



SPECIFICATION FOR APPROVAL



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KEC-1K2W SERIES

SWITCHING POWER SUPPLY

KEC-1K2W SERIES

Manufacturer Part No.: KS251474

Customer Name **KTEC**

Customer Part NO. _____

Project Modify List

[illegible]

Manufacturer

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Approved Signatures

APPROVED BY

CHECKED BY

TESTED BY

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SWITCHING POWER SUPPLY



KEC-1K2W SERIES Manufacturer Part No.: KS251474

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1. INPUT REQUIREMENTS

1.1 Highlight & Features

- Size: L8.07" x W5" x H1.59" (205*127*40.5mm).
- Universal AC input with active PFC circuit.
- Suited for type BF medical products.
- Remote on/off , power OK.
- 5 V standby @ 2.0A maximum.
- High efficiency up to 94%.
- MTBF up to 200KHrs.
- This product is used in medical instruments, industrial equipment, printers and other fields.
- Parallel current sharing function.
- The output voltage is adjustable.
- 2 x MOPP.
- Analog and digital output voltage adjustment.
- Intelligent fan speed control.
- RS485/RS232 communication mode optional.

1.2 General Description

This specification defines the performance and characteristics of an adaptor 1200 watts with a metal case and internal fan cooling. The output voltage can be selected from 24V, 42V, 48V.

1.3 Chemical Substance Control Laws

PAHS 6P NP REACH ROHS NOP

1.4 Input Conditions

The supply shall operate over the voltage ranges as follows:

Rated input voltage	100-240Vac
Operating range	90-264Vac
Rated input frequency	50/60Hz
Rated input current	15.0A max. @ 100-240Vac
Power consumption (no-loading)	3.5W Max. @ 230Vac, Excluding fan power
Input configuration	3 Conductor
Power factor	0.95 minimum

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1.5 Ac inrush current

Input inrush current less than 50A for rated input and cold-start at 25°C.

2. OUTPUT REQUIREMENTS

2.1	Nominal DC output voltage	24.0V	42.0V	48.0V
2.2	Minimum load current	0.0A		
2.3	Output current and power with case & fan	50.0A	28.57A	25.0A
		1200W Max.		
2.4	Load regulation	$\pm 3\%$ for Main & 5V STB		
2.5	Line regulation	$\pm 1\%$		
2.6	Ripple and noise	24.0V	42.0V	48V
		240mVp-p	420mVp-p	480mVp-p
		Add 0.1uF/50V ceramic capacitor and 10uF/50V aluminum electrolytic capacitor in parallel the output terminal. Measured with 20MHz bandwidth oscilloscope at rated load and rated input voltage.		
2.7	Efficiency	Up to 94% typical value @ 230VAC.		
2.8	Turn on delay time	3000ms maximum at 115VAC and output full load.		
2.9	Rise time	$\leq 20\text{ms}$ 24V to 42V output voltage at rated load; $\leq 50\text{ms}$ 48V output voltage at rated load.		
2.10	Hold up time	10ms minimum for main O/P, measured at Full Load from 115 VAC and Vout reduces to 90% of original value before the AC drop out.		
2.11	Output over-shoot	Less than 10% of nominal voltage value.		
2.12	Protection function			
	Over voltage protection	110% to 150% of nominal output voltage. Latching, recycle AC power to recover.		
	Over current protection	110% to 180% of rated output current value, hiccup mode, auto-recovery.		
	Short circuit protection	The adapter shall not be damaged by short the DC output to Ground. The adapter shall resume normal operation when a short circuited fault condition is removed.		
	Over temperature protection	The output will be turned off when the temperature is too high.		

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3. MECHANICAL

3.1 Enclosure and Layout

Case	Metal
Weight	1520g (Max.)
Dimensions	205*127*40.5mm

3.2 Input and Output Configuration

Connector	Definition	Pin Number(s)	Connector Type
AC Input (J15)	AC line	Pin 1	DT-4C-B14W-03 (Or equivalent)
	PE/ground	Pin 2	
	AC neutral	Pin 3	
DC Output (J7)	+Vout	Pin 1	M4 Output terminal
DC Output (J1)	-Vout	Pin 2	M4 Output terminal
12V fan (J2 & J3)	+12V fan output	Pin 1	2.0*4 Pin Connector
	Fan_PWM	Pin 2	
	Fan_detection	Pin 3	
	12V fan return	Pin 4	
Control Terminal (CON5)	5V bus for I2C	Pin 1	JVT2008W46-2*05SNR-D (Or equivalent)
	DC return of 5V bus	Pin 2	
	Serial data signal (SDA)	Pin 3	
	Serial clock signal (SCL)	Pin 4	
	NC	Pin 5	
	NC	Pin 6	
	Address bit 0 (A0)	Pin 7	
	Address bit 0 (A1)	Pin 8	
	Address bit 0 (A2)	Pin 9	
	NC	Pin 10	

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Control Terminal (CON6)	Remote on/off +	Pin 1	JVT2008W46-2*07SNR-D (Or equivalent)
	Remote on/off -	Pin 2	
	Power good -	Pin 3	
	Power good +	Pin 4	
	NC	Pin 5	
	NC	Pin 6	
	+5V Standby output	Pin 7	
	+5V Standby output	Pin 8	
	DC return	Pin 9	
	DC return	Pin 10	
	Remote sense +	Pin 11	
	Remote sense -	Pin 12	
	Current share	Pin 13	
	DC return	Pin 14	

4. REGULATORY COMPLIANCE

4.1 EMC Specifications

The external power supply must meet all specification in this section. It is required that the external power supply work closely with the customer’s equipment in order to get the best EMC solution.

4.1.1 Radiated and Conducted Emission

FCC part 15: Class B for radiated and conducted emissions.
EN55015 & EN55032, Class B for radiated and conducted emissions.
Note: Applications that meet Class B requirements for some end products may require additional EMI filters.

4.1.2 Harmonic Standard

Meet EN61000-3-2
Performance Criteria A

4.1.3 Voltage fluctuations and Flicker

Meet EN61000-3-3

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4.2 Immunity

4.2.1 Electrostatic Discharge Immunity

IEC 60601-1-2, EN 55035, EN 61000-4-2

Air Discharge: $\pm 15\text{kv}$ Contact Discharge: $\pm 8\text{kv}$

Performance Criteria A

Electrostatic-discharge test by contact or air should be conducted with static-discharge tester, energy storage capacitance of 150pF, and discharge resistance of 330 Ω , 15kv air discharge, 8kv contact discharge.

4.2.2 Radiated Field Immunity

IEC 60601-1-2, EN 55035, EN 61000-4-3

Frequency Range: 80MHz -2.7GHz

Field Strength: 3 V/m with 80% amplitude modulation of 1kHz

Performance Criteria A

Radio-frequency electromagnetic field susceptibility test, RS 80MHz -2.7GHz, 3V/m, 80%AM(1kHz).

4.2.3 Fast Transient Immunity

IEC 60601-1-2, EN 55035, EN 61000-4-4

Power line: 2kv

Performance Criteria B

4.2.4 Surge Immunity

IEC 60601-1-2, EN 55035, EN 61000-4-5

1.2/50 μs Open circuit voltage8/20 μs Short circuit current

Power line: 1kv

Line to earth: 2kv

Performance Criteria A

Lightning surge voltage shall be applied in differential and common mode to AC input lines and cross primary AC input and secondary GND.

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4.3 Safety Requirements and Certification

4.3.1 Regulatory Standard

The power supply shall comply with the following international regulatory standards:

for short	Country	Certified Status	Standard
UL	USA	/	IT:UL 62368-1 MEDICAL:UL 60601-1
FCC	America	/	FCC Part 15 subpart B
CB	Global	/	IT:IEC62368-1 MEDICAL:IEC60601-1

4.3.2 Additional Safety Requirements

- ⦿ Dielectric Withstand Voltage:
Primary(input AC short)-to-Secondary(output DC short): 4000Vac, 20mA, 1 minute.
Primary input to GND and Secondary output to GND: 1500Vac, 20mA, 1 minute.
- ⦿ Insulation Resistance, Input to output: 50MΩ(MIN.) at 500VDC.
- ⦿ The leakage current shall not exceed 100uA.

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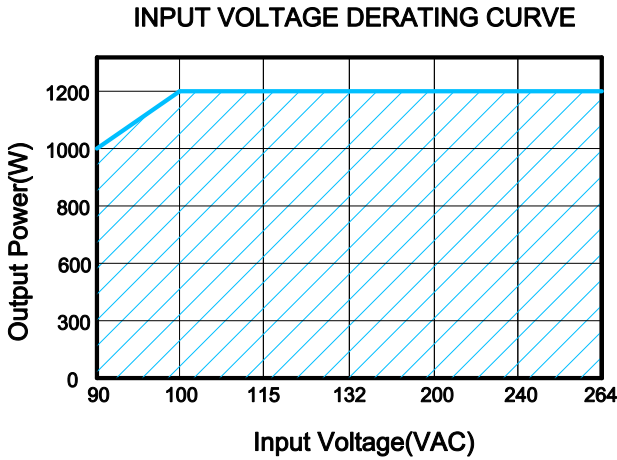
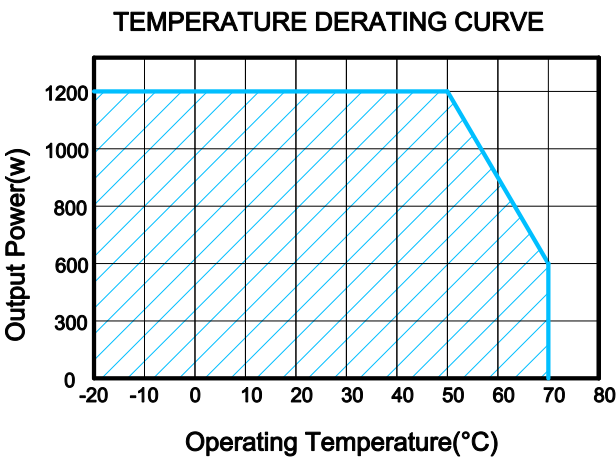
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5. ENVIRONMENTAL REQUIREMENTS

Temperature	Operating	-20°C +70°C
	Non-Operating	-40°C +80°C (Non Condensing)
	Note: For details about the operating environment, see 5.1Derating Curve.	
Humidity	Operating	10%~95% (Non Condensing)
	Non-Operating	10%~95% (Non Condensing)
Altitude	Sea level to 5000m.	
Vibration	10Hz-55Hz, 19.6m/s ² , 3 axes x 2 hours. Normal performance after test condition is removed.	

5.1 Derating Curve



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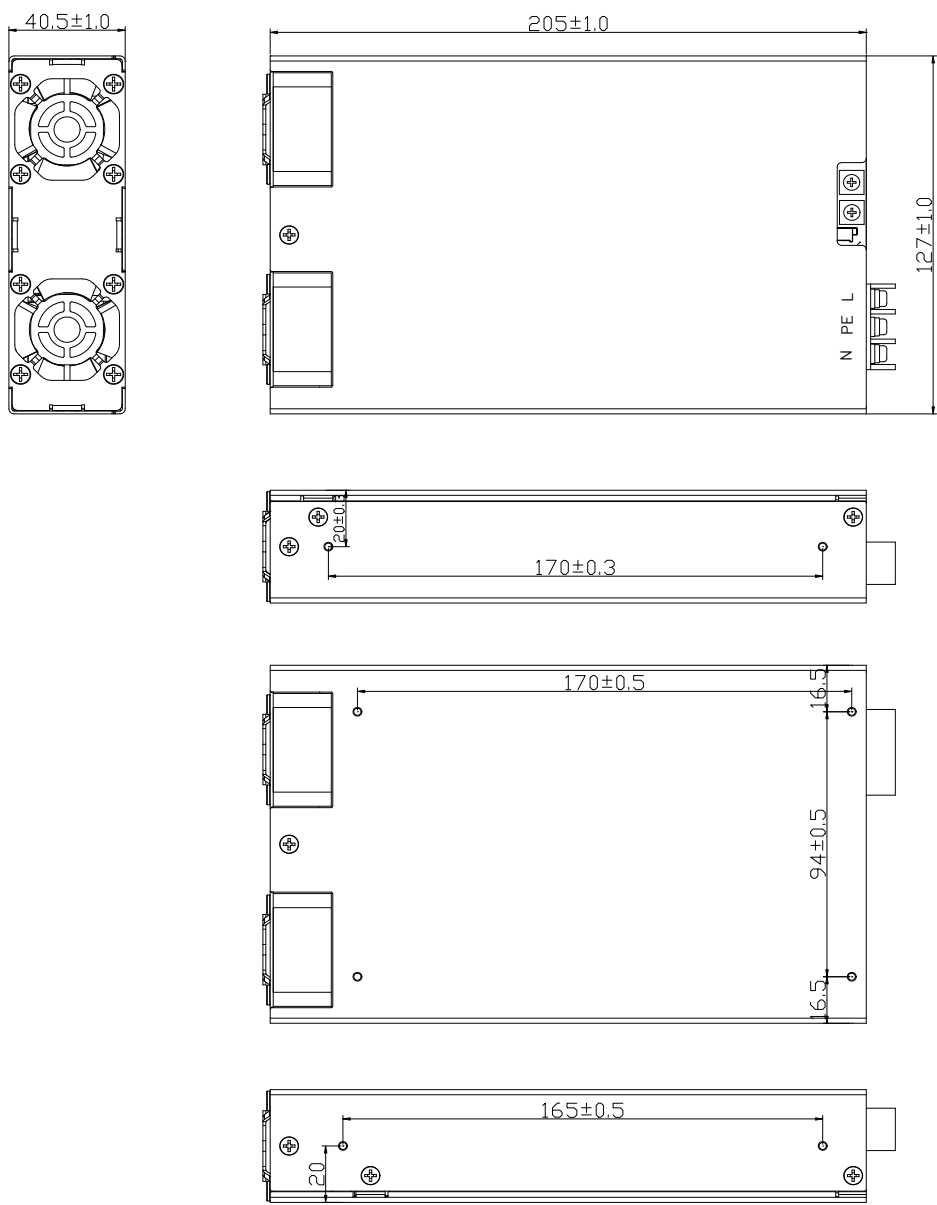
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6. MECHANICAL SPECIFICATIONS

Size: L205*W127*H40.5mm(L8.07" x W5" x H1.59")



- Note: 1. Case cover & chassis material: Aluminum or Fe alloy
2. AC pin material: copper alloy (Tin plated)
3. PAHS 6P NP REACH ROHS NOP

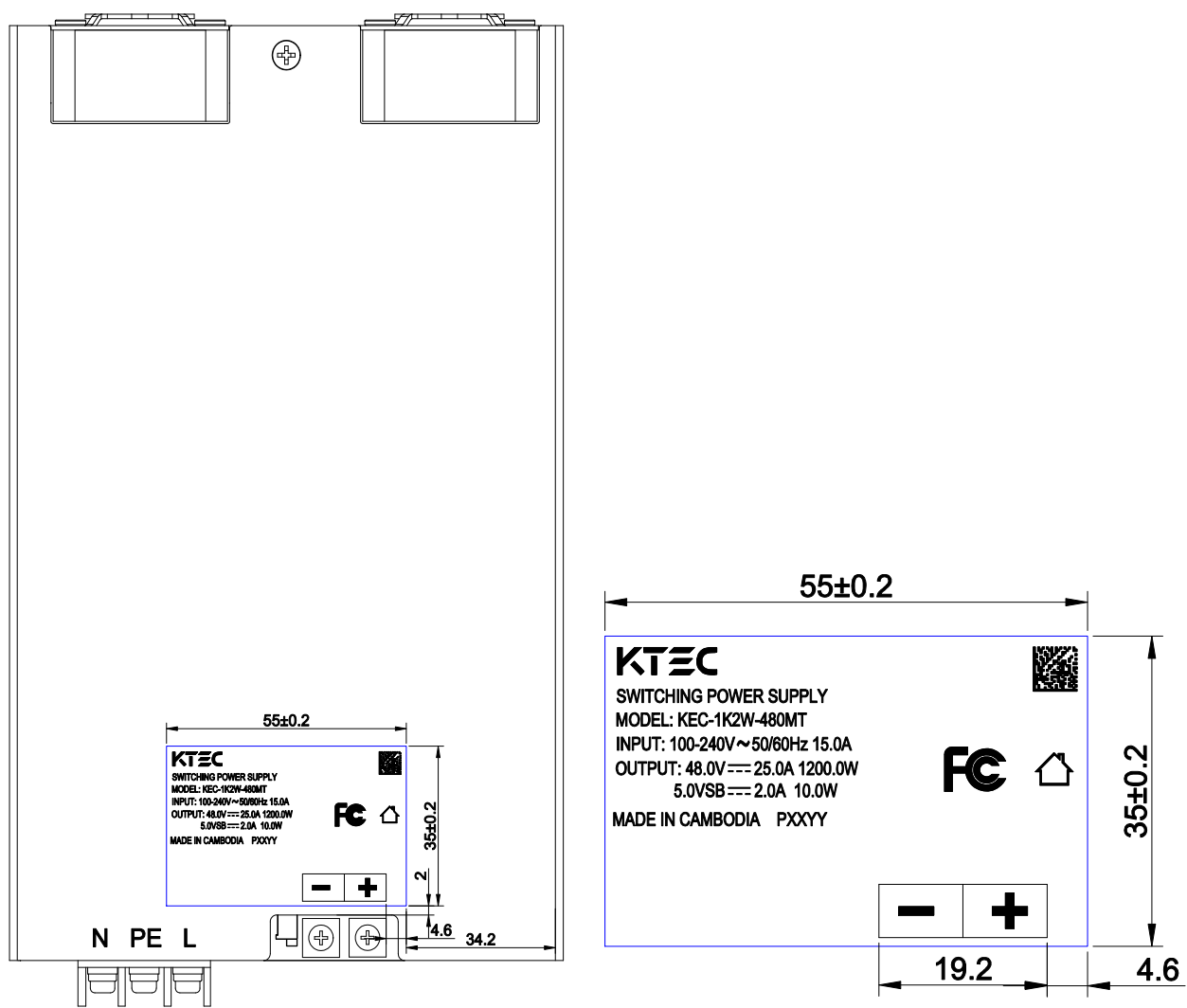
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KTEC

7. NAME PLATE



Note:

Material: silver polyester（消银龙）; Thickness: 0.08+-0.01mm.

Black characters silver background.

Date code (PXXYY: P=PAHS XX=WEEK, YY=YEAR), use the actual production date.

SN (Data Matrix Code size: 5*5mm):

First code G (Ktec) + Production part number (Product code) + Ten yards of flow code SSSSSSSSSS (decimal) Total 19 codes.

Example: GKS2514740000000001, GKS2514740000000002...GKS2514749999999999.

SWITCHING POWER SUPPLY

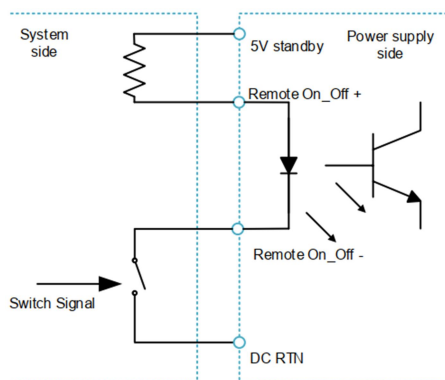
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8. MAIN FUNCTION INTRODUCTION:

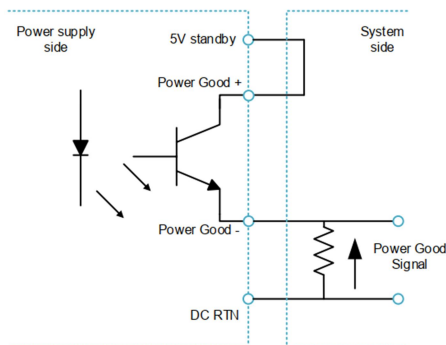
8.1 Remote On/off

Remote on/off uses an isolated diode located within the power supply. This signal can be used to enable or disable only the main output. When the main output is disabled, the +5 V Standby output will continue to operate. System can use a switch to conduct through this diode (suggested pull up resistor to 5 V standby with 1 K ohm resistor) to disable the main out. The signal can be floated (no connection to the signal), in order to enable the main output.

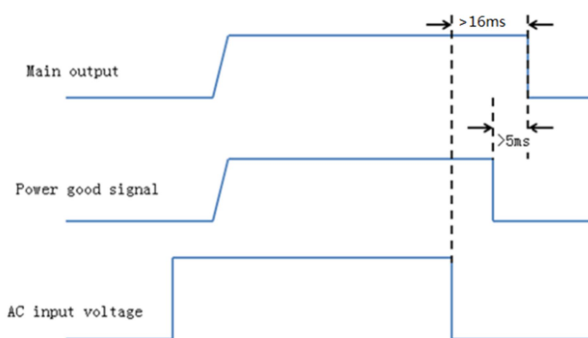


8.2 Power Good

Power Good+/- Port system isolated open-collector transistor (rated 80 V / 50mA). By adding a resistor (recommended value 10Kohm, 1/8 W) between the Power Good- port and the DC RTN, the Power Good+ port can be connected to a 5V auxiliary supply voltage (or a voltage that is not greater than the transistor rating). Depending on the use voltage, the resistance value must be adjusted, taking into account the use of the Power Good+ port connected to the end product. After the AC Power is turned on, the Power Good signal is high (as shown in the figure below), and after the AC input is turned off, the Power Good signal is low. When the output voltage drops below 90%, the Power Good is pulled to the low level at least 5ms ahead of time.



Power Good Connection



Power Good Time Sequence

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8.3 Parallel Current Sharing

The power supply supports parallel current sharing. To enable this function, connect the two active outputs in parallel to the Current Share port. In order to ensure better parallel current sharing effect, VR is used to fine-tune the output voltage before parallel operation so that the output voltage of two power supplies is as close as possible.

8.4 Output Voltage Regulation

The power supply provides the user with a potentiometer to adjust the output voltage. According to the design, the output voltage can be adjusted within the range of rated voltage $\pm 10\%$, when the output voltage is adjusted below the rated value, the maximum output current can reach the rated output value; When the output voltage is adjusted above the rated value, the output power cannot exceed the rated maximum power (the maximum output current will also be reduced).

8.5 Remote Sensing Function

The remote sensing feature can be used to compensate for the voltage drop generated by the output line connecting the main output port to the load. The remote sensing two ports are connected to the load by a twisted wire, and the remote sensing function compensates for voltage drops of up to 500 mV, as is the case with the main output line. Even if the remote sensing port is short-circuited or polarity reversed, the power supply will not be damaged.

8.6 Note

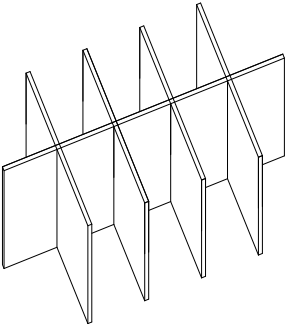
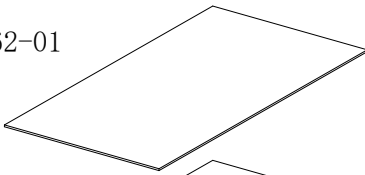
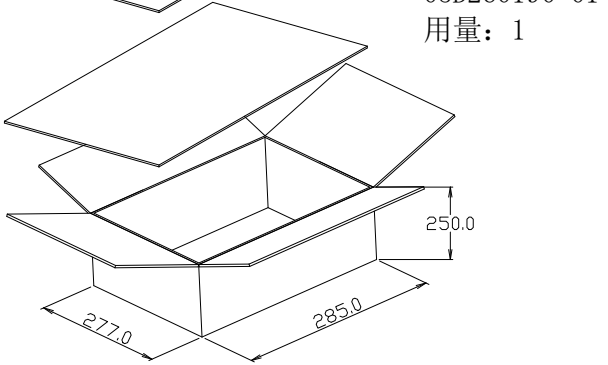
KTEC provides the parameters based on the actual test data, because the product involves many functions and items, if the information provided in the specification is incomplete or unclear, please contact KTEC to seek solutions, and prohibit private modification of this power supply. KTEC shall not be liable for any claim or action arising out of improper use or incorrect information provided in the specification. The customer shall evaluate the use of the product before placing the order. KTEC reserves the right to update the information in the specification without notice.

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9. PACKING (UNIT: MM)

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