

General

The specification defines the performance characteristics of a 90 W, Single Output level Switching Power Supply for GM95-240375-F. The power supply has designed highly reliable and meet international safety and electromagnetic compatibility requirements.

1. Input Characteristics.

1.1 Normal Input Voltage:

It is normal for 100~240Vac input AC voltage

1.2 Input Voltage Range:

The Power shall operate form 90-264Vac.

1.3 Input Current:

<u>2.5</u> Arms max	At AC low line input and DC output full load
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1.4 Rated Input Frequency:

It is normal for 50Hz or 60Hz and single phase.

1.5 AC Input Frequency Range:

The Power shall operate with an input frequency from 47Hz to 63Hz

1.6 No Load Power Consumption:

Maximum non-load power consumption is less than 0.15W at 115Vac/60Hz and 230Vac/50Hz

(Retest it after full load for 15 minutes)

1.7 Inrush Current (cold start) : 30A Max. @110Vac/60Hz

: 60A Max. @230Vac/50Hz

1.8 Active Power Factor Correction: Typical---

1.9 Input protection

<u>5~6.3</u> A Fuse	The power supply shall be protected against power line surges and any abnormal condition.
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1.10 Efficiency:

The efficiency of the Supply shall meet the following requirements (Warm up after 30 minutes test):

230Vac/50Hz Efficiency(Typical full load)	115Vac /60Hz Efficiency(Typical full load)	230V/50Hz Average Efficiency(25%,50%, 75%,100% rated load)	115V/60Hz Average Efficiency(25%, 50%,75%,100% rated load)
87.0%	85.0%	89.0%	88.0%

2. Output Characteristics.

2.1 Rated Voltage (Constant voltage mode)

The rated output voltage is specified at 24V

2.2 Voltage Range

The output voltage will be performed 24V±5% when the load is 0A~3.75A steadily

2.3 Current

This Power can work from 0A~3.75A and output voltage is in section 2.2 specified range

2.4 Ripple/Noise

Output Ripple voltage is 200mV peak to peak or less.(100Vac 60Hz/240Vac 50Hz)



Measured methods:

* The ripple is measured from peak to peak with band width limit of 20MHz (C1 : 0.1uF Ceramics capacitor C2 : 47uF/50V Aluminum capacitor under DC output full Load, AC nominal input 25°C ambient temperature).

2.5 Turn on delay

The power shall switch on in less than 2 seconds at input voltage is 115Vac

2.6 Hold-up time

The output voltage shall be sustained 6mS within regulation requirement after loss 100Vac and maximum load

2.7 Rise time

DC output rise time from 10% to 90% of output voltage shall be less than 40mS at nominal line and maximum load

2.8 Surge load:

The power shall support 4.1A for 20S at 100~240Vac and 25°C

2.9 Load transient response:

The power must within regulation when applied a step load from 0% to 50% and 50% to 100% load at 0.5A/uS slew rate and 10mS time period.

The output voltage will be performed 22.8V~25.2V

2.10 Output regulation

Voltage	Loading(A)	Tolerance Range	Regulation	
	Normal	Total Regulation	Line	Load
<u>+24.0V</u>	<u>0~3.75A</u>	±5%	±1%	±5%

* Total regulation involved line regulation load regulation cross regulation---etc

* Line regulation is measured from 90Vac to 132Vac or 185vac to 264vac

* Load regulation is measured all output from min load to max load at 115vac or 230vac nominal AC input voltage.

3. Protection

3.1 Over Voltage Protection:

The output shall be protection to latch off at over-voltage condition , maximum value can't be over 2 times the rated voltage (<u>48V</u>) , That might be return to normal state by AC reset \cong 5 seconds	<input checked="" type="checkbox"/>
The power supply will be auto recovered when faults remove	<input type="checkbox"/>

3.2 Over Current Protection(>5S):

Over current range: >4.1A, The single over current power should be restored automatically (115Vac/60Hz or 230Vac/50Hz)

3.3 Short Circuit:

Instantaneous (2~3 and 3~10 seconds) short circuit, no damage, no odor, smoke, fire, plastic deformation, excessive heat generation. The power supply should be automatically restored. When the fault state is removed, it will enter the normal state

3.4 Peak Load Mode: Output duration: When the product surface temperature is less than 50 °C,

ON <2s OFF> 1ms, the output current RMS value is less than 5.5A, the power supply can work more than 10 cycles or more than 20S time, power is not damaged ☒

3.4.1 Continuous short time more than ≥ 3 seconds between, the products will lock output, the AC reset output less than 5 seconds to recover.

3.4.2 input voltage 230V / 50Hz, power instantaneous maximum load current 8.0A to continue between 1.5 ~ 3.6 seconds or output continuous current greater than 4.15A, the time can not exceed 5S

3.4.3 input voltage 115V / 60Hz, power instantaneous maximum load current 7.0A, or output continuous current greater than 4.15A, the time can not exceed 5S

4. Environment (temperature and humidity)

4.1: Operating temperature 0℃~40℃

4.2: Operating humidity 20%~ 90% (Relative humidity).

4.3: Storage temperature -20℃ ~ 80℃.

4.4: Storage humidity 0%~ 95%. (Relative humidity).

4.5 Waterproof Test ☐

4.5.1 Reference standard: IP66

Maximum use of humidity of 98%, but it is recommended to use less than 90% humidity

4.5.2 Test Method:

Immerse in water 10CM for 10 minutes. After taking out water, wipe the surface clean, test electrical performance, withstand voltage and insulation resistance meet the standard

4.5.3 Simulation Test Method:

Vacuum test machine test: condition vacuum suction pressure: 3 Kg/F a considerable depth of 30m (the pressure of each machine by instrument conversion and partial pressure, compression less than 3 Kg/F), 3S;; Good air tightness

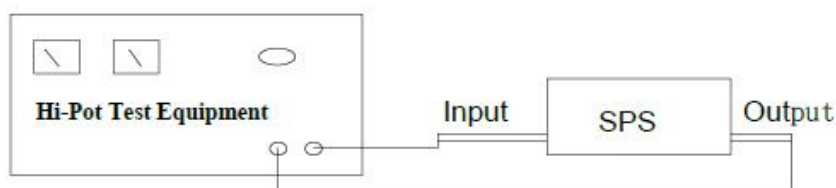
4.6: Dropping Packed:

Wall mount type and Height 76cm for desktop type as , the horizontal surface consists of hardwood at least 13mm thick , mounted on two layers of plywood each 19mm to 20mm thick , all supported on a concrete or equivalent non-resilient floor

5. Immunity

5.1 Dielectric Withstand Voltage (HI-POT)

HI-POT---A IEC 320 3pin primary to secondary (FG) 2000Vac 5mA 1Second (The product input GND is directly connected to the output DC negative)	<input type="checkbox"/>
HI-POT---A IEC 320 3pin primary to secondary (FG) 3000Vac 5mA 1 Second (Product input GND to output DC is not directly connected)	<input checked="" type="checkbox"/>
HI-POT---B IEC 320 2pin primary to secondary 4000Vac 5mA 1 Second	<input type="checkbox"/>



5.2 Leakage Current:

The AC leakage current is less than 0.75mA when power is connected to 240Vac/50Hz at normal condition

5.3 Insulation Resistance:

The insulation resistance shall be not less than 30M ohms after application of 500Vdc/10mA for 1 minute

5.4 Lightning Surge Immunity

This is to follow the norm of IEC-61000-4-5 Level 3 requirements

L-N 2KV/1.2*50Us 5 times No function error, L-FG or N-FG 2KV/1.2*50Us 5 times No damage

5.5 Electric Fast Transients (EFT)

This is to follow the norm of IEC-61000-4-4/1995, (EN 61000-4-4) Level 3 requirements

5.6 Electrostatic Discharge (ESD)

This Power is capable to withstand ESD test voltage at any point around the enclosure as
(EN 55024:1998+A1:2001+A2:2003,EN 61000-4-2)

±8KV air discharge No damage.

±4KV contact discharge No damage

5.7 Electrostatic Interference (EMI)

The power supply shall complied to:

FCC part 15 : Class B for radiated and conducted emissions.

EN55032:2015 , Class B for radiated and conducted emissions.

GB9254-2008,GB17625.1-2012

6. Safety Approval:

6.1 Safety Certification Standards

The power supply shall complied the following international regulatory standards

Trademark	Country	Standard& Certified Status		
CE	Europe	<input checked="" type="checkbox"/> Declared& CE Mark		
UL/CUL	USA/ Canada	<input type="checkbox"/> UL 60950	<input checked="" type="checkbox"/> UL62368	<input type="checkbox"/> UL1310
GS	Europe	<input type="checkbox"/> EN60950	<input checked="" type="checkbox"/> EN62368	<input checked="" type="checkbox"/> EN61558
CCC&CQC	CHINA	<input checked="" type="checkbox"/> GB4943	<input checked="" type="checkbox"/> GB8898	<input type="checkbox"/> GB4706.1
PSE	Japan	<input type="checkbox"/> J60950	<input type="checkbox"/> J60065	<input type="checkbox"/> J61558-1
SAA	Australia	<input type="checkbox"/> EN60950	<input type="checkbox"/> EN60065	<input type="checkbox"/> EN61558
KC	Korea	<input type="checkbox"/> EN60950		
BS	England	<input type="checkbox"/> EN60950		
BIS	India	<input type="checkbox"/> IS13252		
LPS	/	<input type="checkbox"/> IEC60950		

7. Reliability:

7.1 MTBF (Mean-Time-Between-Failures) Calculation

The calculated MTBF shall be 50K hours of continuous operation at 20 °C, maximum load and normal voltage.

7.2 MTBF Verification

The MTBF shall be verified from life testing performed by factory Quality department. The operating conditions are: 40 °C ambient temperature , sea level , both nominal line voltage ranges (115Vac or 230Vac) and a minimum load of 70% of the maximum load

7.3 Burn-in

24hrs,40+/-5 °C 240Vac

ON/OFF cycling full load nominal line

8. Cooling Method:

By fan force air cooling	<input type="checkbox"/>
By natural air cooling	<input checked="" type="checkbox"/>

9. Sample Test Report

9.1 Electrical Test

No.	Test Item	Test condition	Standard SPEC	Test value per sample reading			Unit	Judge
				1#	2#	3#		Pass/Fail
1	Output voltage	Vin 100Vac/60Hz Io=0	<u>24V±5%</u>	23.88	23.85	24.03	V	Pass
2	Output voltage	Vin 100Vac/60Hz Io= Rated current	<u>24V±5%</u>	23.16	23.18	23.38	V	Pass
3	Efficiency (full load)	Vin 115Vac/60Hz	<u>85%</u> min.	86.28	86.53	86.70	%	Pass
4	Average Efficiency	Vin 115Vac/60Hz	<u>88%</u> min.	88.12	88.59	88.49	%	Pass
	Efficiency	Vin 115Vac/60Hz 10% rated load	<u>79%</u> min.	91.55	92.08	91.22	%	Pass
5	Ripple & Noise	Vin 100Vac/60Hz rated load	<u>200Mv</u> p-p max.	43	44	45	mV	Pass
6	OCP(>5S)	Vin 115Vac/60Hz	>4.4A	5.4	5.3	5.3	A	Pass
7	PLM (1.5~3.6S)	Vin 115Vac/60Hz	>7A (>21V)	9.1	9.3	9.0	A	Pass
8	Standby Power	Vin 115Vac/60Hz Io=0	≤ <u>0.15W</u>	0.05	0.04	0.04	W	Pass
9	Output voltage	Vin 240Vac/50Hz Io=0	<u>24V±5%</u>	23.88	23.85	24.03	V	Pass
10	Output voltage	Vin 240Vac/50Hz Io= Rated current	<u>24V±5%</u>	23.16	23.18	23.38	V	Pass
11	Efficiency(full load)	Vin 230Vac/50Hz	<u>87%</u> min.	89.64	88.98	88.70	%	Pass
12	Average Efficiency	Vin 230Vac/50Hz	<u>89%</u> min.	89.71	90.08	89.86	%	Pass
	Efficiency	Vin 230Vac/50Hz 10% rated load	<u>79%</u> min.	91.86	92.14	91.92	%	Pass
13	Ripple & Noise	Vin 240Vac/50Hz rated load	<u>200Mv</u> p-p max.	49	52	53	mV	Pass
14	OCP(>5S)	Vin 240Vac/50Hz	>4.4A	5.8	5.8	5.6	A	Pass
15	PLM(1.5~3.6S)	Vin 230Vac/50Hz	>8A (>21V)	11.3	11.5	11.4	A	Pass
16	Standby Power	Vin 230Vac/50Hz Io=0	≤ <u>0.15W</u>	0.07	0.06	0.06	W	Pass
17	Burn in	Input 220Vac full load 24hours		OK	OK	OK	-	Pass

9.2 Safety Test

1	Hi-pot Test	<u>3.0K</u> Vac 5mA 1 Second Between input and output test	Pass	Pass	Pass	-	Pass
2	Insulation Resistance	The insulation resistance shall be not less 30M ohms after application of 500Vdc/10mA for 3 Seconds	Pass	Pass	Pass	-	Pass
3	Drop test	Heigh:760mm Three*faces(once on each plane)	OK	OK	OK	-	Pass

Remark		With LED ,with GVE

10. Mechanical Specification:

10.1: Net Weight (g) : 313 g/pcs

10.2: Outline Dimension: 129.6*58.5*31 mm

10.3: Outline Color: Black

10.4: DC Cable: 18AWG 2464 L1200mm \pm 15mm From the magnetic ring to the power supply 100mm,Tuning fork (音叉) in+/out-,SR7.8*6.8 (total length)

10.5: DC Connector Dimension:

LD= 10.0 mm

OD= 5.5 mm

ID= 2.5 mm

10.6: AC Cable: C14 input pedestal.Match $3 \times 0.75\text{mm}^2$ L1500mm \pm 50mm 3PIN (3C、total length、C14)

11. Dimension :

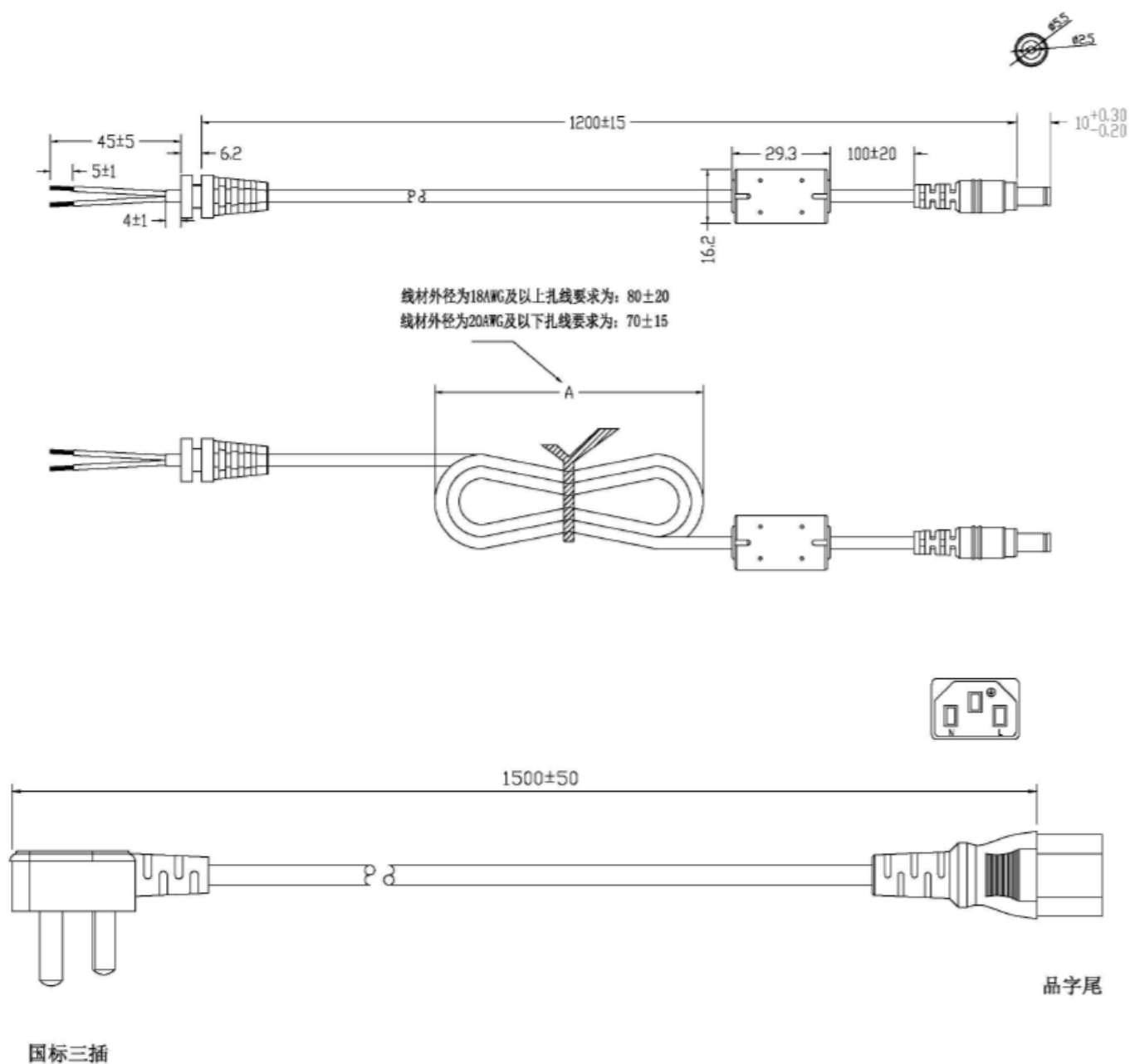
11.1: Physical Dimension

11.2: Label Drawing ---

11.3: PE Bag --

11.4: Packing List --

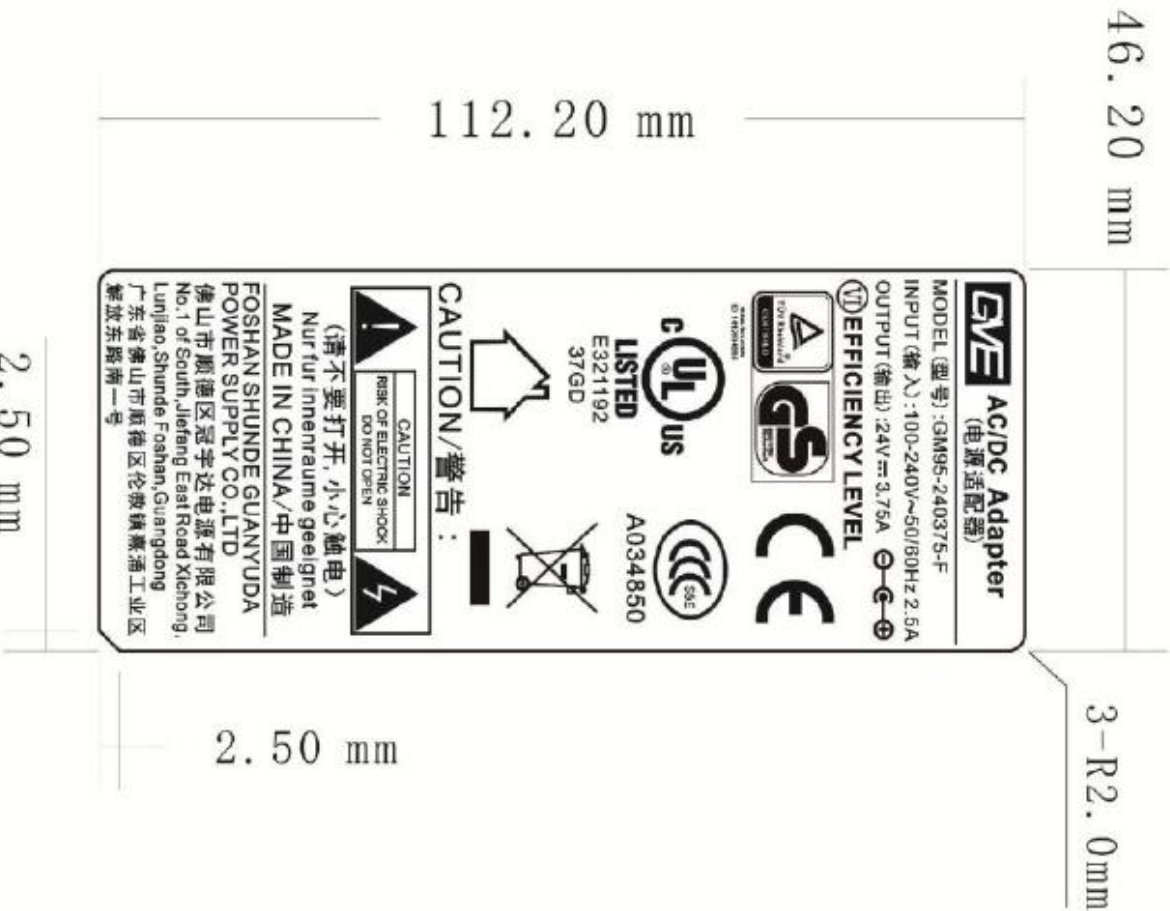
11.1: Physical Dimension



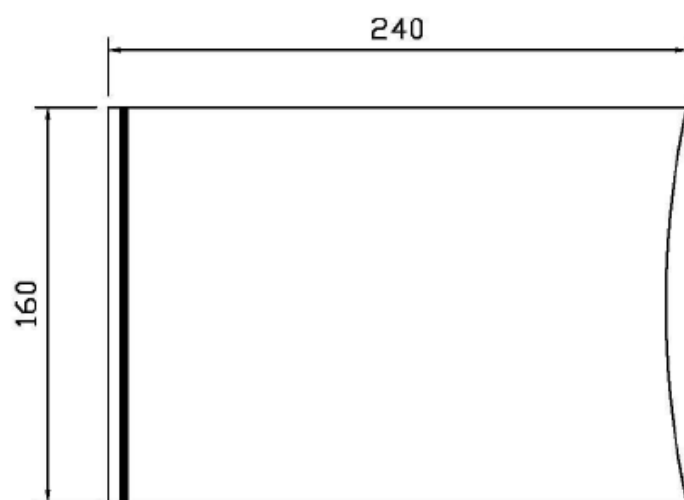
备注: 因AC线材厂家或模具不同, 插头的外观图形有所差异, 但插头符合认证标准.

Note: because the AC wire manufacturer or mould is different, the appearance of the plug is different, but the plug is in conformity with the certification standard.

11.2: Label Drawing



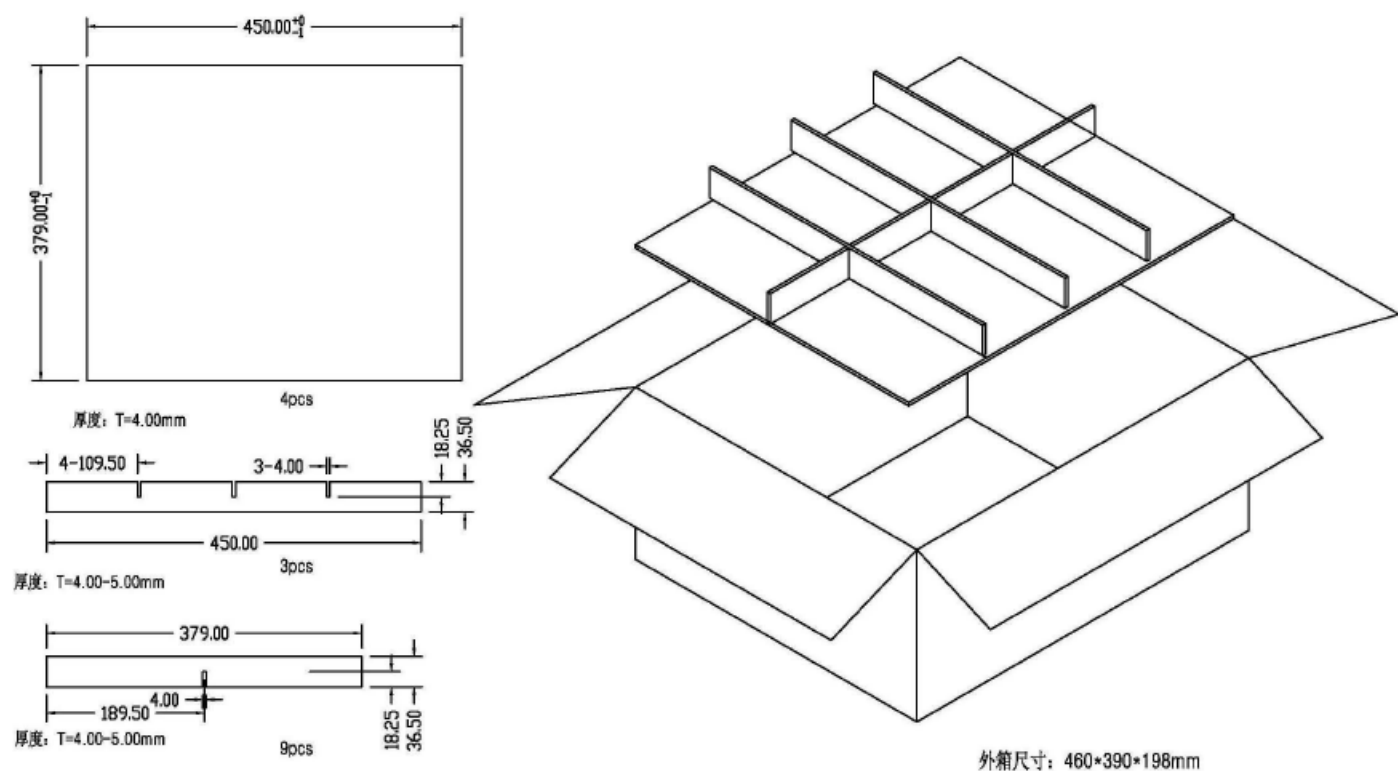
11.3: PE Bag



240*160mm

Color: Transparent

11.4: Packing List



Technical requirements of:
A layer of 8Pcs,a total of 3 layer,24pcs

GA95W桌面式外壳流水标位置



流水标

SN:B1706000001

↑ ↑ ↑
固 车 年
定 间 份

↑
流水标