

# SKA700T

## Product specifications

Product Name: music power station

Product Model: SKA700T

Product Brand:  **SUNGZU**



Document number	Edition	issuing date	execution	Auditing	Examine and approve

## Revised records

No	Edition	Revised content	execution	Auditing	Examine and approve	date

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## 1. Product overview

This product is an outdoor recreation power station (multifunctional backup power supply, hereinafter referred to as this product), which is mainly composed of battery pack module, BMS module, inverter module, DC input/output module, audio module, etc. The battery pack module uses lithium iron phosphate power battery, which has the characteristics of stable safety, low energy consumption for charging and discharging, and long service life, ensuring product safety and durability. The inverter module uses a pure sine wave inverter to ensure the stability and compatibility of the AC output. The information exchange between the DC input and output module and the BMS module maximizes the charging and discharging efficiency of this product, making transportation and use safer.

This product adopts LED digital screen display; dual-mode Bluetooth V5.0 is compatible with Bluetooth V4.2 and V2.1+EDR technology, low power consumption, fast transmission, and more stable signal; the main chip has built-in DSP sound processing algorithm, CD-level lossless sound quality, Professional-level listening enjoyment; 48-caliber full-range speaker unit, 360-degree surround sound; independent low-frequency radiator bass is more powerful and shocking; TWS mode can be shared and used by two devices simultaneously; The 360-degree magic light show releases five kinds of RGB ambient lighting effects, which can be switched at will with one button. The three lighting modes of emergency lighting can be switched between strong light, soft light and SOS mode at will.

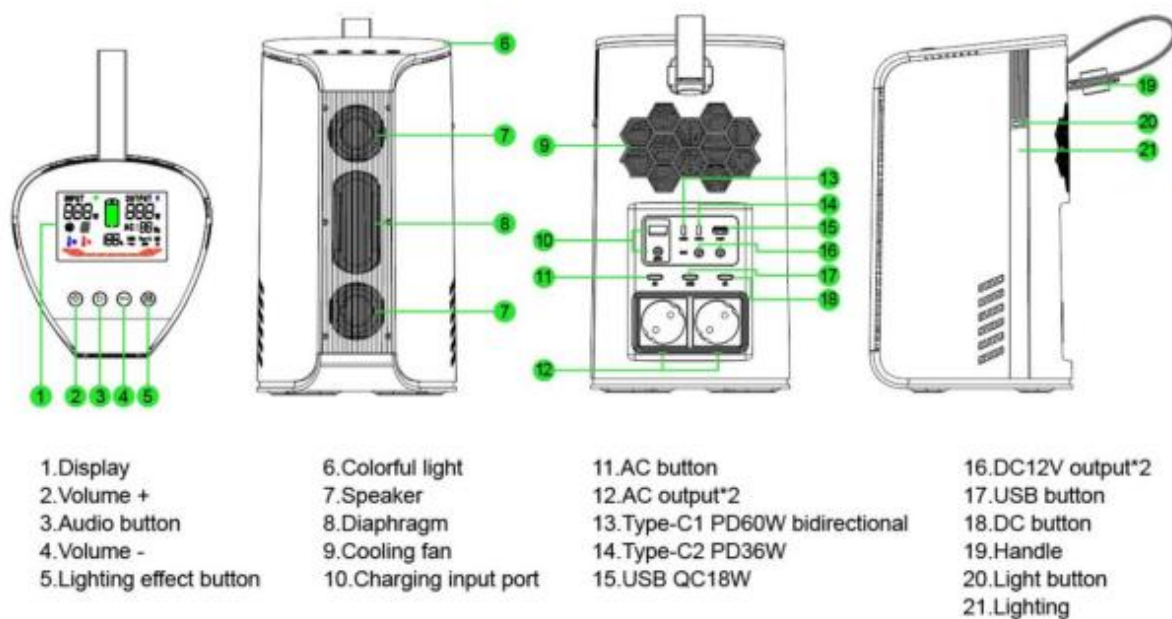
The safety and reliability of this product have been repeatedly tested and verified by the company's R&D team for a long time. The product input can be charged by four charging methods: solar panels, adapters, car chargers, and PD fast charging. The product output supports 220V/ 110V, DC12V, USB and Type-C fast charging output, AC output is suitable for electrical equipment below 700W.

## 2. Product application

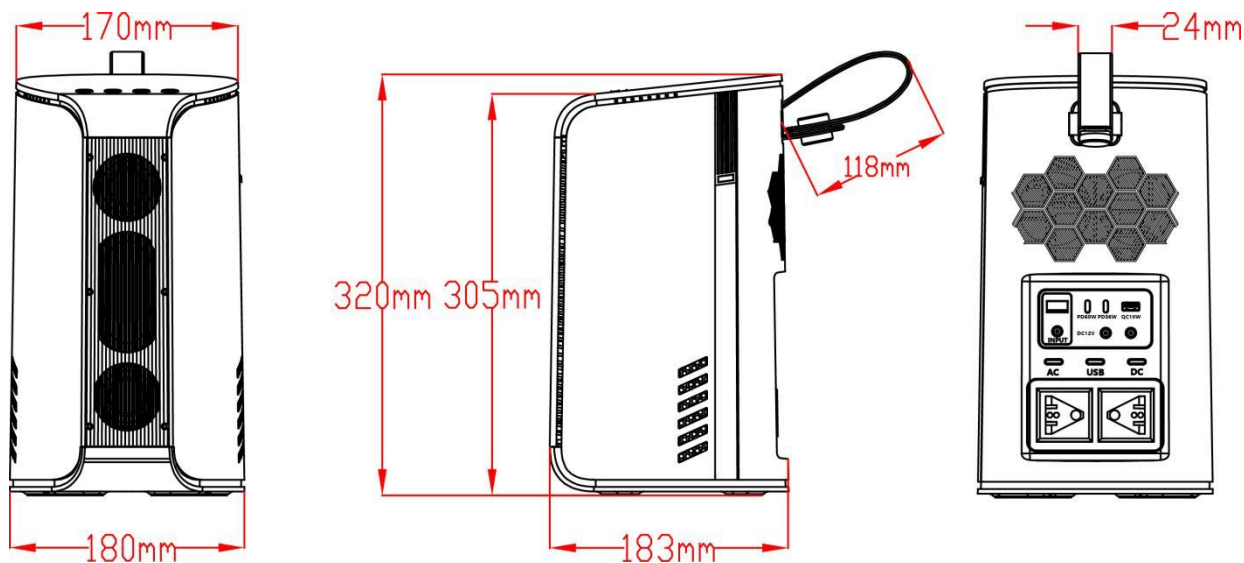
- 2.1. The application fields of this product include but not limited to:
- 2.2. Outdoor applications: camping, fishing, RV, self-driving, outdoor work, lighting, etc.
- 2.3. Industrial applications: instruments and equipment, instrumentation, testing devices, data acquisition, etc.
- 2.4. Household electricity applications: lighting, rice cookers, fans, computers, refrigerators, televisions, etc.
- 2.5. Digital product applications: mobile phones, tablets, cameras, computers, printers, game consoles, learning machines, etc.
- 2.6. Application of vehicle equipment: vehicle refrigerator, vehicle kettle, vehicle air pump, vehicle rice cooker, etc.

## 3. Product structure

### 3.1. Product Features



### 3.2. Product Plan and Dimensions



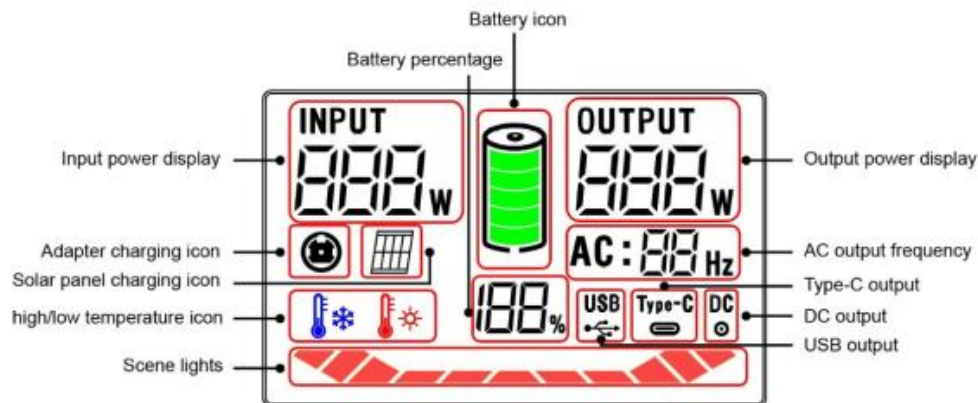
length (mm)	Width(mm)	high (mm)	weight (Kg)
180mm	183mm	320mm	6.1Kg

### 4. Technical Parameters

No	Electrical Characteristics		Parameter	
1	product input	adapter	19Vdc / 4.74A/ 90W (MAX)	
		solar panel	18Vdc~44Vdc/ 120W (MAX)	
		60W bidirectional PD	60W (MAX)	
2	product output	AC output	output voltage	220V±3% 50Hz/110V±3% 60Hz
			continuous output	700W (pure sine wave)
			Peak power	1400W±3%
			harmonic distortion	<5%
			Conversion efficiency	≥88%
			output ripple	≤500mV
		DC 12V output	2×DC5521	12Vdc 10A 120W (MAX)
			Conversion efficiency	≥92%
		USB	5V/3A, 9V/2A, 12V/1.5A	Support QC3.0/QC2.0/AFC/FCP/SCP/PE2.0/PE1.1/SFCP/BC1.2 etc agreement

			Conversion efficiency	$\geq 92\%$
		Type-C2 (36W)	5V/3A, 9V/3A, 12V/3A,	Support PPS/PD3.0/PD2.0/QC4+/QC4/QC3.0/QC2.0/AFC/FCP /SCP/PE2.0/PE1.1/SFCP etc agreement
			Conversion efficiency	$\geq 92\%$
		Type-C1 (60W bidirectional )	5V/3A, 9V/3A, 12V/3A, 15V/3A, 20V/3A	Support PD3.0/PD2.0/QC3.0+/QC3.0/QC2.0/AFC/FCP /SCP/SFCP/Apple/DRP Try.SRC etc agreement
			Conversion efficiency	$\geq 93\%$
3	battery cell	battery capacity	16V/31Ah (3.2V 155000mAh )	
		battery pack	IFR32140 LiFeP04 5S×2P (10pcs cells)	
		cycle life	2000 cycle capacity $\geq 80\%$	
4	Audio	Bluetooth	Dual-mode Bluetooth V5.0 compatible with Bluetooth V4.2 and V2.1+EDR technology	
		power	10W*2	
		Frequency response	20HZ-20KHZ	
		transmit power	$\leq 9\text{dBm (EIRP)}$	
		occupying bandwidth	$\leq 1\text{MHz}$	
		Frequency Range	2400-2483.5MHz	
		Distortion	$< 1\%$	
5	Static power	Static power consumption of the whole machine	$\leq 200\text{UA}$	
6	working environment	temperature	$0^{\circ}\text{C} \sim 45^{\circ}\text{C}$	
		humidity	10%-80%RH	
7	storage environment	temperature	$-10^{\circ}\text{C} \sim 60^{\circ}\text{C}$	
		humidity	10%-65%RH	

## 5. Functional description



Through the display, you can check the product power, input and output power, temperature, frequency and other information.

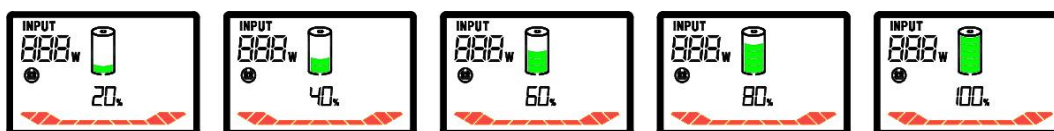
### 5.1. Charging capacity display

When the product is connected to the charger for charging, the display will show the corresponding charging interface type icon and charging power, and the battery icon will increase. (for example, if the battery is 50% originally, it will increase by 1 grid every 0.5s from the 2nd grid, and after 4 grids, the battery will return to display 1 grid, and this cycle)

- 1) When the power is 0% to 19%, the battery indicator bar will increase and cycle from the first grid to the top;
- 2) When the power is 20% to 39%, the first grid of the battery indicator bar is always on, and the second grid is cycled upwards;
- 3) When the battery is 40% to 59%, the 1st and 2nd grids of the battery indicator bar are always on, and the 3rd grid increases and circulates upwards;
- 4) When the power is 60% to 79%, the 1st, 2nd, and 3rd grids of the battery indicator bar are always on, and the 4th grid increases upwards and circulates;
- 5) When the battery is 80% to 99%, the 1st, 2nd, 3rd, and 4th bars of the battery indicator bar are always on, and the 5th bar flashes in 0.5S;
- 6) When the battery is 100%, the 1st, 2nd, 3rd, 4th, and 5th cells of the battery indicator bar are always on, indicating that the battery is

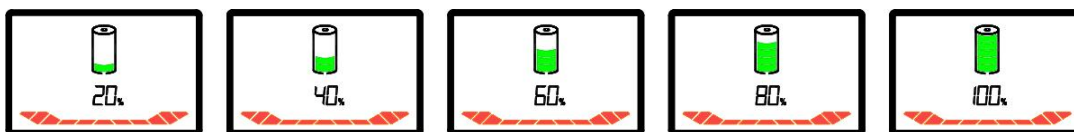


fully charged.



## 5.2. Discharge power display

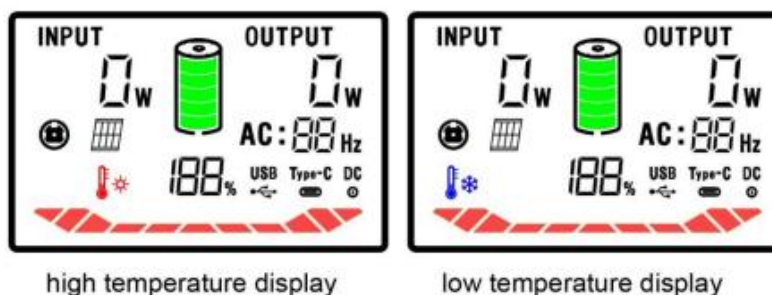
- 1) When the product is not charging, the display will display the current battery level; the 5 grid lights indicate that the battery level is 20%, 40%, 60%, 80%, and 100%.



## 5.3. Temperature control system display

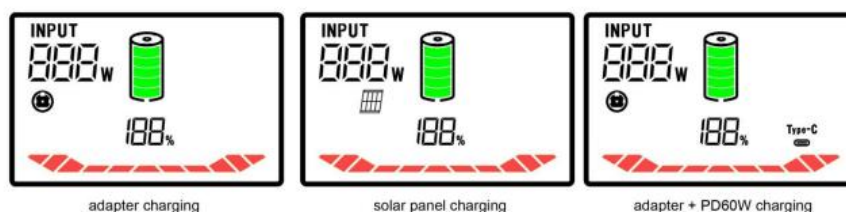
① This product has a built-in intelligent temperature control system. When the internal temperature of the product is higher than 45° C, the cooling fan will automatically start and automatically shut down when the internal temperature of the product drops below 45° C.

② When the temperature of the working environment is too high or too low, a high temperature or low temperature prompt will be displayed on the display screen. If the temperature is too high or too low, the machine may not work normally. It is not a product quality problem. Please pay attention to the use environment.



#### 5.4. Input display

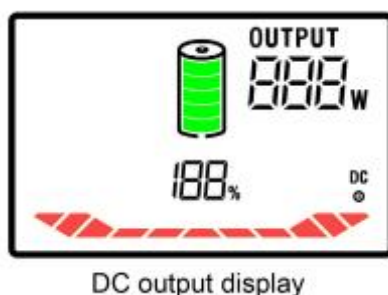
Charging mode: DC 19V adapter, car adapter, 18V~44V solar panel, Type-C1 PD60W can be used to charge this product bidirectionally; the adapter and "Type-C1 PD60W bidirectional" can be used to charge at the same time, and the maximum power can reach 140W; Using solar energy and "Type-C1 PD60W bidirectional" charging, the maximum power can reach 180W; when the power is higher than 90W, the fan will be turned on automatically, and the screen will display the corresponding icon and input power being input for charging, the battery icon will be in a horse racing state, and the battery percentage will increase accordingly. The content of the scene light runs from both sides to the middle, and the state of the colorful LED breathing light (the default white light effect can be freely switched by clicking the light effect button to freely switch between seven monochrome breathing light effects). (As shown in the picture below)



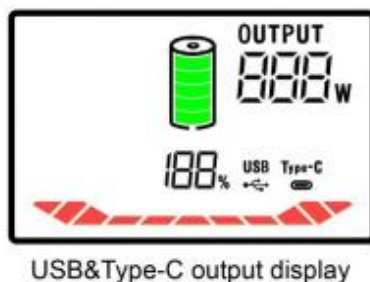
Note: The DC input charging port and the solar input charging port cannot be charged at the same time.

## 5.5. Output function

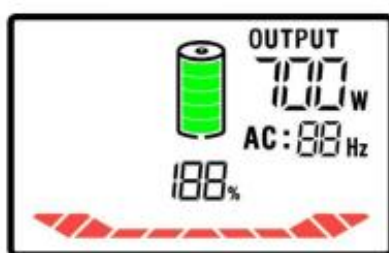
① DC12V output: click the "DC switch button" to turn on the DC12V DC output, the screen will display the DC output icon, output power, battery icon and power percentage, and the scene lights will run from the middle to both sides; at this time, the DC 12V electrical equipment can be connected , the battery percentage and the battery icon decrease accordingly; click the "DC switch button" again to turn off the DC output. (As shown in the picture below)



② USB and Type-C output: Click the "USB switch button" to turn on the USB and Type-C DC output, the screen will display the USB output icon, Type-C output icon, output power, battery icon and battery percentage, and the scene light will start from the middle Run horses to both sides; at this time, you can connect "USB QC18W", "Type-C1 PD60W", "Type-C2 PD36W" electrical equipment, and the percentage of power and the battery icon will decrease accordingly; click the "USB switch button" again, Turn off USB and Type-C output. (As shown in the picture below)

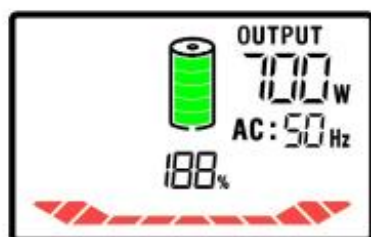


③AC output: Click the "AC switch button" to turn on the AC output, the screen will display the AC output frequency icon, output power, battery icon and battery percentage, and the scene lights will race from the middle to both sides;At this time, you can connect electrical equipment with AC constant power below 700W and resistive equipment below 1400W, and the battery percentage and battery icon will decrease accordingly; click the "AC switch button" again to turn off the AC output. (As shown in the picture below)

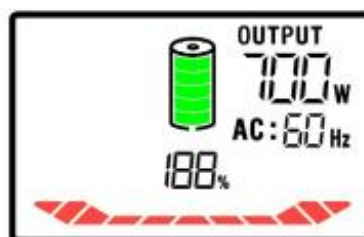


AC output display

④AC output frequency switching: Click the "AC switch button" to turn on the AC output, the screen will display the AC output frequency, press and hold the "AC switch button" for 10 seconds, the AC frequency can be switched between 50Hz/60Hz. (As shown in the picture below)

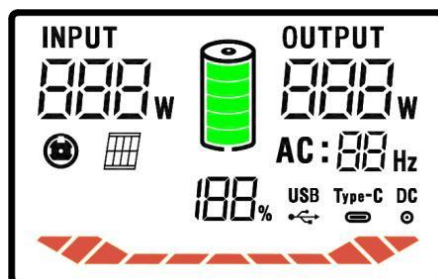


Frequency switching 50Hz







Frequency switching 60Hz

⑤ Charge while discharging: This device supports the function of discharging while charging. The display screen shows the same steps as 4.3-4.4, the scene lights are running from the two sides to the middle, and the state of the colorful LED breathing lights. (As shown in the picture below)



⑥Note: AC and DC12V cannot be used at the same time; when the load is abnormal, the scene light will flash for 30 seconds, such as: overload protection, over-current protection, short-circuit protection, low-voltage protection, etc.; When the battery level shows 3%, the AC cannot be turned on, and when the battery level shows 0%, all functions cannot be turned on, and it needs to be charged in time.

## 5.6. Audio button introduction

Icon	Button	function
	Audio button	Long press to power on/off, short press to play/pause, double click for TWS mode.
	Volume +	Short press to increase volume, long press to play next song.
	Volume -	Short press to decrease volume, long press to previous song.
	Light effect button	Short press to switch the lighting effect, long press to turn on/off the lighting effect, double-click to clear/reconnect to Bluetooth.

### 5.7. LED lighting mode

lighting effect	Description
monochrome spectrum	The spectrum of monochrome running upwards, 2S cuts the next color, and the background color is white
Colorful Rhythm Spectrum	The spectrum running upwards, one light and one color, a total of 10 lights and 10 colors are synchronized left and right, no background color
streamer light	Seven colors
red and blue lights	The left and right sides are fixed and alternately flashing
Colorful breathing lights	Colorful automatic color switching

### 5.8. Audio Operating Instructions

① Press and hold the "audio switch button" to turn on the machine, accompanied by start-up sound and light effects, the sound is waiting for connection, the colorful LED ice blue breathing light is always on, the pairing name is [700T], and only in this state you can connect the device correctly; There will be a sound prompt when the Bluetooth connection is successful, the colorful LED monochromatic spectrum is a pause light effect, and the audio can be played normally. If you press and hold the "audio switch button" of this product again, it will be turned off, accompanied by the sound effect and light effect of the shutdown.

② TWS mode on/off: Select two the machines, and press and hold the two "audio switch button" to start up, enter the Bluetooth waiting for connection state, double-click any one of the "sound switch button" to turn on the TWS mode (double-click's machine to default to the host), the interconnection is successful and accompanied by voice prompts, the colorful LED light is synchronized with the light effect of the host. At this time, the audio of the two machines can be connected to the Bluetooth device for synchronous sharing. (Note: Connect the Bluetooth device after the TWS mode interconnection is successful.)

③ LED lighting effect mode switching: when the audio is turned on and waiting to be connected, the default ice blue lighting effect, short press the "lighting effect button" to switch between monochrome spectrum, seven colors rhythm spectrum, streamer light, red and blue light, seven colors breathing, long press to turn on / Turn off the LED light effect mode.

### **5.9. Emergency Lighting Operating Instructions**

Lighting on/off: Click the "lighting button" to turn on the light, short press the "lighting button" to switch between strong light, soft light, and SOS mode lighting effects in turn, and long press to turn off the light.

## 6. Product electrical characteristics

### 6.1. System Design Parameters

term	minimum value	standard	maximum value	remark
Boot mode and response time		1s		Short press the AC/DC/USB button to wake up the system and turn it on (light up the screen), and at the same time turn on the corresponding output; short press the AC/DC/USB button again to turn off the corresponding output, then it will enter the sleep state after 10S
Charging high temperature protection	40℃	45℃	50℃	This temperature detection is judged by the system software
Charging low temperature protection	-5℃	-0℃	2℃	This temperature detection is judged by the system software

### 6.2. Charging input port parameters

term	minimum value	standard	maximum value	remark
Charging input voltage	18V	19V	22V	
DC charging current	---	4.2A	---	Optional output is 19V/4.7A adapter
Solar charging voltage	18V		44V	Support MPPT solar charging
Charge cut-off current	---	---	1A	Judging the full current by the battery pack
Input Polarity Reverse Protection	---	support	---	Cannot charge when the input is reversed, no prompt
Input short circuit protection	---	support	---	Cannot charge when the input is short-circuited, no prompt
adaptive charging		support		
Type-C1 PD60W bidirectional charging	PPS/PD3.0/PD2.0/QC4+/QC4/QC3.0/QC2.0/AFC/FCP/SCP/PE2.0/PE1.1/SFCP			



### 6.3. USB output port

term	minimum value	standard	maximum value	remark
5V no-load output voltage	4.70V	5.00V	5.30V	Under the condition of no-load output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20 copper cores, and the diameter of a single copper core is 0.14mm)
5V full load output voltage	4.70V	5.00V	5.30V	Under the condition of no-load output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
5V rated output current	---	3.0A	---	Electronic load terminal
5V port output ripple	---	---	95mV	Rated conditions, set the bandwidth of the oscilloscope to 20MHz, connect the test terminal with 10 $\mu$ F electrolytic capacitor and 0.1 $\mu$ F ceramic capacitor in parallel
5V Short Circuit Protection		support		When the output is short-circuited, the output is automatically turned off, and the output is automatically restored when the fault is removed.
5V Output Overcurrent Protection	3.1A	3.3A	3.5A	In case of over-current protection, the output is automatically turned off, and the output is automatically restored when the fault is removed.
5V Output Conversion Efficiency	85%	---	94%	Load greater than 500mA, test PCB board terminal voltage
9V no-load output voltage	8.50V	9.00V	9.50V	Under the condition of no-load output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
9V full load output voltage	8.50V	9.00V	9.50V	Under the condition of full output output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
9V rated output current	---	2.00A	---	Electronic load terminal



9V port output ripple	---	---	140mV	Rated conditions, set the bandwidth of the oscilloscope to 20MHz, connect the test terminal with 10 $\mu$ F electrolytic capacitor and 0.1 $\mu$ F ceramic capacitor in parallel
9V Output Overcurrent Protection	3.1A	3.3A	3.5A	In case of over-current protection, the output is automatically turned off, and the output is automatically restored when the fault is removed.
9V Output Short Circuit Protection	---	support	---	When the output is short-circuited, the output is automatically turned off, and the output is automatically restored when the fault is removed.
12V no-load output voltage	8.55V	12.00V	12.50V	Under the condition of no-load output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
12V full load output voltage	8.55V	12.00V	12.50V	Under the condition of full output output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
12V Rated output current	---	1.5A	---	Electronic load terminal
12V port output ripple	---	---	140mV	Rated conditions, set the bandwidth of the oscilloscope to 20MHz, connect the test terminal with 10 $\mu$ F electrolytic capacitor and 0.1 $\mu$ F ceramic capacitor in parallel
12V overcurrent protection	3.1A	3.3A	3.5A	In case of over-current protection, the output is automatically turned off, and the output is automatically restored when the fault is removed.
12V Output Short Circuit Protection	---	support	---	When the output is short-circuited, the output is automatically turned off, and the output is automatically restored when the fault is removed.

#### 6. 4. DC5521 output port parameters

term	minimum value	standard	maximum value	remark
DC no-load output voltage	12V	---	14V	The terminal voltage when the product is no-load and stable output
Full load output voltage	11.5V	---	14V	The terminal voltage of the product with rated load and stable output
Rated output current		10A		The product can work stably for a long time
Port output ripple	---	---	300mV	Rated conditions, set the bandwidth of the oscilloscope to 20MHz, connect the test terminal with 10 $\mu$ F electrolytic capacitor and 0.1 $\mu$ F ceramic capacitor in parallel
efficiency	90%	---	95%	Load greater than 500mA, test PCB board terminal voltage
Output overcurrent protection	10.5A	11A	12A	If the current exceeds the current, the output of the port will be automatically turned off, and the "scene light" icon on the screen will flash, and the fault needs to be reset by pressing the button.
Short circuit protection	---	support	---	When the DC output is short-circuited, the output will be automatically turned off, and the "scene light" icon on the screen will flash, and the button needs to be pressed to restore the fault.

### 6.5. Type-C1 output port

term	minimum value	standard	maximum value	remark
5V no-load output voltage	4.75V	5.00V	5.25V	Under the condition of no-load output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
5V full load output voltage	4.75V	5.00V	5.25V	Under the condition of full output output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
5V rated output current	---	3.0A	---	Electronic load terminal
5V port output ripple	---	---	20mV	Rated conditions, set the bandwidth of the oscilloscope to 20MHz, connect the test terminal with 10 $\mu$ F electrolytic capacitor and 0.1 $\mu$ F ceramic capacitor in parallel
5V Short Circuit Protection	---	support	---	When the output is short-circuited, the output is automatically turned off, and the output is automatically restored when the fault is removed.
5V output over-current protection	3.10A	3.40A	3.50A	When the output is over-current, the output is automatically turned off, and the output is automatically restored after the fault is removed.
5V output conversion efficiency	---	85%	---	Load greater than 500mA
9V no-load output voltage	8.55V	9.00V	9.45V	Under the condition of no-load output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
9V full load output voltage	8.55V	9.00V	9.45V	Under the condition of full output output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
9V rated output current	---	3.00A	---	Electronic load terminal
9V port output ripple	---	---	30mV	Rated conditions, set the bandwidth of the oscilloscope to 20MHz, connect the test terminal with 10 $\mu$ F electrolytic

				capacitor and 0.1 $\mu$ F ceramic capacitor in parallel
9V Overcurrent Protection	3.10A	3.40A	3.50A	In case of over-current protection, the output is automatically turned off, and the output is automatically restored when the fault is removed.
9V output short circuit protection	---	support	---	When the output is short-circuited, the output is automatically turned off, and the output is automatically restored when the fault is removed.
9V output conversion efficiency	---	91%	---	Load greater than 500mA
12V no-load output voltage	11.50V	12.00V	12.50V	Under the condition of no-load output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
12V full load output voltage	11.50V	12.00V	12.50V	Under the condition of full output output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
12V rated output current	---	3.0A	---	Electronic load terminal
12V port output ripple	---	---	30mV	Rated conditions, set the bandwidth of the oscilloscope to 20MHz, connect the test terminal with 10 $\mu$ F electrolytic capacitor and 0.1 $\mu$ F ceramic capacitor in parallel
12V overcurrent protection	3.10A	3.40A	3.50A	In case of over-current protection, the output is automatically turned off, and the output is automatically restored when the fault is removed.
12V Output Short Circuit Protection	---	support	---	When the output is short-circuited, the output is automatically turned off, and the output is automatically restored when the fault is removed.
12V output conversion efficiency	---	93%	---	Load greater than 500mA
15V no-load output voltage	14.50V	15.00V	15.50V	Under the condition of no-load output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper

				cores, and the diameter of a single copper core is 0.14mm)
15V full load output voltage	14.50V	15.00V	15.50V	Under the condition of full output output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
15V rated output current	---	3.0A	---	Electronic load terminal
15V port output ripple	---	---	50mV	Rated conditions, set the bandwidth of the oscilloscope to 20MHz, connect the test terminal with 10 $\mu$ F electrolytic capacitor and 0.1 $\mu$ F ceramic capacitor in parallel
15V Overcurrent Protection	3.10A	3.30A	3.50A	In case of over-current protection, the output is automatically turned off, and the output is automatically restored when the fault is removed.
15V Output Short Circuit Protection	---	support	---	When the output is short-circuited, the output is automatically turned off, and the output is automatically restored when the fault is removed.
15V output conversion efficiency	---	93%	---	Load greater than 500mA
20V no-load output voltage	19.50V	20.00V	20.50V	Under the condition of no-load output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
20V full load output voltage	19.50V	20.00V	20.50V	Under the condition of full output output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
20V rated output current	---	5.0A	---	Electronic load terminal
20V port output ripple	---	---	80mV	Rated conditions, set the bandwidth of the oscilloscope to 20MHz, connect the test terminal with 10 $\mu$ F electrolytic capacitor and 0.1 $\mu$ F ceramic capacitor in parallel

20V overcurrent protection	3.10A	3.40A	3.50A	In case of over-current protection, the output is automatically turned off, and the output is automatically restored when the fault is removed.
20V Output Short Circuit Protection	---	support	---	When the output is short-circuited, the output is automatically turned off, and the output is automatically restored when the fault is removed.
20V output conversion efficiency	---	93%	---	Load greater than 500mA

#### 6.6. Type-C2 output port

term	minimum value	standard	maximum value	remark
5V no-load output voltage	4.75V	5.00V	5.25V	Under the condition of no-load output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
5V full load output voltage	4.75V	5.00V	5.25V	Under the condition of full output output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
5V rated output current	---	3.0A	---	Electronic load terminal
5V port output ripple	---	---	95mV	Rated conditions, set the bandwidth of the oscilloscope to 20MHz, connect the test terminal with 10 $\mu$ F electrolytic capacitor and 0.1 $\mu$ F ceramic capacitor in parallel
5V Short Circuit Protection	---	support	---	When the output is short-circuited, the output is automatically turned off, and the output is automatically restored when the fault is removed.
5V output over-current protection	3.0A	3.20A	3.40A	When the output is over-current, the output is automatically turned off, and the output is automatically restored after the fault is removed.
5V output conversion efficiency	---	86%	---	Load greater than 500mA

9V no-load output voltage	8.55V	9.00V	9.45V	Under the condition of no-load output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
9V full load output voltage	8.55V	9.00V	9.45V	Under the condition of full output output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
9V rated output current	---	3.00A	---	Electronic load terminal
9V port output ripple	---	---	130mV	Rated conditions, set the bandwidth of the oscilloscope to 20MHz, connect the test terminal with 10 $\mu$ F electrolytic capacitor and 0.1 $\mu$ F ceramic capacitor in parallel
9V Overcurrent Protection	3.0A	3.20A	3.40A	In case of over-current protection, the output is automatically turned off, and the output is automatically restored when the fault is removed.
9V output short circuit protection	---	support	---	When the output is short-circuited, the output is automatically turned off, and the output is automatically restored when the fault is removed.
9V output conversion efficiency	---	91%	---	Load greater than 500mA
12V no-load output voltage	11.50V	12.00V	12.50V	Under the condition of no-load output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
12V full load output voltage	11.50V	12.00V	12.50V	Under the condition of full output output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
12V rated output current	---	3.0A	---	Electronic load terminal
12V port output ripple	---	---	120mV	Rated conditions, set the bandwidth of the oscilloscope to 20MHz, connect the test terminal with 10 $\mu$ F electrolytic capacitor and 0.1 $\mu$ F ceramic capacitor in parallel





12V overcurrent protection	3.0A	3.20A	3.40A	In case of over-current protection, the output is automatically turned off, and the output is automatically restored when the fault is removed.
12V Output Short Circuit Protection	---	support	---	When the output is short-circuited, the output is automatically turned off, and the output is automatically restored when the fault is removed.
12V output conversion efficiency	---	93%	---	Load greater than 500mA
15V no-load output voltage	14.50V	15.00V	15.50V	Under the condition of no-load output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
15V full load output voltage	14.50V	15.00V	15.50V	Under the condition of full output output, measure the voltage of the USB output port of the product (the length of the discharge line is 30cm, 20pcs copper cores, and the diameter of a single copper core is 0.14mm)
15V rated output current	---	3.0A	---	Electronic load terminal
15V port output ripple	---	---	70mV	Rated conditions, set the bandwidth of the oscilloscope to 20MHz, connect the test terminal with 10 $\mu$ F electrolytic capacitor and 0.1 $\mu$ F ceramic capacitor in parallel
15V Overcurrent Protection	3.0A	3.20A	3.40A	In case of over-current protection, the output is automatically turned off, and the output is automatically restored when the fault is removed.
15V Output Short Circuit Protection	---	support	---	When the output is short-circuited, the output is automatically turned off, and the output is automatically restored when the fault is removed.
15V output conversion efficiency	---	95%	---	Load greater than 500mA

### 6.7. AC output port parameters

term	minimum value	standard	maximum	remark
Rated output voltage	215Vac	220Vac	225Vac	Input voltage range 12.5~18V, rated resistive load
output waveform	---	sine wave	---	Rated resistive load
Output frequency	49.5Hz	50Hz	50.5Hz	50/60HZ switchable
no-load loss	---	16W	18W	Input voltage range 12.5~18V, AC gear maximum no-load loss
Rated output power	---	700W	---	Input voltage range 12.5~18V, rated resistive load
efficiency	88%	90%	92%	Load current 50%, 75%、
soft start time	---	2S	---	The time from power-on to output stabilization at
Linear Regulation	---	---	10%	
Load Regulation	---	---	10%	
Voltage Harmonics (THD)	---	---	3%	Test the THD value of the rated resistive load (<3%)
Short circuit protection	---	support	---	When short-circuited, the output is turned off, and the button restores the output the button restores the output
overload protection	320W≤constant power load@<5s;			
Pre-stage over-temperature	105℃	110℃	115℃	Turn off output after over temperature protection
Pre-stage over-temperature recovery	55℃	60℃	65℃	After the over-temperature protection is released, press the button to resume outputpress the button to resume output
Post-stage over-temperature	105℃	110℃	115℃	Turn off output after over temperature protection
Post-stage over-temperature recovery	55℃	60℃	65℃	After the over-temperature protection is released, press the button to resume output

## 6.8. Battery Pack Parameters

term	minimum	standard	maximum	remark
Battery Type	---	155000mAH	---	Single cell 15500mAH
Rated voltage	---	16V	---	5 in series 5*3.2V
battery capacity	---	496WH	---	
Protection board control mode	---	---	---	Charge and discharge same port negative control
Output short circuit protection and time	---	support	---	When there is a short circuit on the protection board, the output will be turned off, and the wake-up will be activated after the fault is removed.
Overcurrent protection and time	---	120A	---	500-600mS
balanced current	60mA	70mA	80mA	
Balanced turn-on voltage	3.15V	3.2V	3.25V	
Cell charging overcharge	3.58V	3.6V	3.65V	Single cell overcharge protection voltage
Battery discharge undervoltage	2.4V	2.50V	2.55V	Single-cell over-discharge protection voltage
Charging high temperature protection	40℃	45℃	50℃	Stop charging when the battery temperature is too high, high temperature charging will reduce battery capacity and life
Charging low temperature protection	-5℃	0℃	2℃	Stop charging when the battery temperature is too low, low temperature charging will reduce battery capacity and life
Discharge high temperature protection	55℃	60℃	65℃	The temperature is too high, the battery stops discharging
Discharge low temperature protection	-18℃	-20℃	-22℃	The temperature is too low, the battery stops discharging
Protection board standby leakage current	---	---	70uA	

## 6.9. Audio parameters

<b>bluetooth parameters</b>	
bluetooth chip	BP1048B1
bluetooth version	Dual-mode Bluetooth V5.0, compatible with Bluetooth V4.2 and V2.1+EDR
bluetooth protocol	Support Bluetooth Piconet and Scatternet networking protocols Support PLC/A2DP/AVRCP/HFP/HSP/OPP/HID/SPP/ Protocols such as PBAP/GATT/SM
transmit power	$\leq 9\text{dBm (EIRP)}$
Frequency Range	2400–2483.5MHz
occupying bandwidth	$\leq 1\text{MHz}$
<b>Speaker parameters</b>	
Power amplifier chip	HT328
Horn diameter	48mm square folded edge 18-core inner double magnetic horn 4 ohms 8W with BOX
impedance	$4\Omega \pm 15\%$ (DCR $3.5\Omega \pm 10\%$ )
rated power	2*10W
Frequency response	20HZ–20KHZ
Distortion	<1%

## 7. Product actual test

### 7.1. Test items

No	Test items	Test Conditions	Check item	Test Results
1	high altitude test	Pressure $\leq$ 11.6Kpa, T =20 $\pm$ 5 $^{\circ}$ C 2. No packaging, no electricity	1. Appearance 2. Power performance	1. The appearance is not deformed 2. Electrical work is normal
2	temperature test	The temperature is between 40 $\pm$ 2 $^{\circ}$ C and 75 $\pm$ 2 $^{\circ}$ C 2. Repeat the test 10 times 3. The switching time is 30 minutes	1. Appearance 2. Power performance	1. The appearance is not deformed 2. Electrical work is normal
3	vibration test	Amplitude: 1.52 mm, Scanning frequency range: 5Hz ~ 10Hz, scanning speed: about 10 square meters / S3, Scanning frequency range: 0Hz~200Hz, scanning speed: about 3m2/S3, Scanning frequency range: 200Hz ~ 500Hz, scanning speed: about 1 square meter / S3, Each vibration lasts for 20 minutes and vibrates from all directions of the X, Y and Z axes. The appearance of the power supply does not show any signs of damage. There is no shaking inside, no rattling noise; the screws are firmly fastened, and there is no sliding tooth.	1. Appearance 2. Power performance	1. The shell is not deformed; the screw is not detached; 2. The internal components are not falling off, open welding, loosening, etc.; 3. Electrical performance is normal

## 7.2. Basic Functional Test Display

### 7.2.1. Special Equipment Test

No	Test items	use power	run time	Machine state	machine internal temperature	remark
1	Resistive	700w	33 mins	normal	Battery 50℃	

### 7.2.2. High temperature environment load test

Test tools: professional equipment testing

No	ambient temperature	load properties	load power	machine state	machine internal temperature	remark
1	35℃	Resistive	700W	normal	Battery 58℃	
2	40℃	Resistive	700W	normal	Battery 62℃	

### 7.2.3. Low temperature environment load test

Test tools: professional equipment testing

No	ambient temperature	load properties	load power	machine state	machine internal temperature	remark
1	-5℃	Resistive	700W	normal	Battery 45℃	
2	-20℃	Resistive	700W	normal	Battery 30℃	

### 7.2.4. Adapter Charging Test

Item	AC charging part		discharge part		charging time	machine internal temperature	remark
	Voltage	current	Voltage	current			
AC charging test	19V	4.21A			6H	Battery 32℃	
AC charge AC discharge test	19V	4.21A	220V	3.2A		Battery 58℃	The output power is greater than the input, and it cannot be fully charged
AC charge DC discharge test	19V	4.21A	12.5V	10A		Battery 35℃	The output power is greater than the input, and it cannot be fully charged

### 7.2.5. Household Appliances Test

No	device name	rated power	run time	Machine state	machine internal temperature	Remark
1	egg steamer	350w	66mins	normal	Battery 45℃	
2	Fan	60W	6hours	normal	Battery 25℃	

### 7.2.6. Structural component reliability requirements

No	Test items	test equipment experiment method	Test Conditio ns	Judgment criteria
1	USB Endurance Test	Insert&unplug the tester	5000times 200times/ hour	1. No visible damage to the USB connector 2. USB insertion force and extraction force comply with USB—IF v2.0 specification (insertion force $\leq$ 35N, extraction force $\geq$ 8N) 3. After the insertion and extraction test is completed, check whether there is any copper leakage on the contact terminal
2	DC output terminal durability test	Insert&unplug the tester	3000times 200times/ hour	1. There is no obvious damage to the terminal 2. Pull-in force and pull-out force conform to 10N-50N 3. After the insertion and extraction test is completed, check whether there is any copper leakage on the contact terminal
3	DC input terminal durability test	Insert&unplug the tester	3000times 200times/ hour	1. DC input terminals have no obvious damage 2. Pull-in force and pull-out force conform to 10N-50N 3. After the insertion and extraction test is completed, check whether there is any copper leakage on the contact terminal

4	AC output terminal durability test	Insert&unplug the tester	2000times 200times/hour	<p>1. No visible damage to the AC connector</p> <p>2. After the test, the maximum pull-out force: 3PIN should be less than 70N to fall off, and the minimum pull-out force of unipolar should be greater than 1.5N without falling off</p> <p>3. After the insertion and extraction test is completed, check whether there is any copper leakage on the contact terminal</p>
5	Terminal mechanical strength test	Push and pull gauges	50N 1min	The terminal will not be sunken, and there will be no mechanical and functional defects
6	Button life	Insert&unplug the tester	500times 200times/hour	Buttons are non-functional and mechanically defective
7	Button mechanical strength test	Push and pull gauges	50N 1min	The terminal will not be sunken, and there will be no mechanical and functional defects

## 8. Product packaging

### 8.1. Product packaging accessories



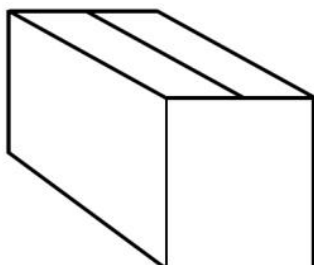
Packaging accessories list

Adapter	Power cord	Manual
1	1	1

Note: Due to the different socket standards in different countries, match according to the actual receiving place.

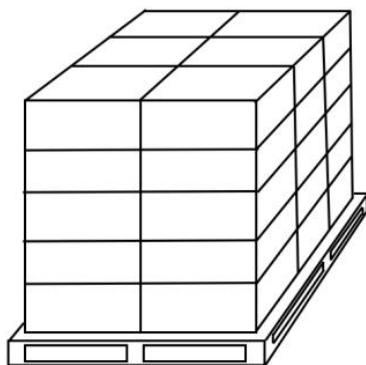


## 8.2. Packing Dimensions and Specifications



Carton size and weight	
length	34.5cm
width	25.5cm
height	40.8cm
weight	7.6Kg

## 9. Product handling and transportation



Pallet size and weight	
length	110cm
width	100cm
height	204cm
Number of carton on pallet	50PCS
Weight of whole pallet	420Kg
Pallet size	110cm*100cm*11cm

Note: The maximum stacking height is five layers, handle with care when handling, prohibit stepping on, raining, exposing to the sun, etc.

## 10. Product Certification and Implementation Standards

CE	CE-EMC	Implementation Standard : EN55032 、 EN55024
	CE-LVD	Implementation Standard: EN60950
FCC	FCC-VOC	Implementation Standard: Part15
ROHS	RoHs and related environmental hazardous substances	Implementation Standard: 2011/65/EU

## 11. Product troubleshooting and troubleshooting

Phenomenon	Cause	Solution
No response to pressing any button	The internal battery has no output/or the product is completely out of power and is in a protected state	Charge the product
When charging, there is no increase in power displayed	AC plug is loose or adapter is damaged	Re-plug/replace with a new adapter
Not in use, fast energy consumption, easy to run out of power	AC switch is open, standby losses	When not using AC, please turn off the AC switch
Battery shows 5%	The internal battery is about to run out and the machine will stop working soon	Stop using and charge the product
The product cannot be charged with the solar panel	The solar panel does not match, or the positive and negative poles are reversed	Choose the corresponding solar panel to charge the product
Electrical equipment does not work	may be overloaded	Please confirm whether the rated power of the electrical equipment matches this product

## 12. Product care and maintenance

12.1. When not in use for a long time, it should be stored in a dry and ventilated environment, and the room temperature should be kept between 20-25℃;

12.2. When not in use for a long time, a deep charge and discharge is required every 3 months to avoid battery capacity degradation;

12.3. Avoid using the machine in a dusty environment for a long time. When there is a lot of dust in the air inlet and outlet, you can use an air gun to clean it in time to avoid affecting the heat dissipation of the machine;

12.4. If you use it for a long time under the state of charging and discharging, please charge and discharge deeply once a month, and let it stand for more than 3 hours to extend the battery life.

## 13. For product manual, please read the "Product Manual"

#### FCC Warning

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

#### Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.