

 冠德科技股份有限公司 KUANTECH INCORPORATED COMPANY	Switching power supply specification(class B)		
	KTEC MODEL NO:	KTEC PART No:	CUSTOMER P/N:
		KS060240	

SPECIFICATION FOR APPROVAL

CUSTOMER: FOXCONN

KTEC MODEL No: _____

KTEC PART No: KS060240

REV. A

Type: AC/DC Adaptor

Issue Date: 2020-06-05

承認書確認后請簽回一份

CUSTOMER APPROVED SIGNATURE

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APPROVAL BY	SAFETY	DIRECTOR	ENGINEER	PREPARED
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CUSTOMER P/N:

KS060240

Revision history

Revision	Description			Date
A	First Rev.			2020.06.05
R&D	Safety	Eng.	QA	Sales

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1.1 Engineer Check List

Check List Item			
No.	Content	Remarks & Description	Status
1			
2			
3	Drop test condition: 1m, concrete floor, 6 times. Result: appearance and function ok, hi-pot and insulation resistance test pass.		
4	Desk top : meet COC V5 Tier2		
5			
6			
7			
8			
	3.0 AC Input Requirements		
	3.1 Input Voltage and Frequency		
	3.2 Cold Startup		
	3.3 AC Inrush Current		
	3.4 Ride-Through Time		
	3.5 Input Fusing		
	3.6 Input Leakage Current		
	3.7 Brown Out		
	3.8 Line Voltage Surge and Sag		
	3.9 Power Factor Correction		
	3.10 Energy Star		
	3.11 Input Disturbance Immunity		
10	4.0 Output Requirements		
	4.1 Output Voltage and Current		
	4.2 DC Output Connector		
	4.3 Output Return Isolation		
	4.4 Ripple and Noise		
	4.5 Overshoot and Undershoot		
	4.6 Power Up Sequencing		
	4.7 Dynamic Response		

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	4.8 Cross Regulation		
	4.9 Temperature Coefficient		
	4.10 Turn-On Delay and Rise Time		
	4.11 Feedback Control and Loop Stability		
	4.12 Protection Features		
	4.12.1 Shorted Output		
	4.12.2 Over Current and Overpower Protection		
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	5.6 Drop		
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	7.2 Electrolytic Capacitor Life		
	7.3 Process Capability Study-CP/CPK		
	7.4 Halt/Strife		
	7.5 DVT		
	7.6 Failure Mode Effect Analysis(Fmea)		
	7.7 On Going Reliability Test		
	7.8 Burn In		
14	8.0 Mechanical Requirements		
	8.1 Input Connection		
	8.2 Overall Dimensions		
	8.3 Cooling		
	8.4 Markings		

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2 Electrical Specification

2.1 AC input characteristics

2.1.1 AC input voltage single range

Minimum	Maximum
90Vac	264Vac

2.1.2 AC input voltage frequency range

Minimum	Maximum
47Hz	63Hz

2.1.3 Input current

100Vac-240Vac input voltage	1.6A maximum
-----------------------------	--------------

2.1.4 Input inrush current

No damage shall be occurred and the input fuse shall not be blown up nominal input voltage full load 25°C cold start.

2.1.5 Standby power

Input voltage 100Vac/240Vac no load power consumption less than 0.15W.

2.2 DC output characteristics (CC MODE)

2.2.1	Output Voltage	24.0V
2.2.2	Output Current	5.0A
2.2.3	Line Regulation	+/-5%
2.2.4	Load Regulation	+/-5%
2.2.5	Ripple and Noise	400mVp-p maximum
		Add 0.1uF/50V ceramic capacitor and 10uF/50V aluminum electrolytic capacitor across the output terminal. Measured with 20MHz Bandwidth Oscilloscope.
2.2.6	Overshoot	Less than 10% of nominal voltage value
2.2.7	Hold Up Time	8 mS minimum
		At nominal input 100Vac minimum voltage and full Load

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2.2.8	Turn-On Delay	4000mS max. at nominal input AC voltage and full load
2.2.9	Average Efficiency	89.00% minimum(output current from 100%, 75%, 50%, 25%.)
		79.00% minimum 10% load
		115V/60Hz and 230V/50Hz.
2.2.10	Rise Time	The supply shall have a start-up rise time of less than 40mS to rise to within regulation limits for all DC outputs.
2.2.11	Undershoot (Turn Off)	Less than 10% of nominal voltage value

2.3 Protection characteristics

2.3.1 Over current protection

The power supply will be protection when output power at 110%-200% all rated DC output.

2.3.2 Over voltage protection

The output voltage shall be clamped by internal protection.

2.3.3 Output short circuit protection

Output can be shorted without damage. The switching power supply will be auto-recovery while the fault is removed.

2.4 Environmental

2.4.1 Operation temperature

-5°C ~ 50°C

2.4.2 Operation humidity

10 ~ 90% RH. Non-Condensing

2.4.3 Storage temperature

-20 °C ~ +70°C

2.4.4 Storage humidity

10 ~ 90% RH. Non-Condensing

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2.5 Safety & EMC requirement

2.5.1 Leakage Current

0.25mA maximum, at nominal AC input voltage and frequency

2.5.2 Dielectric strength

Primary (LN) to Secondary: 3000Vac 5mA 1 minute; 3600Vac 5mA 2 second for mass product.

2.5.3 Insulation resistance:

Input to output 500VDC 10Mohm min.

2.5.4 Radio Frequency Electromagnetic immunity: IEC61000-4-3

Range : 80MHz-1000MHz

Field Strength: 3V/m

Distance Antenna-EUT: 3m

Polarity of Antenna: Horizontal and Vertical

Performance: Criteria A

2.5.5 Injected Current Susceptibility: IEC61000-4-6

Range: 0.15MHz-80MHz

Voltage Level: 3V

Step: ≤ 0.015 decades / sec

Performance: Criteria A

2.5.6 Lightning surge: IEC61000-4-5

- 1.2/50 usec Open Circuit voltage

- 8/20 usec Short Circuit current

- Differential mode: ± 2 kV

- Common mode: ± 4 kV

Performance: Criteria B.

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2.5.7 Electrostatic discharge (ESD): IEC61000-4-2

- Air Discharge: $\pm 8\text{kV}$

- Contact Discharge: $\pm 4\text{kV}$

Discharge Impedance: $330\Omega / 150\text{pF}$

Polarity: Positive and Negative

Performance: Criteria B

2.5.8 Electric fast transient (EFT): IEC61000-4-4

Techniques - Electrical fast transient / burst immunity test

Pulse Amplitude-AC Power Port: 1.0kV

Burst Frequency: 100kHz

Polarity of Antenna: Positive and Negative

Performance: Criteria B

2.5.9 Safety compliance

for short	Country	Certified Status	Standard
CE	Europe	Meet	Declared & CE Mark
KC	Korean	/	K 60950-1

2.6 Reliability requirement

2.6.1 MTBF calculation

Reliability level of 50K hours MTBF @ 25°C (rated input voltage, and using the Bellcore SR-332 method).

2.6.2 E-cap life time

Must exceed 30,000 hours at 40°C full load.

2.6.3 High temperature test (Operating)

Full load 50°C , storage 12 hours, then power on/off 5 times at $90\text{-}264\text{Vac}$ input, operating 48hours, Normal performance after test condition is removed.

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2.6.4 Low temperature test (Operating)

Full load 0°C, storage 12 hours, then power on/off 5 times at 90-264Vac input, operating 48 hours, Normal performance after test condition is removed.

2.6.5 High temperature and humidity test (Operating)

+50°C, 90% RH, full load, 90Vac input, 24 hours; +50°C, 90% RH, full load, 264Vac input, 24 hours.

Normal performance after test condition is removed.

2.6.6 High temperature and humidity test (Non-operating)

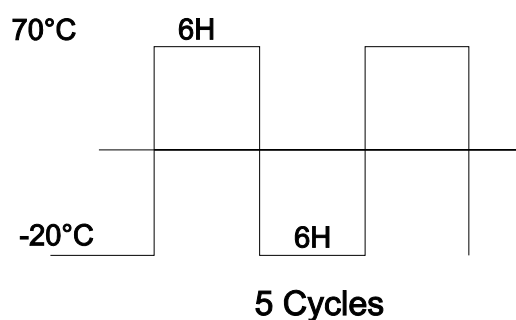
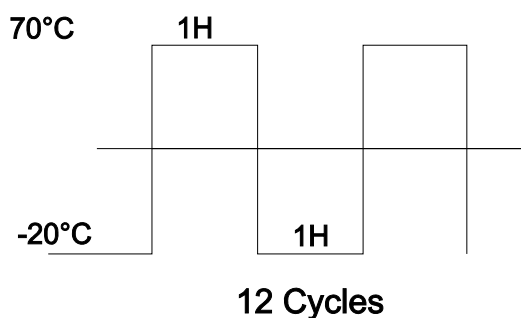
+50°C, 95% RH, 48 hours, tested within 3 minutes in ambient 25°C after take out from chamber; Meet to Dielectric strength and insulation resistance test

2.6.7 Thermal shock (Non-operating)

One cycle define: +70°C, 1 hour →(ramp rate 40°C/minute) →-20°C, 1 hour; Testing 12 cycles;

One cycle define: +70°C, 6 hour →(ramp rate 40°C/minute) →-20°C, 6 hour; Testing 5 cycles;

Then place it on normal temperature and normal humidity for 1 hour. After do the testing, the appearance and electrical need pass.



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2.6.8 DC Jack plug in/out

The plug and socket proceed insertion and withdrawal test: 20 cycles/min;
 application product can power on and operation with the test adapter after
 6000 cycles insertion and withdrawal test

2.6.9 Drop Test

From 1000mm onto concrete, 6 times (1/face), No surface crack
 Function are normal, can be passed dielectric strength and insulation
 resistance test.

2.6.10 Random vibration test (non-operating)

5Hz-50Hz, 30m/s², 3 axes x 2 hours
 Normal performance after test condition is removed

2.6.11 Mechanical shock (non-operating, non packing)

Trapezoidal shock, shock level 40G, duration time: 12~25mS, a
 series of 6 shocks, one on each side
 After this test item, functions are normal, can be passed dielectric
 strength and insulation resistance test.

2.6.12 Burn-in test:

4 hours at 40 +/-5°C, full load

2.6.13 DC Jack pull test

DC jack shall have at least 4 to 15N pull strength when remove from
 the product.

2.6.14 Cable pull test

Hung 4.5 kg, duration: 1 minute, inner copper wire breakage rations
 under 30%, and No short-circuit happened.

2.6.15 SR pull test

90N load, duration: 1 minute, inner copper wire breakage rations under
 30%, and No short-circuit happened.

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2.6.16 Strain relief bend test:

Hung 500g over 2000 times (condition: 60count/min. +/-45°), and the cable performance ok

2.6.17 Low temperature DC plug & SR bending test

Fix the DC cord in a -5℃ ambient, after 24 hours, bend the DC plug & SR 5 times from -60° to +60°, inner copper wire breakage rations under 30%, and no short-circuit happened.

2.6.18 Enclosure surface temperature rise

Enclosure temp. Rise<45℃ @ ambient 40℃, 90~264Vac, full load

2.7 Mechanical

2.7.1 Physical size

161.5(L) *65.5(W) * 35(H) mm maximum

2.7.2 AC input plug

Mini 2Pin

2.7.3 Output plug

WIRE: 16AWG, 2468, 1800mm

PLUG: 5.5*2.1*10mm

2.7.4 Net weight

About / g

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3 Guarantee

3.1 The changing of anywhere, we have to be negotiated with customer and get approval before practice.

3.2 This production meet to RoHS standard.

3.3 Ever product should be burn-in before delivered to customer.

Burn-in condition as defined 2.6.12

3.4 Warranty period 18 months

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4 Schematic circuit drawing

TBD

5 PCB Drawing

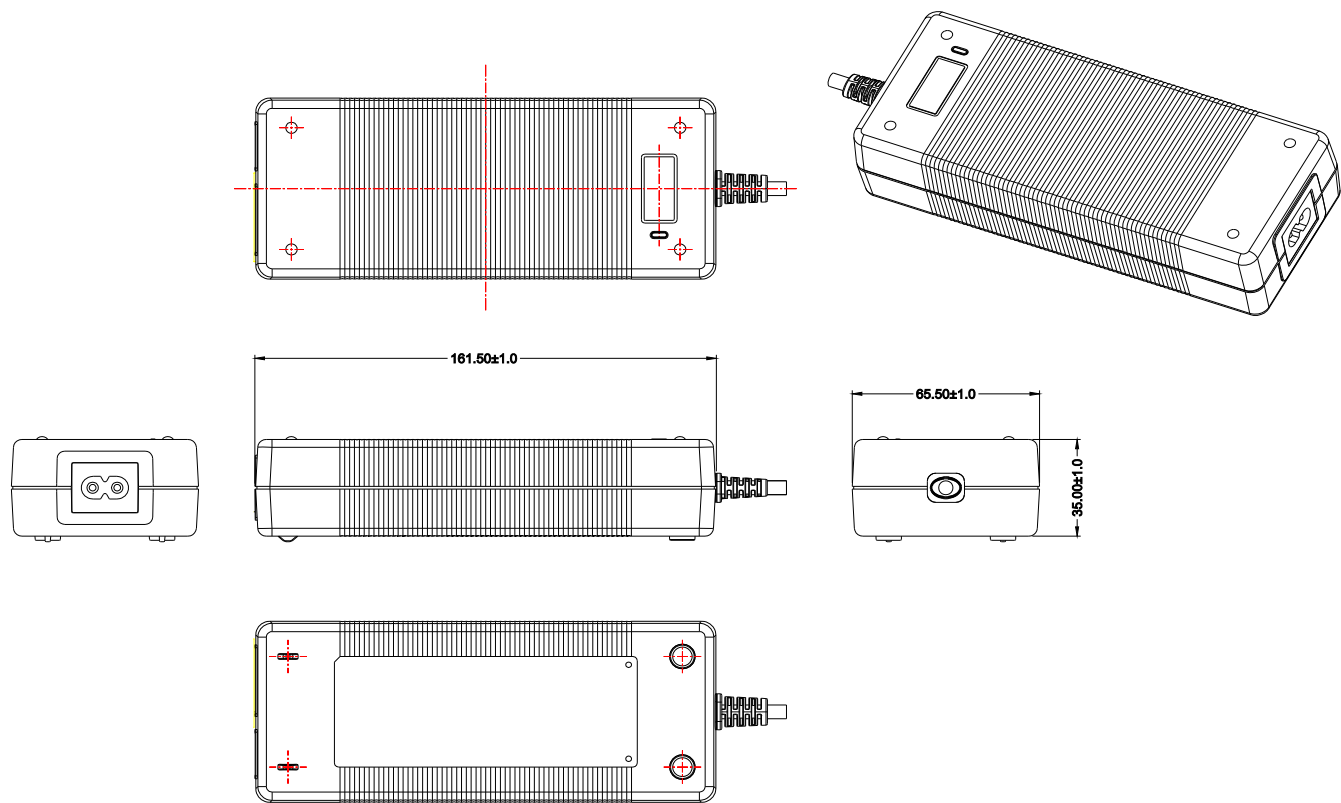
TBD

6 Part list

TBD

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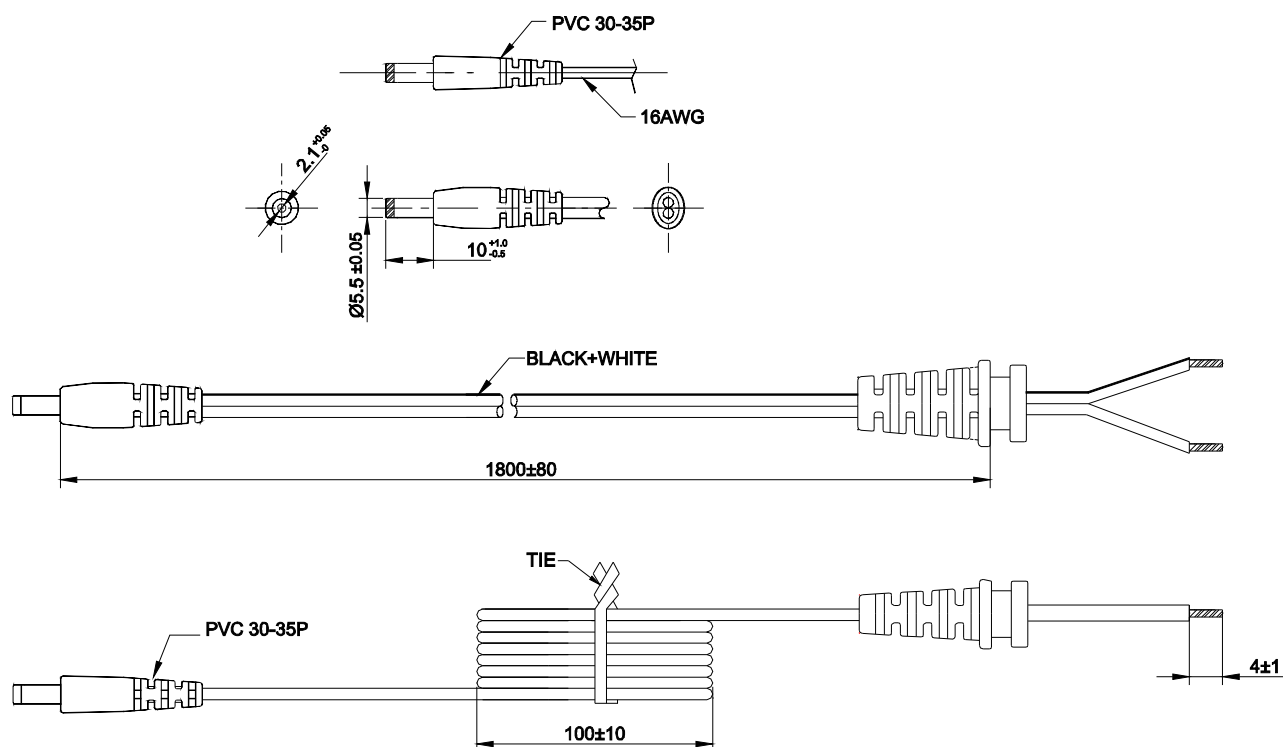
7 Housing Drawing (Unit: mm)



- NOTE: 1. Case cover & chassis material:
 PC BLACK (NO KTEC)
 2. AC PIN Material: Brass (Ni Plated)
 3. PAHS REACH RoHS
 4. Satin Finish 雾面

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8 DC Cable (Unit: mm)



NOTE: (unit:mm)

- 1).WIRE TYPE:VW-1 2468 80°C 300V L=1800mm 2C 16AWG BLACK+WHITE
BLACK AND WHITE---POSITIVE BLACK---NEGATIVE
- 2).THE POLARITY: 
- 3).PAHS REACH RoHS



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Switching power supply specification(class B)

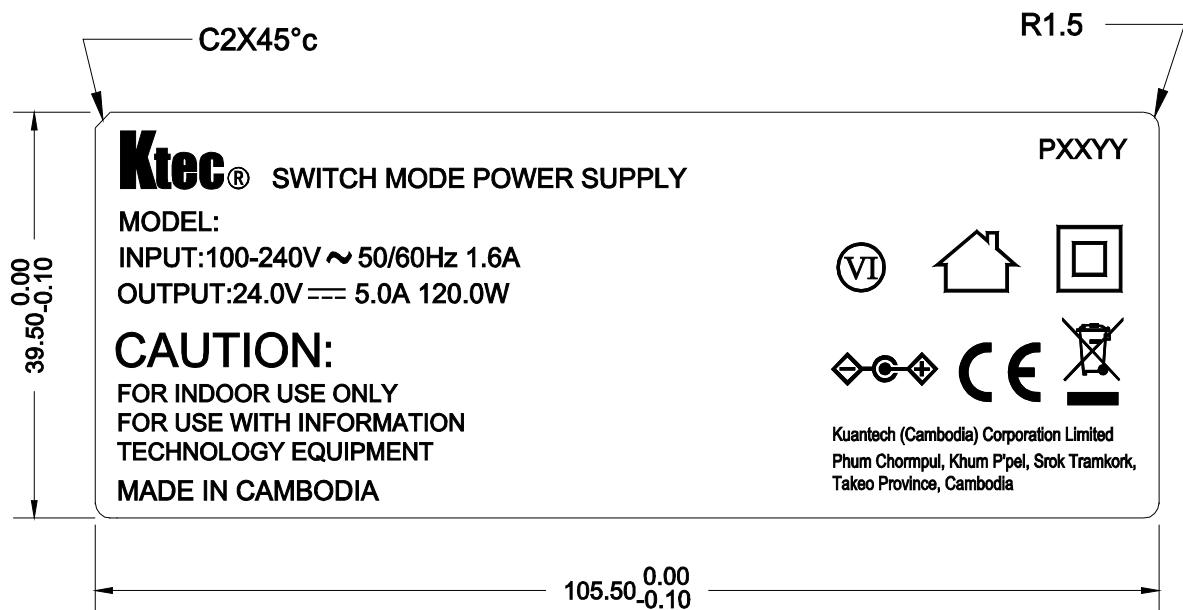
KTEC MODEL NO:

KTEC PART No:

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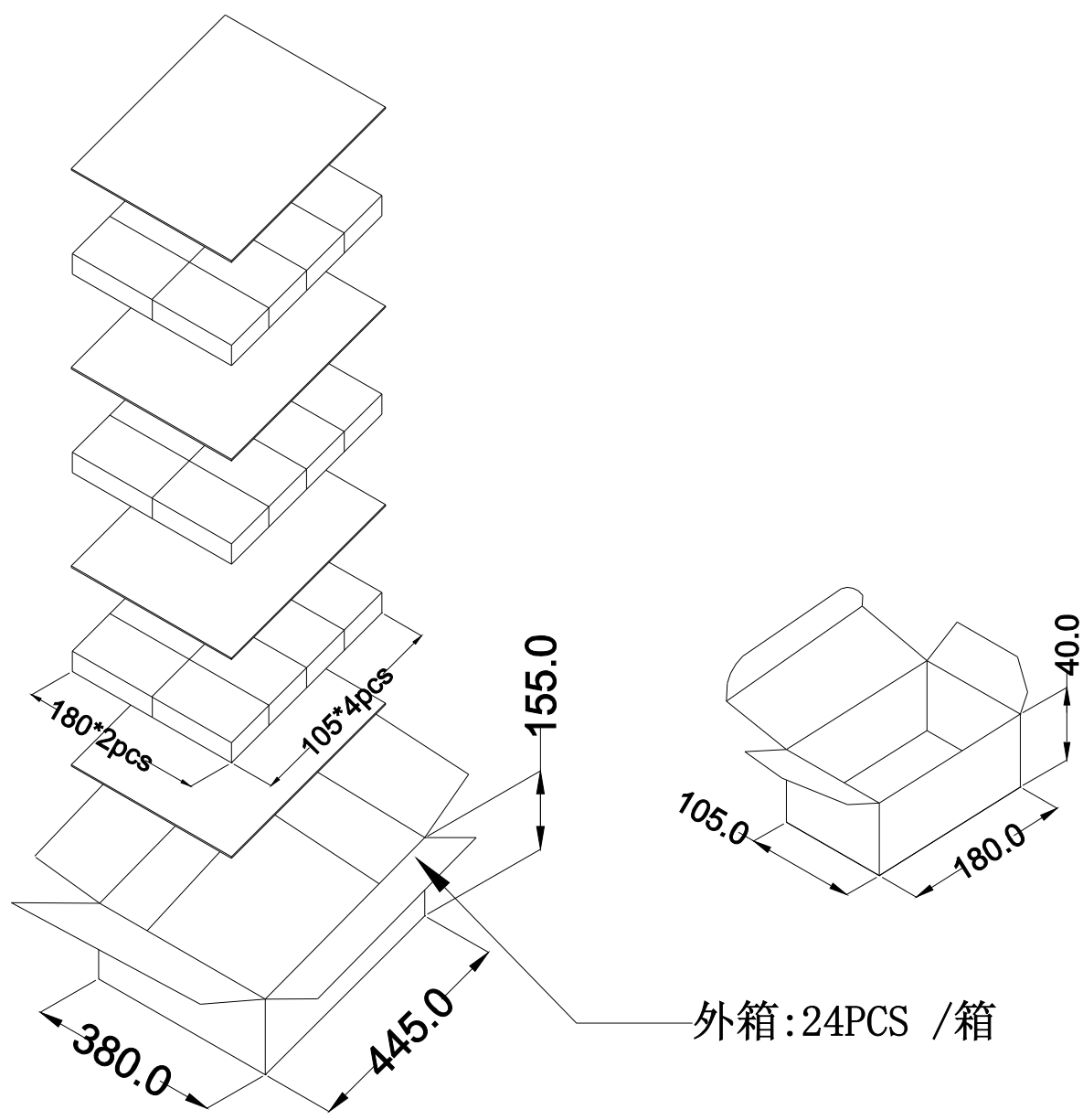
9 Label drawing (Unit: mm)



Note: ☒ Laser (镭射)
Date code (PXXYY: P=PAHS 6P NP, XX=WEEK, YY=YEAR)
按实际生产日期

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10 Carton drawing



Item	Dimension	0-20	~100	~250	~600	800~	 DESIGN 汪晓丽	MODEL NO.	PART NO.		DWG. DATE	MATERIAL	PART NAME		
													NAME PLATE		
								CHECKED	PIN	APPROVED	REV. DATE	FILE NO.	DRAWING NO.	UNIT	
														SCALE	
													SIZE		
													REV.		
1	2		3		4			5	6	7	8	9	10	11	12
KUANTECH COMPANY LIMITED												A4	1.0		