | ■ Others |

7.4.1.2 Socket and Termainal Type

| | | |
|---|---|---|
| ■ 2PIN Socket | ☐ 3PIN Socket | ☐ Terminal type |

7.4.2 Output Connector :

7.4.2.1 Output Plug

OD*ID*L:

7.4.2.2 Polarity

See appearance figure

7.4.3 Input & Output Cord

7.4.3.1 Length and Cord

See appearance figure

7.4.3.2 Specifition

See appearance figure .

7.5 **Unit Weigth**

The weight of the unit power supply shall be about 300 g(Ref).

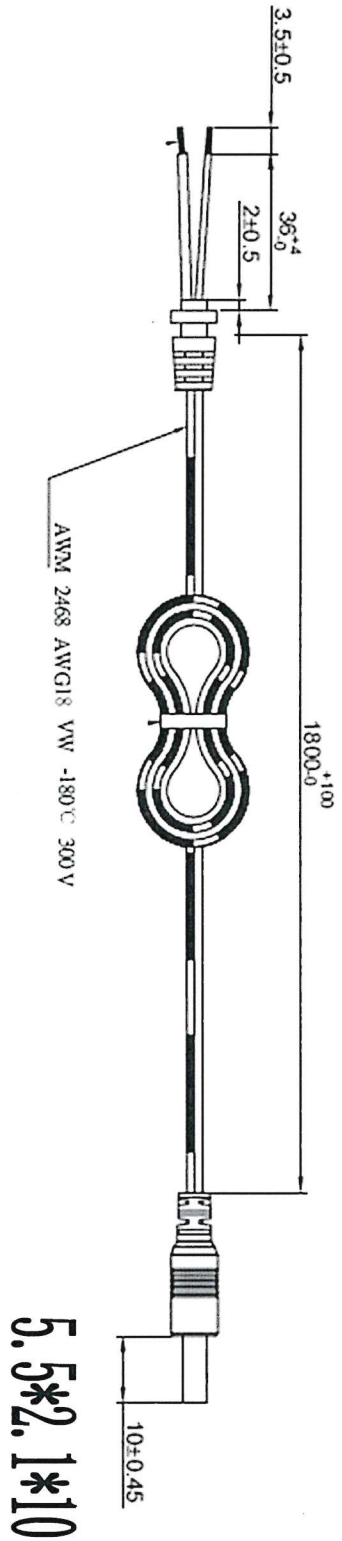
7.6 **Dimension**

120mm X53mm X35mm (L* W * H).

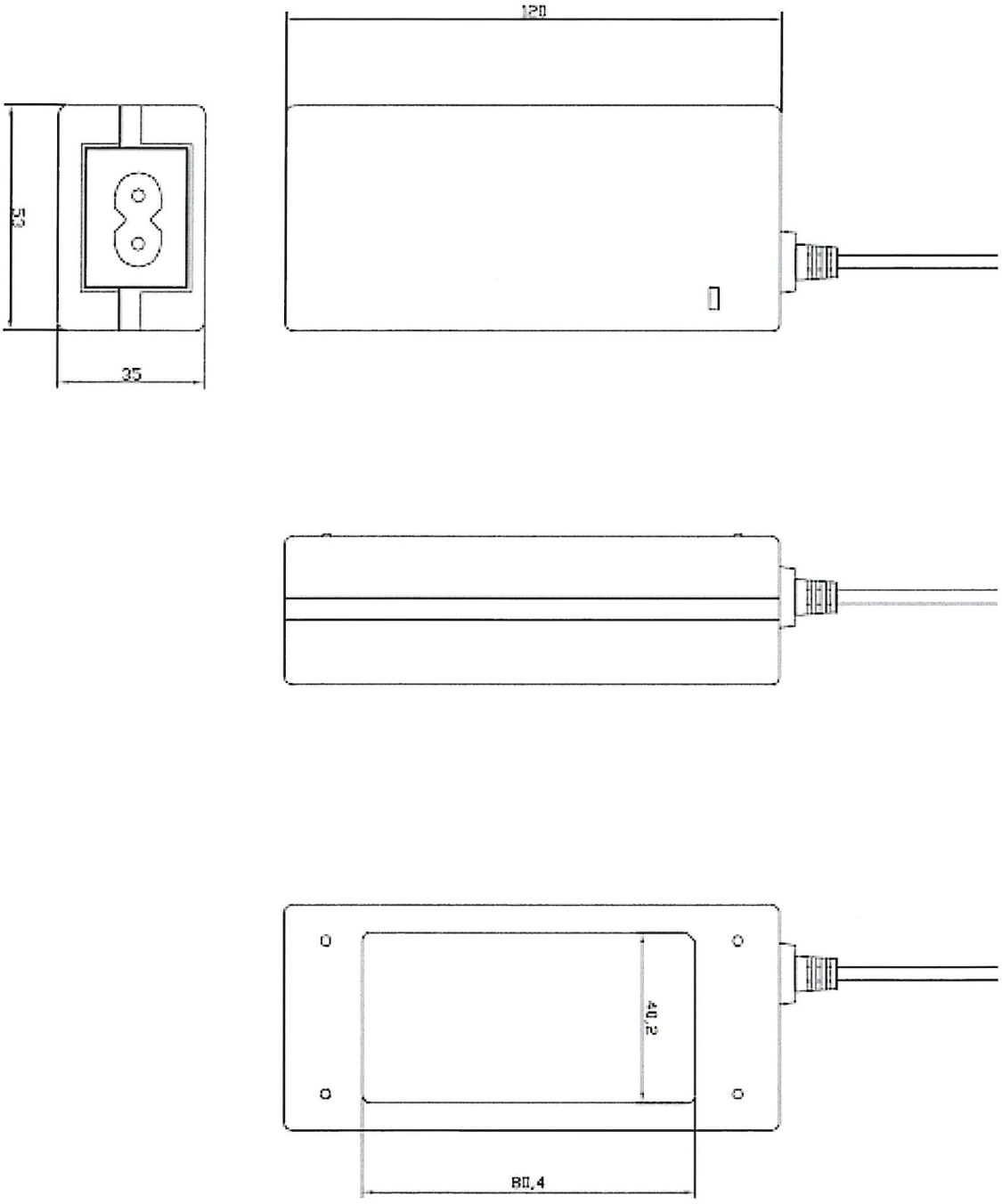
8. APPENDIX DRAWING

**8.1 NAMEPLATE DRAWING**

### 8.2 DC Cord drawing



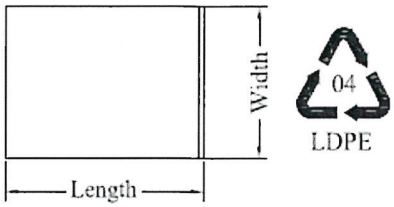
## 8.3 OVERALL DRAWING(外观图）



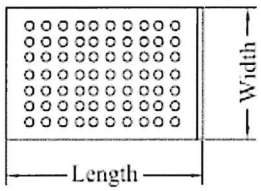
## 8.4 PACKING DRAWING

**Unit： mm**

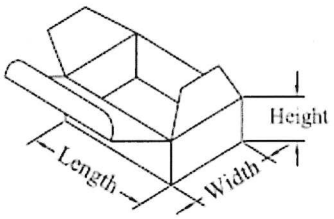
■ PE袋(PE Bag)
Length: **
Width: **

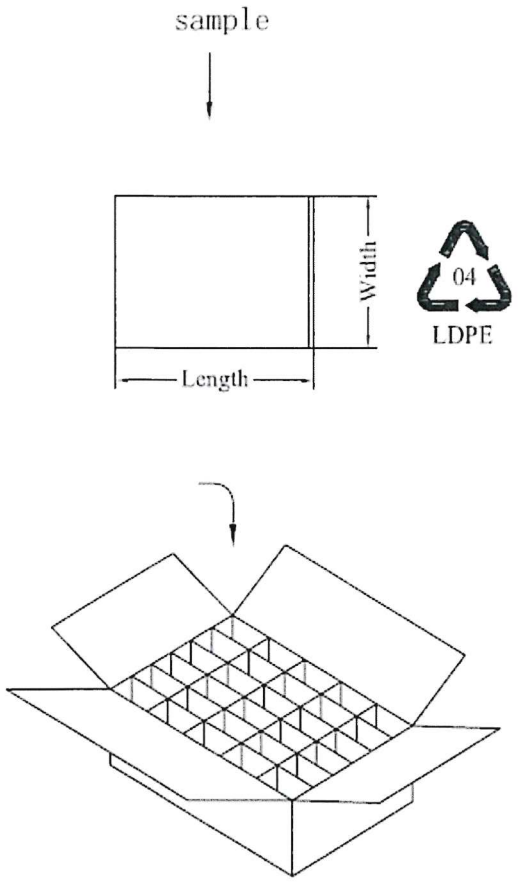



☐ 汽泡袋(Bubble Bag)
Length: **
Width: **

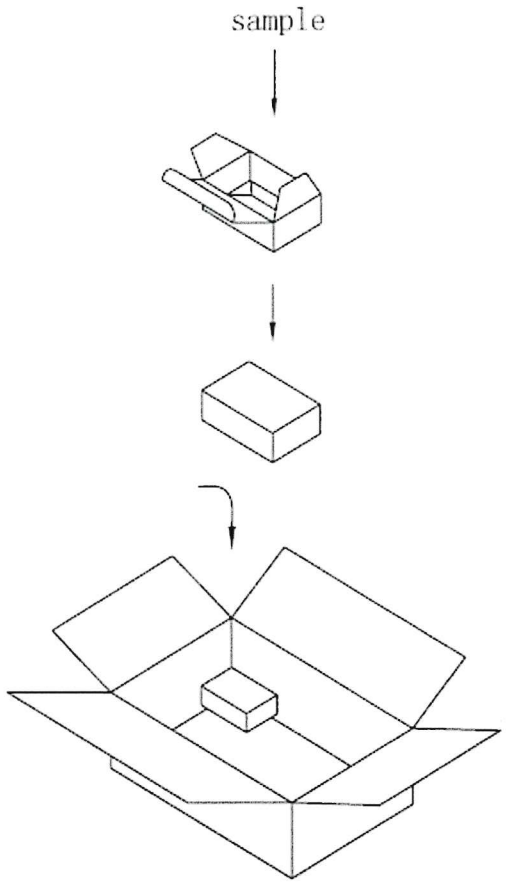



☐ 白盒(Whlte Box)
Length:
Width:
Helght:




■ 1. plate Inslde the shipping carton.




☐ 2. White box in the shipping carton.